

Destination 3: Developing an agile and secure single market and infrastructure for data services and trustworthy artificial intelligence services



THE EU RESEARCH AND INNOVATION PROGRAMME (2021-27)

HORIZON-CL4-2027-04-DATA-03: New approaches for decentralized, federated and sustainable AI data processing (RIA)



HORIZON-CL4-2027-04-DATA-03: “New approaches for decentralized, federated and sustainable AI data processing” (RIA)

1. Expected outcomes

New **approaches, tools and techniques** to overcome the EU's **AI compute capacity bottlenecks** through **decentralised, sustainable compute models** that **exploit diverse hardware architectures**.

- **Compute continuum AI architectures:** distributed, decentralised and federated architectures beyond federated learning, integrating model compression tools and new mechanisms to scale AI processing across multiple, diverse infrastructures
- **AI workflows across heterogeneous infrastructures:** development, deployment and operation along the edge, cloud and HPC continuum, incorporating neuromorphic and quantum computing and hardware efficiency enhancements (in-memory computing, hardware and software approximation)
- **Data availability and consistency:** data quality tools to prevent imbalance and inconsistency across distributed sources, volume optimisation for data transfers, and distributed data management, while preserving privacy and preventing leaks (including post-quantum cryptography)
- **Energy efficiency and sustainability:** tools to measure, monitor and improve end-to-end energy efficiency, and exploration of the energy implications of heterogeneous processing architectures for infrastructure design and long-term sustainability

HORIZON-CL4-2027-04-DATA-03: “New approaches for decentralized, federated and sustainable AI data processing” (RIA)

2. Is there anything we do NOT want?

- The topic is technology oriented. So, use cases should seek for validation and demonstration of the project advances. No standalone technology-adoption projects.

3. Topic evolution

- HORIZON-CL4-2025-04-DATA-02: “Empowering AI/generative AI along the Cognitive Computing continuum” (RIA)

... and links to other topics

- Projects are expected to develop synergies and relate to activities and outcomes of the Digital Europe Programme (DEP)
- Important Project of Common European Interest on Next Generation Cloud Infrastructure and Services and AI (in-preparation).

HORIZON-CL4-2027-04-DATA-03: “New approaches for decentralized, federated and sustainable AI data processing” (RIA)

4. Which existing projects are relevant?

- [Resultant projects of HORIZON-CL4-2025-04-DATA-02](#)
- [Resultant projects of HORIZON-CL4-2023-DATA-01-04](#)
- [NexusForum CSA](#)

5. Which types of stakeholders are mainly addressed?

- Cloud and Edge computing and AI service and technology providers and System integrators
- Research community

HORIZON-CL4-2027-04-DATA-03: “New approaches for decentralized, federated and sustainable AI data processing” (RIA)

6. Are there additional background documents or other relevant information?

- [NexusForum Research and Innovation Roadmap](#)
- European Cloud Alliance [updated cloud-edge strategic industrial roadmap](#) and Thematic Roadmaps (See information in this [link](#))

HORIZON-CL4-2027-04-DATA-03: “New approaches for decentralized, federated and sustainable AI data processing” (RIA)

8. Are there any future trends / emerging initiatives that proposers should be aware of?

- Cloud and AI Development Act, <https://digital-strategy.ec.europa.eu/en/policies/cloud-and-ai-development-act>
- IPCEI-AI, <https://www.bundeswirtschaftsministerium.de/Redaktion/EN/Dossier/ipcei-ai.html>

9. Are there plans for follow-up funding?

- Next MFF will determine. Cloud and AI Development Act, grand challenge 2.

THE EU RESEARCH AND INNOVATION PROGRAMME (2021-27)

HORIZON-CL4-2027-04-DATA-08: “World-leading Data and Computing Technologies”



HORIZON-CL4-2027-04-DATA-08: Demand-side 3C pilot demonstrators on converged Telco Edge Cloud Infrastructure (IA)

1.a. Expected outcomes

The call builds on the 2025 supply-side 3C* large-scale pilot (HORIZON-CL4-2025-03-DATA-08). It aims to validate **open orchestration platforms across the telco–cloud–edge continuum**, driven by **demand-side needs and business-led innovation**. It is expected to:

- Strengthen **sustainability, resilience and competitiveness** in key EU verticals by leveraging advanced 3C telco-edge-cloud capabilities.
- Exploit features such as **API aggregation, network slicing, automation, low latency, security, ISAC and reconfigurability** to improve service quality and overall communications performance.
- Deliver **sector-focused demand pilots**, including:
 - **One mandatory pilot specifically on smart mobility**, aligned with the Automotive Action Plan (Pillars 3 and 5) and the Connected and Autonomous Vehicle Alliance – ECAVA. (this might cover several different modes of transport, infrastructure, urban planning, etc.)
 - **One additional pilot** in sectors like energy, smart communities, industrial virtual worlds, health, agrifood, or manufacturing (this might cover one or several vertical sectors).
- Unlock the **value of AI for European businesses** and support growth in strategic industrial sectors.
- Foster a **dynamic innovation ecosystem**, especially for SMEs and start-ups, enabling new services, business models, market uptake, commercialisation and replicability.

*Cf. definition in the call text

HORIZON-CL4-2027-04-DATA-08: Demand-side 3C pilot demonstrators on converged Telco Edge Cloud Infrastructure (IA)

1.b. Scope

- Build on the 2025 supply-side 3C large-scale pilot and **demonstrate demand-driven pilots** on emerging European telco-edge-cloud 3C infrastructure.
- Develop **pilot demonstrators** led by consortia combining demand-side users and infrastructure providers.
- Demonstrate domain-specific applications and services using key 3C capabilities.
- Include a robust data governance model covering **data sovereignty, interoperability** with Common European Data Spaces, secure data sharing, and alignment with Gaia-X principles.
- Show how 3C infrastructure can enable **agile, green and efficient network** and computing operations, support AI-intensive workloads, and create higher-value services beyond connectivity.
- Reuse and build on open-source frameworks, standards and open interfaces developed by the supply-side pilot and relevant ecosystem.
- Carry out **testing, validation and demonstration in operational environments**, ensuring security, privacy, energy efficiency, sustainability and ecological footprint transparency.
- Ensure **strong involvement of vertical stakeholders**, especially SMEs, scale-ups and start-ups, and collaborate closely with related EU initiatives and projects.

HORIZON-CL4-2027-04-DATA-08: Demand-side 3C pilot demonstrators on converged Telco Edge Cloud Infrastructure (IA)

2. Is there anything we do NOT want?

- The activities are expected to propose pilots that demonstrate **real-world applicability, scalability, and measurable impact** in operational environments (e.g., with end-user or industry validation). Theoretical, lab-only, or non-validated solutions without clear deployment pathways should be avoided.
- The call targets **demand-side use cases** (e.g., applications, services, or business models) that **leverage existing Telco-Edge-Cloud infrastructure**. Proposals should not reinvent or duplicate supply-side infrastructure (e.g., building new edge nodes or networks).
- **Convergence** and **interoperability** with other telco-edge-cloud ecosystems (e.g., multi-operator, multi-vendor, or cross-sector collaboration) are expected. Proposals should not propose isolated or siloed pilots that lack integration with broader telco-edge-cloud frameworks.
- Avoid projects working in isolation or proposing closed environments. **Collaboration and integration are expected** from day one and not at the final stages.
- The proposal should introduce **novel demand-side dimensions** (e.g., new verticals) to expand the pilot's scope, and avoid overlapping with prior Horizon Europe projects (e.g., HORIZON-CL4-2025-03-DATA-08 supply-side EURO-3C Project) without clear added value.

