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

This destination will directly support the following Key Strategic Orientations (KSOs), as outlined in the Strategic Plan:

- **KSO 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

Proposals for topics under this Destination should set out a credible pathway contributing to the following expected impact:

- **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.

The priorities in this domain are aligned with the objectives of the Digital Decade to build secure and sustainable digital infrastructures and to support the digital transformation of businesses and public services. It will directly support individual innovators (researchers, developers, high-tech SMEs and start-ups, etc.) engaged in developing the technologies for a trustworthy and human-centric digital environment, building on a more resilient, and decentralised internet architecture and enabling new social and business models respecting European values.

In particular, the Digital Decade and its compass set a target 80% of citizens using a digital ID solution by 2030. In order to achieve this target, Europe needs to build an Internet of Trust empowering end-users with more control over their data and their digital identity. The Internet of Trust will also mobilise innovators towards more sustainable and secure internet infrastructures, supporting the Digital Decade objective of setting up 10000 climate neutral highly secured edge nodes. Finally the R&I priorities in this domain will fully support the international dimension of the digital decade by promoting the EU human-centred approach with key international partners.

As Europe takes the lead in the green and digital transitions, workers, regions, and societies are faced with extremely fast transformations, and will be differently affected by these changes, creating opportunities for inclusive technological and social development, but also carrying the risk of increased inequalities. The rapid adoption of new technologies offers an immense potential for improved standards of living, safer mobility, better healthcare, new jobs, or the personalisation of public services. At the same time, it presents risks such as skills mismatches, digital divides, customer lock-in, or serious breaches of security or privacy.

As Europe sets off on its path to recovery towards a greener, digital and more resilient economy and society, the need to improve and adapt skills, knowledge and competences

becomes all the more important. All communities have the right to benefit from these new digital and green developments, leading to a more inclusive society, increased trust and a better adoption of new products and services. Developments in digital and enabling technologies have the potential to enhance social inclusion, can inform up-skilling training programmes and ensure a two-way engagement with society with regard to developing technologies.

The issue of trust has become central in the use of technologies, following revelations about the exploitation of personal data, large-scale cybersecurity and data breaches, and growing awareness of online disinformation. As outlined in the White Paper on Artificial Intelligence (COM(2020)65), for AI technologies, trust requires in particular improving transparency (explainability, expected levels of performance). For the Internet, increasing trust requires new tools and services to ensure that GDPR is a reality for end-users.

It is also an opportunity for Europe to re-gain presence on the consumer electronics market, by developing new interactive applications in various sectors with solutions meeting European values and requirements in terms of privacy and security. The COVID-19 crisis has also shown how important distance and innovative learning is for society.

Actions under this Destination will support EU objectives of inclusiveness, by supporting a human-centred approach to technology development that is aligned with European social and ethical values, as well as sustainability. These actions will further contribute to addressing the challenges faced by European industry and support the creation of sustainable, high-quality jobs by targeting skills mismatches, the need to empower all workers, and ethical considerations relating to technological progress.

Actions should devote particular attention to openness of the solutions and results, and transparency of the research process. To ensure trustworthiness, public awareness and support, wide adoption by user communities for the benefit of society, actions should promote the highest standards of transparency and openness. Actions should ensure that the processes and outcomes of research and innovation align with the needs, values and expectations of society, in line with Responsible Research and Innovation.

This Destination is structured into the following headings, which group topics together with similar outcomes to address a common challenge:

- Leadership in AI based on trust

The objective of this heading is to ensure autonomy for Europe in AI, leading the way in research, development and deployment of world-class technologies that are beneficial to humans individually, organisationally and societally, and that adheres to European values, such as the principles reflected in our fundamental rights and environmental sustainability. Technologies need to be developed that industries and citizens will trust, so and that they could be applied in a wide range of applications and industrial sectors. Trustworthy AI is particularly key in applications such as (but not limited to) healthcare or in diverse critical infrastructures such as energy and transportation.

Some topics of this heading are under the co-programmed Partnership 'AI, Data and Robotics'.

Proposals are encouraged to link with relevant European Institute of Innovation and Technology (EIT) and its Knowledge and Innovation Communities (KICs), in particular the EIT Digital.

EIT Digital plays role in shaping technologies and innovations that work for people. At least two of its focus areas, Digital Wellbeing and Digital Cities, address directly topics such as ethical artificial intelligence, predictive analytics or augmented and virtual reality that are relevant to this areas. The solutions will benefit from the increasing will of citizens to participate in the sharing economy. EIT Digital, through projects with cities for example, improves engagement and inclusiveness of the citizens and of the visitors by increasingly organising and exposing data, especially in real time and along with analytics and machine learning. Augmented and virtual reality of the cities are another facet of exposing or simulating city data from the past, present or future to the benefit of citizens.

- An Internet of Trust

The issue of trust in the internet has become central, following revelations about the exploitation of personal data, large-scale cybersecurity and data breaches, and growing awareness of online disinformation. A 2019 survey[310] shows that half of the global internet users are more concerned about their online privacy compared to a year previously. Distrust in the Internet is causing people to change the way they behave online, for example by disclosing less personal information. Users also express an increasing level of distrust of social media platforms.

The objective of this heading is to develop a 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.

- eXtended Reality (XR)

Due to its low presence in the consumer electronics industry, Europe is increasingly dependent on external providers in this area. This raises concerns about its digital sovereignty in crucial domains such as digital interaction services that are being adopted by a growing number of European users and industries. The COVID-19 crisis has shown how important distance and innovative learning is for society, our children, their parents and their teachers, maintaining social and educational links under challenging circumstances. Emerging technologies such as virtual reality, eXtended Reality or immersive environments provide numerous opportunities for personalised, innovative, efficient and inclusive learning, for learners of all ages, gender and condition

---

310

The objective of this heading is to gain industrial leadership in eXtended Reality technologies and immersive environments, while ensuring the European values of privacy, ethics and inclusiveness. It also aims to support the digital transformation of education through these technologies in particular.

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

This heading promotes various systemic approaches to encourage creativity and make the most of the technologies developed elsewhere within society and industry. They include testing ideas in local communities; support for IP, standardisation and industry-academia exchanges; art-driven design; and assessments of complex socio-economic systems. These are complemented by support for a network of National Contact Points (NCPs), with a special emphasis on engaging with new actors.

Activities beyond R&I investments will be needed to realise the expected impacts: testing, experimentation, demonstration, and support for take-up using the capacities, infrastructures, and European Digital Innovation Hubs made available under the Digital Europe Programme; further development of skills and competencies via the European Institute of Innovation and Technology, in particular EIT Digital and EIT Manufacturing; upscaling of trainings via the European Social Fund +; use of financial instruments under the InvestEU Fund for further commercialisation of R&I outcomes; and links to the thematic smart specialisation platform on industrial modernisation.

- Digital Humanism and human compatible technologies

The Digital Decade policy programme ("The Path to the Digital Decade"), sets a European approach for its digital transformation based on values and technological leadership.

In parallel, there is still a lack of systematic approaches to ensure a constructive role of culture in technology development in the spirit of methods to integrate non-technology innovation and social innovation.

Efforts will be pursued to help ensuring people are at the centre of the digital transformation, in line with our values and principles.

- European standards for industrial competitiveness

The Communication 'Updating the 2020 Industrial strategy: towards a stronger Single Market for Europe's recovery' made clear that global leadership in technologies goes hand-in-hand with leadership in standard-setting and ensuring interoperability across the EU industrial ecosystems. EU industry needs European and international standards that underpin its twin digital and green transition. A minimal set of standards will also enable the creation of a soft layer for data sharing and exchange amongst EU industrial ecosystems and underpinning data spaces. Establishing global leadership in key priority standards such as cyber-security is also a critical matter for the competitiveness and resilience of EU industries. Global convergence on the same international standards helps reduce adaptation costs and strengthens EU and global

value chains. Thus the topic of standards is an essential cross-cutting issue when it comes to the twin transition of the industrial ecosystems and making European industry more resilient.

Several digital decade targets for 2030 are addressed like tech up-take facilitated by interoperability standards, climate neutral highly secure edge notes and ethical principles for human-centred algorithms through international endorsed standards.

Standardisation can be an important factor for valorising EU R&I projects, allowing new technologies to enter into a more mature phase, favouring their applicability on a larger scale and hence promoting their uptake.

Bringing the research and innovation community early on into the standards-making process is key to identify the issues and priorities, share views on future developments and stakeholder needs, and to provide recommendations to the European Commission and European standardisation organisations for future standardisation needs. Putting standards into science is very important to anticipate and prepare the standards-development process in future areas.

- International cooperation

The proposed international coordination and support actions are aligned with the Commission's international priorities. They will help build strong international digital partnerships, and promote a human-centred digital agenda. International cooperation will further a level playing field and reciprocity while delivering new solutions to digital challenges. The proposed actions will be involved in trade and industrial policy aspects by promoting European technologies in key international markets. They will also support digital dialogues with partner countries.

Cooperation will be prioritised with Japan, the Republic of Korea, and Singapore as part of our digital partnerships with countries in the Indo-Pacific region. The resulting project will foster links with relevant research institutions on R&I activities in the field of digital. It will also support the newly announced Trade and Technology Council with India.

Cooperation with countries in sub-Saharan Africa will stimulate R&I cooperation with the EU and promote EU values for a human-centric digital transformation. Cooperation between Africa and EU will expand on the existing outcomes of Africa-EU cooperation especially in the field of Innovation Hubs cooperation[311], sustainability of African digital ecosystems, reinforcement of the African private sector and contribution to Africa's economic growth (including SDG attainment). It will also contribute to the overarching objectives of our continental partnership in full alignment with the principles of the Global Gateway.

Cooperation with Latin America will aim at exploiting the potential of the newly established BELLA network and implement the outcomes of EU-LAC dialogues in the context of digitalisation and R&I.

---

[311] See in particular ICT 58 Call : https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/ict-58-2020

Additionally, international collaboration is encouraged or targeted in several thematic areas may also be addressed within the respective Joint Undertakings (Smart Networks and Services, EuroHPC, and Key Digital 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 (including gender and intersectional aspects), as well as sustainability;

- Sustainable, high-quality jobs by targeting skills mismatches, the need to empower workers, including those at risk of social exclusion, and ethical considerations relating to technological progress[312].

Innovation Actions — Legal entities established in China are not eligible to participate in Innovation Actions in any capacity. Please refer to the Annex B of the General Annexes of this Work Programme for further details.

The following call(s) in this work programme contribute to this destination:

Call	Budgets (EUR million)		Deadline(s)
	2023	2024	
HORIZON-CL4-2023-HUMAN-01	55.00		29 Mar 2023
HORIZON-CL4-2023-HUMAN-01-CNECT	201.50		29 Mar 2023
HORIZON-CL4-2024-HUMAN-01		61.00	19 Mar 2024
Overall indicative budget	256.50	61.00	

---

[312]   2019 CIGI-Ipsos Global Survey on Internet Security and Trust

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

HORIZON-CL4-2023-HUMAN-01

Conditions for the Call

Indicative budget(s)[313]

Topics	Type of Action	Budgets (EUR million) 2023	Expected EU contribution per project (EUR million)[314]	Indicative number of projects expected to be funded
Opening: 08 Dec 2022 Deadline(s): 29 Mar 2023				
HORIZON-CL4-2023-HUMAN-01-31	CSA	2.00	Around 2.00	1
HORIZON-CL4-2023-HUMAN-01-32	CSA	2.00	Around 2.00	1
HORIZON-CL4-2023-HUMAN-01-33	CSA	5.00	Around 1.00	5
HORIZON-CL4-2023-HUMAN-01-51	RIA	10.00	Around 10.00	1
HORIZON-CL4-2023-HUMAN-01-52	RIA	4.00	Around 4.00	1
HORIZON-CL4-2023-HUMAN-01-53	RIA	10.00	1.50 to 2.50	4
HORIZON-CL4-2023-HUMAN-01-54	CSA	2.50	Around 0.50	5
HORIZON-CL4-2023-HUMAN-01-62	CSA	2.00	Around 2.00	1
HORIZON-CL4-2023-HUMAN-01-63	CSA	3.00	2.50 to 3.00	1
HORIZON-CL4-2023-HUMAN-01-64	CSA	8.00	0.50 to 1.00	8
HORIZON-CL4-2023-HUMAN-01-91	CSA	2.50 [315]	Around 2.50	1

---

[313] The Director-General responsible for the call may decide to open the call up to one month prior to or after the envisaged date(s) of opening.
The Director-General responsible may delay the deadline(s) by up to two months.
All deadlines are at 17.00.00 Brussels local time.
The budget amounts are subject to the availability of the appropriations provided for in the general budget of the Union for years 2023 and 2024.

[314] Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.

[315] Of which EUR 1.00 million from the 'NGEU' Fund Source.

HORIZON-CL4-2023-HUMAN-01-92	CSA	2.00 [316]	Around 2.00	1
HORIZON-CL4-2023-HUMAN-01-93	CSA	2.00 [317]	Around 2.00	1
Overall indicative budget		55.00		

General conditions relating to this call	
Admissibility conditions	The conditions are described in General Annex A.
Eligibility conditions	The conditions are described in General Annex B.
Financial and operational capacity and exclusion	The criteria are described in General Annex C.
Award criteria	The criteria are described in General Annex D.
Documents	The documents are described in General Annex E.
Procedure	The procedure is described in General Annex F.
Legal and financial set-up of the Grant Agreements	The rules are described in General Annex G.

Systemic approaches for accelerating uptake of technology and innovation

Proposals are invited against the following topic(s):

HORIZON-CL4-2023-HUMAN-01-31: Toolbox for efficient IP licensing for market uptake and societal value creation (CSA)

Specific conditions	
Expected EU contribution per project	The Commission estimates that an EU contribution of around EUR 2.00 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.
Indicative budget	The total indicative budget for the topic is EUR 2.00 million.

---

[316] Of which EUR 0.80 million from the 'NGEU' Fund Source.
[317] Of which EUR 0.80 million from the 'NGEU' Fund Source.

Type of Action	Coordination and Support Actions
Eligibility conditions	The conditions are described in General Annex B. The following exceptions apply: If projects use satellite-based earth observation, positioning, navigation and/or related timing data and services, beneficiaries must make use of Copernicus and/or Galileo/EGNOS (other data and services may additionally be used).
Legal and financial set-up of the Grant Agreements	The rules are described in General Annex G. The following exceptions apply: Eligible costs will take the form of a lump sum as defined in the Decision of 7 July 2021 authorising the use of lump sum contributions under the Horizon Europe Programme – the Framework Programme for Research and Innovation (2021-2027) – and in actions under the Research and Training Programme of the European Atomic Energy Community (2021-2025). [318].

Expected Outcome: Proposals are expected to contribute to the following outcomes:

- Promote effective use and deployment of intellectual property ensuring easier access to and sharing of IP-protected assets which are essential to the development of digital and industrial solutions among others, benefitting society.

- Provide models to improve the preparedness to respond to future emergencies with adequate solutions (including digital and industrial solutions) via efficient technology licensing.

Scope: Technology transfer, rapid sharing and access to knowledge assets are playing major role in the global Covid-19 response. The uptake of new technology transfer practices, including digital and data-driven, increased role of the various intermediaries and several novel intellectual property (IP) related access initiatives, such as socially responsible and impact licencing models have demonstrated that knowledge and intellectual asset management is a key tool to address the demanding societal needs related to the pandemic.

Robust and resilient R&I leads to scientific progress and enables the ecosystem delivering and adapting solutions for the society and the challenges it faces. IP and use of different types of collaboration contracts, licenses and pooling agreements are key elements of the process by facilitating technology sharing, increasing scaling up and thereby creating new capacities and industries.

---

[318]   This decision is available on the Funding and Tenders Portal, in the reference documents section for Horizon Europe, under 'Simplified costs decisions' or through this link: https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/guidance/ls-decision_he_en.pdf

In line with the EU IP action plan and the Report on an intellectual property action plan to support EU's recovery and resilience by the European Parliament[319], this action will promote better IP management in research and innovation in view to materialise excellent research into innovation that is benefitting the society and businesses in the EU and beyond.

This activity will deliver an IP toolbox for helping companies, public research organisations including universities and the relevant intermediary entities to establish quick and efficient co-operation and licences with businesses, as well as practical examples of incentives which can motivate private sector to commit voluntary licensing for other areas e.g. climate change emergency.

This action will harvest the lessons learned as well as practical experiences, including results from FP7 and H2020, and assess how these new practices and tools could be transferred to other emergencies e.g. addressing climate change effects (floods, droughts, fires etc.) and helping the society to increase preparedness for any future emergencies.

HORIZON-CL4-2023-HUMAN-01-32: Piloting communities of expert facilitators to improve industry-academia-public sector co-creation (CSA)

Specific conditions	
Expected EU contribution per project	The Commission estimates that an EU contribution of around EUR 2.00 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.
Indicative budget	The total indicative budget for the topic is EUR 2.00 million.
Type of Action	Coordination and Support Actions
Eligibility conditions	The conditions are described in General Annex B. The following exceptions apply: If projects use satellite-based earth observation, positioning, navigation and/or related timing data and services, beneficiaries must make use of Copernicus and/or Galileo/EGNOS (other data and services may additionally be used).
Legal and financial set-up of the Grant Agreements	The rules are described in General Annex G. The following exceptions apply: Eligible costs will take the form of a lump sum as defined in the Decision of 7 July 2021 authorising the use of lump sum contributions under the Horizon Europe Programme – the Framework Programme for Research and Innovation (2021-2027) – and in actions under the

---

[319]   A9-0284/2021

	Research and Training Programme of the European Atomic Energy Community (2021-2025). [320].

Expected Outcome: Proposals are expected to contribute to the following outcomes:

- Strengthen the base for industry-academia collaboration in the higher education institutions in the European Union and Associated Countries and help fostering skills addressing industry and public sector needs;

- Facilitate industry and SMEs to capitalise on the diversity of R&I talents, skills and cultures across the European Union and Associated Countries and spread novel approaches for industry-academia-public sector co-creation in cross-border manner;

- Boost valorisation of excellent research results and innovation, i.e. transforming them into sustainable solutions with economic and social value.

Scope: There is a clear need to improve industry-academia interactions in Europe[321] and enhance knowledge valorisation[322] in innovation ecosystems. The role of intermediaries, e.g. industry clusters, science and innovation parks which can provide a collaboration platform and facilitate co-creation is relevant in this context. Methodologies for improved industry-academia co-creation through expert facilitation offer possibilities for higher education institutions to better meet the needs for innovation from the industry, business side and public sector. The diverse pool of R&I talents at the higher education institutions across Europe constitutes a vast source for creativity which should be fully capitalised for innovation.[323]

This action will pilot communities of expert facilitators for increasing knowledge exchange and co-creation between industry, academia and public sector and help matching the supply and demand for innovation. This action will link professionals in industry-academia-public sector collaboration, build communities of expert facilitators for industry-academia co-creation and disseminate best practices and know-how for demand-driven industry-academia collaboration across Europe. This will include training a wider community of expert facilitators in higher education institutions across Europe.

This action should integrate appropriate Social Sciences and Humanities (SSH) disciplines, with appropriate experts and/or partners, in order to produce outcomes enhancing its societal impact. Particular attention should be paid to promoting gender-responsive and inclusive research and innovation outputs.

---

[320] This decision is available on the Funding and Tenders Portal, in the reference documents section for Horizon Europe, under 'Simplified costs decisions' or through this link: https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/guidance/ls-decision_he_en.pdf

[321] Council conclusions on "Accelerating knowledge circulation in the EU" adopted on 29 May 2018; SRIP Report - Science, Research and Innovation Performance of the EU 2020.

[322] Council Recommendation (EU) 2021/2122 of 26 November 2021 on a Pact for Research and Innovation in Europe (ST/13701/2021/INIT)

[323] Policy Report "Towards a 2030 Vision on the Future of Universities in Europe" https://ec.europa.eu/info/publications/towards-2030-vision-future-universities-field-ri-europe_en

This action could also explore complementarities with already existing instruments in the field of university-business cooperation, such as the EIT Knowledge Innovation Communities, EIT HEI Initiative, Erasmus+ Alliances for Innovation, European Skills Agenda and relevant national and regional activities.

