

# THE EU RESEARCH AND INNOVATION PROGRAMME (2021-27)

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## ***Destination 3***

### ***Objective "Data sharing and analytics capacity"***





## **HORIZON-CL4-2024-DATA-01-01 AI-driven data operations and compliance technologies (AI, data and robotics partnership) (IA)**

### 1. What are you looking for?

- Developing, piloting and integrating compliance tools and data economy enablers into compliant systems and solutions for creating value on data, especially in the AI context
- Addressing **compliance** in the broad sense (legal, ethical, environmental, fairness/trustworthiness)
- Addressing compliance in a **holistic** way – employing inherently compliant architectures and design principles (“compliance by design”)





## HORIZON-CL4-2024-DATA-01-01

### 2. What do you NOT want?

- Stand-alone or add-on compliance tools, not integrated in systems/solutions
- Low-maturity science-fiction (this a practical IA topic)
- Research-oriented proposals (this is an IA topic)
- Legal entities established in China are not eligible in **any capacity** (p. 178 of WP, p. 13 of General Annexes to WP)





## Topic evolution and links to other topics

Proposals should build on results of:

- H2020-ICT-13-2019-20 data platforms
  - HORIZON-CL4-2021-DATA-01-01 privacy-preserving technologies
  - HORIZON-CL4-2023-HUMAN-01-01 data for trustworthy AI
- ... and liaise with Digital Europe projects on:
- Common European Data Spaces
  - European Digital Innovation Hubs





# **HORIZON-CL4-2024-DATA-01-01**

## 4. Current (relevant) project portfolios

[ICT-13-2018-2019](#) - Supporting the emergence of data markets and the data economy

[HORIZON-CL4-2021-DATA-01-01](#) - Technologies and solutions for compliance, privacy preservation, green and responsible data operations



5. Who are the types of main stakeholders that are addressed?

6. Is there a key group of actors (eg. Partnership or other) driving this?



## Work Programme topic – Key actors

5. Who are the types of main stakeholders that are addressed?

WP quote: *The competences represented in the consortium should cover all the relevant aspects (technical, legal, commercial, societal, ethical) appropriately.*

6. Is there a key group of actors (eg. Partnership or other) driving this?

**AI, data and robotics partnership** ([Adra](#))

**Big Data Value Association** ([BDVA](#))





## Work Programme topic

7. Are there any additional / background documents?

[A European Strategy for Data \(COM/2020/66 final\)](#)





## Future Outlook

8. Do you have information about future trends, emerging initiatives, roadmaps, key players in this area?

*See point 6*







## Upcoming events / information days

9. Please list upcoming information days and other events of relevance to this area
- [Horizon Europe Cluster 4 Info Days](#) 12 Oct 2023
  - European Big Data Value Forum ([EBDVF](#)) 25-27 Oct 2023
  - AI, Data and Robotics Forum ([ADRF](#)) 8-9 Nov 2023