HORIZON-CL4-2027-04-DATA-08: Demand-side 3C pilot demonstrators on converged Telco Edge Cloud Infrastructure (IA)

3. Topic evolution

- Demand-side pilot demonstrators called in this topic will build on:
 - HORIZON-CL4-2025-03-DATA-08 on large-scale pilots for supply end-to-end infrastructures integrating device, network computing and communication capabilities for Telco Edge Cloud deployments (EURO-3C Project)
- Some “building blocks” can be found in previous calls such as:
 - HORIZON-CL4-2021-DATA-01 (Edge and IoT platforms) & HORIZON-CL4-2021-DIGITAL-EMERGING-01 (Smart Networks and 6G) up to a limited extent.
 - Running projects from SNS JU Stream D (Large scale trials and pilots)

... and links to other topics

- *HORIZON-CL4-2025-03-DATA-09 (related CSA)*
- *HORIZON-CL4-2025-03-DATA-11 Open Internet Stack (RIA)*
- *HORIZON-CL4-2025-03-DIGITAL-EMERGING-09 Challenge-Driven GenAI4EU Booster (RIA)*

HORIZON-CL4-2027-04-DATA-08: Demand-side 3C pilot demonstrators on converged Telco Edge Cloud Infrastructure (IA)

4. Which existing projects are relevant?

- HORIZON-CL4-2025-03-DATA-08 (EURO-3C Project, RIA)
- HORIZON-CL4-2025-03-DATA-09 (INCLUDE Project, CSA), as pivoting agent between supply and demand sides
- Projects from SNS Stream C (Experimental infrastructure) and Stream D (Large scale trials and pilots)
- IPCEI-CIS
- IPCEI-CIC (Computing Infrastructure Continuum), currently under preparation.
- HEXA-X-II (SNS Flagship)
- Open-source initiatives (non-EU): Sylva, CAMARA, Nephio, ANUKET

HORIZON-CL4-2027-04-DATA-08: Demand-side 3C pilot demonstrators on converged Telco Edge Cloud Infrastructure (IA)

5. Which types of stakeholders are mainly addressed?

- **Vertical-sector demand-side actors** from the targeted application domains, in particular smart mobility (including transport, logistics and the automotive industry) and, depending on the pilot, energy, smart communities, industrial virtual worlds, health, agrifood or manufacturing.
- **Providers of telco, edge and cloud infrastructure**, including network and computing operators able to support the pilots across the telco-cloud-edge continuum.
- **Application and service developers** providing domain-specific applications and services.
- **Open-source and API ecosystem contributors** to open-source frameworks, open APIs and interoperable software stacks relevant to 3C telco-edge-cloud deployments.
- **Data governance, security and interoperability stakeholders** supporting data spaces, security, standards and interoperability.
- **Innovation ecosystem players** (e.g., SMEs, scale-ups and start-ups) expected to build innovative services, validate business models and support commercialisation and replicability.
- **System integrators**, testing and validation actors.

HORIZON-CL4-2027-04-DATA-08: Demand-side 3C pilot demonstrators on converged Telco Edge Cloud Infrastructure (IA)

6. Are there additional background documents or other relevant information?

- Commission White Paper “**How to master Europe’s digital infrastructure needs?**”
- The **Telco Cloud Thematic Roadmap**, and the **Telco Cloud Reference Architecture (TCRA)**, from the European Alliance for Industrial Data, Edge and Cloud.

HORIZON-CL4-2027-04-DATA-08: Demand-side 3C pilot demonstrators on converged Telco Edge Cloud Infrastructure (IA)

7. What are relevant upcoming events?

- Horizon Europe Cluster 4 Info Days on 14th October 2026.

HORIZON-CL4-2027-04-DATA-08: Demand-side 3C pilot demonstrators on converged Telco Edge Cloud Infrastructure (IA)

8. Are there any future trends / emerging initiatives that proposers should be aware of?

- These are very large pilots which, by definition, cannot run in isolation and must follow the technology landscape and state-of-the-art in different domains such as: SNS-JU (Smart Networks) projects; 5G corridors, CAM (Automated mobility), AI Continent Action Plan (including AI Factories), IPCEI-CIS and other in preparation.
- The related CSA (HORIZON-CL4-2025-03-DATA-09) will ensure unified and coordinated progress towards advancing end-to-end infrastructures integrating device, network computing, and communication capabilities.

9. Are there plans for follow-up funding?

N/A

THE EU RESEARCH AND INNOVATION PROGRAMME (2021-27)

HORIZON-CL4-2027-04-DATA-09: Energy efficiency and sustainability of AI data processing in Data Centres (IA)



HORIZON-CL4-2027-04-DATA-09: Energy efficiency and sustainability of AI data processing in Data Centres (IA)

1. Expected outcomes

Pilots and demonstration sites for energy-efficient, sustainable AI data processing in data centres, reinforcing EU strategic autonomy and climate goals, with improved power usage effectiveness and reuse of waste heat.

- **Substantially improve heat removal from high-power AI chips** (e.g. direct on-chip cooling, advanced thermal interface materials, multi-scale thermal management), enabling higher performance without thermal throttling. This should lead to lower cooling energy needs and higher reliability for dense AI workloads.
- **Novel backup power systems** (such as graphene-enhanced batteries) that operate with minimal cooling requirements, improving data centre resilience and enabling better use of renewable power.
- **New methods and frameworks that optimise the entire data centre for energy-efficient AI processing.** This includes intelligent workload scheduling and AI model optimisation techniques to reduce energy use (e.g. carbon-aware job scheduling and power capping to cut energy demand and peak temperatures), as well as designs for integrating on-site/off-site renewables and waste-heat reuse.

HORIZON-CL4-2027-04-DATA-09: Energy efficiency and sustainability of AI data processing in Data Centres (IA)

2. Is there anything we do NOT want?

- Projects just focusing on simulations and not ready to offer real pilots and demonstrators.

3. Topic evolution and links to other topics

- build synergies and leverage their outcomes with funded projects from Cluster 5 HORIZON-CL5-2027-05-D4-06: “Thermal energy optimisation and waste heat recovery of high energy demand IT rooms in buildings or small edge data centres”.

HORIZON-CL4-2027-04-DATA-09: Energy efficiency and sustainability of AI data processing in Data Centres (IA)

4. Which existing projects are relevant?

- [NexusForum CSA](#)

5. Which types of stakeholders are mainly addressed?

- Data centre and colocation industry
- Cloud and edge technologies and services providers
- Research community

6. Are there additional background documents or other relevant information?

- [NexusForum Research and Innovation Roadmap](#)

HORIZON-CL4-2027-04-DATA-09: Energy efficiency and sustainability of AI data processing in Data Centres (IA)

8. Are there any future trends / emerging initiatives that proposers should be aware of?

- Cloud and AI Development Act, <https://digital-strategy.ec.europa.eu/en/policies/cloud-and-ai-development-act>

9. Are there plans for follow-up funding?

- Next MFF will determine. Cloud and AI Development Act, grand challenge 1.

Destination 4: Achieving open strategic autonomy in digital and emerging enabling technologies



***HORIZON-CL4-2027-04-DIGITAL-EMERGING-04:
Apply AI: Challenge-Driven AI Innovation Booster in
Apply AI prioritised sectors (RIA)***



HORIZON-CL4-2027-04-DIGITAL-EMERGING-04: Apply AI: Challenge-Driven AI Innovation Booster in Apply AI prioritised sectors (RIA)

- Indicative Budget: 42M€ // **3 Projects @ ~14M€**
- Type of Action: Research and Innovation Action (RIA) // TRL: From TRL 2 to TRL 5

1. Expected outcomes (all)

- Significant technological progress and innovation in Apply AI Strategy's prioritised sectors driven by challenge-oriented, AI-powered solutions.
- Increase competitiveness and visibility of the relevant AI community within key application domains, and promote collaborative approaches for AI development in these domains, fostering the ecosystem.
- Increase adoption of AI technologies across the following three key application domains: healthcare, advanced manufacturing (including AI-powered robotics) and in-vehicle autonomous driving.