HORIZON-CL4-2023-HUMAN-01-33: Fostering knowledge valorisation through societal and cultural interactions (CSA)

Specific conditions	
Expected EU contribution per project	The Commission estimates that an EU contribution of around EUR 1.00 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.
Indicative budget	The total indicative budget for the topic is EUR 5.00 million.
Type of Action	Coordination and Support Actions
Eligibility conditions	The conditions are described in General Annex B. The following exceptions apply: If projects use satellite-based earth observation, positioning, navigation and/or related timing data and services, beneficiaries must make use of Copernicus and/or Galileo/EGNOS (other data and services may additionally be used).
Legal and financial set-up of the Grant Agreements	The rules are described in General Annex G. The following exceptions apply: Eligible costs will take the form of a lump sum as defined in the Decision of 7 July 2021 authorising the use of lump sum contributions under the Horizon Europe Programme – the Framework Programme for Research and Innovation (2021-2027) – and in actions under the Research and Training Programme of the European Atomic Energy Community (2021-2025). [324].

Expected Outcome: Projects are expected to contribute to the following outcomes:

- Value creation and transfer to economy and society by increased interactions between arts and cultural institutions, citizens and industry;

---

[324] This decision is available on the Funding Wand Tenders Portal, in the reference documents section for Horizon Europe, under 'Simplified costs decisions' or through this link: https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/guidance/ls-decision_he_en.pdf

- Innovative solutions with strong societal acceptance for uptake and transformative capacity through new conceptualisations of societal challenges enabled through artistic methodologies and approaches;

- Enabling interactions, schemes and modes engaging civil society, arts, cultural institutions and industry to benefit diverse communities, develop skills and promote preparedness, recovery and the twin transition.

Scope: The new Industrial Strategy targets place-based innovation with broad stakeholder engagement. The European knowledge valorisation policy places much attention on a more diverse societal engagement involving a multitude of participants to create value through innovation benefiting all of society.

Enabling systemic change and achieving the twin transition cannot be achieved by technological solutions alone, if these solutions are not accepted and fully used by society, or if they increase existing inequalities. Engagement with the arts and cultural institutions can increase citizens' understanding of complex issues (such as climate change, crisis management, data, artificial intelligence etc.) and involve citizens in co-creation for solutions drawing on existing knowledge and research results and driven by art and technology. Strengthening approaches of experimentation and creativity common in the ways artistic and cultural interactions operate, in co-creation with citizens and industry, can increase the potential for transformation towards a more prosperous, inclusive and innovative future.

This action aims to strengthen and further develop existing or new schemes promoting arts-industrial technologies-citizens interactions, that increase uptake of new technologies and innovative solutions through better societal understanding and acceptance, as well as co-creation delivering economic and societal benefits. While arts and technology are the main drivers, citizens and communities are empowered to develop, test, co-create and share the benefits of new innovative solutions that address their needs. Industry is stimulated to adopt more human-centred and creative approaches, enhanced by interactions with citizens, artists, designers, social and humanities scientists, cultural and creative professionals and institutions.

The proposals will address at least one of the following challenges:

- Developing and testing new schemes, initiatives and modes for arts-industrial technologies-citizens interactions leading to increased uptake of research results and innovative solutions by market and society. At least 20 new schemes and initiatives across Europe will be tested;

- Transferring, with the appropriate adaptations, and testing in another environment, existing schemes, initiatives and modes for arts-industrial technologies-citizens interactions that increase uptake of research results and innovative solutions by market and society. At least 20 existing (or recent) schemes and initiatives will be tested in a different member state to where they are in place/ originate, across Europe.

Research and Innovation for Industry 5.0

Proposals are invited against the following topic(s):

HORIZON-CL4-2023-HUMAN-01-51: Pilots for an innovative human-centric industry (RIA)

Specific conditions	
Expected EU contribution per project	The Commission estimates that an EU contribution of around EUR 10.00 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.
Indicative budget	The total indicative budget for the topic is EUR 10.00 million.
Type of Action	Research and Innovation Actions
Eligibility conditions	The conditions are described in General Annex B. The following exceptions apply: If projects use satellite-based earth observation, positioning, navigation and/or related timing data and services, beneficiaries must make use of Copernicus and/or Galileo/EGNOS (other data and services may additionally be used).

Expected Outcome: Project results are expected to contribute to the following outcomes:

- Improved understanding of the socio-technical and ethical implications of advanced (digital) technologies for workers and work organisation across industrial sectors;

- Work and learning environments and work models that make best use of the possibilities of advanced (digital) technologies and the human capabilities and creative potential in a synergistic manner, thus contributing to enhanced European industrial competitiveness in existing and new markets;

- A skilled and creative industry workforce that is empowered through and in control of advanced technologies that are aligned with European social and ethical values.

Scope: Digitalisation and automation in industry to date have focussed primarily on capitalising on opportunities to increase efficiency and enhance productivity, often without much attention to the changing role of the worker. In its Industry 5.0 concept, the Commission puts forward a view of a resilient, sustainable and human-centric industry. The human-centric approach implies placing core human needs and interests at the heart of processes in industry, rather than taking the technology and its potential for increasing efficiency as a starting point.

A human-centric industry recognises and leverages the capabilities and creative potential of its workers through the synergistic combination with advanced (digital) technologies. In this process, with regard to work organisation, work place design, work content and skills, working conditions and work relations, fundamental principles and human needs such as human autonomy and control, coherence and variation of tasks, work-life balance, social dialogue and others, must be safeguarded, as well as human rights [325] such as privacy and safety. Moreover, as diverse groups of workers experience the increasing impact – as well as opportunities - of the digital transition, upskilling or reskilling is required to meet the digital transformation challenges of the enterprise.

The project will develop and demonstrate the concept of human-centricity in a real-life, operational industrial environment in at least ten pilots. A pilot may consist of an individual company, but may also span multiple companies that interact across (possibly transnational) value chains or in a local innovation ecosystem. The set of pilots, as a whole, will cover a variety of industrial sectors and company sizes, including SMEs and start-ups and/or scale-ups, and will be situated in at least 13 different EU Member States or countries associated to the Horizon Europe programme.

The pilots will innovate and go beyond-the-state-of-the-art with respect to the purposeful application of advanced technologies, which would typically be situated at a Technology Readiness Level (TRL) of 6 or 7. With regard to digital solutions, the aspect of cyber-security must be adequately addressed in design, implementation and governance. Purposeful application signifies that innovation is expected that promotes a human-centric industry and may imply, as appropriate, innovation with respect to work organisation, tasks and functions of workers, skills and training, occupational health and safety, enterprise management and governance (incl. the management of human resources), business models, corporate values and ethics, etc.

In addition, the pilots may address particular themes such as the ones listed hereunder in a non-prescriptive and non-exhaustive manner:

- the development of and experimentation with models and technologies to stimulate individual and collective creativity of workers and future workforce,

- the participation of workers (as end-users) in the design of purposeful technology application in the work process,

- the application of technology to enhance the inclusivity of the work environment, the ways in which unskilled or low-skilled labour participate in a human-centric production process and the role of technology therein,

- how technological, process and organisational innovation can offer jobs that remain rewarding for the individual worker along the life cycle,

---

[325] The Universal Declaration on Human Rights, the International Covenant on Economic, Social and Cultural Rights, the European Convention on Human Rights and the Charter of Fundamental Rights of the European Union

- the development of and experimentation with the use of advanced technologies (such as robotics) in learning environments to increase the skill level of the current and future workforce,

- the response to the COVID-19 pandemic in terms of the organisation of work and its effects.

The project will report the obtained results and the practices leading to success, as well as the encountered difficulties and bottlenecks and any trade-off that had to be made. They will identify and analyse direct and indirect effects and outcomes of the pilots. These include effects and outcomes that pertain to workers' satisfaction and well-being, with a particular interest for the acceptance of and relation with technology. Equally important are the effects and outcomes that implicate the competitiveness and resilience of the company and, taking a wider perspective, the societal role of industry as responsible provider of prosperity. The consortia will interpret their findings in a coherent theoretical framework, exploiting the diversity of the pilots and taking into account the specificities of the setting and context of the pilots.

The consortium will formulate evidence-based recommendations tailored to relevant stakeholders, including, as appropriate, policy makers at relevant levels (EU, national/regional, sectoral), social partners, industry federations and professional associations and partnerships and organised civil society (NGOs). A concluding conference will support this goal.

This topic requires an interdisciplinary approach with the effective contribution of SSH disciplines and the involvement of SSH experts and/or institutions.

The proposals should consider the intersectional gender dimension in the content of the proposed research and innovation, in order to deliver scientific quality and societal relevance of the produced knowledge and innovation.

Proposers should consider and actively seek synergies with relevant active and finalised projects/activities in Horizon 2020 and Horizon Europe [326] (including public-private and

---

[326] Including relevant projects resulting from Cluster 2 calls under the Destination "Innovative research on social and economic transformations"(inter alia HORIZON-CL2-2021-TRANSFORMATIONS-01-05, HORIZON-CL2-2022-TRANSFORMATIONS-01-07, HORIZON-CL2-2023-TRANSFORMATIONS-01-01, HORIZON-CL2-2023-TRANSFORMATIONS-01-08, HORIZON-CL2-2024-TRANSFORMATIONS-01-05, HORIZON-CL2-2024-TRANSFORMATIONS-01-09, HORIZON-CL2-2024-TRANSFORMATIONS-01-11) and Cluster 4 calls under the Destination "Climate neutral, circular and digitised production" (inter alia HORIZON-CL4-2021-TWIN-TRANSITION-01-01, HORIZON-CL4-2021-TWIN-TRANSITION-01-07, HORIZON-CL4-2021-TWIN-TRANSITION-01-08, HORIZON-CL4-2022-TWIN-TRANSITION-01-01, HORIZON-CL4-2022-TWIN-TRANSITION-01-06), under the Destination "Increased autonomy in key strategic value chains for resilient industry"(inter alia HORIZON-CL4-2021-RESILIENCE-01-29, HORIZON-CL4-2021-RESILIENCE-01-31), under the Destination "Digital and emerging technologies for competitiveness and fit for the green deal" (inter alia HORIZON-CL4-2021-DIGITAL-EMERGING-01-10, HORIZON-CL4-2022-DIGITAL-EMERGING-01-05, HORIZON-CL4-2023-DIGITAL-EMERGING-01-02) and under the Destination "A human-centred and ethical development of digital and industrial technologies" (inter alia HORIZON-CL4-2021-HUMAN-01-21, HORIZON-CL4-2021-HUMAN-01-25, HORIZON-CL4-2021-HUMAN-01-26, HORIZON-CL4-2022-HUMAN-01-01, HORIZON-CL4-2022-HUMAN-01-14,

public-public partnerships[327] and EIT KICs) and the Digital Europe programme (European Digital Innovation Hubs), as well as within relevant sectorial associations[328]

HORIZON-CL4-2023-HUMAN-01-52: Drivers and success factors for progress towards Industry 5.0 (RIA)

Specific conditions	
Expected EU contribution per project	The Commission estimates that an EU contribution of around EUR 4.00 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.
Indicative budget	The total indicative budget for the topic is EUR 4.00 million.
Type of Action	Research and Innovation Actions
Eligibility conditions	The conditions are described in General Annex B. The following exceptions apply: If projects use satellite-based earth observation, positioning, navigation and/or related timing data and services, beneficiaries must make use of Copernicus and/or Galileo/EGNOS (other data and services may additionally be used).

Expected Outcome: Project results are expected to contribute to the following outcomes:

- Increased uptake of the Industry 5.0 principles and practices across industrial sectors, achieved through improved understanding of its benefits for enterprises and society and actionable knowledge about factors of success and impediment;

- Sound data and analysis of the uptake of Industry 5.0 in its different dimensions for policy makers at EU, national/regional and sectoral level.

Scope: In January 2021, the Commission articulated, under the name Industry 5.0[329], a vision of a future-proof industry that, capitalising on technological progress beyond productivity and efficiency, is the resilient provider of prosperity, within planetary boundaries and placing the wellbeing of the worker at the centre.

In order to optimise policies that stimulate the uptake of the Industry 5.0 principles of sustainability, resilience and human-centricity and facilitate their implementation, an increased understanding of drivers and factors contributing to or hindering successful

---

HORIZON-CL4-2023-HUMAN-01-02, HORIZON-CL4-2023-HUMAN-01-22, HORIZON-CL4-2023-HUMAN-01-52, HORIZON-CL4-2024-HUMAN-01-53, HORIZON-CL4-2023-HUMAN-01-81)

[327] In particular, but not exclusively, the European Partnerships "Made in Europe", "Processes4Planet" and "Artificial Intelligence, Data and Robotics" and "Built4People"

[328] such as Manufuture, Cecimo, Orgalim and others.

[329] https://ec.europa.eu/info/research-and-innovation/research-area/industrial-research-and-innovation/industry-50_en

implementation is required, based on a sociotechnical and multidisciplinary approach, taking technological, social and human aspects into consideration.

The action will select and thoroughly study the successful or less successful implementation of the Industry 5.0 principles in at least ten cases. Each case is in a different EU Member State or country associated to the Horizon Europe programme. Cases may be cross-boundary. These cases may be complemented with other cases. If a case in a country outside the EU or in a country not associated to the Horizon Europe programme would be proposed, its relevance must be demonstrated in the proposal. The overall design of the study must be well deliberated, founded in a coherent theoretical framework, and provide for a careful selection of cases (for instance, by variation of relevant case characteristics such as company size and type, industrial sector, country typology, etc.) and for a framework of analysis that can be applied consistently across cases. The smart study design should enable the consortium to extract maximal and relevant insights from the combined analysis of the selected cases.

Taking into account and exploiting the specificities of the cases, the deep analysis of the individual cases, together with the combined analysis of the cases, will address the following research themes in an evidence-based manner.

- **Implementation practices**: How do companies, local innovation ecosystems or industry sectors implement Industry 5.0 principles in practice? Which modes of implementation exist? How does industry go beyond the state-of-the-art and innovate, for instance with respect to the purposeful application of technology, work organisation and production, organisation and operation of supply chains, worker tasks and functions, training and skills, human resources management, sustainable business models and resilient value chains, long-term value creation, corporate governance, climate transition and sustainability plans, stakeholder engagement, partnerships and networks, etc.?

- **Drivers**: What are the drivers for companies, industry sectors or industrial ecosystems to adapt (or not) Industry 5.0 principles? Which trade-offs may have to be made? Which role do public policies and regulatory environment play? How does successful implementation of Industry 5.0 principles provide advantage on multiple dimensions such as (global) competitiveness, reputation, attractiveness for talent and for investment, enhanced generation of qualified jobs, adaptive capacity to incremental changes and sudden disruptions (e.g. by reduction of dependencies), progress towards climate change objectives, etc.?

- **Success factors and bottlenecks**: What are the factors, either internal or external to the company, that contribute or hinder the uptake and implementation of Industry 5.0 principles? How do workers accept and relate to advanced technology in the work place? What is the role of the embedding of a company in the local community? What are the factors that could diminish or reinforce inequalities through the implementation of advanced technologies in the work place? What is the added value of considering sustainability aspects, including science-based targets, in defining the business strategy?

- **SMEs/start-ups/scale-ups**: How can/do SMEs/start-ups/scale-ups take up Industry 5.0 principles and what is the role of the local innovation ecosystem in this? How does it help these types of enterprises to participate successfully in the green and digital transition of industry?

- **Measurement**: The project will investigate state-of-the-art quantitative and qualitative tools for measuring progress towards Industry 5.0 in its three dimensions of resilience, sustainability and human-centricity and how they can be applied in practice.

Proposers are encouraged to elaborate the above research themes further with a view to contributing fully to the expected outcomes. Proposers will explain and motivate the trade-off made between number and representativeness of study cases and breadth and depth of analysis.

The analysis must go beyond mere desk research and must be developed and validated in interaction with the actors involved in the respective cases. A number of workshops involving external experts, including from within the Commission, will support this goals

The project will transfer knowledge in actionable form to relevant actors including policy makers, social partners and industry federations and partnerships, organised civil society (NGOs). A concluding conference will support this goal.

This topic requires an interdisciplinary approach with the effective contribution of SSH disciplines and the involvement of SSH experts and/or institutions.

The proposals will devote attention to the gender dimension in the content of the proposed research and innovation, in order to deliver scientific quality and societal relevance of the produced knowledge and innovation.

Proposers should consider and actively seek synergies with relevant active and finalised projects/activities in Horizon 2020 and Horizon Europe[330] (including public-private and

---

[330] Projects that are relevant for industry with respect to the three pillars of the Industry 5.0 concept may result from across the different parts of the HE programme, in addition to HORIZON-CL4-2023-HUMAN-01-51 and HORIZON-CL4-2023-HUMAN-01-53 and the following:
Cluster 2 calls under the Destination "Innovative research on social and economic transformations"(inter alia HORIZON-CL2-2021-TRANSFORMATIONS-01-05, HORIZON-CL2-2022-TRANSFORMATIONS-01-07, HORIZON-CL2-2023-TRANSFORMATIONS-01-01, HORIZON-CL2-2023-TRANSFORMATIONS-01-08, HORIZON-CL2-2024-TRANSFORMATIONS-01-05, HORIZON-CL2-2024-TRANSFORMATIONS-01-09, HORIZON-CL2-2024-TRANSFORMATIONS-01-11)
Cluster 4 calls under the Destination "Climate neutral, circular and digitised production" (inter alia HORIZON-CL4-2021-TWIN-TRANSITION-01-01, HORIZON-CL4-2021-TWIN-TRANSITION-01-07, HORIZON-CL4-2021-TWIN-TRANSITION-01-08, HORIZON-CL4-2022-TWIN-TRANSITION-01-01, HORIZON-CL4-2022-TWIN-TRANSITION-01-06), under the Destination "Increased autonomy in key strategic value chains for resilient industry"(inter alia HORIZON-CL4-2021-RESILIENCE-01-29, HORIZON-CL4-2021-RESILIENCE-01-31), under the Destination "Digital and emerging technologies for competitiveness and fit for the green deal" (inter alia HORIZON-CL4-2021-DIGITAL-EMERGING-01-10, HORIZON-CL4-2022-DIGITAL-EMERGING-01-05, HORIZON-CL4-2023-DIGITAL-EMERGING-01-02) and under the Destination "A human-centred and ethical development of digital and industrial technologies" (inter alia HORIZON-CL4-2021-HUMAN-01-21, HORIZON-CL4-2021-HUMAN-01-25, HORIZON-CL4-2021-HUMAN-01-26, HORIZON-CL4-2022-

public-public partnerships and EIT KICs) and the Digital Europe programme (European Digital Innovation Hubs), as well as within relevant sectorial associations.[331]

HORIZON-CL4-2023-HUMAN-01-53: Localised and Urban Manufacturing, supporting creativity and the New European Bauhaus (RIA using FSTP)

Specific conditions	
Expected EU contribution per project	The Commission estimates that an EU contribution of between EUR 1.50 and 2.50 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.
Indicative budget	The total indicative budget for the topic is EUR 10.00 million.
Type of Action	Research and Innovation Actions
Eligibility conditions	The conditions are described in General Annex B. The following exceptions apply: If projects use satellite-based earth observation, positioning, navigation and/or related timing data and services, beneficiaries must make use of Copernicus and/or Galileo/EGNOS (other data and services may additionally be used).
Technology Readiness Level	Activities are expected to start at TRL 5 and achieve TRL 6 by the end of the project – see General Annex B.
Procedure	The procedure is described in General Annex F. The following exceptions apply: To ensure a balanced portfolio covering demonstration activities in diverse geographical areas of the European Union and Associated Countries, grants will be awarded first to the highest ranked application according to the standard procedure described in Horizon Europe General Annexes D and F, followed by other applications that are the highest ranked among those that ensure the most complementary geographical coverage, provided that the applications attain all thresholds. When assessing geographical coverage, the evaluation will take into account the location of the application's demonstration activities, not the location of the application's participants/beneficiaries.