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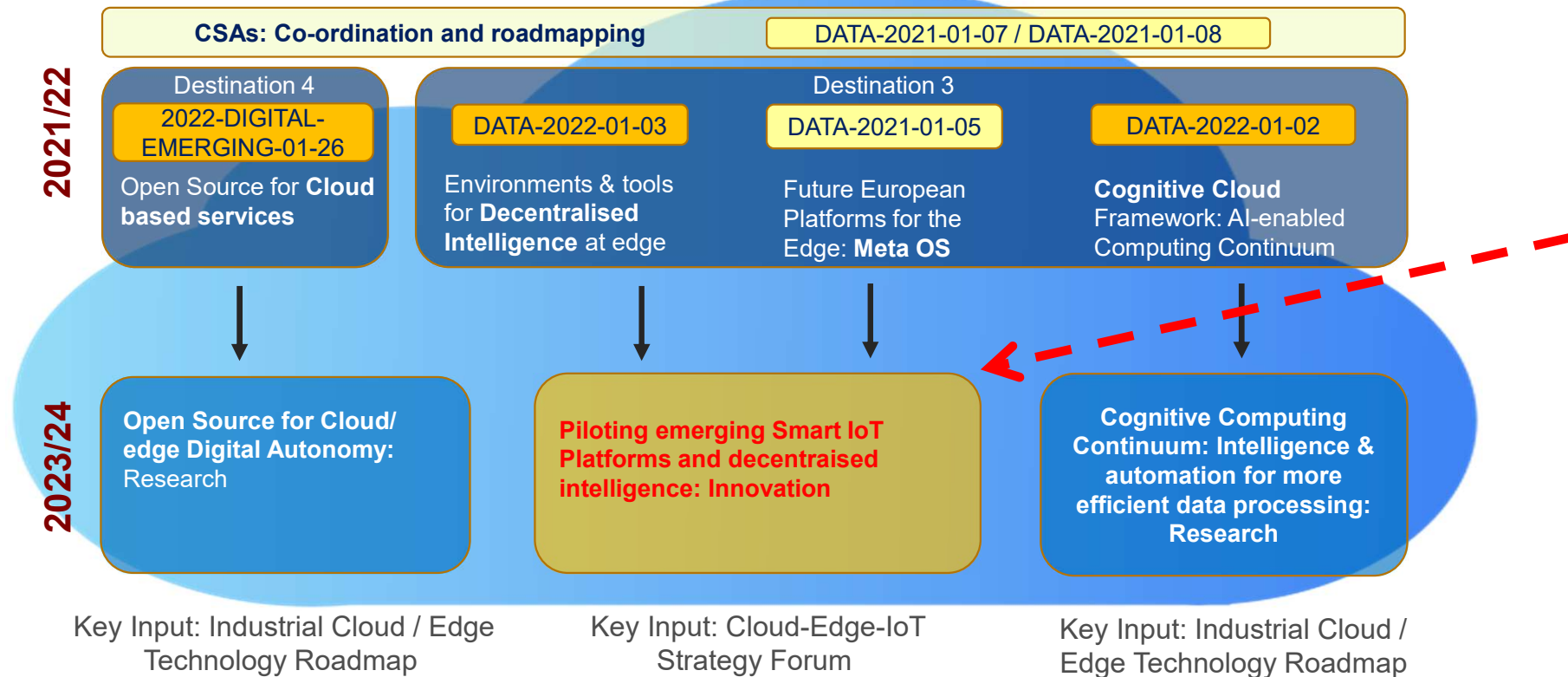
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## ***Destination 3***

### ***Objective "From Cloud to Edge to IoT for European Data"***



# Cloud - Edge – IoT: A strategic initiative over 4 years +



# HE CL4 - Dest. 3, Section: From Cloud to Edge to IoT for European Data

## Pilot Actions - IA: -- 45 Mill €

- **Piloting emerging Smart IoT Platforms and decentralized intelligence**

## RIA – 28 Mill €:

- *Cognitive Computing Continuum: Intelligence and automation for more efficient data processing*

## CSA (2 Mill €):

- **Horizontal Activities – 2 Mill €**  
of the 'the 'Cloud-Edge-IoT' platform building  
→ standards, governance, security, SME/start-ups
- *Coordination and Support of Cognitive Computing Continuum research and policy – 2 Mill €*
- *Collaboration with NSF – 1 Mill € on fundamental research on new concepts for distributed computing and swarm intelligence*