HORIZON-CL4-2027-04-DIGITAL-EMERGING-04: Apply AI: Challenge-Driven AI Innovation Booster in Apply AI prioritised sectors (RIA)

2. Is there anything we do NOT want?

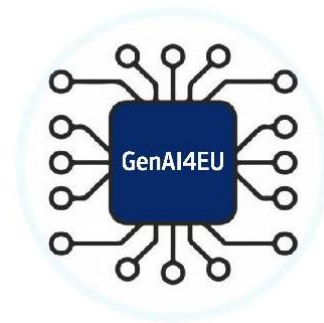
Generic AI projects with **no clear sectoral focus** or no concrete industrial challenge

- Lack of strong **industry/end-user involvement** or insufficient access to relevant data and infrastructure
- Weak challenge design, unclear evaluation methodology, or missing KPIs and benchmarking mechanisms
- Limited dissemination, visibility, ecosystem collaboration, or SME engagement
- Proposals without a structured, ambitious, and support-rich **multi-stage competition approach**
- **LACK OF AMBITION! Weak exploitation pathways or limited expected impact and uptake of developed AI solutions**

HORIZON-CL4-2027-04-DIGITAL-EMERGING-04: Apply AI: Challenge-Driven AI Innovation Booster in Apply AI prioritised sectors (RIA)

3. Key Areas of Research & Innovation

- Development of impactful **advanced AI use cases** in Apply AI strategic sectors
- AI for **healthcare**: e.g. diagnostics, treatment optimisation, robotic surgery, predictive patient analytics
- AI for **advanced manufacturing**: e.g. production optimisation, quality control, predictive maintenance, AI-powered robotics
- AI for **autonomous driving**: e.g. vehicle safety, navigation systems, traffic optimization
- Multi-stage challenge-driven competitions to develop and scale **high-impact AI solutions** across sectors
- THE PROJECTS WILL HAVE TO Design multi-stage competitions: Definition, support, and execution of challenges



3 USER-DRIVEN Apply AI CHALLENGES – 3 x 14M€

Defined Use-cases & success criterion

User Industry Provide data/sponsorship/possible contract to the winner



STAGE 1:

- Open to all participants
- Compete for free
- 10 best plans get 300k€ - **FSTP** (fast process/SME friendly) to prepare for step 2



STAGE 2:

- Open to the 10 best solutions from STEP 1
- 4 Best get 2,25 M€ - **FSTP** (fast process/SME friendly) to prepare for step 3



STAGE 3:

- 4 Best performing compete for the grand Finale

Winner gets a contract/partnership with
the « sponsors » (users) &
Exploitation/business support



INCREASED
COMPLEXITY
Progress
monitoring
KPIs

HORIZON-CL4-2027-04-DIGITAL-EMERGING-04: Apply AI: Challenge-Driven AI Innovation Booster in Apply AI prioritised sectors (RIA)

4. Topic evolution

- This topic follows the challenge-driven approach initially introduced under the topic **HORIZON-CL4-2026-04-DIGITAL-EMERGING-19**
- Contributes to the **Apply AI Strategy** by accelerating AI adoption in strategic sectors through sector-driven innovation challenges
- Applies a structured **multi-stage competition scheme** based on Financial Support to Third Parties (FSTP)
- Reinforces the use of challenge-driven mechanisms to stimulate high-impact AI innovation and SME participation
- Simplified procedure for Ownership and Control Assessment (OCA) of FSTP recipients

HORIZON-CL4-2027-04-DIGITAL-EMERGING-04: Apply AI: Challenge-Driven AI Innovation Booster in Apply AI prioritised sectors (RIA)

5. Cross links

- ADRA Partnership (AI, data & robotics)
- CSA HORIZON-CL4-2025-03-HUMAN-18: GenAI4EU central Hub.
- AI Factories including Data Labs.
- Testing & Experimentation Facilities (TEFs).
- European Digital Innovation Hubs (EDIHs).
- AI on Demand platform

HORIZON-CL4-2027-04-DIGITAL-EMERGING-04: Apply AI: Challenge-Driven AI Innovation Booster in Apply AI prioritised sectors (RIA)

6. Which types of stakeholders are mainly addressed?

- Sector-leading companies in **healthcare, advanced manufacturing, and autonomous driving** providing use cases, operational needs, and relevant data. Each consortium should involve several major industry players in the targeted sector
- Challenge organisers, or organisations with strong experience in **FSTP management, multi-stage competitions, and SME support**
- Entities with expertise in **evaluation methodologies, KPIs, benchmarking, and exploitation pathways**
- Partners able to support **technical assistance, business support, dissemination, visibility, impact maximisation, and ecosystem outreach**
- **FSTP beneficiaries:** *AI developers, SMEs, startups, and technical experts developing advanced AI solutions (single SME or small team led by an SME)*

HORIZON-CL4-2027-04-DIGITAL-EMERGING-04: Apply AI: Challenge-Driven AI Innovation Booster in Apply AI prioritised sectors (RIA)