HUMAN-01-01, HORIZON-CL4-2022-HUMAN-01-14, HORIZON-CL4-2023-HUMAN-01-02, HORIZON-CL4-2023-HUMAN-01-22, HORIZON-CL4-2023-HUMAN-01-52, HORIZON-CL4-2024-HUMAN-01-53, HORIZON-CL4-2023-HUMAN-01-81)

[331]   such as Manufuture, Cecimo, Orgalim and others.

Expected Outcome: Manufacturing industry, as well as customers, consumers and wider communities, should benefit from the following outcomes, applying the New European Bauhaus concept:[332]

- Designing and demonstrating symbiotic and sustainable factories that support a decentralised manufacturing vision close to the customer – this will in turn bring benefits in terms of flexibility, resilience, urban transformation and minimisation of transport costs and impacts;

- Developing regenerative concepts that offer increased value for the larger community, inspired by the New European Bauhaus, paying particular attention to regenerative design and regenerative and value-added manufacturing;[333]

- Human-centric and participatory approaches to enhance wider engagement and creativity, with appropriate contributions from Social Sciences and Humanities (SSH), including cognitive science;

- Raising the profile of manufacturing as an attractive career option;

- Improved access to flexible production capabilities in decentralised environments, especially for SMEs.

Scope: Decentralised, local and urban manufacturing is characterised by small, versatile factories, close to customers, and to highly qualified workers, where various types of customised products are produced in small series for the cost price of mass-produced products.

The New European Bauhaus seeks a transformation relying on industrial ecosystems, from construction to lifestyle and creative industries, from materials to business models, from digital to farming, to provide tailored and affordable solutions. The New European Bauhaus approaches innovation not only in the sense of new technologies but also as a combination of new and traditional techniques, or adaptations of local crafts and knowledge. This topic is intended to integrate the New European Bauhaus initiative into the development and implementation of the decentralised manufacturing vision. New business models and social economy approaches, and Design for Sustainability, can also support the decentralised manufacturing vision.

New technologies offer the possibility of implementing certain manufacturing processes in localised and urban settings, limiting time to reach the job place for workers, bringing production closer to, and responding to the needs of customers and consumers, and promoting urban resilience and inclusiveness. The focus is on designing and prototyping urban and decentralised processes, not on large-scale adoption by manufacturing industry. However,

---

[332] https://europa.eu/new-european-bauhaus/index_en

[333] Horizon Europe and new European Bauhaus NEXUS report, p. 8, 14, https://op.europa.eu/en/publication-detail/-/publication/9f9acd60-8aec-11ec-8c40-01aa75ed71a1/language-en

attention to standards is required, to ensure that the urban and decentralised segments can be integrated in wider manufacturing processes.

Research and Innovation activities should cover:

- Adaptation (and where relevant development) of green and digital technologies that allow production in local and urban contexts with lower environmental impacts, noise, waste, energy and space consumption, and an increased quality of experience.

- Consideration of the potential of circular economy approaches, by closing the material and energy cycles in cities and transforming waste streams into productive resources.

- Activities for developing skills and creativity; participatory design strategies; inclusiveness, possibly including unemployed workforce and marginalised groups; and engaging citizens in the definition of challenges and solutions.

- Artistic experimentation with novel uses of technologies that help push for green solutions in the spirit of S+T+ARTS (starts.eu) and New European Bauhaus, also taking into consideration the different dimensions of inclusion and aesthetics and quality of experience.

Digitally-enabled solutions that support the local and urban manufacturing vision may be considered. Possible technology development includes the adoption of artificial intelligence and smart data approaches to control and optimise distributed manufacturing and logistic processes; Internet of Things solutions and big data analysis to reach zero-defect manufacturing processes and zero-surprises predictive maintenance; distributed ledger technologies to reduce transaction costs.

Developed technologies should be demonstrated in at least two complementary use cases. To achieve this, project consortia may provide financial support to SMEs in the form of Financial Support to Third Parties (FSTP). The maximum amount to be granted to each third party is EUR 100 000, with up to one third of the total EU contribution used for FSTP.

A human-centric approach should be integrated, with appropriate contributions from Social Sciences and Humanities (SSH), and in particular the arts as catalysts of human compatible and green uses of technology (see S+T+ARTS) in transdisciplinary approaches. As part of this, a strategy for skills development should could be included, associating social partners where relevant.

All projects should build on or seek collaboration with existing projects and develop synergies with other relevant European, national or regional initiatives, funding programmes and platforms. In particular, projects can consider links to the EU Mission Climate-Neutral and Smart Cities,[334] and to one or more of the 100 EU Cities that will participate.[335]

---

[334] https://ec.europa.eu/info/research-and-innovation/funding/funding-opportunities/funding-programmes-and-open-calls/horizon-europe/eu-missions-horizon-europe/climate-neutral-and-smart-cities_en
[335] https://ec.europa.eu/commission/presscorner/detail/en/ip_22_2591

Projects are expected to contribute to the New European Bauhaus initiative by interacting with the New European Bauhaus Community, NEBLab and other relevant actions of the initiative through sharing information, best practice and, where relevant, results.

In the context of this topic, geographical areas of the European Union and Associated Countries are NUTS level 1 regions of European Union Member States and of Associated Countries for which they are defined. In the case of Associated Countries without NUTS classification, the country as a whole is to be considered as one geographical area:

- List of Associated Countries not defined by NUTS level 1: Armenia; Bosnia and Herzegovina; Faroe Islands; Georgia; Kosovo;[336] Israel; Moldova; Tunisia; Ukraine.

- List of countries not defined by NUTS level 1 with which association negotiations are being processed or where association is imminent: Morocco.

HORIZON-CL4-2023-HUMAN-01-54: Green and digital skills and training needs for a just transition (CSA)

Specific conditions	
Expected EU contribution per project	The Commission estimates that an EU contribution of around EUR 0.50 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.
Indicative budget	The total indicative budget for the topic is EUR 2.50 million.
Type of Action	Coordination and Support Actions
Procedure	The procedure is described in General Annex F. The following exceptions apply: *To ensure a balanced portfolio covering skills in the different areas, grants will be awarded to applications not only in order of ranking, but also to projects covering different areas, provided that the applications attain all thresholds.*
Legal and financial set-up of the Grant Agreements	The rules are described in General Annex G. The following exceptions apply: Eligible costs will take the form of a lump sum as defined in the Decision of 7 July 2021 authorising the use of lump sum contributions under the Horizon Europe Programme – the Framework Programme for Research and Innovation (2021-2027) – and in actions under the

---

[336] This designation is without prejudice to positions on status, and is in line with UNSCR 1244/1999 and the ICJ Opinion on the Kosovo declaration of independence.

	Research and Training Programme of the European Atomic Energy Community (2021-2025). [337].

Expected Outcome:

- Reduce skills gaps that hold back the green and digital transitions, by developing and disseminating suitable skills development programmes and training modules, including to prepare future scale-up e.g. through ESF+ or the European Institute of Innovation and Technology (EIT).

- Support collective action on skills development by companies and providers of education and training, and hence support deep-tech innovation; and contribut=e to the European Year of Skills 2023[338], to the large-scale skills partnerships in key industrial ecosystems under the Pact for skills[339], and to the flagship to skill, re-skill and up-skill talents in the deep tech fields outlined in the Commission's new European Innovation Agenda[340].

- Support the training of advanced ICT-specialist skills or other key digital technologies' skills that would contribute to industrial leadership and strategic autonomy and rely on advanced specialised know-how, and to reaching the digital decade targets[341].

Scope: In order to tackle climate and environmental-related challenges, Europe is committed to transform its economy, reducing greenhouse gas emissions by 55% by 2030 and becoming climate neutral by 2050. Delivering on the green transition can have a positive effect on the total number of jobs in the EU with almost 1 million jobs being added with the right policies in place. However, in order for the transition to be successful and fair, existing and new workers need to be equipped with the right skills. In order to do that, they should have access to lifelong learning and dedicated up-skilling and reskilling programmes.

In a similar way, advanced digital skills require more than mastering coding or having a basis of computing sciences. With emerging technologies around quantum, AI, big data and other key technologies, the need for ICT specialist is increasing. For example, there were only 7.8 million ICT specialists in 2019 with a prior annual growth rate of 4.2%. If this trend continues, Europe will be far below the projected need of 20 million experts e.g. for key areas underlying its competiveness and enabling the green transition. More than 70% of businesses report a lack of staff with adequate skills as an obstacle to investments.

---

[337]   This decision is available on the Funding and Tenders Portal, in the reference documents section for Horizon Europe, under 'Simplified costs decisions' or through this link: https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/guidance/ls-decision_he_en.pdf
[338]   State of the Union (europa.eu)
[339]   Pact for Skills - Employment, Social Affairs & Inclusion - European Commission (europa.eu)
[340]   New European Innovation Agenda (europa.eu)
[341]   https://ec.europa.eu/info/strategy/priorities-2019-2024/europe-fit-digital-age/europes-digital-decade-digital-targets-2030_en

In light of these needs, the Commission has proposed to make 2023 the European Year of Skills.[342] The development and dissemination of innovative training programmes which equip the labour force with green and advanced digital skills has to be part of the solution. Proposals may focus on the skills needs of occupations in one or more specific industrial sectors. They should build on the existing Erasmus+ Blueprint Alliances for sectoral cooperation on skills[343] where available (introduced in the 2016 New Skills Agenda for Europe, and gradually rolled out for an increasing number of sectors), as well as on the existing large-scale skills partnerships in industrial eco-systems under the Pact for Skills [344] following the 2020 European Skills Agenda[345]. Where relevant, outcomes from this call should feed into the Deep Tech Talents Initiative, for instance through cooperation with the European Institute of Innovation and Technology (EIT) in designing a mechanism to monitor and report on deep tech skills that support the green and digital transition, the related education and training programmes and its dissemination in Europe [346].

Skills development should take into account the twin green and digital transition and support labour markets with the aim to increase EU growth potential, including by fostering deep-tech solutions.

Proposals should address at least two of the following aspects:

- Identify, along with relevant stakeholders, specific green or digital skills, defined as those needed to underpin the ongoing and upcoming digital and green transition of the economy to climate neutrality by 2050 and the 2030 digital decade targets, with a particular focus on those that are in shortage; this should take account of the work in the action on skills to support the twin transitions in the European Skills Agenda, in particular the taxonomy of green skills in ESCO[347];

- Devise, test and implement scalable (e.g. through ESF+ or EIT) skills development programmes and trainings to endow the labour force with the identified green or digital skills, with the aim to skill, re-skill and up-skill the workforce as stated in the European Skills Agenda and the new European Innovation Agenda;

- Where possible, such trainings should be designed with a particular focus on the needs of workers that are at risk of becoming redundant due to structural transformations related to the green or digital transition or whose task profiles are expected to change significantly, or currently unemployed people;

- Develop deep tech skills and training programmes in the fields critical for the green and digital transitions, such as circularity, raw and advanced materials, energy-intensive and manufacturing industries, clean-tech, and digital technologies;

---

[342] [Commission kick-starts work on the European Year of Skills (europa.eu)](#)
[343] https://ec.europa.eu/social/main.jsp?catId=1415&langId=en
[344] https://pact-for-skills.ec.europa.eu/index_en
[345]
[346] [EIT TO SKILL ONE million tech INNOVATORS – Join the Pledge! | European Institute of Innovation & Technology (EIT) (europa.eu)](#)
[347] [https://ec.europa.eu/esco/portal/skill](#)

- Support certification and recognition of the green and digital skills and competences, where possible within the relevant accreditation model such as the EIT Label.

Proposals should have a clear strategy for identifying the effectiveness and efficiency of the proposed training. Proposals should also indicate the number of beneficiaries they expect to reach with the project outcomes: both during the initial project duration, and in a possible follow-up project/during scale-up. They should anticipate questions related to the scalability and dissemination of the resulting output, for instance by involving suitable stakeholders.

Where relevant, the proposals should build on and feed into the mechanism developed and applied by EIT[348] such as the Deep Tech Talent Initiative (DTTI), a pioneering programme that aim to skill one million people within European deep tech fields over the next three years. The important dimension of the EIT DTTI is to ensure that companies and industry representatives are part of the curricula development and that curricular elements are continuously updated in line with the changing labour market needs in the technology area.

Proposals should also explain how the activities support transferability, certification and recognition of the skills and competencies, following relevant industry standards or horizontal models, such as EIT Label for non-degree education and training.

Proposals should envisage collaboration and synergies with related projects such as Bridges 5.0.

All output material should be published with a 'Creative Commons license' to allow further use free of charge.

This topic requires the effective contribution of Social Sciences and Humanities (SSH) disciplines and the involvement of SSH experts, institutions as well as the inclusion of relevant SSH expertise, in order to produce meaningful and significant effects enhancing the societal impact of the related research activities.

Social innovation is recommended when the solution is at the socio-technical interface and requires social change, new social practices, social ownership or market uptake.

European standards for industrial competitiveness

Proposals are invited against the following topic(s):

HORIZON-CL4-2023-HUMAN-01-62: Boosting industrial symbiosis by standardisation (CSA)

Specific conditions	
Expected EU contribution per	The Commission estimates that an EU contribution of around EUR 2.00 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a

---

[348] https://www.eitdeeptechtalent.eu

project	proposal requesting different amounts.
Indicative budget	The total indicative budget for the topic is EUR 2.00 million.
Type of Action	Coordination and Support Actions
Eligibility conditions	The conditions are described in General Annex B. The following exceptions apply: If projects use satellite-based earth observation, positioning, navigation and/or related timing data and services, beneficiaries must make use of Copernicus and/or Galileo/EGNOS (other data and services may additionally be used).
Legal and financial set-up of the Grant Agreements	The rules are described in General Annex G. The following exceptions apply: Eligible costs will take the form of a lump sum as defined in the Decision of 7 July 2021 authorising the use of lump sum contributions under the Horizon Europe Programme – the Framework Programme for Research and Innovation (2021-2027) – and in actions under the Research and Training Programme of the European Atomic Energy Community (2021-2025). [349].

Expected Outcome: Proposals are expected to contribute to the following outcomes:

- Reinforcing the links between standardisation and research and innovation in circular value chains, ensuring that standardisation facilitates cross-sector interoperability at all levels.

- Facilitating the market entry of innovative solutions, which could aid the circularity of resources and zero pollution.

- Identifying the major bottlenecks for standardisation related framework conditions to support industrial symbiosis.

- In order to support the implementation of the ERA Industrial technology roadmap for low carbon technologies[350], helping the development of agile and green standards to ensure interoperability in the domain of industrial symbiosis.

Scope: As emphasised in the European Green Deal and in the New Industrial Strategy for Europe, developing new standards, coupled with increased EU participation in international standardisation bodies, will be essential to boost industry's competitiveness and build a sustainable and more inclusive future.

---

[349] This decision is available on the Funding and Tenders Portal, in the reference documents section for Horizon Europe, under 'Simplified costs decisions' or through this link: https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/guidance/ls-decision_he_en.pdf

[350] file:///C:/Users/targerg/Downloads/KI0121501ENN.en%20(1).pdf

This action will identify solutions on how standardisation can allow stakeholders at all levels develop a shared understanding of processes by which waste or by-products of an industry or industrial process become the raw materials for another.

The action will cover manufacturing and process industries in a wider context taking into consideration waste treatment and management, energy use and materials sourcing. It will evaluate the impact of industrial symbiosis on the environment and strengthen the link between environmental science and policymaking. In this multidisciplinary approach standards have a key role as they reduce the multiplicity of approaches, terminologies, measurements allowing for accurate benchmarking and target setting.

The selected project may benefit from being addressed by a consortium that includes a variety of stakeholders covering, inter alia, industry, energy, environment and SSH.

HORIZON-CL4-2023-HUMAN-01-63: Provide for a strong and sustainable pool of experts for European Standardisation: attract the students of university/HEI

Specific conditions	
Expected EU contribution per project	The Commission estimates that an EU contribution of between EUR 2.50 and 3.00 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.
Indicative budget	The total indicative budget for the topic is EUR 3.00 million.
Type of Action	Coordination and Support Actions
Eligibility conditions	The conditions are described in General Annex B. The following exceptions apply: If projects use satellite-based earth observation, positioning, navigation and/or related timing data and services, beneficiaries must make use of Copernicus and/or Galileo/EGNOS (other data and services may additionally be used).
Legal and financial set-up of the Grant Agreements	The rules are described in General Annex G. The following exceptions apply: Eligible costs will take the form of a lump sum as defined in the Decision of 7 July 2021 authorising the use of lump sum contributions under the Horizon Europe Programme – the Framework Programme for Research and Innovation (2021-2027) – and in actions under the Research and Training Programme of the European Atomic Energy Community (2021-2025). [351].

---

[351] This decision is available on the Funding and Tenders Portal, in the reference documents section for Horizon Europe, under 'Simplified costs decisions' or through this link:

<u>Expected Outcome</u>: Projects should support the following outcomes:

- Inclusion of standardisation knowledge in curricula of university/Higher Education Institutions (HEI) to educate students about standardisation in order to attract them, a tomorrow's professionals, to contribute to standardization: *building up a strong and sustainable pool of European standardisation-competent professionals ready to engage in European and International Standardisation*;

- Increased visibility of standardisation in European universities/HEI;

- More standardisation-competent university/HEI education leavers forming the pool of professionals ready to contribute to and defending EU's interest in standardisation;

- More set of courses for universities/HEI integrating standardisation contents and covering the respective technological, innovations-supportive and societal aspects including the potential of standards to safeguard EU core values;

- Increased visibility of standardisation at universities/HEI through "Academic Standardisation Days" and setting-up of a Students' Standardisation Association.

<u>Scope</u>: "European Green Deal" and "New Industrial Strategy for Europe", as well as the geopolitical environment, call for a strong EU presence in international standardisation development.

This action aims at providing for a robust and sustainable pool of European professionals ready to contribute to standardisation and support positioning EU as global standard-setter. University/HEI teaching is key to build up the pool of standardisation experts. Academics teaching can provide for standardisation-competent graduates, who are aware of the benefits of standardisation and thus ready, as young professionals, to make Europe's voice heard in international standardisation.

Those teachers of EU universities/HEI, who already integrate standardisation-related content in their lectures, should team up and, in co-operation with industry, design an innovative teaching concept of standardisation. This concept should cover the standardisation under IEC, ISO and ITU lead; update students on the highly decentralised, global ICT-related standardisation (fora and consortia); and address the technical and societal facets of standardisation (multidisciplinary orientation). The teaching concept has the mission to bridge between these two standardisation domains as well as integrate the aspects of a human-centric standardisation and the EU core values. This concept should foster the development of green and digital skills and underline the respective support through standardisation.

Based on this concept, content modules should be developed for direct and distant teaching. Both, the teaching concept and the modules should be shared with universities/HEI which are ready to include, for the *first time*, standardisation-content in their teaching offer.

---

https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/guidance/ls-decision_he_en.pdf

Promotion actions should be designed in order to increase the visibility of standardisation in EU academia/HEI; here "Academic Standardisation Days" and "Students' Standardisation Association(s)" should be considered as practical realisations.

Proposals should involve appropriate expertise in Social Sciences and Humanities (SSH), in particular in sociology, political science, economy and philosophy, to achieve an academic teaching that covers the different types of impact of standardization including the human-centred approach and compliance with the European core values.

In order to achieve the expected outcomes, international cooperation is encouraged.

HORIZON-CL4-2023-HUMAN-01-64: Pre-normative research and standardisation in industrial ecosystems (CSA)

Specific conditions	
Expected EU contribution per project	The Commission estimates that an EU contribution of between EUR 0.50 and 1.00 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.
Indicative budget	The total indicative budget for the topic is EUR 8.00 million.
Type of Action	Coordination and Support Actions
Eligibility conditions	The conditions are described in General Annex B. The following exceptions apply: If projects use satellite-based earth observation, positioning, navigation and/or related timing data and services, beneficiaries must make use of Copernicus and/or Galileo/EGNOS (other data and services may additionally be used).
Legal and financial set-up of the Grant Agreements	The rules are described in General Annex G. The following exceptions apply: Eligible costs will take the form of a lump sum as defined in the Decision of 7 July 2021 authorising the use of lump sum contributions under the Horizon Europe Programme – the Framework Programme for Research and Innovation (2021-2027) – and in actions under the Research and Training Programme of the European Atomic Energy Community (2021-2025). [352].