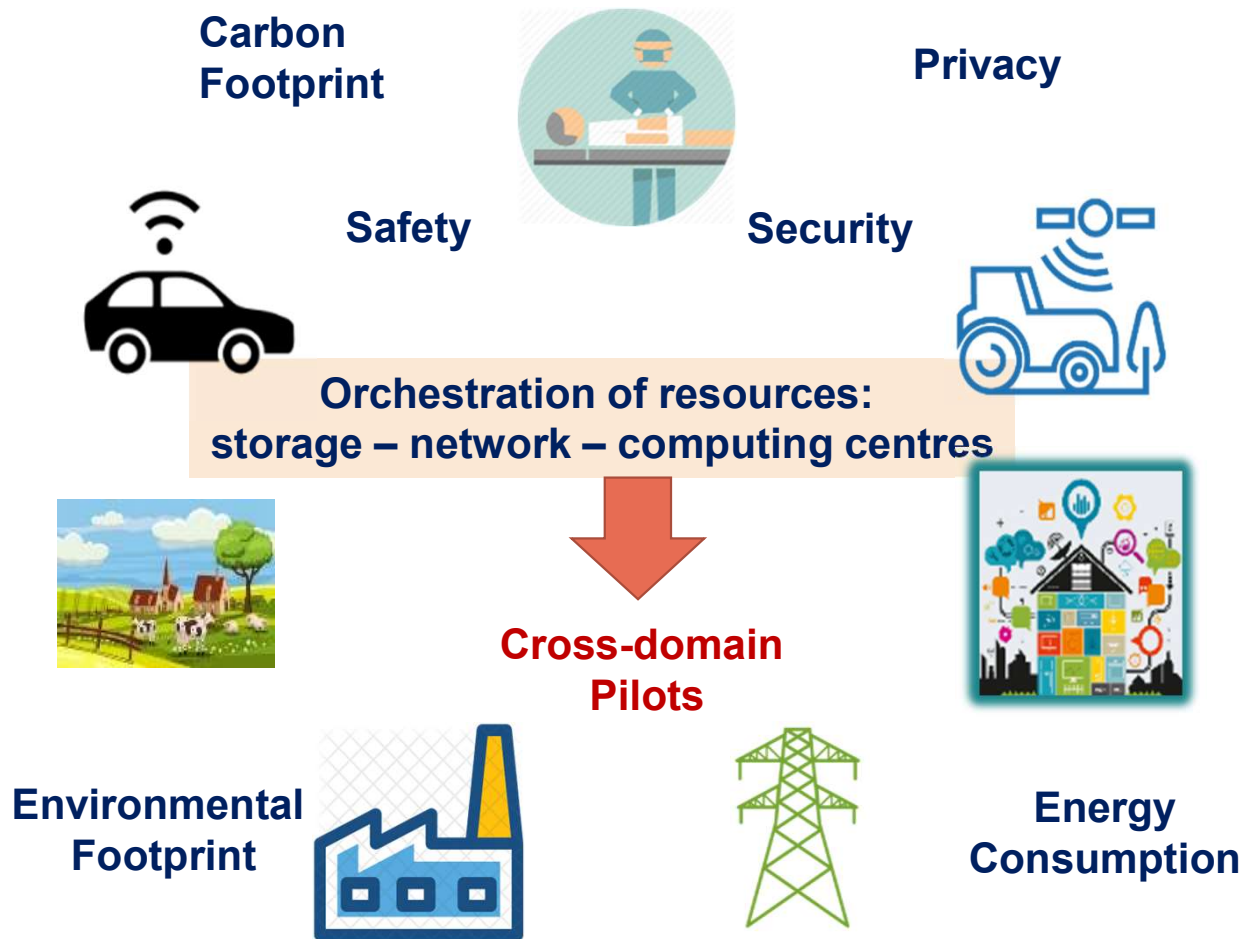
2024 Calls Open

# Pilots for the Edge

- **Challenges of System Integration**
- Embedded Systems & Control
- Internet of Things – Connected Objects
- Cloud – Digital Twins - Orchestration
- **A Platform Economy @theEdge**
  - **taking a system-level approach**
    - \* from hardware of smart devices
    - \* to operating systems at device and at system level,
    - \* to middleware and to application software
  - *Functions/Apps over the Air up-dates*
  - *Avoid Vendor Lock-in - Open, vibrant ecosystem*



# Industrial IoT Use cases underpinning the trend towards the edge



Closing:  
March 2024

Strategy:  
**A Platform Approach to share hardware and foster an Open Ecosystem**