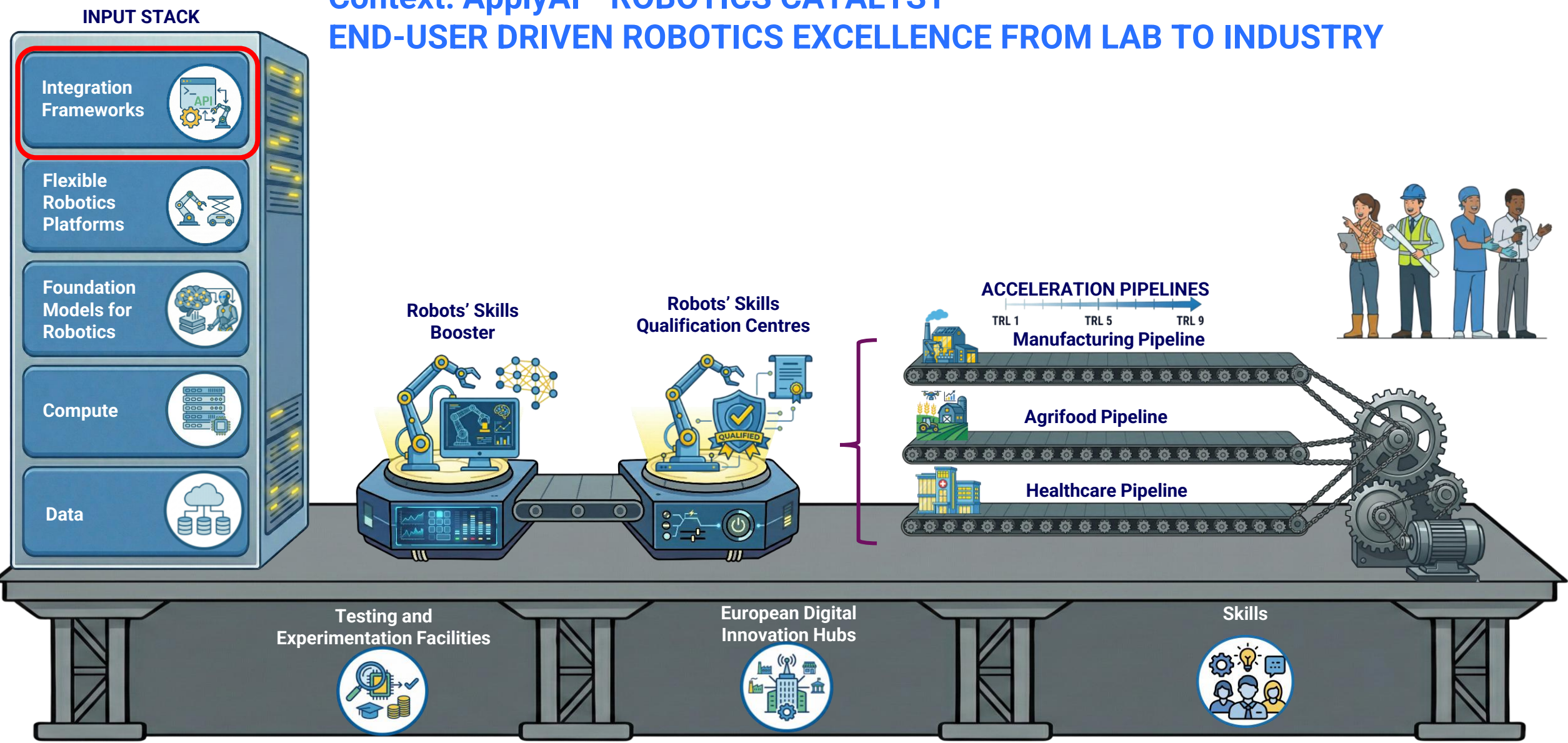
7. Other relevant information

- Eligibility – Art. 22.5: participation limited to Member States, Iceland, Norway, and selected associated countries (Canada, Israel, Republic of Korea, New Zealand, Switzerland, United Kingdom)
- Excludes entities established in eligible countries but controlled by non-eligible countries for strategic autonomy and security reasons (unless guarantees are positively assessed by the eligible country)
- High-risk suppliers (e.g. mobile network communication equipment providers) are excluded
- FSTP recipients must be established in eligible countries, with simplified OCA for FSTP recipients
- TRL range: activities expected to start at TRL 2 and achieve TRL 5 by the end of the project

***HORIZON-CL4-2027-04-DIGITAL-EMERGING-05:
Apply AI: AI-Driven Robotics for Industry: Enabling
System Integration and Adoption (IA)***



Context: ApplyAI - ROBOTICS CATALYST
END-USER DRIVEN ROBOTICS EXCELLENCE FROM LAB TO INDUSTRY



HORIZON-CL4-2027-04-DIGITAL-EMERGING-05: Apply AI: AI-Driven Robotics for Industry: Enabling System Integration and Adoption (IA)

- Indicative Budget: 18M€ // **1 Project**
- Type of Action: Innovation Action (IA) // TRL: From TRL 4 to TRL 7

1. Expected outcomes (all)

- Wider and faster deployment of robotics, bridging the gap between technology providers and end-users.
- Development and implementation of modular and interoperable integration frameworks and solutions, including standardized protocols for data, training and safety testing, evaluation and validation of robotic solutions in key use cases
- Improved competitiveness of European industries, notably SMEs via the development of advanced robotics systems, intelligent planning and control systems, user feedback rendering techniques and cutting-edge AI innovations

HORIZON-CL4-2027-04-DIGITAL-EMERGING-05: Apply AI: AI-Driven Robotics for Industry: Enabling System Integration and Adoption (IA)

2. Is there anything we do NOT want?

Integration projects **without real industrial pilots** or lacking strong involvement of end-users

- Solutions that are **not modular, interoperable, reusable, or scalable** across industrial contexts
- Approaches that fail to provide **clear pathways for safe deployment, certification, and regulatory compliance**
- Proposals ignoring **energy-efficient ('Green AI') methods**, carbon-aware strategies, or real-world operational constraints
- Projects that do **not contribute to the Apply AI Strategy** by supporting system integration, deployment pipelines, and industry uptake
- Proposals that do not deliver **practical integration outputs** (integration framework, integration kit, adoption guide, standards contributions)

HORIZON-CL4-2027-04-DIGITAL-EMERGING-05: Apply AI: AI-Driven Robotics for Industry: Enabling System Integration and Adoption (IA)

3. Key Areas of Research & Innovation

- Development of **modular, interoperable integration frameworks** for AI-driven robotics across diverse industrial environments
- **Faster and scalable system integration tools**, including AI design, training and inference methods ensuring robustness, transparency, and adaptability
- Use of **energy-efficient ('Green AI') models and hardware**, and carbon-aware deployment strategies
- High-fidelity **digital twins and simulation testbeds** for training, validation, verification, and smooth transfer to real deployment
- Creation of **integration kits, reusable datasets and benchmark tasks** supporting industry adoption and ecosystem uptake
- Contributions to **open standards, certification pathways, and regulatory compliance** to enable safe and trusted industrial deployment

HORIZON-CL4-2027-04-DIGITAL-EMERGING-05: Apply AI: AI-Driven Robotics for Industry: Enabling System Integration and Adoption (IA)

4. Topic evolution

- Contributes to the **Apply AI Strategy** by accelerating deployment pipelines for AI-powered robotics and strengthening continuity from research to industrial uptake
- Addresses the European gap in robotics **system integration capabilities**, with a focus on **interoperability and adoption by industry**, especially SMEs
- Reinforces European efforts on **modular integration frameworks, reusable building blocks**, and standardised interfaces for robotics deployment
- Expands the focus from robotics technology development toward large-scale industrial integration, validation, certification, and operational deployment
- Promotes the **reuse of shared European robotics assets and resources**, including AI-on-Demand Platform tools such as EuroCORE

HORIZON-CL4-2027-04-DIGITAL-EMERGING-05: Apply AI: AI-Driven Robotics for Industry: Enabling System Integration and Adoption (IA)

5. Cross links

- ADRA Partnership (AI, data & robotics)
- Apply AI Strategy – acceleration pipelines for AI-powered robotics deployment
- AI-on-Demand Platform and shared robotics assets (e.g. EuroCORE repository)
- Testing & Experimentation Facilities (TEFs) for robotics and industrial AI validation
- European Digital Innovation Hubs (EDIHs) supporting deployment and uptake by industry and SMEs
- Relevant standardisation and certification initiatives for interoperable and trustworthy AI-enabled robotics systems

HORIZON-CL4-2027-04-DIGITAL-EMERGING-05: Apply AI: AI-Driven Robotics for Industry: Enabling System Integration and Adoption (IA)

6. Which types of stakeholders are mainly addressed?

- **Industrial end-users** (manufacturing, logistics, service robotics) providing real-world environments to validate performance and applicability
- **Robotics developers, SMEs, startups, and research organisations** with expertise in robot design, advanced materials, actuation systems, sensing, mobility and autonomy
- **Partners specialised in human-robot interaction (HRI)**, safety, and control architectures for flexible and reliable operation
- Organisations capable of **integrating robotics into industrial and service workflows**, supporting real deployment and adoption
- Teams working on **secure, efficient communication protocols** and interoperability with digital frameworks or multi-agent systems
- Stakeholders supporting **scalability, commercialisation, safety-product approaches**, and end-user uptake

HORIZON-CL4-2027-04-DIGITAL-EMERGING-05: Apply AI: AI-Driven Robotics for Industry: Enabling System Integration and Adoption (IA)

7. Other relevant information

- Eligibility restricted to Member States, Iceland, Norway, and selected associated countries (Canada, Israel, Republic of Korea, New Zealand, Switzerland, United Kingdom)
- Entities controlled by non-eligible countries may participate only under positively assessed guarantees protecting EU strategic interests and autonomy

THE EU RESEARCH AND INNOVATION PROGRAMME (2021-27)

HORIZON-CL4-2027-04-DIGITAL-EMERGING-06: Achieving open strategic autonomy in digital and emerging enabling technologies (2026-27)



HORIZON-CL4-2027-04-DIGITAL-EMERGING-06: International cooperation in AI (IA)

1. Expected outcomes

- Faster uptake of AI at **innovation hubs**.
- Easier large-scale deployment of **local AI solutions**.
- Strengthened local innovation ecosystems that foster **sustainable socio-economic impact**.

2. Is there anything we do NOT want?

- local innovation hubs in **high-income countries** without capability to support **north-south digital cooperation on AI in Africa**.