---

[352] This decision is available on the Funding and Tenders Portal, in the reference documents section for Horizon Europe, under 'Simplified costs decisions' or through this link: https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/guidance/ls-decision_he_en.pdf

Expected Outcome: The action is expected to contribute to the following outcomes within and across the EU industrial ecosystems:

- Contribute to the achievement of the European industrial policy objectives, especially in relation to the green and digital transitions (twin transitions) and the circular economy;

- Contribute to the implementation of the ERA industrial technology roadmap for low-carbon technologies in energy-intensive industries[353] where relevant;

- Bring together the research world (projects, universities, innovation centres, etc.) with supply chains and stakeholders within industrial ecosystems to define standardisation needs and priorities, the role to be played by pre-normative research, and the contributions to be provided at the European and international standardisation level;

- Define roadmaps for pre-standardisation activities in emerging domains not yet covered by ongoing work;

- Establish a platform for the deployment of education and training in standardisation in the framework of the identified industrial sectors.

Scope: The first Annual Single Market Report [SWD(2021) 351 of 5/5/2021] identifies the following industrial ecosystems: 1. Aerospace & Defence, 2. Agri-food, 3. Construction, 4. Cultural and Creative Industries, 5. Digital, 6. Electronics, 7. Energy Intensive Industries, 8. Energy-Renewables, 9. Health, 10. Mobility-Transport-Automotive, 11. Proximity, Social Economy and Civil Security, 12. Retail, 13. Textiles, 14. Tourism. Further ecosystems or cross-cutting themes (such as chemicals and materials) may be identified and their delineation adapted based on stakeholders dialogues and changing realities.

The Report analyses their different needs and challenges. In particular, the Report assesses the relevance of standardisation in each ecosystem and proposes specific actions to overcome existing barriers in the Single Market.

The action should cover the coordination/execution of pre-normative research activities in the various ecosystems with a view to exploit synergies among the stakeholders. The scope is to boost the interactions between research projects and pre-normative work in the various ecosystems, and to increase the European contribution and presence in the subsequent formal European and international standardisation processes in line with the objectives of the standardisation strategy that was published by the Commission on 2 February 2022 [COM(2022) 31 final]. Within the standardisation processes particular attention should be dedicated on establishing interoperability standards for data sharing within and across the ecosystems, through the implementation of the FAIR data principles[354] and leveraging on already adopted practices especially those in the relevant European common data spaces and in the European Research infrastructures.

---

[353]   The roadmap is published at https://op.europa.eu/en/publication-detail/-/publication/c9f70ebf-b48e-11ec-9d96-01aa75ed71a1/

[354]   Turning FAIR into reality: https://ec.europa.eu/info/sites/default/files/turning_fair_into_reality_1.pdf

Additionally, a strategy for education and skills development within the ecosystems should be developed, associating social partners when relevant.

In order to achieve the expected outcomes, international cooperation is strongly encouraged.

The action should build on or seek collaboration with existing projects and develop synergies with other relevant European, national or regional initiatives, funding programmes and platforms. In particular, the resulting CSAs should ensure a sensible coverage within their domains and strive towards international cooperation, especially with the international standardisation organisations ISO, IEC and ITU, and similar organisations such as OECD.

International Cooperation

Proposals are invited against the following topic(s):

HORIZON-CL4-2023-HUMAN-01-91: International Hub for Digital Partnerships in the Indo-Pacific (CSA)

Specific conditions	
Expected EU contribution per project	The Commission estimates that an EU contribution of around EUR 2.50 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.
Indicative budget	The total indicative budget for the topic is EUR 2.50 million.
Type of Action	Coordination and Support Actions
Eligibility conditions	The conditions are described in General Annex B. The following exceptions apply: If projects use satellite-based earth observation, positioning, navigation and/or related timing data and services, beneficiaries must make use of Copernicus and/or Galileo/EGNOS (other data and services may additionally be used).

Expected Outcome:

- Support R&I activities and concrete pilot projects (e.g. AI, digital identity) linked to implementing Digital Partnerships with Japan, the Republic of Korea, and Singapore and in the context of the Trade and Technology Council (TTC) with India with a view to drive technology development and standardisation, or regulatory/legislative approaches.

- Support to digital dialogues with international partners, facilitate exchange of views and best practices, regulatory cooperation and where appropriate development of common principles regarding regulation, legislation and standards, developed bilaterally or agreed in international fora.

- Oversee international activities across Horizon Europe Cluster 4, and identify joint research and industrial cooperation opportunities with key partners.

- Report on synergies and commonalities in policies, strategies and programmes between the EU and partner countries that could feed in the discussions of Digital Partnership Councils, which will drive forward the implementation of the Partnerships.

- Foster increased cooperation with appropriate research institutions in Japan, Korea, Singapore on the development, deployment and commercialisation of digital technologies, for example through specific collaboration in the field of R&I.

- Support to trade and industrial policy aspects by promoting European technologies and standards in key international markets.

- Promote and support European positions in international fora such as G7, G20, OECD, WTO, and standardisation organisations.

Scope:

- Organize networks, conferences, workshops and other actions that support R&I activities in the Digital Partnerships with Japan, South Korea and Singapore, and with India in the context of the Trade and Technology Council. The thematic areas of cooperation would include semiconductors, especially next generation of semiconductors, emerging privacy-enhancing technologies, high performing, energy efficient and sustainable 5G and Beyond 5G technologies, data technologies, Artificial Intelligence, SME's digital transformation, smart cities, High Performance Computing and Quantum technologies, standardisation, trust services including eID and blockchain.

- Collect and analyse information as well as conduct surveys and draft reports and position papers on partner countries' R&I policies, strategies and programmes, on all the above-mentioned topics of cooperation including platform cooperation, digital education and digital connectivity.

- Foster cooperation and prepare ground for joint research and raise greater awareness of R&I and industrial cooperation opportunities to promote the digital transformation of industry, disruptive innovation and particularly SMEs.

- The action should ensure that relevant stakeholders from both the EU and the partner countries are engaged during the process through regional and international workshops and a set of communication and dissemination actions.

- Increased networking and collaboration of stakeholders from the EU and the partner countries with a view to addressing current needs, considering future requirements and stimulating long-term cooperation.

HORIZON-CL4-2023-HUMAN-01-92: R&I cooperation with Sub-Saharan Africa (CSA)

Specific conditions	
Expected EU contribution per project	The Commission estimates that an EU contribution of around EUR 2.00 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.
Indicative budget	The total indicative budget for the topic is EUR 2.00 million.
Type of Action	Coordination and Support Actions
Eligibility conditions	The conditions are described in General Annex B. The following exceptions apply: If projects use satellite-based earth observation, positioning, navigation and/or related timing data and services, beneficiaries must make use of Copernicus and/or Galileo/EGNOS (other data and services may additionally be used).

Expected Outcome:

- Stimulate R&I cooperation between Sub-Saharan Africa and the EU in the field of digital.

- Strengthen strategic partnerships and support digital dialogues with countries in sub-Saharan Africa, in full compliance with the principles of the Global Gateway.

- Support to trade and industrial policy aspects by promoting European technologies in African markets, and vice-versa.

- Contribute to Africa's economic growth and job creation, and to the Sustainable Development Goals (SDGs), especially through African and R&I.

- Promote EU values for a human-centric digital transformation.

- Support EU's international priorities, as set out in Europe's Digital Decade and Global Gateway.

- Build synergies and prepare an enabling environment for research and investment for the EU.

Scope:

- Foster cooperation and prepare ground for joint research and innovation and raise greater awareness of R&I cooperation opportunities between the EU and sub-Saharan Africa.

- Organize networks, conferences, workshops and other actions that support R&I activities and monitor digital-relevant activities in sub-Saharan Africa.

- Collect and analyse information as well conduct surveys and draft reports and position papers on sub-Saharan African countries' R&I policies, strategies and programmes.

- Link EU and African internet R&I communities, building on the work of existing projects such as the African-European Digital Innovation Bridge (AEDIB) and the FPI project "Open Internet in Africa".

- The action should ensure that relevant stakeholders from both the EU and African countries are engaged during the process through regional and international workshops and a set of communication and dissemination actions.

HORIZON-CL4-2023-HUMAN-01-93: R&I cooperation with Latin America (Mexico, Brazil, Argentina, and other countries in the BELLA network or members of RedClara) (CSA)

Specific conditions	
Expected EU contribution per project	The Commission estimates that an EU contribution of around EUR 2.00 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.
Indicative budget	The total indicative budget for the topic is EUR 2.00 million.
Type of Action	Coordination and Support Actions
Eligibility conditions	The conditions are described in General Annex B. The following exceptions apply: If projects use satellite-based earth observation, positioning, navigation and/or related timing data and services, beneficiaries must make use of Copernicus and/or Galileo/EGNOS (other data and services may additionally be used).

Expected Outcome: The proposal will enable the development of a strategic partnership in R&I with Latin America and the Caribbean including - but not limited to - areas such as Cloud, IoT and 5G. The proposal is expected to contribute to the following outcomes:

- Support implementation of commitments related to R&I resulting from digital dialogues with key countries and sub-regional organisations in LAC (Brazil, Mexico, Argentina, Pacific Alliance, MERCOSUR, EU-LAC Digital Economy Dialogue).

- Develop a roadmap for future R&I cooperation with the LAC region and relevant national, regional and international funding schemes for its application.

- Report on synergies and commonalities in policies, strategies and programmes related to R&I between the EU and partner countries.

- Promote EU values for a human-centric digital transformation and contribute to Sustainable Development Goals (SDGs).

Scope: Joint EU-LAC cooperation on digital transformation has led to the successful completion of the BELLA programme[355], which supported the construction of a new submarine fibre-optic cable linking Lisbon (Portugal) with Fortaleza (Brazil) as well as an onward terrestrial connection with several countries in the region. The new connection provides for the long-term interconnectivity needs of European and Latin American research and innovation communities, but its full potential has not been exploited so far.

The existing digital and ICT dialogues between the EU and Brazil, Mexico and Argentina as well as cooperation with the Pacific Alliance have resulted in agreements to increase cooperation in the area of R&I, and it is expected that the future EU-LAC Digital Dialogue will bring these commitments to a continental perspective, but the agreements made at a political level are still lacking a framework to make this cooperation possible on the ground. Proposals will aim at exploiting the potential of the newly established BELLA network and implement the outcomes of EU-LAC dialogues in relation to digitalisation and R&I.

Proposals are expected to:

- Organize networks, conferences, workshops and other actions that support R&I activities with Brazil, Mexico, Argentina and other countries connected to the BELLA network or members of RedClara[356].

- Promote the exchange of best practices between the European and LAC R&I communities.Collect and analyse information as well conduct surveys and draft reports and position papers on partner countries' R&I policies, strategies and programmes, including on data governance and data technologies.

- Foster cooperation and prepare ground for joint research and raise greater awareness of R&I and industrial cooperation opportunities.

- The action should ensure that relevant stakeholders from both the EU and the partner countries sides are engaged during the process through regional and international workshops and a set of communication and dissemination actions.

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

HORIZON-CL4-2023-HUMAN-01-CNECT

---

[355]   BELLA programme
[356]   RedClara (LAC region partner in BELLA programme)

Conditions for the Call

Indicative budget(s)[357]

Topics	Type of Action	Budgets (EUR million) 2023	Expected EU contribution per project (EUR million)[358]	Indicative number of projects expected to be funded
Opening: 08 Dec 2022				
Deadline(s): 29 Mar 2023				
HORIZON-CL4-2023-HUMAN-01-01	RIA	35.00 [359]	7.00 to 9.00	5
HORIZON-CL4-2023-HUMAN-01-02	IA	24.00 [360]	Around 8.00	3
HORIZON-CL4-2023-HUMAN-01-03	RIA	20.00 [361]	6.00 to 8.00	3
HORIZON-CL4-2023-HUMAN-01-04	CSA	4.00 [362]	Around 4.00	1
HORIZON-CL4-2023-HUMAN-01-05	IA	10.00 [363]	Around 5.00	2
HORIZON-CL4-2023-HUMAN-01-11	RIA	27.00 [364]	Around 27.00	1
HORIZON-CL4-2023-HUMAN-01-12	IA	14.00 [365]	3.00 to 5.00	5
HORIZON-CL4-2023-HUMAN-01-13	RIA	4.00 [366]	Around 4.00	1
HORIZON-CL4-2023-HUMAN-01-14	CSA	2.00	Around 2.00	1
HORIZON-CL4-2023-HUMAN-01-21	RIA	26.00 [367]	5.00 to 8.00	4

---

[357]   The Director-General responsible for the call may decide to open the call up to one month prior to or after the envisaged date(s) of opening.
The Director-General responsible may delay the deadline(s) by up to two months.
All deadlines are at 17.00.00 Brussels local time.
The budget amounts are subject to the availability of the appropriations provided for in the general budget of the Union for years 2023 and 2024.

[358]   Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.

[359]   Of which EUR 12.25 million from the 'NGEU' Fund Source.

[360]   Of which EUR 8.40 million from the 'NGEU' Fund Source.

[361]   Of which EUR 7.00 million from the 'NGEU' Fund Source.

[362]   Of which EUR 1.70 million from the 'NGEU' Fund Source.

[363]   Of which EUR 3.50 million from the 'NGEU' Fund Source.

[364]   Of which EUR 9.45 million from the 'NGEU' Fund Source.

[365]   Of which EUR 4.90 million from the 'NGEU' Fund Source.

[366]   Of which EUR 1.40 million from the 'NGEU' Fund Source.

[367]   Of which EUR 9.80 million from the 'NGEU' Fund Source.

HORIZON-CL4-2023-HUMAN-01-22	IA	25.00 [368]	5.00 to 8.00	4
HORIZON-CL4-2023-HUMAN-01-23	CSA	2.00	Around 2.00	1
HORIZON-CL4-2023-HUMAN-01-65	CSA	1.50 [369]	Around 1.50	1
HORIZON-CL4-2023-HUMAN-01-66	CSA	2.50 [370]	Around 2.50	1
HORIZON-CL4-2023-HUMAN-01-81	CSA	1.50 [371]	Around 1.50	1
HORIZON-CL4-2023-HUMAN-01-82	CSA	3.00 [372]	Around 3.00	1
Overall indicative budget		201.50		

General conditions relating to this call	
Admissibility conditions	The conditions are described in General Annex A.
Eligibility conditions	The conditions are described in General Annex B.
Financial and operational capacity and exclusion	The criteria are described in General Annex C.
Award criteria	The criteria are described in General Annex D.
Documents	The documents are described in General Annex E.
Procedure	The procedure is described in General Annex F.
Legal and financial set-up of the Grant Agreements	The rules are described in General Annex G.

Leadership in AI based on trust

Proposals are invited against the following topic(s):

---

[368]   Of which EUR 8.75 million from the 'NGEU' Fund Source.
[369]   Of which EUR 0.53 million from the 'NGEU' Fund Source.
[370]   Of which EUR 1.05 million from the 'NGEU' Fund Source.
[371]   Of which EUR 0.53 million from the 'NGEU' Fund Source.
[372]   Of which EUR 1.05 million from the 'NGEU' Fund Source.

HORIZON-CL4-2023-HUMAN-01-01: Efficient trustworthy AI - making the best of data (AI, Data and Robotics Partnership) (RIA)

Specific conditions	
Expected EU contribution per project	The Commission estimates that an EU contribution of between EUR 7.00 and 9.00 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.
Indicative budget	The total indicative budget for the topic is EUR 35.00 million.
Type of Action	Research and Innovation Actions
Eligibility conditions	The conditions are described in General Annex B. The following exceptions apply: If projects use satellite-based earth observation, positioning, navigation and/or related timing data and services, beneficiaries must make use of Copernicus and/or Galileo/EGNOS (other data and services may additionally be used).
Technology Readiness Level	Activities are expected to start at TRL 2-3 and achieve TRL 4-5 by the end of the project – see General Annex B.
Procedure	The procedure is described in General Annex F. The following exceptions apply: To ensure a balanced portfolio coverage, grants will be awarded to applications not only in order of ranking but at least also to the highest ranked proposals for each of the two focus areas, provided that the applications attain all thresholds.

Expected Outcome: Projects are expected to contribute to the following outcomes:

- Optimized AI solutions: optimizing model design and data usage to maximize accuracy and robustness.

- Ensure in general, the pipeline of high-quality, representative, unbiased and compliant training data for AI development in all relevant sectors

- Support data preparation and AI training processes that lead to efficient and more trustworthy AI

Scope: There is a need for AI methods that optimize training and reduce the amount data, the intensity of processing and the operations necessary for training high-quality, trustworthy AI systems. As a consequence, the energy consumption and the environment footprint will also be reduced. Such solutions are of relevance also in the context of embedded and embodied AI,

i.e. AI capabilities in robotics and connected devices/objects/embedded processors, including small (down to micro/nanoscale) objects with long-term autonomy.

Proposals should address novel AI methods and training data provision processes, aiming at high quality and reliable AI while minimizing the data needs and manipulations, targeting smart and dynamic end-to-end automation of AI training in the cloud-edge computing continuum, where AI training, AI deployment and data collection/preparation happens at the most appropriate level of the cloud-edge continuum. This will lead to better quality of AI by smart data selection/harvesting/preparation and reduces the need to collect, store, process and transfer large amounts of data and/or large AI models, while reducing energy consumption.

Proposals should address at least one of the following focus areas:

- automated and AI-based mining, harvesting, selection, cleaning, annotation, and/or enrichment/augmentation of data for AI; generating and using synthetic data to reduce the need for large volumes of real and potentially sensitive data; validating the efficiency of these processes in AI systems;

- lighter, less data-intensive and less energy-consuming AI models, optimized learning processes that require less input (data efficient AI) without degrading the quality of the output; machine learning methods and architectures that deal with lower volumes such as transfer learning; one-shot learning; continuous and/or lifelong learning.

Proposals should clearly mention which of the two areas will be their main focus area.

The work should contribute to increasing data efficiency and energy efficiency of AI, and rationalize the provision of data for AI. The work should support appropriate AI paradigms (central, distributed, dynamic, hybrid), responding and adapting easily to the needs of the use situation, and to the changing characteristics, availability and use conditions for data.

Target AI systems should be appropriately evaluated, and results analysed and fed back to ensure continuous improvement of the "data for AI" pipeline.

Multidisciplinary research activities should address all of the following:

- Proposals should involve appropriate expertise in all the relevant disciplines, such as e.g. engineering, data science, computer sciences, mathematics, and where applicable in Social Sciences and Humanities (SSH) and gender expertise.

- Projects should build on or seek collaboration with existing projects and develop synergies with other relevant European, national or regional initiatives, funding programmes and platforms, especially the actions funded in the Digital Europe programme, under the chapter "Cloud, data and artificial intelligence".

- Contribute to making AI, data and robotics solutions meet the requirements of trustworthy AI, based on accuracy, robustness, safety, ethical principles and reliability, in line with the European Approach to AI. Ethics principles needs to be adopted from early stages of development and design.

- Proposals are expected to dedicate tasks and resources to collaborate with and provide input to the open innovation challenge under HORIZON-CL4-2023-HUMAN-01-04 addressing optimisation. Research teams involved in the proposals are expected to participate in the respective Innovation Challenges.

All proposals are expected to embed mechanisms to assess and demonstrate progress (with qualitative and quantitative KPIs, benchmarking and progress monitoring, as well as illustrative application use-cases demonstrating concrete potential added value), and share communicable results with the European R&D community, through the AI-on-demand platform, Digital Industrial Platform for Robotics and Common European data spaces, and if necessary other relevant digital resource platforms in order to enhance the European AI, Data and Robotics ecosystem through the sharing of results and best practice.