# HORIZON-CL4-2024-DATA-01-03: Piloting emerging Smart IoT Platforms and decentralized intelligence

➤ Type of Action: Innovation Action (IA)

**Opening: 15 November 2023**

**Deadline: 19 March 2024**

**Budget: EUR 45 million**

**EU contribution per project: EUR 20 – 25 million**

- Scope: up-take and up-scaling of emerging EU-driven smart industrial internet of things and edge computing systems to perform under real life conditions.  
→ *mature particular technologies like meta-operating systems for the IoT and the Edge, cognitive cloud technologies and tools for decentralized intelligence and swarm computing*

**Adoption across key applications and sectors:**

*\* pilots should validate cross-domain interfaces and common standards and foster cross-sector industrial agreements and address cross-sector platforms in more than one application domain, such as renewable energy, buildings and electro-mobility, farming and/or industrial automation, including strategic aspects such as condition-monitoring/predictive maintenance and logistics, or other relevant application domains*

[https://ec.europa.eu/info/research-and-innovation/funding/funding-opportunities/funding-programmes-and-open-calls/horizon-europe/cluster-4-digital-industry-and-space\\_en](https://ec.europa.eu/info/research-and-innovation/funding/funding-opportunities/funding-programmes-and-open-calls/horizon-europe/cluster-4-digital-industry-and-space_en)

# HORIZON-CL4-2024-DATA-01-03: Piloting emerging Smart IoT Platforms and decentralized intelligence

- **Type of Action:** Innovation Action (IA)

|                                  |   |
|----------------------------------|---|
| <b>Opening: 15 November 2023</b> | <b>Opening: 15 November 2023</b>                        |
| <b>Budget: EUR 45 million</b>    | <b>EU contribution per project: EUR 20 – 25 million</b> |

- **Expected Outcome:** Proposals are expected to contribute to (all) of the following expected outcomes:
  - \* *Implementations of **edge paradigms in real environments** .. + next generation edge computing technologies for adoption in key applications and sectors*
  - \* **Strategic industrial cooperation in data processing** by building open platforms, agreement on common architectures and standards
  - \* Open platforms underpinning an emerging **open edge ecosystem including midcaps, SMEs** and start-ups that foster edge solutions
  - \* Demonstrating **cross-domain standardisation and up-scaling of edge infrastructure** solutions
- **Cascading Grants:** The maximum amount to be granted to each third party is EUR 200.000 in order to allow third parties to support industry, in particular SMEs, in take-up and validation of emerging edge platform interfaces, in particular
  - \* **Market Perspective:** Emergence of an open edge **ecosystem including midcaps, SMEs and start-ups** including business models to foster edge solutions, which represent a modular functional spectrum of executable apps and services.

[https://ec.europa.eu/info/research-and-innovation/funding/funding-opportunities/funding-programmes-and-open-calls/horizon-europe/cluster-4-digital-industry-and-space\\_en](https://ec.europa.eu/info/research-and-innovation/funding/funding-opportunities/funding-programmes-and-open-calls/horizon-europe/cluster-4-digital-industry-and-space_en)



# HORIZON-CL4-2021-DATA-01-03

## What do we NOT want?

- Pure technology push → need to consider validation in selected application context
- Low profile projects → looking for strategic projects to pave the way for a European Strategic Agenda
- Proprietary technology development → need to consider open interfaces and standards, where applicable build on open source projects
- Narrowly focused scope  
→ need to connect different dots IoT, ADRA, cloud, ARTEMIS, KDT , SNS..
- Static work plan execution  
→ build an open ecosystem and make strategic use of Cascading funds
- Simplistic dissemination activities: non-targeted, academic communication