HORIZON-CL4-2027-04-DIGITAL-EMERGING-06: International cooperation in AI (IA)

3. Topic evolution

- **EU Business Tech Offer** as EU and Africa strengthen cooperation on Artificial Intelligence (21 May 2026)

... and links to other topics

- Digital for Development (D4D) Hub
- Global Gateway
- Smart Africa

HORIZON-CL4-2027-04-DIGITAL-EMERGING-06: International cooperation in AI (IA)

4. Which existing projects are relevant?

- **GenAI for Africa** HORIZON-CL4-2025-04-HUMAN-08
 - 101299050 BRIDGE-AI
 - 101298559 GAINAfrica
 - 101298721 IRIS Africa



Discover more on our website
<https://link.europa.eu/pGfbWH>

HORIZON-CL4-2027-04-DIGITAL-EMERGING-06: International cooperation in AI (IA)

5. Which types of stakeholders are mainly addressed?

- local innovation hubs in Africa

HORIZON-CL4-2027-04-DIGITAL-EMERGING-06: International cooperation in AI (IA)

6. Are there additional background documents or other relevant information?

- **AI for Public Good**
- International Digital Strategy for the EU
- AI Continent Action Plan



Discover more on our website
<https://link.europa.eu/MXHVDk>

HORIZON-CL4-2027-04-DIGITAL-EMERGING-06: International cooperation in AI (IA)

7. What are relevant upcoming events?

- Apply AI Summit on 17 November 2026
- Global Gateway Forum on 8–9 June 2027

HORIZON-CL4-2027-04-DIGITAL-EMERGING-06: International cooperation in AI (IA)

8. Are there any future trends / emerging initiatives that proposers should be aware of?

- compute infrastructure remains a bottleneck.
- adaptation to local languages, cultures, and socio-economic contexts, skills development and governance remain essential for AI implementation (N-ATLAS, GalsenAI, NCAIR).

9. Are there plans for follow-up funding?

- Pending discussions on the new MFF and ECF

THE EU RESEARCH AND INNOVATION PROGRAMME (2021-27)

HORIZON-CL4-2027-04-DIGITAL-EMERGING-10 ***Achieving open strategic autonomy in digital and emerging enabling technologies*** ***“Other emerging technologies”***



HORIZON-CL4-2027-04-DIGITAL-EMERGING-10 “Horizon scanning and foresight in future enabling digital technologies” (CSA)

1. Expected outcomes

- European leadership in foresight activities on future enabling technologies and their transformational potential in industrial, societal and environmental terms
- Increased collaboration between academia, industry players and other relevant stakeholders in iterative and multidisciplinary approaches for co-creating the enabling technologies of the future.
- Alignment with national or regional initiatives creating an expanding innovation ecosystem, anchored in local contexts across Europe, for selected emerging technologies.
- Accelerating the pick-up of novel advanced technology by industry and society.

2. Is there anything we do NOT want?

- R&D activities

HORIZON-CL4-2027-04-DIGITAL-EMERGING-10 “Horizon scanning and foresight in future enabling digital technologies” (CSA)

3. Topic evolution

- Not an evolution, but rather the continuation of HORIZON-CL4-2021-DIGITAL-EMERGING-01-13: Academia-Industry Forum on Emerging Enabling Technologies (CSA).

... and links to other topics

- None

HORIZON-CL4-2027-04-DIGITAL-EMERGING-10 “Horizon scanning and foresight in future enabling digital technologies” (CSA)

4. Which existing projects are relevant?

- FORGING <https://forging-hub.eu/>: selected through the call HORIZON-CL4-2021-DIGITAL-EMERGING-01-13; closed in September 2025.

HORIZON-CL4-2027-04-DIGITAL-EMERGING-10 “Horizon scanning and foresight in future enabling digital technologies” (CSA)

5. Which types of stakeholders are mainly addressed?

- *“Proposals should involve and be driven by representatives of the relevant actors (e.g. academia, RTOs, industry including SMEs)”*

HORIZON-CL4-2027-04-DIGITAL-EMERGING-10 “Horizon scanning and foresight in future enabling digital technologies” (CSA)

6. Are there additional background documents or other relevant information?

- “*Proposals should connect with analogous EC-internal activities, either ongoing () or foreseen...*”
- JRC [Technology Foresight | Knowledge4Policy \(K4P\)](#)

HORIZON-CL4-2027-04-DIGITAL-EMERGING-10 “Horizon scanning and foresight in future enabling digital technologies” (CSA)

7. What are relevant upcoming events?

- There is no relevant upcoming events.

HORIZON-CL4-2027-04-DIGITAL-EMERGING-10 “Horizon scanning and foresight in future enabling digital technologies” (CSA)

8. Are there any future trends / emerging initiatives that proposers should be aware of?

- the next MFF proposal is a relevant contextual element.

9. Are there plans for follow-up funding?

- No plans (yet?).

***HORIZON-CL4-2027-04-DIGITAL-EMERGING-11:
EU Frontier AI Initiative: Developing frontier AI
solutions that are safe and computationally
efficient within Apply AI (RIA)***





2027-04-DIGITAL-EMERGING-11

EU Frontier AI Initiative: Developing frontier AI solutions that are safe and computationally efficient within Apply AI (RIA)

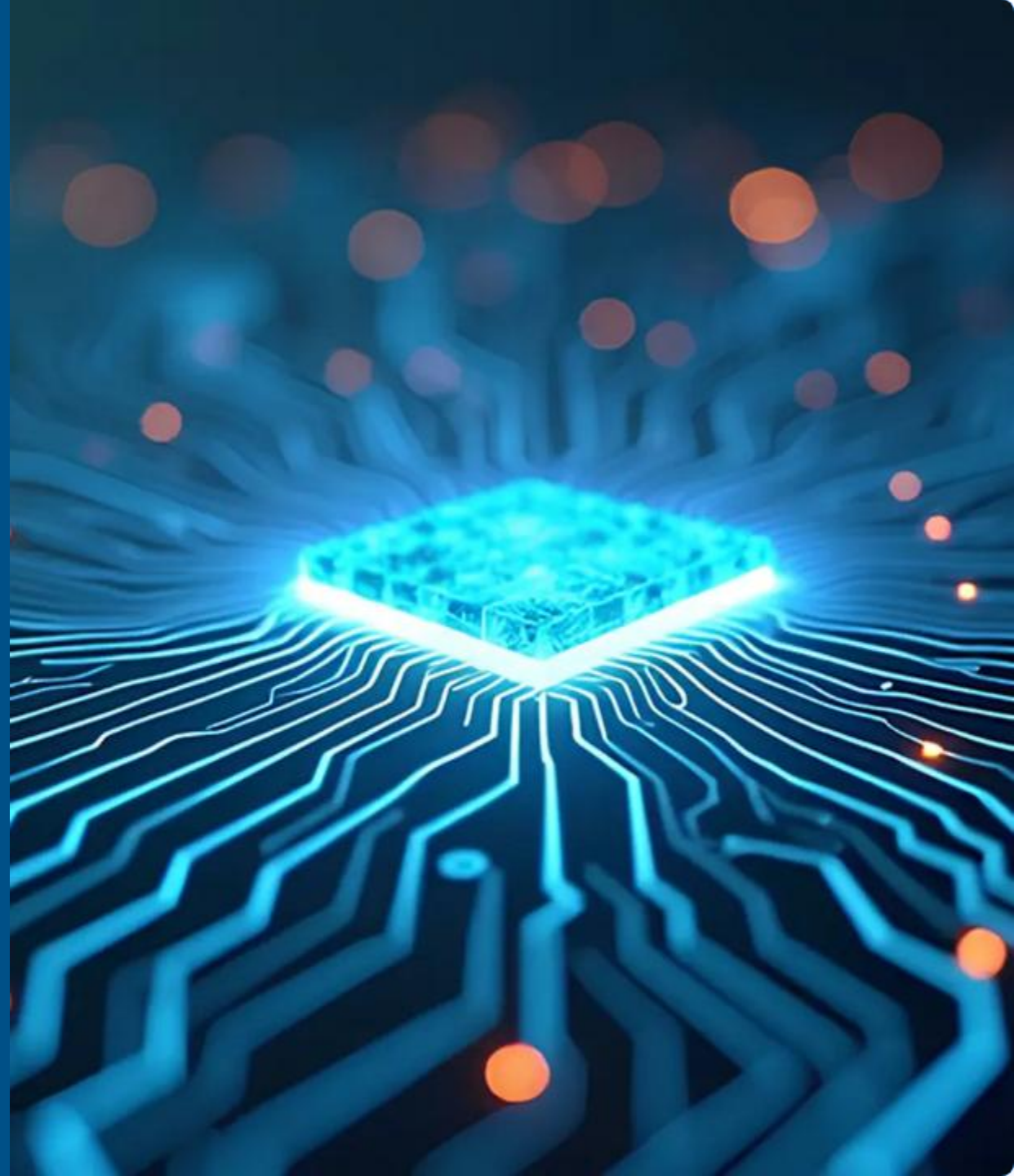
- Indicative budget – **44 Million** EUR
- Expected EU contribution per project – **44 Million** EUR
- Type of Action – Research and Innovation
- TRL –Start from TRL 2 achieving TRL 4
- Eligibility conditions: **Article 22.5**
 - Member States together with Iceland and Norway. Additional associated countries, Canada, Israel, Republic of Korea, New Zealand, Switzerland, and the United Kingdom
 - Direct or indirect control restrictions