The proposal should describe the characteristics and availability of the data to be used within the project and explain how the possible privacy and IPR issues related to the data are addressed. The provenance, associated metadata and any other contextual information should be collected and maintained to the extent necessary in order to enable validation and support explainable AI and to ensure continuous compliance with applicable legislation (e.g. GDPR, AI act, data act).

In order to achieve the expected outcomes, international cooperation is encouraged, in particular with Canada and India.

This topic implements the co-programmed European Partnership on AI, data and robotics.

HORIZON-CL4-2023-HUMAN-01-02: Large Scale pilots on trustworthy AI data and robotics addressing key societal challenges (AI Data and Robotics Partnership) (IA)

Specific conditions	
Expected EU contribution per project	The Commission estimates that an EU contribution of around EUR 8.00 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.
Indicative budget	The total indicative budget for the topic is EUR 24.00 million.
Type of Action	Innovation Actions
Eligibility conditions	The conditions are described in General Annex B. The following exceptions apply: If projects use satellite-based earth observation, positioning, navigation and/or related timing data and services, beneficiaries must make use of Copernicus and/or Galileo/EGNOS (other data and services may additionally be used).
Technology	Activities are expected to start at TRL 3-5 and achieve TRL 6-7 by

Readiness Level	the end of the project – see General Annex B.
Legal and financial set-up of the Grant Agreements	The rules are described in General Annex G. The following exceptions apply:
	The funding rate is up to 60% of the eligible costs. This funding rate applies both to members and non-members of the partnership, except for non-profit legal entities, where the funding rate is up to 100% of the total eligible costs.

Expected Outcome: Projects are expected to contribute to the following outcomes:

- Strengthening EU's ecosystem of AI, Data and Robotics excellence and innovation in world class foundational and application-inspired and application-oriented research;

- Technology progress in AI addressing major challenges hampering the deployment of AI, Data and Robotics technologies;

- Wide uptake of AI, Data and Robotics technologies by industry and end-users towards the Digital Decade targets for 2030.

- Robust and trustworthy AI, Data and Robotics technologies

Scope: AI is key to maintain European sovereignty in major industrial sectors strategic for Europe. Human-centric approaches are key to acceptance and to ensure safety, security and protection of fundamental rights. To assure safety and human acceptance trust is mandatory. AI based solutions and tools can boost societal wellbeing and economic growth. To promote their deployment and uptake, there is a need to test and improve their robustness, performance and reliability in real-world scenarios and on concrete use cases to identify and overcome barriers to their deployment. Large scale pilots involving industry and end users can demonstrate how AI, Data and Robotics enabled solutions can benefit, both industry as well as a society, demonstrating robustness and "trustworthiness" (in all its dimension). Pilots should target technological advances with large scale potential impact ion strategically important sectors with large societal impacts such as healthcare, improved working and/or living conditions, etc.

Multidisciplinary research and innovation activities should address all of the following:

- Proposals should involve appropriate expertise in all the relevant disciplines, such as engineering, computer sciences, mathematics, Social Sciences and Humanities (SSH), biology, gender etc. and involve the relevant expertise to address the selected application sector.

- Contribute to making AI and robotics solutions meet the requirements of Trustworthy AI, based on the respect of the ethical principles, the fundamental rights including critical aspects such as robustness, safety, reliability, in line with the European Approach

to AI. Ethics principles needs to be adopted from early stages of development and design.

- Involvement of end-users in the requirement and validation of the pilots to ensure human-centric approach and maximise acceptance.

- Proposals should include a clear business case and exploitation strategy.

- Build on existing standards or contribute to standardisation. Interoperability for data sharing should be addressed, notably through the implementation of the FAIR data principles and adopting standardised and discipline-oriented metadata schemas and ontologies.

- Projects should build on or seek collaboration with existing projects and develop synergies with other relevant European, national or regional initiatives, funding programmes and platforms.

All proposals should demonstrate the assessment criteria upon which the proposed sectors/use-cases have been selected (e.g. in terms of socioeconomic factors, etc.).

All proposals are furthermore expected to embed mechanisms to assess and demonstrate progress (with qualitative and quantitative KPIs, benchmarking and progress monitoring, as well as illustrative application use-cases demonstrating concrete potential added value), and share communicable results with the European R&D community, through the AI-on-demand platform or Digital Industrial Platform for Robotics, public community resources, to maximise re-use of results, either by developers, or for uptake, and optimise efficiency of funding; enhancing the European AI, Data and Robotics ecosystem through the sharing of results and best practice.

This topic implements the co-programmed European Partnership on AI, data and robotics.

HORIZON-CL4-2023-HUMAN-01-03: **Natural** **Language** **Understanding** **and** **Interaction in Advanced Language Technologies (AI Data and Robotics Partnership) (RIA)**

Specific conditions	
Expected EU contribution per project	The Commission estimates that an EU contribution of between EUR 6.00 and 8.00 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.
Indicative budget	The total indicative budget for the topic is EUR 20.00 million.
Type of Action	Research and Innovation Actions
Eligibility	The conditions are described in General Annex B. The following

conditions	exceptions apply: If projects use satellite-based earth observation, positioning, navigation and/or related timing data and services, beneficiaries must make use of Copernicus and/or Galileo/EGNOS (other data and services may additionally be used).
Technology Readiness Level	Activities are expected to start at TRL 2 and achieve TRL 5 by the end of the project – see General Annex B.

Expected Outcome: Projects are expected to contribute to the following outcomes:

- Development of natural language understanding and interaction in advanced language technologies based on context-aware language models able to further integrate long-term general knowledge and derive meaning in order to develop automated reasoning and enhanced interaction skills;

- Effective multilingual and bias-controlled language models, capable of learning from smaller language corpora, efficient in computing and respectful of European values (i.e., privacy, non-discrimination, robustness in legal, ethical and technical terms, reliability and trustworthiness, interpretability and explainability, security and safety);

- AI systems and solutions based on novel multilingual pre-trained language models that have assimilated cross-language and cross-cultural knowledge through textual and speech input;

- Higher uptake of innovative language technology solutions by European companies, providing extensive language coverage[373] of AI-enabled applications and services in Europe.

Scope: As AI becomes increasingly more performant, there is growing potential for humans to directly use and benefit from smarter systems. Effective AI-based human-machine interaction and collaboration relies on grasping real meaning from natural languages, recognising gestures and activities, understanding intention, creating and maintaining shared mental models and designing multi-step interactions. Reciprocally, truly natural interaction between people and machines is essential for future AI-enabled systems across all application areas and domains.

Envisaged AI solutions should address one or both of the following areas:

- Improve **context-aware human-machine interaction** to increase understanding and exploitation of the interaction context and content in multimodal settings, thus increasing responsiveness of interactive AI solutions, such as smart assistants, conversational and dialogue systems, content generation models, etc.

---

[373] All official EU as well as socially and commercially relevant languages.

- Support and enhance **seamless human-to-human communication** across languages e.g. by means of automatic translation or interpretation (incl. automatic subtitling) in real time with a greater understanding of the communication context and the meaning involved in it.

Multidisciplinary research activities should address at least one of the following:

- Developing novel methods and techniques for producing **context-aware models**, which incorporate factual-based structured and unstructured knowledge in broader situational and temporal information, and continual learning to achieve natural behaviour and reasoning in all intended settings.

- Improving large **pre-trained multilingual language models** to cover a large set of languages[374], with a high level of natural language understanding and the ability to efficiently add more languages, including low-resource ones, via transfer or language-independent learning methods.

- Improving language-independent and bias-controlling **algorithms and methods for language model training and usage efficiency** in terms of data, time and energy consumption while retaining performance, accuracy and general usability.

- Developing **language representations**, encompassing an effective combination of multilingual, symbolic and sub-symbolic knowledge and allowing systems to perform cross-cultural reasoning in various contextual tasks.

Proposals should involve appropriate expertise in all the relevant disciplines, such as data science, computer science, computational linguistics, machine learning and natural language processing. Particular attention should be paid to control gender or other biases in language models.

Research should build on existing standards, contribute to standardisation and result in findable, accessible, interoperable and reusable research data including metadata schemas and ontologies.

All proposals are expected to embed mechanisms to assess and demonstrate progress (with qualitative and quantitative KPIs, benchmarking and progress monitoring, as well as illustrative application use-cases demonstrating concrete potential added value), and share communicable results with the European R&D community, through the AI-on-demand platform, Common European Data Spaces (especially the dedicated Language Data Space) and other relevant Member States' initiatives, such as Open GPT-X, and if necessary other relevant digital resource platforms in order to enhance the European AI, Data and Robotics ecosystem through the sharing of results and best practice.

Proposals are also expected to dedicate tasks and resources to collaborate with and provide input to the open innovation challenge under HORIZON-CL4-2023-HUMAN-01-04

---

[374] Focus on all official EU as well as socially and commercially relevant languages.

addressing natural language understanding and interaction. Research teams involved in the proposals are expected to participate in the respective Innovation Challenges. This topic implements the co-programmed European Partnership on AI, data and robotics.

HORIZON-CL4-2023-HUMAN-01-04: Open innovation: Addressing Grand challenges in AI (AI Data and Robotics Partnership) (CSA)

Specific conditions	
Expected EU contribution per project	The Commission estimates that an EU contribution of around EUR 4.00 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.
Indicative budget	The total indicative budget for the topic is EUR 4.00 million.
Type of Action	Coordination and Support Actions
Eligibility conditions	The conditions are described in General Annex B. The following exceptions apply: If projects use satellite-based earth observation, positioning, navigation and/or related timing data and services, beneficiaries must make use of Copernicus and/or Galileo/EGNOS (other data and services may additionally be used).
Technology Readiness Level	Activities covered under FSTP are expected to start at TRL 2-3 and achieve TRL 4-5 by the end of the project – see General Annex B.
Legal and financial set-up of the Grant Agreements	The rules are described in General Annex G. The following exceptions apply: Beneficiaries may provide financial support to third parties (FSTP). The support to third parties can only be provided in the form of prizes. The maximum amount to be granted to each third party is EUR 500.000 to address open innovation challenges on key important S&T challenges and drive general progress on important tasks through a common challenge/benchmark problem. FSTP should be eligible to third parties from academia and SMEs in Member States or Associated Countries, but exclude third parties that receive funding under ongoing projects of the following topics[375]: CL4-2023-HUMAN-01-01, CL4-2023-HUMAN-01-03 CL4-2024-HUMAN-01-01, CL4-2024-HUMAN-01-02.

---

[375] Such teams will participate in the innovation challenges, and can receive rewards, but will not be eligible to receive prize money as they are already funded.

Expected Outcome: Projects are expected to contribute to the following outcomes:

- Demonstrate and reinforce Europe's research excellence in AI by driving substantial scientific progress in the following major scientific & technological AI areas: optimisation, explainability, robustness, natural language understanding and interaction, and collaborative intelligence

- Develop prestigious AI open innovation challenges that will mobilise wide participation of top scientists from academia, industry including start-ups and as well as young teams and rising stars from all over EU and Associated countries.

- Substantially increase interest from industry in AI (incl. SMEs and start-ups), in particular from key socio-economic sectors for Europe. Therefore contributing to uptake of research results by industry

Scope: AI is a general-purpose technology that is expected to substantially contribute to all sectors and applications. AI technologies have demonstrated great value and potential in areas as diverse as healthcare, supply chain logistics, space-based imagery analysis, cybersecurity. However, there are challenges that AI technologies are facing. When it comes to deployment of AI technologies, reliable performance is required. Despite its huge potential and its ability to cut down on tasks and costs, AI faces trust issues with humans. At the same time, the failure modes of AI technologies are poorly understood.

Open innovation challenges can foster broad and robust progress on generic AI research challenges. The resulting scientific progress resulting such challenges will contribute to the robustness of AI systems in general, enabling a multitude of different applications across many sectors.

Proposals are expected to organize open innovation challenges aiming to bring the best research teams across variety of public and private organisations that try to tackle and crack major S&T challenges in AI by benchmarking different solutions. The open innovation challenges will be bootstrapped by engaging EU funded projects to participate. Newcomers, rising stars and the wider AI community should be able to join the challenges, giving them the opportunity to benchmark against prestigious teams. The best performing team(s) should be awarded with either with monitory prizes[376], which industry can co-sponsor, and/or non-monetary prizes, e.g. co-authorship of a paper in a prestigious scientific journal, internship in prestigious labs or companies.

Proposals should address the delivery of open innovation challenges with the aim to

- Attract outstanding talent and the best research teams to tackle key scientific and technological AI challenges, of relevance to industry.

---

[376] Large industry as well as project beneficiaries from CL4-2023-HUMAN-01-01, CL4-2024-HUMAN-01-01, CL4-2024-HUMAN-01-02 and CL4-2024-HUMAN-01-03 will not be eligible for monetary prizes

- Drive substantial and broad scientific progress in key AI areas with the aim to reinforce the research excellence in Europe.

- Prepare at least three open innovation challenges addressing challenges in collaboration with the projects funded under the following topics: CL4-2023-HUMAN-01-01, CL4-2023-HUMAN-01-3, CL4-2024-HUMAN-01-01 and CL4-2024-HUMAN-01-02 focusing on optimisation, explainability, robustness, natural language understanding and interaction, and collaborative intelligence[377] respectively. The projects funded through these calls should participate in the respective open innovation challenges, and can receive rewards, but will not be eligible to receive prize money as they are already funded.

- Enable strong cooperation and co-creation between academia and industry and establish a continuous interaction

- Attract industry and business interest in demonstrating advanced performances meeting the needs of user industry, in view of fostering deployment and business opportunities in Europe.

- Define a process that fosters the uptake of developed algorithms/solutions across Europe

Proposals are expected to

- Provide a sound methodology for the design of AI challenges as open innovation challenges and/or benchmarks, including the definition of challenges to be addressed[378], representative of common needs for a vast adoption in a broad set of industrial and public sectors[379]; as well as the definition of evaluation method and criteria. This involves mobilisation of prestigious scientists and industries (incl. start-ups and SMEs) to select the data/problems that will drive substantial scientific progress and be help reinforcing the reputation of Europe, contributing to build the European AI lighthouse. This task will involve financial support to parties, in line with the conditions set out in part K of the General Annexes..

- Provide a convincing approach to attract the best[380] teams from academia and industry, incl. start-ups and SMEs, students, rising stars and newcomers, to participate in the open innovation challenges and benchmark their different solutions to tackle the AI challenges.

- Address all aspects of running open innovation challenges and best exploit them to maximise the visibility of AI to the wider audience.

---

[377] This concerns topics CL4-2023-HUMAN-01-01, CL4-2024-HUMAN-01-01, CL4-2024-HUMAN-01-02 and CL4-2024-HUMAN-01-03

[378] Proposals should also allow citizens to contribute to the definition of challenges

[379] Encouraging and promoting diversity among AI researchers incl. gender and race, socio-cultural background, etc.

[380] Encouraging and promoting diversity among AI researchers incl. gender and race, socio-cultural background, etc.

- Mobilise external partners (incl. from industry) in sponsoring and setting up the open innovation challenges and engage sponsors to contribute/offer money prizes or other attractive rewards to the top performing teams (e.g. co-authorship of papers in prestigious journals, internships in prestigious labs or companies etc.). Reward and competition schemes should provide equal access for everyone to participate and encourage diversity among the participating teams.

- Collaborate with the AI on Demand Platform, the AI, Data and Robotics Partnership, the Networks of AI excellence centres[381], projects funded under CL4-2023-HUMAN-01-01, CL4-2023-HUMAN-01-03, CL4-2024-HUMAN-01-01 and CL4-2024-HUMAN-01-02, as well as other relevant initiatives.

All proposals are expected to embed mechanisms to assess and demonstrate progress (with qualitative and quantitative KPIs, benchmarking and progress monitoring), and share results with the European R&D community, through the AI-on-demand platform, public community resources, to maximise re-use of results, either by developers, or for uptake, and optimise efficiency of funding; enhancing the European AI, Data and Robotics ecosystem through the sharing of results and best practice.

Furthermore it is expected that the participating teams will make their algorithms and methods available and re-usable (e.g. through the AI on Demand Platform) to ensure scientific and technological progress.

Financial support to third parties: A minimum of 50% of the EU funding requested by the proposal should be allocated to the purpose of financial support to third parties.

HORIZON-CL4-2023-HUMAN-01-05: Through AI from Disinformation to Trust (IA)

Specific conditions	
Expected EU contribution per project	The Commission estimates that an EU contribution of around EUR 5.00 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.
Indicative budget	The total indicative budget for the topic is EUR 10.00 million.
Type of Action	Innovation Actions
Eligibility conditions	The conditions are described in General Annex B. The following exceptions apply: If projects use satellite-based earth observation, positioning, navigation and/or related timing data and services, beneficiaries must make use of Copernicus and/or Galileo/EGNOS (other data and services may

---

[381] Projects funded under the following calls/topics: H2020-ICT48, HORIZON-CL4-2021-HUMAN-01-03HORIZON-CL4-2022-HUMAN-02-02)

	additionally be used).
Technology Readiness Level	Activities are expected to start at TRL 4-5 and achieve TRL 6-7 by the end of the project – see General Annex B.
Procedure	The procedure is described in General Annex F. The following exceptions apply:
	To ensure a balanced portfolio covering different types of advanced AI solutions against disinformation, grants will be awarded not only in order of ranking but at least also to the highest ranked proposal addressing each of the two expected outcomes (1. Innovative AI solutions for trusted information production for media professionals, and 2. Innovative AI solutions for supporting trustworthy online activity of citizens, provided that the applications attain all thresholds.
Legal and financial set-up of the Grant Agreements	The rules are described in General Annex G. The following exceptions apply:
	Eligible costs will take the form of a lump sum as defined in the Decision of 7 July 2021 authorising the use of lump sum contributions under the Horizon Europe Programme – the Framework Programme for Research and Innovation (2021-2027) – and in actions under the Research and Training Programme of the European Atomic Energy Community (2021-2025). [382].

Expected Outcome: Proposal results are expected to contribute to one of the following expected outcomes:

1. Innovative AI solutions for trusted information production for media professionals.

2. Innovative AI solutions for supporting trustworthy online activity of citizens.

Scope: Following the results of the Horizon Europe 2020/21 Work Programme, the second Horizon Europe 2023/24 Work Programme will support innovation activities to move closer to AI-based market and ultimately widely available solutions that can play an important role in ensuring pluralistic access to meaningful information, quality content and trustworthy online interaction. This topic is fully in line with both the EDAP – European Democracy Action Plan and MAAP – Media and Audiovisual Action Plan, for reinforcing the European media ecosystem and maintaining resilient democratic systems, in times of crises and of need for adaptation and change.

Given the emergence of the next generation of social media as part of digital universe(s) or fediverse(s), which are more immersive and based on virtual realities and gaming contexts,

---

[382] This decision is available on the Funding and Tenders Portal, in the reference documents section for Horizon Europe, under 'Simplified costs decisions' or through this link: https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/guidance/ls-decision_he_en.pdf

the detection of different forms of content manipulation (e.g. deep-fakes, tampered content and scammed environments) becomes even more challenging. Solutions provided would include the correlation/comparison of various sources of information, multi-modal language interpretation, rapid visual pattern detection in moving images and simulated environments, capabilities as recommendation engine/personal companion, and interfacing with augmented, virtual reality and gaming environments. Solutions should be gender-sensitive and not perpetuate harmful stereotypes. The innovation actions will bring together technological providers, media professionals and end users for ensuring market readiness of the results.

Proposals should clearly identify the expected outcome it will focus on as described above. All proposals are expected to embed mechanisms to assess and demonstrate progress (with qualitative and quantitative KPIs, demonstrators, benchmarking and progress monitoring), and share communicable results with the European R&D community, through the AI-on-demand platform. Activities are expected to achieve TRL6-7 by the end of the project.

All proposals are expected to allocate tasks to cohesion activities with the other subtopic, the PPP on AI, Data and Robotics and funded actions related to this partnership, and to extend and apply the results from the previous research and innovation topic on AI against Disinformation.