# HORIZON-CL4-2024-DATA-01-03

## Are these new topics?

- build on the results of projects selected under topic HE-CL4-2021-DATA-01-05 (MetaOS), HE-CL4-2022-DATA-01-02 (Cognitive Cloud), HE-CL4-2022-DATA-01-03 (Swarms), HECL4-2023-DATA-01-04 (computing continuum) as well as the projects to be selected under topic HE-CL4-2024-DIGITAL-EMERGING-01-21.
- **Building on Cloud-Edge-IOT Cluster under HE-CL4-Destin.3**  
→ coordinated by the CSAs OpenContinuum + UnlockCEI
- **Direct follow-up of the European Data Strategy**  
→ complementing legislative proposals , e.g. DGA, Data Act  
→ create links to Data Space projects //TEFs under DIGITAL EUROPE  
→ bridge to related SRIAs in Chips JU, INSIDE, SNS JU, Alliance AIOTI, Cloud Alliance
- **Coupling different sectors at the edge to allow reduction of GHG emission**

# HORIZON-CL4-2021-DATA-01-03 – Key Actors

## Who are the types of main stakeholders that are addressed?

- Industrial IoT/Systems Value chain: Data, AI technology providers, sensor-IoT device manufacturers, distributed computation experts, connectivity, standardisation
- Existing digital platforms (Cloud, Edge, IoT, ..) , relevant open source communities like ECLIPSE, Linux, Apache, ...
- Academia, key industrial demand side, system integrators SMEs, start-ups,...

## Is there a key group of actors (eg. Partnership or other) driving this?

- Alliance AIOTI, GAIA-X, Alliance of Industrial Data & Cloud, BDVA, 5G PPP, ARTEMIS IA

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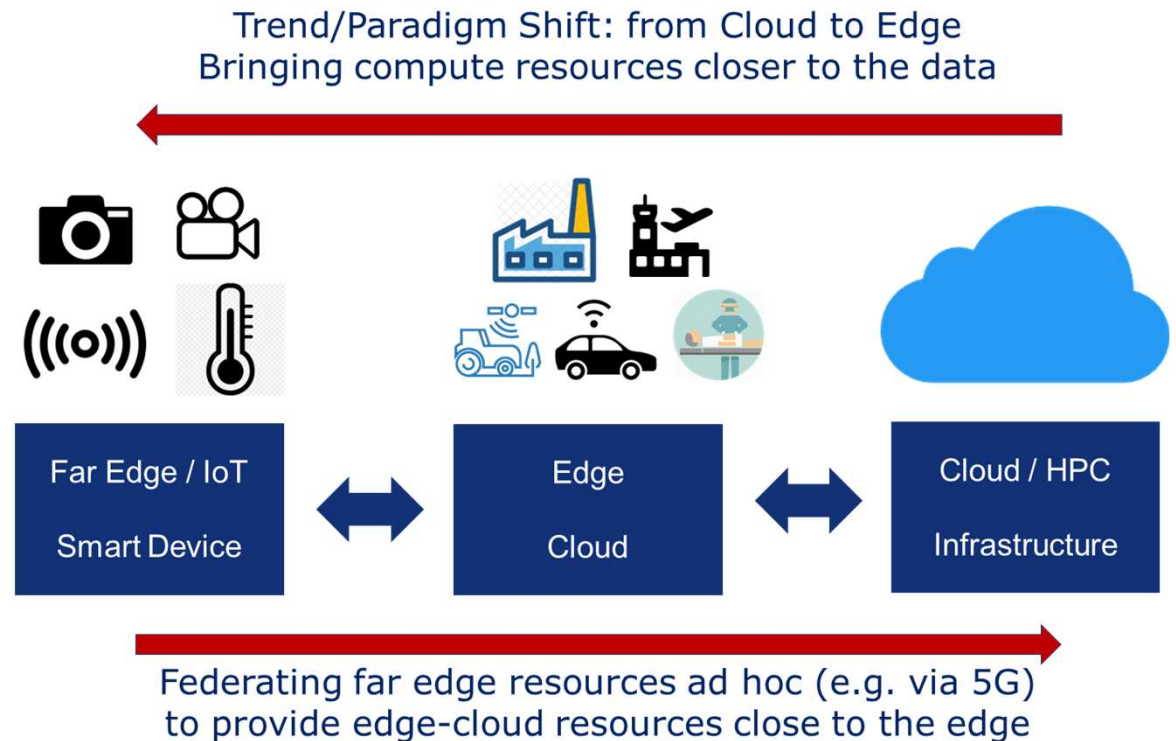
## ***Destination 3***