Towards European Frontier AI

Frontier AI : Current advances in AI are paving the way for more powerful capabilities. These "Frontier AI" models are becoming strategic assets in the global technology stack.

Strategic Priority: For the EU, developing highly capable models is essential to reinforce sovereignty and competitiveness.

EU Assets: Building on world-class computing infrastructure, scientific talent, and a commitment to open source and safety.



The Frontier AI Initiative



Collaborate

Bring together Europe's leading industrial and academic actors.



Innovate

Unlock advanced capabilities and new use cases for frontier AI models.



Compete

Launch EU-wide competitions for open frontier AI models.



Foundation Models Development

HORIZON EUROPE

- **Advancing Large AI Models:** Integration of New Data Modalities & Expansion of Capabilities
Total budget €50 million



DIGITAL EUROPE

- Making available a **high performing open-source European foundation model**
Total budget €38 million



EIC ACCELERATOR

- **Two challenges supporting AI startups developing Foundation Models.**
€100 million

2027-04-DIGITAL-EMERGING-11

Expected Outcomes. All of:

- Strengthened European capabilities in the development of frontier AI models.
- Improved computational efficiency of frontier AI models, resulting in reduced computational costs.
- Enhanced safety of advanced AI systems based on frontier AI models through the development and implementation of safe-by-design principles and/or AI agents acting as safety evaluators.

2027-04-DIGITAL-EMERGING-11

Scope

- **Frontier Model Development:** The primary objective is to train state-of-the-art models optimized for agentic capabilities, focusing on reasoning, autonomous problem-solving, and sophisticated tool use.

2027-04-DIGITAL-EMERGING-11

Scope

- **Computational Efficiency:** To mitigate environmental impacts and lower barriers to entry, the research prioritises innovations that significantly reduce resource demands during pre-training and inference.
- **Advanced AI Safety:** Addressing sophisticated misbehaviour while enhancing robustness against adversarial attacks and jailbreaks.



2027-04-DIGITAL-EMERGING-11

Some Considerations

- The project selected in this topic should link to the resources offered by the AI Factories and the Data Labs.
- A reasonable amount of funds could be devoted to the acquisition of compute resources.
- Where relevant, links could be established to European companies developing frontier AI.



2027-04-DIGITAL-EMERGING-11

Some Considerations

- The project should establish strong links with the Resource for AI Science in Europe (RAISE), ensuring that its priorities inform the research topics addressed.
- Proposals are expected to allocate tasks for cohesion activities with ADRA and the CSA HORIZON-CL4-2025-03-HUMAN-18: GenAI4EU central Hub.



2027-04-DIGITAL-EMERGING-11

Key actors

- Advanced AI labs and High-performance Computing Centres already engaged in the development of frontier AI

THE EU RESEARCH AND INNOVATION PROGRAMME (2021-27)

Destination 6: Digital and industrial technologies driving human-centric innovation



THE EU RESEARCH AND INNOVATION PROGRAMME (2021-27)

HORIZON-CL4-2027-04-HUMAN-01

***Advanced and Innovative hardware components for
Virtual Worlds (RIA) (Virtual Worlds Partnership)***



HORIZON-CL4-2027-04-HUMAN-01: “Advanced and Innovative hardware components for Virtual Worlds (Virtual Worlds Partnership) (RIA)”

1. Expected outcomes

Innovative and advanced XR hardware, advanced headsets, screens, wearables and haptic components, sensors and actuators, advanced chips for a deeper and closer-to reality immersion, stimulating all human senses.

Next generation of engaging and lifelike immersion:

- Stimulation of **all** senses (sight, hearing, feel, touch, smell), for a fully immersive close-to-reality experience.
- Users will be **submerged** with realistic sensations making the experience as immersive as possible
- Novel scientific approaches or push the limit of existing ones to improve the synchronization and **integration of the different modalities**.
- Integration of various components in fully tested devices, demonstrating the usefulness and efficiency of their system in illustrative scenarios in the industrial and societal contexts.
- Focus on performant, reliable, miniaturised, interoperable advanced and innovative technologies, with inclusivity, energy consumption and energy efficiency at the centre of concerns.

HORIZON-CL4-2027-04-HUMAN-01: “Advanced and Innovative hardware components for Virtual Worlds (Virtual Worlds Partnership)” (RIA)

2. Is there anything we do NOT want?

- a) State-of-the-art applications
- b) Non suitable, unethical or unsafe solutions
- c) Non reliable, Non robust and Non interoperable solutions
- d) Proposals not contributing to ongoing standardisation work
- e) Research non-grounded into real world scenarios
- f) Non-transdisciplinary research
- g) Research that does not involve end-users

HORIZON-CL4-2027-04-HUMAN-01: “Advanced and Innovative hardware components for Virtual Worlds (Virtual Worlds Partnership)” (RIA)

3. Topic evolution

- **2022 - eXtended Reality Technologies (RIA)**
- **2023 - Next Generation eXtended Reality**
- **2025 - Core technologies for virtual worlds (RIA)**

HORIZON-CL4-2027-04-HUMAN-01: “Advanced and Innovative hardware components for Virtual Worlds (Virtual Worlds Partnership)” (RIA)

4. Which existing projects are relevant?

Former or on-
going Projects



<https://europa.eu/!7kJMmJ>

VIVE - Vehicle Interior Virtual Environment

IRIS-XR - Immersive realism through integrated sensing and optics for extended reality

XR-SENSE - Next-Generation Visuohaptic Media Representation, Coding and Interactive Rendering for Immersive and Inclusive XR

REALM - Research on Extended And Layered Multimodalities

VICTOR-XR - Virtual-physical Integration and Consistency through multi-modal, Open, Real-time XR

SENSORAMA - high-fidelity, adaptive, and ethically trustworthy XR training systems.