An Internet of Trust

Proposals are invited against the following topic(s):

HORIZON-CL4-2023-HUMAN-01-11: Next Generation Internet Fund (RIA)

Specific conditions	
Expected EU contribution per project	The Commission estimates that an EU contribution of around EUR 27.00 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.
Indicative budget	The total indicative budget for the topic is EUR 27.00 million.
Type of Action	Research and Innovation Actions
Award criteria	The criteria are described in General Annex D. The following exceptions apply: The following additions to the general award criteria apply: The following additional aspects will be taken into account under Criterion 3 'Quality and efficiency of the implementation': "Capacity and proven experience of the consortium to create and grow internet commons based on open source software, hardware and standards".

Legal and financial set-up of the Grant Agreements	The rules are described in General Annex G. The following exceptions apply:
	Beneficiaries must provide financial support to third parties. The support to third parties can only be provided in the form of grants.
	As the main objective of the action is to support large number of third parties through open calls, the maximum amount to be granted to each third party is EUR 500 000 to allow 1/ cases where a given legal entity (e.g. large research, academic or industrial organisations) may receive several grants (e.g. from different calls) 2/ reaching the maturity level for third party's project to ensure sustainability with multiple awards.
	As the primary purpose of the action is to support and mobilise internet innovators, a minimum of 80% of the total requested EU contribution should be allocated to financial support to third parties, selected through open calls.

Expected Outcome: Proposals results are expected to contribute to the following expected outcomes:

- A human centric internet aligned with values and principles commonly shared in Europe such as protection of privacy, inclusiveness, transparency, autonomy, openness, decentralisation and cooperation across borders.

- A flourishing internet, based on common building blocks created within NGI, that enables better control of our digital life, respects our privacy, permits better sharing of data (including personal and non-personal) based on users' preferences, and enables better socio-economic impact based on improved trust.

- A structured eco-system of talented contributors driving the creation of new internet commons and the evolution of existing internet commons based on open source software, open standards and open hardware and designs.

- Synergies with NGI pilots as well as with other like-minded actions in Europe and outside.

Scope: The general objective is to nurture a structured human-centric internet eco-system by turning digital values into motivating challenges for top value-driven open source innovators in Europe enabling to create, mature and grow new internet commons. These commons encompass the whole internet stack (both server and device sides) from open hardware, networking and transport technologies, firmware, operating systems and virtualisation, electronic identities and middleware, decentralised ledgers, software productivity tools, traffic supervision tools, up to over the top internet and vertical applications.

Applicants should select and fund third party projects through financial support to third parties based on excellence and implement a continuous open call environment addressing the

requirements for transparency, publicity, confidentiality, fair treatment, and handling of conflict of interest. Applicants should publicise calls towards the open source communities actively influencing the course of the Internet.

The calls should aim at improving trust, privacy, portability, discoverability, inclusion with better sharing and search of personal and non-personal data with advanced identity management, implementing optimal balance between decentralisation, security and energy efficiency and ensuring more socio-economic benefits.

Applicants should define the mechanisms for maturing third parties' projects e.g. security and accessibility audits, packaging of the software for easy deployment, localisation of the software in EU languages, documentation best practices and advising on licensing.

Applicants should detail the path to growth for third parties' projects e.g. by actively animating communities, creating momentum among like-minded efforts, defining how projects will gain critical mass and what services will be provided for reaching such stage. Proposals should also detail the strategy for standardisation.

Applicants should address the issue of longer term sustainability of the projects by providing legal hosting capabilities, advising on funding models (based on open source business models e.g. foundations) and on governance models (e.g. in relation to European strategic autonomy) integrating a maintenance strategy.

Applicants should actively manage the portfolio of funded projects and provide a coherent overall picture, describing how mature solutions are by giving details on audits made and ensuring trusted and easy deployment capabilities for each building blocks.

Applicants should strive for identification of common tools and stimulate maximum re-use among funded projects e.g. interoperable identity and credential management tools, common packaging solutions, tools for decentralised social media.

Applicants should create the conditions for successful collaboration with NGI pilot actions as well as other ongoing NGI actions such as the outreach office and ongoing research and innovation actions in the area of trust, search, architecture, blockchain and international.

Applicants should seek active collaborations with like-minded funding efforts addressing internet commons at national, European levels and beyond Europe including with European technology industries.

Applicants should demonstrate their experience and understanding of open source communities and their expertise covering the full open source life cycle through proven track record including years of experience and indication of volume of open source projects supported.

In this topic the integration of the gender dimension (sex and gender analysis) in research and innovation content is not a mandatory requirement.

Financial support to third parties

The proposal should detail the calls logic including criteria for eligibility and award, procedure for awarding, eligible costs, third parties' costs calculation and maximum per calls. Third parties will be funded through projects typically in the EUR 50 000 to 150 000 range per project, with indicative duration of 9 to 12 months.

The consortium should provide the programme logic for the third-party projects, managing the projects life-cycle, and provide the necessary technical and non-technical support: these tasks cannot be implemented using the budget earmarked for the financial support to third parties.

The Commission considers that proposals in this topic with an overall duration of typically 42 months would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other durations.

HORIZON-CL4-2023-HUMAN-01-12: Pilots for the Next Generation Internet (IA)

Specific conditions	
Expected EU contribution per project	The Commission estimates that an EU contribution of between EUR 3.00 and 5.00 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.
Indicative budget	The total indicative budget for the topic is EUR 14.00 million.
Type of Action	Innovation Actions
Legal and financial set-up of the Grant Agreements	The rules are described in General Annex G. The following exceptions apply: Beneficiaries must provide financial support to third parties. The support to third parties can only be provided in the form of grants. The maximum amount to be granted to each third party is EUR 60 000. A minimum of 15% of the total requested EU contribution should be allocated to financial support to third parties, selected through open calls.

Expected Outcome: Projects are expected to contribute to the following outcomes:

- Apply Next Generation Internet (NGI) technologies in a variety of industrial and societal use cases, enabling the emergence of internet ecosystems supporting the needs of key vertical sectors with high socio-economic impact.

- Generate new business opportunities and enable the emergence of new business and sustainability models based on Open Source.

- Support the community of European top internet innovators, with the capacity to set the course of the Internet evolution according to a human-centric approach.

Scope: The aim of this topic is to foster the take up of Next Generation Internet (NGI) technologies and solutions in Europe by integrating them in a variety of industrial and societal use cases, enabling the emergence of internet ecosystems supporting the needs of specific sectors, such as (but not limited to) public services, healthcare and well-being, supply chain management, transport, finance, creative and cultural industries, tourism, energy and ICT.

NGI Pilots will make use of the rich portfolio of technologies and tools developed in the NGI programme in Horizon 2020 and Horizon Europe, and will apply them to real-life use cases with the goal of validating NGI human-centric solutions across value chains, as close as possible to operational conditions, engaging large user groups and proving their socio-economic potential. Pilots will also address sustainability beyond the lifecycle of the project.

Pilots will involve SSH experts and user organisations from vertical sectors, NGI innovators and other digital technology providers. Pilot projects will need to carefully consider the needs and expectations of the end-users as main drivers of the technological developments, as well as energy efficiency requirements. Issues around inclusiveness and gender-sensitivity in the developed solutions should be addressed, where relevant.

Pilots will include development, integration, testing, deployment, uptake and operation activities. Focus will be on open source solutions (both software and hardware) and their integration and adoption in vertical use cases, to ensure replicability of the results and portability in different areas. Proposals should address use cases from at least two different verticals and address their interdependencies.

Proposals should encourage, when relevant, open access to data, standardisation activities, as well as an IPR regime ensuring lasting impact and reusability of results.

Proposals should incorporate third party contributions from NGI open source innovators. A minimum of 15% of the total requested EU contribution should be allocated to financial support to third parties, selected through open calls.

The Commission considers that proposals with an overall duration of typically 24 to 36 months would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other durations. For ensuring focused effort, third parties should be funded through projects typically in the EUR 10 000 to 50 000 range per project, with indicative duration of 6 to 9 months.

HORIZON-CL4-2023-HUMAN-01-13: Next Generation Internet International Collaboration - USA (RIA)

Specific conditions	
Expected EU contribution per	The Commission estimates that an EU contribution of around EUR 4.00 million would allow these outcomes to be addressed appropriately.

project	Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.
Indicative budget	The total indicative budget for the topic is EUR 4.00 million.
Type of Action	Research and Innovation Actions
Legal and financial set-up of the Grant Agreements	The rules are described in General Annex G. The following exceptions apply: Beneficiaries must provide financial support to third parties. The support to third parties can only be provided in the form of grants. As the main objective of the action is to support collaboration between third parties and NSF-funded US teams, the maximum amount to be granted to each third party is EUR 150 000. to allow 1/ matching the project size and funding of NSF - US teams, 2/ reaching the maturity level for third party's projects to ensure sustainability of the established collaborations. A minimum of 80% of the total requested EU contribution should be allocated to financial support to third parties, selected through open calls.

Expected Outcome: Projects are expected to contribute to the following outcomes:

- Supporting the EU internet policy objectives by sharing the EU vision and values with international partners, and forging bonds through concrete collaborations.

- Reinforced collaboration and increased synergies between the Next Generation Internet (NGI) and the Internet programmes of the US National Science Foundation (NSF).

- Enhanced EU-US cooperation in the development of Next Generation Internet technologies, services and standards. Developing interoperable solutions and joint demonstrators, contributions to standards

- A transatlantic ecosystem of researchers, open source developers, high-tech startups / SMEs and Internet related communities collaborating on the evolution of the Internet according to a human-centric approach.

- Generate new business opportunities for European Internet innovators based on decentralised technologies and open source.

Scope: The aim of the topic is to reinforce EU-US cooperation in the area of Next Generation Internet, and to establish a continuous dialogue among the actors involved in the US and EU research and innovation programmes. This will be achieved through the implementation of R&I projects between European NGI researchers and innovators, and entities participating in Internet related projects funded by NSF

Proposals should organise open calls for third party projects involving EU teams together with NSF-funded US teams on emerging topics for the EU Next Generation Internet and corresponding US programmes. The thematic focus should be on trust and privacy enhancing technologies, data sharing and portability, sustainable and climate-friendly internet, electronic identities, internet architecture renovation and decentralised technologies. The third party projects should focus on research leading to advanced technology development, and may include joint demonstrators and joint contributions to standards.

The proposal should support open source software and open hardware design. Applicants are encouraged to support, open access to data, access to testing and operational infrastructures as well as an IPR regime ensuring lasting impact and reusability of results.

Proposals should implement three open calls and should make provisions for the coordination with NSF of these open calls in terms of scope, proposals submission and selection, as well as implementation of the third party projects. The details should be agreed with NSF prior to the publication of the open calls.

Proposals should make explicit the intervention logic for the area, their capacity to attract relevant organisations both in the EU and the USA, as well as their expertise and capacity in managing the full life-cycle of the open calls transparently and efficiently.

Financial support to third parties

Proposals should foresee financial support to third party projects that will contribute to enhancing EU cooperation with the USA in the development of Next Generation Internet technologies and services. Only organisations established in the EU Member States and Associated Countries should be eligible for European Commission funding through financial support to third parties.

The Commission considers that proposals with an overall duration of typically 48 months would allow these outcomes to be addressed appropriately, while allowing the implementation of three open calls for third party projects. Nonetheless, this does not preclude submission and selection of proposals requesting other durations. For ensuring focused effort, third parties should be funded through projects typically of EUR 150 000, with indicative duration of 18 months.

In this topic, the integration of the gender dimension (sex and gender analysis) in research and innovation content is not a mandatory requirement.

HORIZON-CL4-2023-HUMAN-01-14: Next Generation Internet Commons Policy (CSA)

Specific conditions	
Expected EU contribution per	The Commission estimates that an EU contribution of around EUR 2.00 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a

project	proposal requesting different amounts.
Indicative budget	The total indicative budget for the topic is EUR 2.00 million.
Type of Action	Coordination and Support Actions

Expected Outcome: Projects are expected to contribute to the following outcomes:

- A stronger integration of the Next generation Internet initiative, its vision and ecosystem, with the digital commons policies at national and European level

- A long-term strategy for internet commons which are critical for sovereignty and trust, based on a clear mapping of existing communities of commoners and commons

- A smooth articulation of bottom-up activities of European communities of commoners and top-down policy priorities e.g. for reaching critical mass, for the reuse of commons, and for avoiding overlaps

- A more coherent funding landscape integrating national and European dimensions from public and private sector

Scope: While internet commons are critical in our digital life their importance it is not fully reflected at the strategic level with little representation of the communities involved, lack of structure, gap between grass-root commoners and top-down sovereignty policies, fragmented funding landscape.

The scope of this support encompasses the following activities; proposals should:

- Identify active communities of commoners in Europe and monitoring of their evolution and maturity levels

- Measure the leverage effect (e.g. in funding and resources) resulting from NGI funding

- Define a strategic agenda valid for the Multi-Annual Financial Framework timeframe and planning expected maturation of the various commons incubated in NGI

- Carry out consultation to identify internet commons priorities for ensuring European sovereignty

- Develop a plan to support commoners based on their needs that would include support to navigate the funding landscape and devise a path towards a European one-stop shop

- Create and animate a group of experts in internet commons that will analyse the NGI portfolio and devise opinion on its evolution every two months. The group should be representative of European geographies, internet building blocks, commoners diversity and include representatives of NGI on-going actions

- Devise mechanisms for creating complementary and synergies with like-minded efforts at global, European and national levels including with European technology industries

- Elaborate governance models for future commons integrating European strategic autonomy policies as well as maintenance strategy

- In conjunction with NGI outreach office, organise strategic events involving key decision makers from national and European levels where the various outputs of the action are exposed and next steps discussed

Proposals should also demonstrate strong knowledge of the open source and internet commons context (e.g. funding mechanisms, methods of working, communities involved, commons life-cycle) and be familiar with the technology building blocks that make the internet.

The Commission considers that proposals with an overall duration of 36 months would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other durations.

In this topic, the integration of the gender dimension (sex and gender analysis) in research and innovation content is not a mandatory requirement.

eXtended Reality

Proposals are invited against the following topic(s):

HORIZON-CL4-2023-HUMAN-01-21: Next Generation eXtended Reality (RIA)

Specific conditions	
Expected EU contribution per project	The Commission estimates that an EU contribution of between EUR 5.00 and 8.00 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.
Indicative budget	The total indicative budget for the topic is EUR 26.00 million.
Type of Action	Research and Innovation Actions
Eligibility conditions	The conditions are described in General Annex B. The following exceptions apply: If projects use satellite-based earth observation, positioning, navigation and/or related timing data and services, beneficiaries must make use of Copernicus and/or Galileo/EGNOS (other data and services may additionally be used).
Technology Readiness Level	Activities are expected to start at TRL 2 and achieve TRL 5 by the end of the project – see General Annex B.

Procedure	The procedure is described in General Annex F. The following exceptions apply:
	To ensure a balanced portfolio, grants will be awarded not only in order of ranking but at least also to the highest ranked proposal of each type (Type I Development and integration of advanced XR hardware components, Type II development of new solutions aiming to improve the user experience, skills and capacity in social and professional XR setups), provided that the applications attain all thresholds.

Expected Outcome: Projects are expected to contribute to the following outcomes:

- Next generation of XR devices and applications, which are human-centred, and provide intuitive and realistic user experiences, by exploiting cross fertilisation between technologies such as 5G/6G, IoT, data, artificial intelligence, edge and cloud computing, and microelectronics but also across domains of use such as (but not limited to education, manufacturing, health, cultural heritage, media and security).

- More realistic, more affordable and gender-neutral devices and applications, developed by European companies, respecting European values of ethics, privacy, security and safety, aiming at technological sovereignty and resilience.

Scope: The following two types of research and innovation proposals are expected:

i. The development and integration of advanced XR hardware components, including the use of already available technologies, such as chips, displays, optics and sensors, for a new generation of XR devices providing greater visual, wearable, vestibular and social comfort. Special relevance should be given (a) to technological breakthroughs in photonics and new materials aiming to increase the image quality and to reduce the size and weight of XR devices; (b) to displays and optical elements bringing the capabilities of XR devices closer to those of the human vision; (c) to more efficient architectures for enhanced performance, reduced power consumption and improved heat dissipation; (d) to novel systems that cater to the widest range of users, including those that need prescription correction; (e) to advanced optical- and photo-detector technologies for sensing systems, including sensing data processing; (f) to innovative XR connectivity components supporting the demanding requirements on latency, data rates and resilience; and (g) to novel materials with tailored optical, mechanical and processing properties for a tight integration of subcomponents, enabling overall miniaturization and environmentally sustainable mass-production of future XR devices.

At least one proposal of this type will be funded.

ii. The development of new solutions aiming to improve the user experience, skills and capacity in social and professional XR setups. This includes tools and services for the creation and management of interactive virtual worlds such as metaverse and 3D models, realistic full body avatars and intelligent agents. The solutions should also seek to enhance the

interoperability, performance and accessibility of XR experiences. The proposals should include prototypes validated in realistic scenarios, proving how innovative the developed solutions are, how they exploit synergies between disciplines and domains, and how far beyond state of the art they go.

At least one proposal of this type will be funded.

The Commission considers that proposals with an overall duration of typically 36 months would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other durations.

This topic requires the effective contribution of SSH disciplines and the involvement of SSH experts, institutions as well as the inclusion of relevant SSH expertise, in order to produce meaningful and significant effects enhancing the societal impact of the related research activities.

HORIZON-CL4-2023-HUMAN-01-22: eXtended Reality for Industry 5.0 (IA)

Specific conditions	
Expected EU contribution per project	The Commission estimates that an EU contribution of between EUR 5.00 and 8.00 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.
Indicative budget	The total indicative budget for the topic is EUR 25.00 million.
Type of Action	Innovation Actions
Eligibility conditions	The conditions are described in General Annex B. The following exceptions apply: If projects use satellite-based earth observation, positioning, navigation and/or related timing data and services, beneficiaries must make use of Copernicus and/or Galileo/EGNOS (other data and services may additionally be used).
Technology Readiness Level	Activities are expected to start at TRL 4 and achieve TRL 7-8 by the end of the project – see General Annex B.
Procedure	The procedure is described in General Annex F. The following exceptions apply: To ensure a balanced portfolio, grants will be awarded not only in order of ranking but at least also to the highest ranked proposal of innovation Type I Development of XR applications to support companies in all industrial ecosystems, provided that the applications attain all thresholds.

	Only one proposal will be funded for innovation Type II.
Legal and financial set-up of the Grant Agreements	The rules are described in General Annex G. The following exceptions apply:
	Beneficiaries may provide financial support to third parties.
	The support to third parties can only be provided in the form of grants. The maximum amount to be granted to each third party is EUR 500 000 to further extend the application domains, guarantee reproducibility and demonstrate the integration paths for take-up by European industries.
	The type ii innovation action should provide financial support to third-party projects from outstanding XR innovators, SMEs and other multidisciplinary actors through a minimum of three open calls during the lifetime of the project.
	As support and mobilising of XR innovators is key to the type ii IA of this topic, a minimum of 60% of the total requested EU contribution should be allocated to financial support to the third parties.

Expected Outcome: Projects are expected to contribute to the following outcomes:

- Develop "XR made in Europe", contributing to technological sovereignty.

- Contribute to develop virtual worlds European platforms.

- Support the use of XR technologies for a sustainable, human-centric and resilient European industry[383].

Scope: The following two types of innovation proposals are expected.

- i. The development of XR applications to support companies in all industrial ecosystems, especially SMEs, to use innovative interactive and immersive technologies, increasing their competitiveness, productivity, efficiency and human-centricity. The applications should be robust, gender-neutral safe and trustworthy, especially in terms of cybersecurity, privacy and health issues. Proposals should exploit cross fertilisation between academics, industry representatives and end-users around well thought-out scenarios. Moreover, proposals should include activities to showcase the results, widely disseminating and exploiting the outcomes.

At least one proposal of innovation Type I will be funded.