### ***Objective "CSAs Platform Building, standardisation and Up-scaling"***



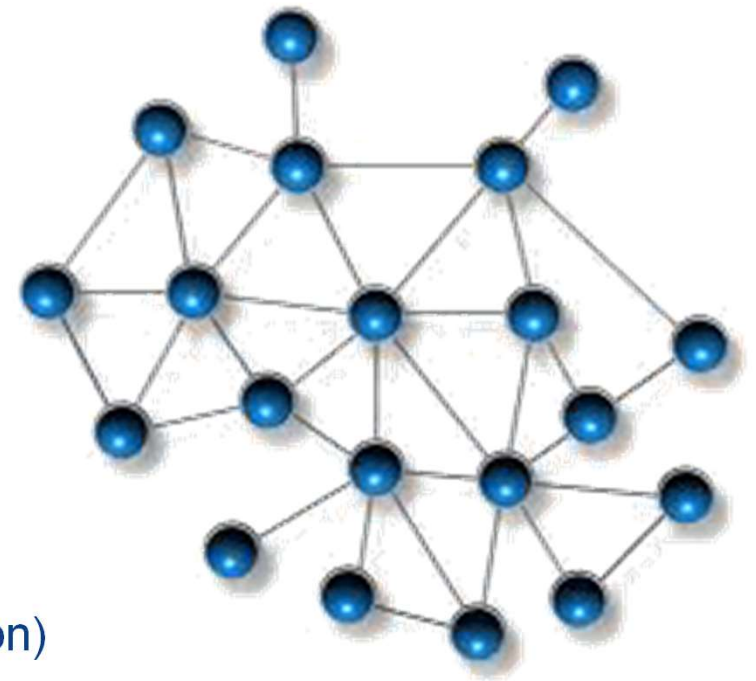
# New IoT Paradigms and their Impact of EU Markets

- **Trends like edge technologies and decentralised Intelligence** will reshape the industrial landscape,
  - spurring innovation towards the edges of the IoT network (edge clouds and edge computing)
  - trend scouting, portfolio analysis, analysis of emerging business cases
  - accelerate the pick-up of novel advanced edge technology in most important sectors for Europe's economy, and competitiveness
- **An open framework for a vibrant Edge-IoT ecosystem** is key for up-scaling and to leverage economies of scale
  - analysis of cross cutting aspects like open standards, open-source frameworks, data semantics
  - compliance, security as well as synergies across sectors.
  - **Promotion of Open Calls via FSTP**
  - Underpinning an emerging open edge ecosystem including midcaps, SMEs and start-ups,



# Ecosystem around the Computing Continuum

- **Computing Continuum:**
  - Cloud – EDGE – 5G/IoT – HW Devices
- **Partnering to grow the opportunity**, Accelerate adoption
  - Analyse fierce competition from Internet giants
  - Promote strategic multivendor partnerships, alliances
- **System Integration Platforms**
  - a must for interoperability and open standards
  - avoiding fragmentation (e.g. horizontal / vertical integration)



| System Platforms  | Ecosystem & Alliances   | Trend Scouting   |
|---|---|--|
| Reference Architecture<br>Cloud-Native Systems<br>A Meta OS<br>SW Over The Air<br>... | Open Standards & APIs<br>Open Source like Eclipse,<br>Linux, etc.<br>Trust & Trustworthiness<br>... | Decentralised Intelligence<br>Distributed Computing<br>Swarm Intelligence<br>Virtualisation<br>... |

# HORIZON-CL4-2024-DATA-01-05

## CSAs for the 'Platform Building, standardisation and Up-scaling of the 'Cloud-Edge-IoT' Solutions

### Scope



Support of programme implementation, focus on horizontal activities across projects and topics in the area of Cloud-Edge-IoT,  
→ especially foster consensus on interoperability and standards as well as ecosystem building in and across verticals, an environmental and green impact.