SLDAR - Speckle-free Photonics Integrated Circuit based Light Engine Using Superluminescent Diodes for Next-generation Augmented Reality Glasses

WeHear - Visual Hearing for Context-Aware Cognitive Audio Technology

New

HORIZON-CL4-2027-04-HUMAN-01: “Advanced and Innovative hardware components for Virtual Worlds (Virtual Worlds Partnership)” (RIA)

5. Which types of stakeholders are mainly addressed?

- a) Research institutions and universities*
- b) SMEs and start-ups*
- c) Targeted industries*
- d) End-users*
- e) XR Community in general*

HORIZON-CL4-2027-04-HUMAN-01: “Advanced and Innovative hardware components for Virtual Worlds (Virtual Worlds Partnership)” (RIA)

6. Are there additional background documents or other relevant information?

- <https://www.virtualworldsassociation.eu/actions/new-platform-for-the-strategic-research-and-innovation-agenda>

HORIZON-CL4-2027-04-HUMAN-01: “Advanced and Innovative hardware components for Virtual Worlds (Virtual Worlds Partnership)” (RIA)

7. What are relevant upcoming events?

- None

HORIZON-CL4-2027-04-HUMAN-01: “Advanced and Innovative hardware components for Virtual Worlds (Virtual Worlds Partnership)” (RIA)

8. Are there any future trends / emerging initiatives that proposers should be aware of?

- [Virtual Worlds partnership](#)
- <https://www.virtualworldsassociation.eu/actions/position-paper-xr-chips-components-pilot-line-for-europe>

9. Are there plans for follow-up funding?

- Discussion on the new MFF are currently on-going

THE EU RESEARCH AND INNOVATION PROGRAMME (2021-27)

HORIZON-CL4-2027-04-HUMAN-02

***Create a thriving and competitive Virtual Worlds and
Web 4.0 ecosystem (CSA) (Virtual Worlds Partnership)***



HORIZON-CL4-2027-04-HUMAN-02: Create a thriving and competitive Virtual Worlds and Web 4.0 ecosystem (CSA) (Virtual Worlds Partnership)

1. Expected outcomes

- Strategic Research and Innovation Agenda (SRIA) for Virtual Worlds in Europe, for useful, open, interoperable, inclusive, sustainable and trustworthy virtual worlds systems and applications, ensuring these reflect EU values and principles.
- Strong European Virtual Worlds Partnership
- Strong and competitive ecosystem
- Reinforced links among initiatives in virtual worlds
- Widespread awareness and outreach programmes.
- Increased adoption of virtual worlds
- Standardisation methods for virtual worlds technologies and in support of the EU regulatory framework.

Indicative budget: EUR 3 million

HORIZON-CL4-2027-04-HUMAN-02: Create a thriving and competitive Virtual Worlds and Web 4.0 ecosystem (CSA) (Virtual Worlds Partnership)

2. Is there anything we do NOT want?

- R&I on Virtual Worlds technologies
- Proposals with disproportionate focus on the technology side
- Unclear vision of the connections between the various stakeholders and building blocks
- Lack of ties and synergies with relevant activities and initiatives
- Too loose link with Virtual Worlds Partnership

HORIZON-CL4-2027-04-HUMAN-02: Create a thriving and competitive Virtual Worlds and Web 4.0 ecosystem (CSA) (Virtual Worlds Partnership)

3. Topic evolution

This topic builds on:

- HORIZON-CL4-2025-03-HUMAN-17: Specific support for the Virtual Worlds Partnership and the Web 4.0 initiative
- HORIZON-CL4-2023-HUMAN-01-23: Supporting the emergence of an open human-centric Metaverse (CSA)
- HORIZON-CL4-2021-HUMAN-01-28 : eXtended Reality Ethics, Interoperability and Impact (CSA)
- European Partnerships in Horizon Europe

HORIZON-CL4-2027-04-HUMAN-02: Create a thriving and competitive Virtual Worlds and Web 4.0 ecosystem (CSA) (Virtual Worlds Partnership)

4. Which existing projects are relevant?



HORIZON-CL4-2027-04-HUMAN-02: Create a thriving and competitive Virtual Worlds and Web 4.0 ecosystem (CSA) (Virtual Worlds Partnership)

5. Which types of stakeholders are mainly addressed?

- *Research institutions and universities*
- *SMEs and start-ups*
- *Targeted industries*
- *End-users*
- *XR Community in general*

**Links with Virtual
Worlds Partnership**

HORIZON-CL4-2027-04-HUMAN-02: Create a thriving and competitive Virtual Worlds and Web 4.0 ecosystem (CSA) (Virtual Worlds Partnership)

6. Are there additional background documents or other relevant information?

- <https://digital-strategy.ec.europa.eu/en/news/european-commission-launches-european-partnership-virtual-worlds>
- <https://www.virtualworldsassociation.eu/about-the-virtual-worlds-partnership>

HORIZON-CL4-2027-04-HUMAN-02: Create a thriving and competitive Virtual Worlds and Web 4.0 ecosystem (CSA) (Virtual Worlds Partnership)

7. What are relevant upcoming events?

- HEurope INFO DAYS
14/10/2026



Horizon Europe info days—Cluster 4: Digital, Industry and Space

HORIZON-CL4-2027-04-HUMAN-02: Create a thriving and competitive Virtual Worlds and Web 4.0 ecosystem (CSA) (Virtual Worlds Partnership)

8. Are there any future trends / emerging initiatives that proposers should be aware of?

- Virtual Worlds partnership

9. Are there plans for follow-up funding?

- Discussion on the new MFF are currently on-going

THE EU RESEARCH AND INNOVATION PROGRAMME (2021-27)

HORIZON-CL4-2027-04-HUMAN-07: Facilitate the engagement of European stakeholders in international digital standardisation (CSA)



HORIZON-CL4-2027-04-HUMAN-07: “Facilitate the engagement of European stakeholders in international digital standardisation” (CSA)

1. Expected outcomes

- Increasing the **participation and influence** of European experts in digital standardisation
- **Improvement of the skills** of European experts (notably SMEs, R&I, academia, open-source and societal stakeholders)
- Develop **standardisation landscapes** and gap analyses of key digital technologies
- **Foresight analysis** regarding standardisation in new emerging technologies
- More **awareness** of the benefits and competitive advantages of standardisation

2. Is there anything we do NOT want?

- That the project consortium contributes directly to standardisation activities
- To allocate most of the funding to standardisation activities at European level only
- Financial support to third parties going to non-European experts

HORIZON-CL4-2027-04-HUMAN-07: “Facilitate the engagement of European stakeholders in international digital standardisation” (CSA)

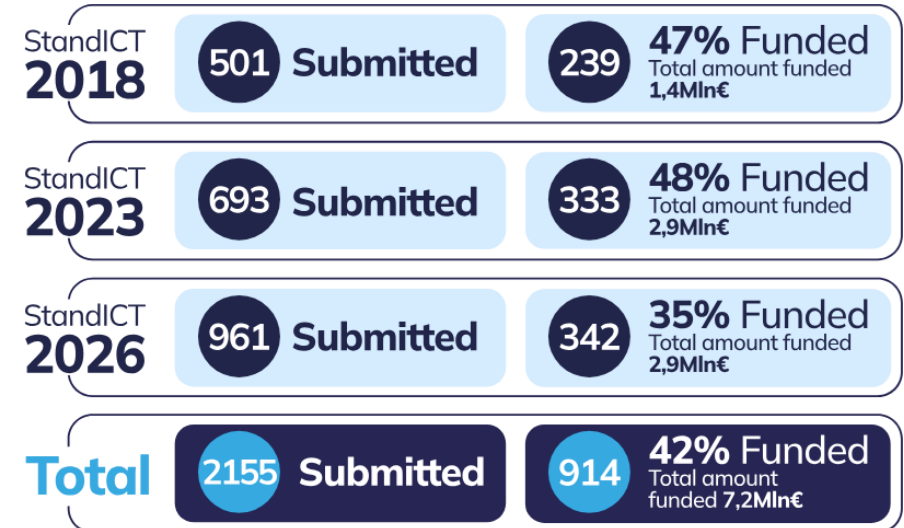
3. Topic evolution

- Continuation of actions **ICT-40-2017** (StandICT.eu), **ICT-45-2020** (StandICT.eu2023), **HORIZON-CL4-2022-RESILIENCE-01-21** (StandICT.eu 2026) and **HORIZON-CL4-2024-HUMAN-03-04** (StandICT.eu 2029).
- See website of StandICT.eu initiative: [| StandICT.eu](https://standict.eu)