---

[383] The term industry in this context encompasses all ecosystems defined in the European industrial strategy

- ii. The creation of a European reference platform aiming to develop and prototype advanced interoperable XR solutions to solve common challenges encountered by the industry (in areas such as assembly, maintenance, remote operation, training, design, logistics, etc.), placing the wellbeing of workers at the centre of the production process. The platform will be populated with third party-projects exploring a wide range of XR technologies and taking benefit of other emerging technologies (such as 5G/6G, IoT, data, artificial intelligence, edge and cloud computing, and microelectronics). In order to facilitate the integration with existing IT systems and policies, the EU XR platform for industry should prioritize XR content, tools and solutions based on open standards, such as OpenXR and WebXR. The solutions provided by the platform should aim to cover as many industry ecosystems as possible. Involvement of end-users is essential in defining specifications and testing.

Only one proposal will be funded for innovation Type II.

Financial support to third parties

The type ii innovation action should provide financial support to third-party projects from outstanding XR innovators, SMEs and other multidisciplinary actors through a minimum of three open calls during the lifetime of the project.

As support and mobilising of XR innovators is key to the type ii IA of this topic, a minimum of 60% of the total requested EU contribution should be allocated to financial support to the third parties. Proposals should define a coherent and coordinated programme logic for the third-party projects, offering the necessary technical support, coaching and mentoring, to ensure a significant advancement and impact in the innovation domain, including in terms of interoperability and standardisation. These tasks should be financed outside of the minimum allocated share for financial support to third parties.

Proposals should make explicit the intervention logic for the area and their potential to attract relevant top XR talents and to deliver a solid value-added to the third-party projects. Proposals should also prove the expertise and capacity of the consortium in managing the full life-cycle of the open calls transparently and efficiently.

The Commission considers that proposals with an overall duration of typically 36 months would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other durations.

Third parties in type ii should be funded through projects typically in the EUR 250 000 to 500 000 range per project, with indicative duration of 12 to 15 months.

This topic requires the effective contribution of SSH disciplines and the involvement of SSH experts, institutions as well as the inclusion of relevant SSH expertise, in order to produce meaningful and significant effects enhancing the societal impact of the related research activities.

HORIZON-CL4-2023-HUMAN-01-23: Supporting the emergence of an open human-centric Metaverse (CSA)

Specific conditions	
Expected EU contribution per project	The Commission estimates that an EU contribution of around EUR 2.00 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.
Indicative budget	The total indicative budget for the topic is EUR 2.00 million.
Type of Action	Coordination and Support Actions

Expected Outcome: Projects are expected to contribute to the following outcomes:

- Europe to co-shape and promote an open, decentralised, trustworthy European and global Metaverse in line with the vision of human-centric technology set out in the EU Declaration on Digital Principles and Rights.

- A strong and competitive ecosystem, with European companies playing a leading role in the adoption and acceptance, and in the development and deployment of Metaverse technologies.

Scope: An acceleration of blending of the real world with augmented and virtual worlds is giving rise to the Metaverse, an online network of immersive and virtual worlds allowing people to interact in real time for various purposes, allowing a seamless blending of the digital and physical world. It offers an infinite array of possibilities and opportunities for many industrial and service sectors including creativity and arts as well as for citizens. At the same time, it also poses significant societal, regulatory and ethical challenges. To be in line with European values and principles, the Metaverse has to be open, human-centric, trustworthy, safe and ethical, offering opportunities to everyone, focusing not only on business opportunities but also on important societal challenges such as healthcare and the green transformation.

The selected proposal will contribute to the 3 important dimensions of people, technologies and infrastructure related to the European vision of the Metaverse. It will:

- contribute to structure and support the Metaverse community and stakeholders in Europe by activities such as networking, outreach, public awareness, technology watch, market analysis, standardisation efforts, and industry-academia collaboration as well as building links to national programmes and initiatives.

- organise a vast engagement process with relevant stakeholders and wide consultation with citizens and civil society on the topic of the Metaverse (expectations, opportunities, challenges, role of Europe)

- reinforce the links between the various Metaverse related elements, in particular eXtended reality and AI, Blockchain, Connectivity but also any other related technologies (such as for example simulation, 3D digitisation, 5G/6G, internet technologies, cloud computing, identity management, advanced microelectronics), ensuring transfer of knowledge and community building.

- support the development of an EU strategy and roadmap towards an open human-centric Metaverse, including the identification of priority areas and application areas with a strong public dimension that would require strong public support and public and private investments

- help with the definition of industry standards for the Metaverse, guarantying interoperability, openness and seamless integration with and between applications, systems, technologies, data and platforms

- identify the main the elements of continuity as well as the differences between the internet as it operates today and the expected trends for the emerging Metaverse.

- identify ethical, legal, societal and economical aspects of the Metaverse such as the ownership of the digital identity and help Europe to tackle these challenges in line with the EU Declaration on Digital Principles and Rights.

- identify IPR and governance models supporting the human-centric vision for the metaverse, and explore the potential of models based on open source for the metaverse.

- closely collaborate and build synergies with other existing related European initiatives such as the AR/VR coalition, the eXtended Reality Ethics, Interoperability and Impact CSA funded under HORIZON-CL4-2021-HUMAN-01-28, the Common European Data spaces funded under DIGITAL (for example Cultural heritage and Media), the relevant European Partnerships (such as Data, AI and Robotics; Photonics, the European Blockchain Partnership); Next Generation Internet (NGI) initiative, the European Flagships (such as Graphene), the EU supported digital twins initiatives (such as Destination Earth).

- support international cooperation, in particular in relation to interoperability and standardisation.

European standards for industrial competitiveness

Proposals are invited against the following topic(s):

HORIZON-CL4-2023-HUMAN-01-65: Support facility for digital standardisation and international cooperation in digital partnerships (CSA)

Specific conditions	
Expected EU	The Commission estimates that an EU contribution of around EUR 1.50

contribution per project	million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.
Indicative budget	The total indicative budget for the topic is EUR 1.50 million.
Type of Action	Coordination and Support Actions
Legal and financial set-up of the Grant Agreements	The rules are described in General Annex G. The following exceptions apply: Eligible costs will take the form of a lump sum as defined in the Decision of 7 July 2021 authorising the use of lump sum contributions under the Horizon Europe Programme – the Framework Programme for Research and Innovation (2021-2027) – and in actions under the Research and Training Programme of the European Atomic Energy Community (2021-2025). [384].

Expected Outcome: Further alignment with like-minded countries on a **common vision on ICT standardisation of key technologies** and developing a robust coordination mechanism to express this common vision in international fora/SDOs.

The project beneficiaries should engage with relevant entities working in ICT standardisation from Japan, South Korea, Taiwan, Singapore, Canada, Australia, and the USA.

Scope: This action will contribute to the **EU Standardisation Strategy**, particularly in **supporting the EU's leading position in global standards-setting as a forerunner in key technologies and promoting EU core values,** by:

- Working together towards defining a **common vision and agenda** for key digital technologies as regards their standardisation aspects, timelines etc. The aim is to engage and work towards a common position with like-minded countries in ICT standardisation of key technologies prioritised in Horizon Europe, such as AI, 5G and beyond, internet protocols, IoT and security aspects, cybersecurity, data, eID, quantum or digital ledger technologies (DLT), which are usually developed in specific international standardisation organisations, fora and consortia such as ISO/IEC JTC1, ITU-T, 3GPP, oneM2M, IETF or IEEE.

- Coordinating with those partner countries to align our positions on digital standardisation in international standardisation organisations and other international fora.

- Monitoring the effective implementation of international standards in **trade and cooperation agreements** with such targeted countries.

---

[384]   This decision is available on the Funding and Tenders Portal, in the reference documents section for Horizon Europe, under 'Simplified costs decisions' or through this link: https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/guidance/ls-decision_he_en.pdf

This topic requires the effective contribution of SSH disciplines and the involvement of SSH experts, institutions as well as the inclusion of relevant SSH expertise, in order to produce meaningful and significant effects enhancing the societal impact of the related research activities.

- • Proposals should cover the following key tasks:

- • T1: Dedicated work stream (for ex. Joint Committee) bringing together European Commission and EU stakeholders and the relevant administrations and stakeholders of the targeted partner country, to define a common agenda and work plan, to set up a mechanism to exchange relevant information, align positions etc.

- • T2: To that effect, to conduct regular studies and analyses of the relevant activities in specific target countries and in international ICT standardisation, especially in key technologies promoted in HE (AI, 5G and beyond, internet, IoT and its security aspects, cybersecurity, data, eID, QT or DLT).

- • T3: Organise outreach activities such as joint international conferences, workshops or supporting material, including newsletters, websites, or promotional videos.

- • T4: Cooperate, synchronise, and achieve synergies with ongoing research and innovation activities and coordination and support actions, exchange of best practices on education and awareness of ICT standards in scientific communities.

HORIZON-CL4-2023-HUMAN-01-66: Promoting EU standards globally (CSA)

Specific conditions	
Expected EU contribution per project	The Commission estimates that an EU contribution of around EUR 2.50 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.
Indicative budget	The total indicative budget for the topic is EUR 2.50 million.
Type of Action	Coordination and Support Actions
Eligibility conditions	The conditions are described in General Annex B. The following exceptions apply: Legal entities established in all African Union member states[385] may exceptionally participate in this Coordination and support action as a beneficiary (or affiliated entity). Due to the scope of this topic, all African Union member states[386] are exceptionally eligible for Union funding.

---

[385]   "African Union member states" includes countries whose membership has been temporarily suspended
[386]   "African Union member states" includes countries whose membership has been temporarily suspended

Legal and financial set-up of the Grant Agreements	The rules are described in General Annex G. The following exceptions apply:
	Eligible costs will take the form of a lump sum as defined in the Decision of 7 July 2021 authorising the use of lump sum contributions under the Horizon Europe Programme – the Framework Programme for Research and Innovation (2021-2027) – and in actions under the Research and Training Programme of the European Atomic Energy Community (2021-2025). [387].
	Beneficiaries may provide financial support to third parties.
	The support to third parties can only be provided in the form of grants. The maximum amount to be granted to each third party is EUR 50000. FSTP should be eligible to third parties in India, Southeast Asia, the African Union, Latin America and Caribbean (LAC), the Western Balkans and the Eastern Partnership.
	The capacity building in third countries is expected to be done, among others, through the funding of micro-projects that may involve local stakeholders. Therefore, a minimum of 40% of the total requested EU contribution should be allocated to financial support to third parties (FSTP).

Expected Outcome: Building on the successful action of the first phase of the FPI InDiCo project on international cooperation on ICT standardisation, the expected outcomes include (i) enhancing the **promotion of the EU ICT/digital standards for key technologies** in the Horizon Europe programme; (ii) the **promotion of the EU model for setting global interoperable ICT/digital standards** (stakeholder driven model) in selected targeted countries and (iii) understanding standardisation ecosystems and when relevant fostering **capacity building** in third countries **for ICT/digital standardisation around EU values.**

The targeted countries and regions are India, China, Southeast Asia, the African Union, Latin America and Caribbean (LAC), the Western Balkans and the Eastern Partnership.

Scope: This Action will promote the EU's human-centred agenda on the global stage and promote the alignment and convergence of international standards with EU standards, as pursued in the **Digital Compass Strategy** and in support of the **Global Gateway.** Besides, it will also enable that the targeted countries can strengthen the link between standards and their policy and regulatory framework, adopting the EU values and underpinning the **EU Digital and** the **EU Standardisation Strategy,** by:

---

[387]   This decision is available on the Funding and Tenders Portal, in the reference documents section for Horizon Europe, under 'Simplified costs decisions' or through this link: https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/guidance/ls-decision_he_en.pdf

1. **Enhancing the cooperation with selected countries participating in InDiCo** (India, China, Brazil and LAC region), **and extending its geographic scope** to important areas where the EU position should be reinforced such as the Western Balkans, the Eastern Partnership, Southeast Asia and the African Union.

2. **Extending its technological reach to cover better technologies that are prioritized in Horizon Europe**, such as AI, 5G and beyond, IoT and its security aspects, internet, cybersecurity, data, eID, quantum, digital ledger technologies (DLT), circular economy or smart cities.

3. **Understanding of the third countries' standardisation ecosystem and when relevant capacity building in terms of digital standardisation**, facilitating alignment around **EU values** and positions in international digital SDOs and other international fora (e.g. 3GPP, oneM2M, IETF, IEEE).

Proposals should build on the outcomes achieved in the first phase of InDiCo, as well as in the experience gained and the studies and action that have been implemented.

Due to the strategic importance for the EU interests, proposals should include European experts on standardisation, with excellent knowledge of the European Standardisation Organisations (CEN, CENELEC and ETSI) and their international activities.

This topic requires the effective contribution of SSH disciplines and the involvement of SSH experts, institutions as well as the inclusion of relevant SSH expertise, in order to produce meaningful and significant effects enhancing the societal impact of the related research activities. Expertise in SSH is important in the context of this project to defending EU values and ethics and supporting the UN Sustainable Development Goals.

Proposals should address the following key tasks:

- T1: Activities to support effective engagement on the EU standardisation model and EU standards:

Analysis of key Standard Development Organisations (SDOs) and countries/regions active in the priorities identified in the Commission Rolling Plan on ICT Standardisation.

Development of case studies/best practices on the EU standardisation model and the harmonisation of global standards on priorities identified in the Commission Rolling Plan on ICT Standardisation.

Development of common approaches, tools and guidelines, e.g., on lessons learned

- T2: Policy outreach, dialogue, and knowledge exchange activities for targeted actors. These activities will be conducted with different actors in various formats including through the organisation or participation at national and regional levels in international groups, specialised workshops, hackathons, interoperability events and roadshows. The aim will be to progressively improve a common understanding regarding the cooperation towards harmonised international open standards including the promotion of the

European model, and the outreach of European ICT Standards to key countries identified in the research activity. When relevant support proof of concepts of the implementation of standards

- T3: Communication and dissemination activities to promote broader sharing of EU Data Protection Model and stimulate knowledge sharing and capitalisation.

Digital Humanism and human compatible technologies

Proposals are invited against the following topic(s):

HORIZON-CL4-2023-HUMAN-01-81: Digital Humanism - Putting people at the centre of the digital transformation (CSA)

Specific conditions	
Expected EU contribution per project	The Commission estimates that an EU contribution of around EUR 1.50 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.
Indicative budget	The total indicative budget for the topic is EUR 1.50 million.
Type of Action	Coordination and Support Actions
Eligibility conditions	The conditions are described in General Annex B. The following exceptions apply: If projects use satellite-based earth observation, positioning, navigation and/or related timing data and services, beneficiaries must make use of Copernicus and/or Galileo/EGNOS (other data and services may additionally be used).
Legal and financial set-up of the Grant Agreements	The rules are described in General Annex G. The following exceptions apply: Eligible costs will take the form of a lump sum as defined in the Decision of 7 July 2021 authorising the use of lump sum contributions under the Horizon Europe Programme – the Framework Programme for Research and Innovation (2021-2027) – and in actions under the Research and Training Programme of the European Atomic Energy Community (2021-2025). [388].

Expected Outcome:

---

[388] This decision is available on the Funding and Tenders Portal, in the reference documents section for Horizon Europe, under 'Simplified costs decisions' or through this link: https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/guidance/ls-decision_he_en.pdf

- Create an active network and cross disciplinary communities on digital humanism bringing together ICT experts, ethnologists, sociologists and experts in fundamental rights

- Help defining and strengthening EU's approach to a human-centred digital transformation through cross-disciplinary, world class foundational and application oriented research

- Formulate approaches how to transform and strengthen European standards (rule of law, social market economy, fundamental rights, social standards and social partnership) into the digital realm including the take up of those standards by digital actors and in particular those developing new digital environment (e.g. data scientists, start-ups, investors)

- Formulate a list of recommendations and roadmaps to address current gaps or issues that are preventing the development of digital solutions that will reinforce - and not undermine - digital humanism across the society

- Propose a concrete framework for measuring and promoting progress of the promotion and putting into practice of the digital rights and principles declaration in the context of the Digital Decade policy programme. This will include concrete indicators, source of information at national and European level, as well as the identification of existing, and development of new, capacity tools to support the uptake of identified best practice uses of digital technologies in support of digital humanism. This work will notably feed the review of the Digital Decade Policy Programme and of the solemn declaration in 2026.

Scope: A horizontal and holistic approach is needed for creating a more resilient, inclusive and democratic European society, prepared and responsive to opportunities, societal changes, threats and disasters, addressing inequalities and providing protection and high-quality public services such as health care, and empowering all citizens to act in the green and digital transitions.

While digital technologies bring strong advantages coming along with a promise of freedom and innovation, negative aspects have also become visible in the last years. These include the monopolization of the information space, increasing levels of fake news and disinformation, strong power of online platforms, cyber threats and crimes, privacy breaches, strong market disparities as well as an economic order that claims human experience as free raw material for commercial practices of extraction, prediction and sales (Zuboff, 2019).

Digital Humanism is here defined as the continuing search for a European answer to keep up high civilization standards stemming from enlightenment and the humanist era, and to further develop them in the digital world. In line with European values, such a digital environment should enable all Europeans to make full use of digital and technologies, to have a society where geographical distance matters less, so that all Europeans can benefit from the digitalisation in their daily activities (ranging from work, learning, to enjoying culture or

leisure activities) but also in their interactions with governments, and participation in democratic processes.

This requires intense, cross-disciplinary work of computer (and technology) sciences with legal, economic, sociological, philosophical and other kinds of expertise as a co-development exercise. To support in-depth, early-on collaboration between computer sciences and the whole wealth of humanities and social sciences to put new algorithms and models into a broader context, proposals under this topic should:

- Support the development of cross-disciplinary communities and networks in relation to digital transformation of society. It is thus critical to foster greater exchanges between social sciences and technological communities.

- Support the cross-disciplinary co-development of new theoretical models and approaches of the impact of digital technologies in our societies, starting with human and societal needs.

- Showcasing success stories and examples of engagement of the digital community seeking to develop concrete ways to progress toward a more human-centred digital world and draw concrete conclusions from these.

- Mapping out collaborative research to develop concrete tools and frameworks for ensuring that all actors of the European digital ecosystem (policy makers, business, startup developers, investors, NGOs) can integrate in their work and activities the values that form a human centred digital transformation and develop a roadmap for the possible development of research activities

- Develop a conceptual framework as well as tools and indicators to monitor and promote the progress of the 'declaration on digital rights and principles' and its six chapters (putting people at the centre of the digital transformation; solidarity and inclusion; freedom of choice; participation in the digital public space; safety, security and empowerment; sustainability), notably to feed the review of the Digital Decade Policy Programme and of the solemn declaration in 2026.

This project is also relevant in the policy context of the Digital Decade policy programme ("The Path to the Digital Decade"), which sets a European approach for its digital transformation based on values and technological leadership. For the first time, societal and human centred objectives are fully integrated into a comprehensive governance mechanism at EU level including monitoring of the progress made by the digital transformation in reaching our collective values and quantitative digital targets (skills, infrastructures, digitalisation of business and public services).

HORIZON-CL4-2023-HUMAN-01-82: Art-driven digital innovation: Towards human compatible and ecologically conscious technology (CSA)

Specific conditions

Expected EU contribution per project	The Commission estimates that an EU contribution of around EUR 3.00 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.
Indicative budget	The total indicative budget for the topic is EUR 3.00 million.
Type of Action	Coordination and Support Actions
Legal and financial set-up of the Grant Agreements	The rules are described in General Annex G. The following exceptions apply: Eligible costs will take the form of a lump sum as defined in the Decision of 7 July 2021 authorising the use of lump sum contributions under the Horizon Europe Programme – the Framework Programme for Research and Innovation (2021-2027) – and in actions under the Research and Training Programme of the European Atomic Energy Community (2021-2025). [389]. Financial Support to Third Parties (FSTP) is foreseen. STARTS residencies: The consortium will provide grants to artists (maximum EUR 40 000 per grant, in total between 400.000 and 600.000 EUR for FSTP in the form of grants). STARTS prize: For three consecutive years, the consortium will hand out annually two prizes of EUR 20 000 each (in total 120.000 EUR for FSTP in the form of prizes).
Other requirement	**Social Sciences and Humanities (SSH):** This topic encourages a radically new approach to inclusion of humanities in R&I by focussing on contributions of the artistic community to development and use of digital technologies that immerse digital more gracefully in economy and society and tackle the Green Transition in the spirit of the New European Bauhaus.