- **Among which are key activities:**
  - a forum to link to relevant European and national initiatives and partnerships like KDT JU, especially links to INSIDE and EPOSS.
  - A fertile communication strategy for broader stakeholder engagement
  - trend scouting, portfolio analysis, workshops, analysis of emerging business cases, accelerator of technology up-take and **promotion of open calls**, especially for SMEs and midcaps
  - Better international collaboration of European cloud/edge and software industry with trusted partner regions
  - Proposals should involve appropriate expertise in Social Sciences and Humanities (SSH)

# HORIZON-CL4-2024-DATA-01-05

CSAs for the 'Platform Building, standardisation and Up-scaling of the 'Cloud-Edge-IoT' Solutions



## Expected outcome

- coordinating the proposal portfolio resulting from *HORIZON-CL4-2024-DATA-01-03* and ensuring consistent exploitation of the outcomes
- Outcomes expected to accelerate the uptake in most important sectors for Europe's economy, and competitiveness
- Underpinning an emerging open edge ecosystem including midcaps, SMEs and start-ups, critical to establishing a mature European supply chain.
- Regaining European competitiveness in internet infrastructures through **effective partnership models and the provisioning of open solutions**
- → *analysis of cross cutting aspects like open standards, open-source frameworks, data compliance, security as well as synergies across sectors.*  
→ *Alignment with national or regional initiatives to create an expanding innovation eco-system, anchored in local contexts across Europe*



# HORIZON-CL4-2024-DATA-01-05

## What do we NOT want?

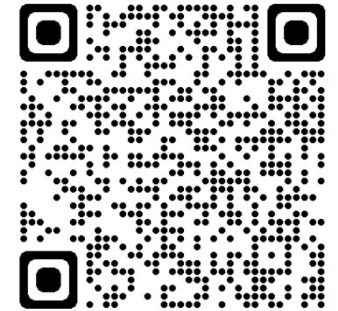
- No generic knowledge: → need Sector Knowledge, Business analytics
- Carrying out R&D, scientific papers as outcome // tons of deliverables
- Newcomers in CSA actions → track record in community buildings and stakeholder mobilisation
- Large consortia: → need of a powerful but lean consortium
- Simplistic, standard dissemination activities: need professional approach
- Closed club → need to open up target communities to interdisciplinary topics

# HORIZON-CL4-2024-DATA-01-05

## Are there any additional / background documents?

- **Communications:**
  - European Data Strategy, Digital Decade
  - Cloud Edge Cluster: [Communication Materials/brochures](#)
- **Position Papers and Event Reports**
  - Alliance AIOTI SRIA: [Advancing IoT and Edge Computing Research & Innovation](#)
  - Concertation & Consultation Meeting May 2023: [Future Outlook](#)
  - Market / position papers by CSAs: [Industry Spotlight](#)
  - IDC Spotlight: [Benefits of an Open Edge](#)
  - Roadmap published by the Alliance on Industrial Data and Cloud
- HIPEAC Vision <https://www.hipeac.net/vision/#/latest/>

# HORIZON-CL4-2024-DATA-01-05



## Future Outlook:

- Portal for projects, open calls and events: [www.EUCloudEdgeIoT.eu](http://www.EUCloudEdgeIoT.eu)
- Study *Economic Potential of Far Edge Computing in the Future Smart IoT* launched on 06/07/2021 → [Portal Shaping Europe's Digital Future](#)

## Please list upcoming information days and other events of relevance to this area

- HE – InfoDays on 11-12 October
- [From Cloud to Edge to IoT](#) Brokerage Event, t.b.d.

## Information on Europa.eu

- [Europe's Internet of Things Policy](#)