... and links to other topics

any RIA that may contribute to standardisation activities

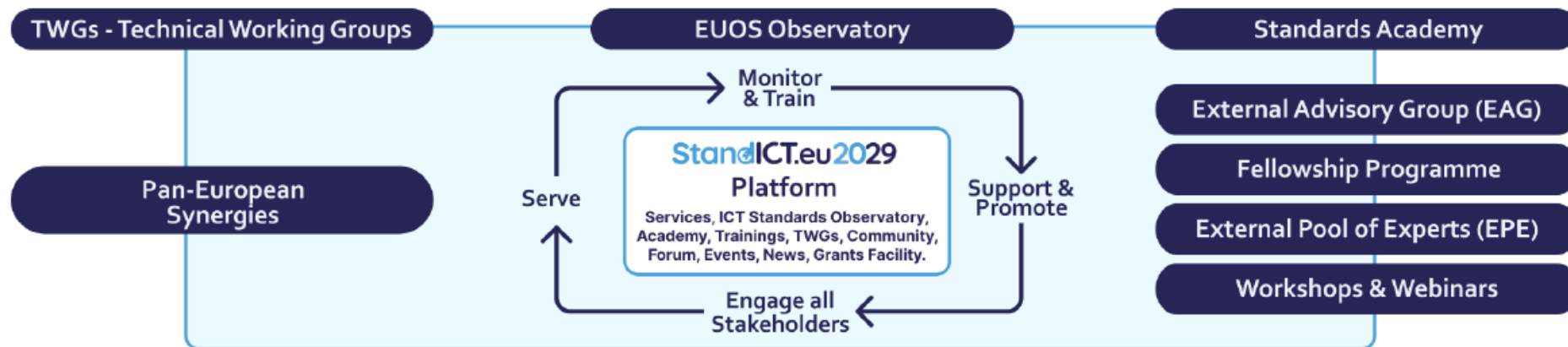
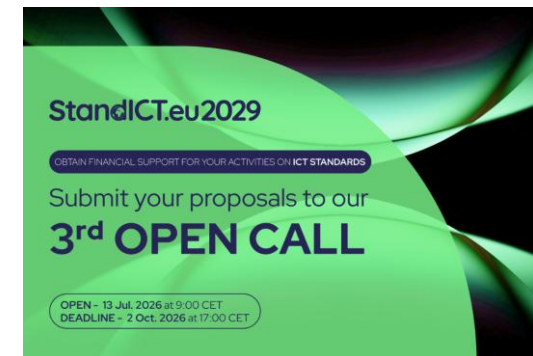
Other CSAs with a standardisation component in specific digital areas, such as Quantum (HORIZON-CL4-2026-04-DIGITAL-EMERGING-12) Cybersecurity (DIGITAL-ECCC-2023-DEPLOY-CYBER-04-STANDARDISATION) or Virtual Worlds (HORIZON-CL4-2027-04-HUMAN-02)



HORIZON-CL4-2027-04-HUMAN-07: “Facilitate the engagement of European stakeholders in international digital standardisation” (CSA)

4. Which existing projects are relevant?

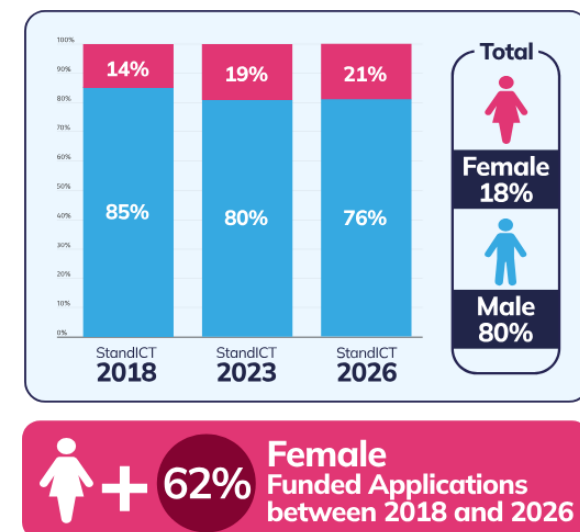
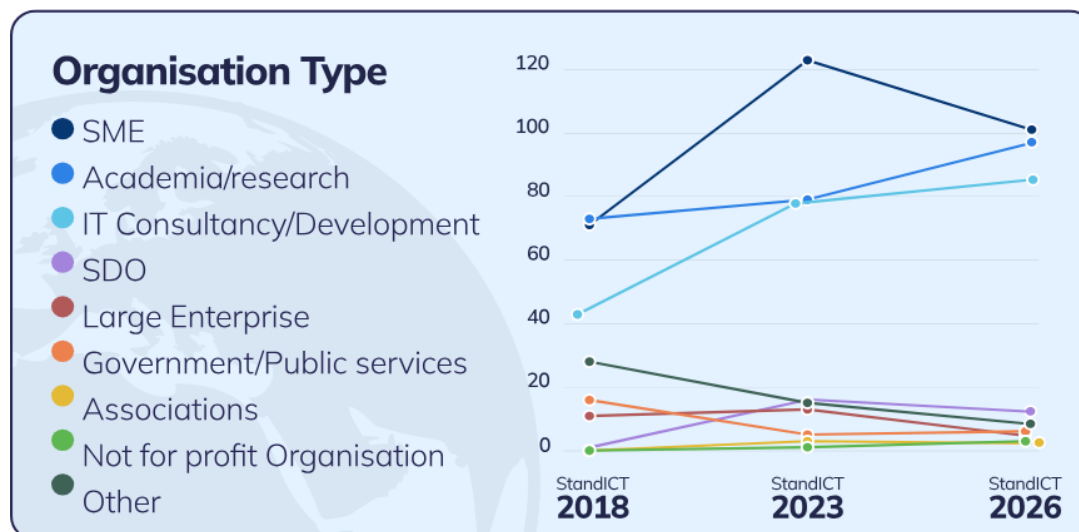
- [StandICT.eu 2029](#)



HORIZON-CL4-2027-04-HUMAN-07: “Facilitate the engagement of European stakeholders in international digital standardisation” (CSA)

5. Which types of stakeholders are mainly addressed?

- European standardisation experts, notably from SMEs and academia/research
- European and international SDOs, and other fora/consortia active in the field of ICT standardisation (e.g. CEN, CENELEC, ETSI, ISO, IEC, ITU, IETF, W3C, IEEE...)



HORIZON-CL4-2027-04-HUMAN-07: “Facilitate the engagement of European stakeholders in international digital standardisation” (CSA)

6. Are there additional background documents or other relevant information?

- [Rolling Plan for ICT standardisation 2026](#)
- [Annual Union Work Programme on European Standardisation 2026](#)
- [EU Standardisation Strategy](#)
- Standardisation Requests in support of Digital Legislation (AI Act, Cyber Resilience Act, Data Act)
- Targeted standard development organisations are part of the expert group “[European Multi-Stakeholder Platform on ICT standardisation](#)”

HORIZON-CL4-2027-04-HUMAN-07: “Facilitate the engagement of European stakeholders in international digital standardisation” (CSA)

7. What are relevant upcoming events?

- N/A

HORIZON-CL4-2027-04-HUMAN-07: “Facilitate the engagement of European stakeholders in international digital standardisation” (CSA)

8. Are there any future trends / emerging initiatives that proposers should be aware of?

- The consortium is seeking alternatives to be less dependent on EU funding, notably seeking support from Member States to establish a [European Digital Infrastructure Consortium](#) (EDIC). This follows the establishment of StandICT.eu as the go-to platform for European experts seeking financial support for ICT standardisation, and reflection about potential project self sustainability.

9. Are there plans for follow-up funding?

- If the project does not achieve the objective of establishing an EDIC, we foresee follow-up funding under the WP29 or WP30.