Expected Outcome: This call encourages a mind change regarding the role of the arts in R&I in the spirit of a European innovation policy based on culture and values. It is building on results of the S+T+ARTS program that has demonstrated concrete benefits of art-technology collaboration for digital innovation and uptake of digital in society and economy.

a. Facilitate artistic experimentation with (digital) technologies to accelerate development and novel use cases of digital technologies. The emphasise will be on ecologically conscious and human compatible technologies and use cases of technologies.

---

[389] This decision is available on the Funding and Tenders Portal, in the reference documents section for Horizon Europe, under 'Simplified costs decisions' or through this link: https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/guidance/ls-decision_he_en.pdf

To this end, the consortium will fund (via FSTP in form of grants) S+T+ARTS residencies of artists to be hosted by EC funded projects, technology institutions, or SMEs/industrial actors (both digital providers and end-users of digital). In the spirit of the topic, hosts of residencies must provide access to technology free of cost. The consortium will mentor residencies and help in follow-up/exploitation of the outcomes (commercial or other). Non-exclusive examples of intended outcomes include:

- Art-driven development and use of human compatible Artificial Intelligence (AI) in spirit of the EC communication on '*Trustworthy AI*'

- Art-driven applications of high-performance computing (visualisation, simulation etc).

- Art as a catalyst for uptake of the digital in society and economy in the spirit of digital innovation hubs.

- Art-driven use of technology to facilitate the Green Transition and contribute to UN Sustainable Development goals in the spirit of the '*New European Bauhaus*' (urban development, green manufacturing, circular economy, water management, etc.)

- Art-driven use of digital media to fight disinformation, for example to promote factual narratives and change behaviour in context of Green Transition and climate change.

    o b. Continuation of the annual S+T+ARTS prize: Achieve visibility of successful art and technology collaborations via an annual prize (FSTP in form of prizes) in two categories - to be defined by proposers, organize annual calls (launch, evaluation) and disseminate the prizes and its winners in an award ceremony and a travelling exhibition

    o c. Organise an annual AI and music S+T+ARTS Festival. The festival will highlight synergies of digital – in particular AI - with human creativity in art and music. Artistic use of digital can push limits of digital technology and is considered a measure of compatibility of digital with human values and needs.

Scope: While Europe is strongly pushing innovation based on technological and scientific progress, it has always put social and ecological priorities on the same level as economic growth. This has led to a new alliance of the arts with S&T as part of a European innovation policy rooted in values and culture. Artists become key drivers of 'art-driven innovation' towards ecologically conscious and human compatible technologies. In this spirit, DG CONNECT launched S+T+ARTS - innovation at the nexus of Science, Technology and the ARTS – and the European Commission president proposed the '*New European Bauhaus',* where synergies between art and novel technologies are identified as enablers of the Green Transition. The present call will thus encourage actors in R&I to adopt artistic experimentation as a complementary method for technology development and use across all EC programs.

The Commission considers a duration of 36 months as appropriate.

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

HORIZON-CL4-2024-HUMAN-01

Conditions for the Call

Indicative budget(s)[390]

Topics	Type of Action	Budgets (EUR million) 2024	Expected EU contribution per project (EUR million)[391]	Indicative number of projects expected to be funded
Opening: 15 Nov 2023 Deadline(s): 19 Mar 2024				
HORIZON-CL4-2024-HUMAN-01-06	RIA	30.00	9.00 to 10.00	3
HORIZON-CL4-2024-HUMAN-01-07	RIA	20.00	Around 5.00	4
HORIZON-CL4-2024-HUMAN-01-34	CSA	5.00	1.50 to 5.00	3
HORIZON-CL4-2024-HUMAN-01-61	CSA	6.00	Around 6.00	1
Overall indicative budget		61.00		

General conditions relating to this call	
Admissibility conditions	The conditions are described in General Annex A.
Eligibility conditions	The conditions are described in General Annex B.
Financial and operational capacity and exclusion	The criteria are described in General Annex C.
Award criteria	The criteria are described in General Annex

---

[390] The Director-General responsible for the call may decide to open the call up to one month prior to or after the envisaged date(s) of opening.
The Director-General responsible may delay the deadline(s) by up to two months.
All deadlines are at 17.00.00 Brussels local time.
The budget amounts are subject to the availability of the appropriations provided for in the general budget of the Union for years 2023 and 2024.

[391] Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.

	D.
Documents	The documents are described in General Annex E.
Procedure	The procedure is described in General Annex F.
Legal and financial set-up of the Grant Agreements	The rules are described in General Annex G.

Leadership in AI based on trust

Proposals are invited against the following topic(s):

HORIZON-CL4-2024-HUMAN-01-06: Explainable and Robust AI (AI Data and Robotics Partnership) (RIA)

Specific conditions	
Expected EU contribution per project	The Commission estimates that an EU contribution of between EUR 9.00 and 10.00 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.
Indicative budget	The total indicative budget for the topic is EUR 30.00 million.
Type of Action	Research and Innovation Actions
Eligibility conditions	The conditions are described in General Annex B. The following exceptions apply: If projects use satellite-based earth observation, positioning, navigation and/or related timing data and services, beneficiaries must make use of Copernicus and/or Galileo/EGNOS (other data and services may additionally be used).
Technology Readiness Level	Activities are expected to start at TRL 2-3 and achieve TRL 4-5 by the end of the project – see General Annex B.

Expected Outcome: Projects are expected to contribute to one of the following outcomes:

- Enhanced robustness, performance and reliability of AI systems, including awareness of the limits of operational robustness of the system

- Improved explainability and accountability, transparency and autonomy of AI systems, including awareness of the working conditions of the system

<u>Scope</u>: Trustworthy AI solutions, need to be robust, safe and reliable when operating in real-world conditions, and need to be able to provide adequate, meaningful and complete explanations when relevant, or insights into causality, account for concerns about fairness, be robust when dealing with such issues in real world conditions, while aligned with rights and obligations around the use of AI systems in Europe. Advances across these areas can help create human-centric AI[392], which reflects the needs and values of European citizens and contribute to an effective governance of AI technologies.

To achieve robust and reliable AI, novel approaches are needed to develop methods and solutions that work under other than model-ideal circumstances, while also having an awareness when these conditions break down. To achieve trustworthiness, AI system should be sufficiently transparent and capable of explaining how the system has reached a conclusion in a way that it is meaningful to the user, while also indicating when the limits of operation have been reached.

The purpose is to advance AI-algorithms that can perform safely under a common variety of circumstances, reliably in real-world conditions and predict when these operational circumstances are no longer valid. The research should aim at advancing robustness and explainability for a generality of solutions, while leading to an acceptable loss in accuracy and efficiency, and with known verifiability and reproducibility. The focus is on extending the general applicability of explainability and robustness of AI-systems by foundational AI and machine learning research. To this end, the following methods may be considered but are not necessarily restricted to:

- data-efficient learning, transformers, reinforcement learning, federated and edge-learning, automated machine learning, or any combination thereof for improved robustness and explainability.

- hybrid approaches integrating learning, knowledge and reasoning, model-based approaches, neuromorphic computing, or other nature-inspired approaches and other forms of hybrid combinations which are generically applicable to robustness and explainability.

- continual learning, active learning, long-term learning and how they can help improve robustness and explainability.

- multi-modal learning, natural language processing, speech recognition and text understanding taking multicultural aspects into account for the purpose of increased operational robustness and the capability to explain alternative formulation[393].

Multidisciplinary research activities should address all of the following:

---

[392] [A European approach to artificial intelligence | Shaping Europe's digital future (europa.eu)](#)
[393] Research should complement build upon and collaborate with projects funded under topic HORIZON-CL4-2023-HUMAN-01-03: Natural Language Understanding and Interaction in Advanced Language Technologies

- Proposals should involve appropriate expertise in all the relevant disciplines, and where appropriate Social Sciences and Humanities (SSH), including gender and intersectional knowledge to address concerns around gender, racial or other biases. etc.

- Proposals are expected to dedicate tasks and resources to collaborate with and provide input to the open innovation challenge under HORIZON-CL4-2023-HUMAN-01-04 addressing explainability and robustness. Research teams involved in the proposals are expected to participate in the respective Innovation Challenges.

- Contribute to making AI and robotics solutions meet the requirements of Trustworthy AI, based on the respect of the ethical principles, the fundamental rights including critical aspects such as robustness, safety, reliability, in line with the European Approach to AI. Ethics principles needs to be adopted from early stages of development and design.

All proposals are expected to embed mechanisms to assess and demonstrate progress (with qualitative and quantitative KPIs, benchmarking and progress monitoring), and share communicable results with the European R&D community, through the AI-on-demand platform or Digital Industrial Platform for Robotics, public community resources, to maximise re-use of results, either by developers, or for uptake, and optimise efficiency of funding; enhancing the European AI, Data and Robotics ecosystem through the sharing of results and best practice.

In order to achieve the expected outcomes, international cooperation is encouraged, in particular with Canada and India.

HORIZON-CL4-2024-HUMAN-01-07: Collaborative intelligence – combining the best of machine and human (AI Data and Robotics Partnership) (RIA)

Specific conditions	
Expected EU contribution per project	The Commission estimates that an EU contribution of around EUR 5.00 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.
Indicative budget	The total indicative budget for the topic is EUR 20.00 million.
Type of Action	Research and Innovation Actions
Eligibility conditions	The conditions are described in General Annex B. The following exceptions apply: If projects use satellite-based earth observation, positioning, navigation and/or related timing data and services, beneficiaries must make use of Copernicus and/or Galileo/EGNOS (other data and services may additionally be used).

Technology Readiness Level	Activities are expected to start at TRL 2-3 and achieve TRL 4-5 by the end of the project – see General Annex B.

Expected Outcome: Projects are expected to contribute to the following outcomes:

- **Demonstrate the value of human-machine collaboration and interaction** by improved effectiveness, intuitiveness, efficiency, completeness, limits of knowledge indication and other objective or quantifiable subjective measures.

- **Demonstrate how collaborative decision-making improves over human decision-making** and that the collaborative decisions cover all stages of reasoning (that they are based on an improved coverage of data and knowledge sources, on an improved analytic ability to reason from input to output, and on a well-communicated decision).

Proposals are expected to address at least one of the expected outcomes.

Scope: The R&I priorities require work at different levels, including both foundational research and well-studied piloting efforts, concentrated in impactful projects, bringing critical mass of expertise and investment to demonstrate potential for more than one major application sectors respectively.

Research should focus on:

- foundational research towards the next generation of collaborative AI, bringing excellence, critical mass and novel approaches as well as quantitatively proven improvement in the levels of human-machine collaboration.

- simulations and experimentation (with and without humans in the loop) to explore the consequences of different interventions and/or to explore the design approaches that help manage decision making.

- integrating advances from [effective, efficient, anticipative, multi-modal] human-computer interaction and from [incremental, continually learned, or anticipative], automatic reasoning systems in order to create new generations of collaborative AI-systems that better and more naturally serve human needs. The means of collaboration can cover the whole range of multi-modal stimuli: lingual, image, video, sound and other forms of interaction, whatever is arguably the most appropriate in the interaction process

- Advancing human-machine collaboration and interaction - operational for a broad range of AI-reasoning systems and applicable to a broad range of application areas of AI.

At least one proposal will be selected with a focus on **human-machine collaboration and interaction** and at least one with a focus on **collaborative decision-making**. Proposals should clearly mention which of the two areas they address.

Multidisciplinary research activities should address all of the following:

- Proposals should involve appropriate expertise in Social Sciences and Humanities (SSH), including knowledge on gender and intersectional inequalities.

- Research should build on existing standards or contribute to standardisation. Interoperability for data sharing should be addressed, notably through the implementation of the FAIR data principles and adopting standardised and discipline-oriented metadata schemas and ontologies.

- Proposals are expected to dedicate tasks and resources to collaborate with and provide input to the open innovation challenge under HORIZON-CL4-2023-HUMAN-01-04 addressing explainability and robustness. Research teams involved in the proposals are expected to participate in the respective Innovation Challenges.

- Projects should also build on or seek collaboration with existing projects and develop synergies with other relevant European, national or regional initiatives, funding programmes and platforms.

- Contribute to making AI and robotics solutions meet the requirements of Trustworthy AI, based on the respect of the ethical principles, the fundamental rights including critical aspects such as robustness, safety, reliability, in line with the European Approach to AI. Ethics principles needs to be adopted from early stages of development and design, and gender-sensitivity should be considered, where relevant.

All proposals are expected to embed mechanisms to assess and demonstrate progress (with qualitative and quantitative KPIs, benchmarking and progress monitoring, as well as illustrative application use-cases demonstrating concrete potential added value), and share communicable results with the European R&D community, through the AI-on-demand platform or Digital Industrial Platform for Robotics, public community resources, to maximise re-use of results, either by developers, or for uptake, and optimise efficiency of funding; enhancing the European AI, Data and Robotics ecosystem through the sharing of results and best practice.

Systemic approaches for accelerating uptake of technology and innovation

Proposals are invited against the following topic(s):

HORIZON-CL4-2024-HUMAN-01-34: Support for transnational activities of National Contact Points in the thematic areas of Digital, Industry and Space (CSA)

Specific conditions	
Expected EU contribution per project	The Commission estimates that an EU contribution of between EUR 1.50 and 5.00 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.

Indicative budget	The total indicative budget for the topic is EUR 5.00 million.
Type of Action	Coordination and Support Actions
Eligibility conditions	The conditions are described in General Annex B. The following exceptions apply:
	If projects use satellite-based earth observation, positioning, navigation and/or related timing data and services, beneficiaries must make use of Copernicus and/or Galileo/EGNOS (other data and services may additionally be used).
Legal and financial set-up of the Grant Agreements	The rules are described in General Annex G. The following exceptions apply:
	Eligible costs will take the form of a lump sum as defined in the Decision of 7 July 2021 authorising the use of lump sum contributions under the Horizon Europe Programme – the Framework Programme for Research and Innovation (2021-2027) – and in actions under the Research and Training Programme of the European Atomic Energy Community (2021-2025). [394].

Objective: [The approach and budget for this support will be implemented through the 2024 amendment, once information is available from the three ongoing NCP networks of Cluster 4.]

European standards for industrial competitiveness

Proposals are invited against the following topic(s):

HORIZON-CL4-2024-HUMAN-01-61: Facilitate the engagement in global ICT standardisation development (CSA)

Specific conditions	
Expected EU contribution per project	The Commission estimates that an EU contribution of around EUR 6.00 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.
Indicative budget	The total indicative budget for the topic is EUR 6.00 million.
Type of Action	Coordination and Support Actions
Eligibility	The conditions are described in General Annex B. The following

---

conditions	exceptions apply: If projects use satellite-based earth observation, positioning, navigation and/or related timing data and services, beneficiaries must make use of Copernicus and/or Galileo/EGNOS (other data and services may additionally be used).
Legal and financial set-up of the Grant Agreements	The rules are described in General Annex G. The following exceptions apply: Beneficiaries may provide financial support to third parties. The support to third parties can only be provided in the form of grants.The maximum amount to be granted to each third party is EUR 50 000, allowing a beneficiary fully to explore an application. As the primary purpose of the action is to support EU and Associated Countries experts in the global ICT standardisation scene, a minimum of 70% of the total requested EU contribution should be allocated to financial support to third parties, selected through open calls. Financial support for these specialists should be typically in the order of EUR 1.000 – 10.000 by use financial support to third parties (FSTP). Beneficiaries will define the process of selection of specialists through open calls. They will also define the process that will lead to a selection of a pool of evaluators that will evaluate the applications received in the open calls through the use of FSTP. Eligible costs will take the form of a lump sum as defined in the Decision of 7 July 2021 authorising the use of lump sum contributions under the Horizon Europe Programme – the Framework Programme for Research and Innovation (2021-2027) – and in actions under the Research and Training Programme of the European Atomic Energy Community (2021-2025). [395].

<u>Expected Outcome</u>: Share information about global sectorial ICT standardisation ecosystems and engagement of European stakeholders in global standardisation settings.

Projects are expected to contribute to the following outcomes:

- Set-up of a facility to support participation of European specialists in international ICT Standard Developing Organisations (SDOs) and global fora and consortia, which should increase the influence of Europe into ICT standardisation, including representation in leadership and key positions, to promote incorporation of European requirements, values and interests in ICT standardisation;

---

[395]   This decision is available on the Funding and Tenders Portal, in the reference documents section for Horizon Europe, under 'Simplified costs decisions' or through this link: https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/guidance/ls-decision_he_en.pdf

- Develop and update sectorial ICT standardisation landscape and gap analysis of ICT standardisation needs in support of EU policies as outlined in the Rolling Plan for ICT standardisation;

- Cooperate, synchronise and achieve capacity building with other similar initiatives or European players including from EU (and national) funded R&I projects; provide a forum for foresight analysis in different sectors;

- Increase awareness on ICT standardisation development;

- Financially support standardisation meetings in Europe of international SDOs and global fora and consortia, so that European players have easier conditions for participation.

<u>Scope</u>: This action will contribute to the objectives spelled out in the EU Standardisation Strategy[396] and meeting the objectives of the European Green Deal and Europe's Digital Decade, in particular to **supporting the EU's leading position in global standards-setting as a forerunner in key technologies and promoting EU core values,** by supporting and empowering the participation of European stakeholders in the development of open technical specifications and standards with the aim to strengthen European competitiveness and sovereignty, promoting European values and ethics, and strengthen the take-up, scalability and cross-sector interoperability of their technological solutions. This action will among the others support the Commission's effort to address the critical issues related to internet, trusted and secured chips, or data standards as described in the EU Standardisation Strategy.

The aim is to reinforce the presence of EU and associated states experts in the global ICT standardisation scene, by setting up an ICT standardisation observatory and a facility supporting the participation of key European specialists (especially from SMEs, societal stakeholders and Academia) in key international and global Standard Developing Organisations[397]. In particular, the project should foresee actions related to topics in the Rolling Plan for ICT standardisation as well as related to internet standardisation.

The action will also contribute to the objective of promoting EU cutting-edge innovation that fosters timely standards, by coordinating with other EU funded projects and action that may contribute with their results to ICT standardisation, as well as with EU supported PPPs and Joint Undertakings, seeking for synergies.

To achieve these objectives, proposals under this topic should provide for:

- Landscape and gap analysis of international ICT standardisation, including identification of sectors and areas, in particular within the field of internet standardisation, quantum network, IoT, 6G mobile communication, data, edge computing, artificial intelligence, eGovernment, block chain / DLT, cyber security, smart cities & communities, data centres, trusted chips, robotics, circular economy certification etc.

---

[396]   Ref.
[397]   Such us ISO, IEC, ISO/IEC JTC1, ITU-T, 3GPP, IETF, OneM2M, W3C, OASIS, IEEE

- Setting up of a management facility to support contributions and leadership (e.g. chairing of technical committees, convenor positions) of European specialists (incl. from SMEs and academia) in activities in relation to international standardisation including in global ICT SDOs, fora and consortia.

- When relevant, support financially the hosting standardisation meetings and workshops in Europe to ease the participation of European experts;

- Facilitation of a foresight committee, which liaises with relevant on-going developments in EU and national Member States funded R&I projects, in particular with projects having identified standardisation outputs or with potential relevant results to contribute to standardisation, including as well other coordination and support actions, and relevant European Partnerships;

- Promotion of the relevance and benefits of ICT standardisation, especially for European industry competitiveness, driving sustainability, sovereignty, green deal, values and ethics. The proposal will also include actions, including development of tools and materials, to promote education on ICT standardisation;

The proposal should take into account the previous activities carried out the observatory and facilities for funding experts within the topics ICT-40-2017 implemented by the StandICT.eu project and ICT-45-2020 implemented under StandICT.eu2023 project (see http://www.standict.eu).

In order to achieve the expected outcomes, international cooperation is strongly encouraged.

In this topic the integration of the gender dimension (sex and gender analysis) in research and innovation content is not a mandatory requirement.

Financial support to third parties

In order to set up a management facility to support contributions and leadership (e.g. chairing of technical committees, convenor positions) of European specialists, beneficiaries may provide financial support to third parties.