WORLD LEADING DATA AND COMPUTING TECHNOLOGIES 2023

From Cloud to Edge to IoT

HORIZON-CL4-2023-DATA-01-04

Cognitive Computing Continuum: Intelligence and automation for more efficient data processing (RIA)

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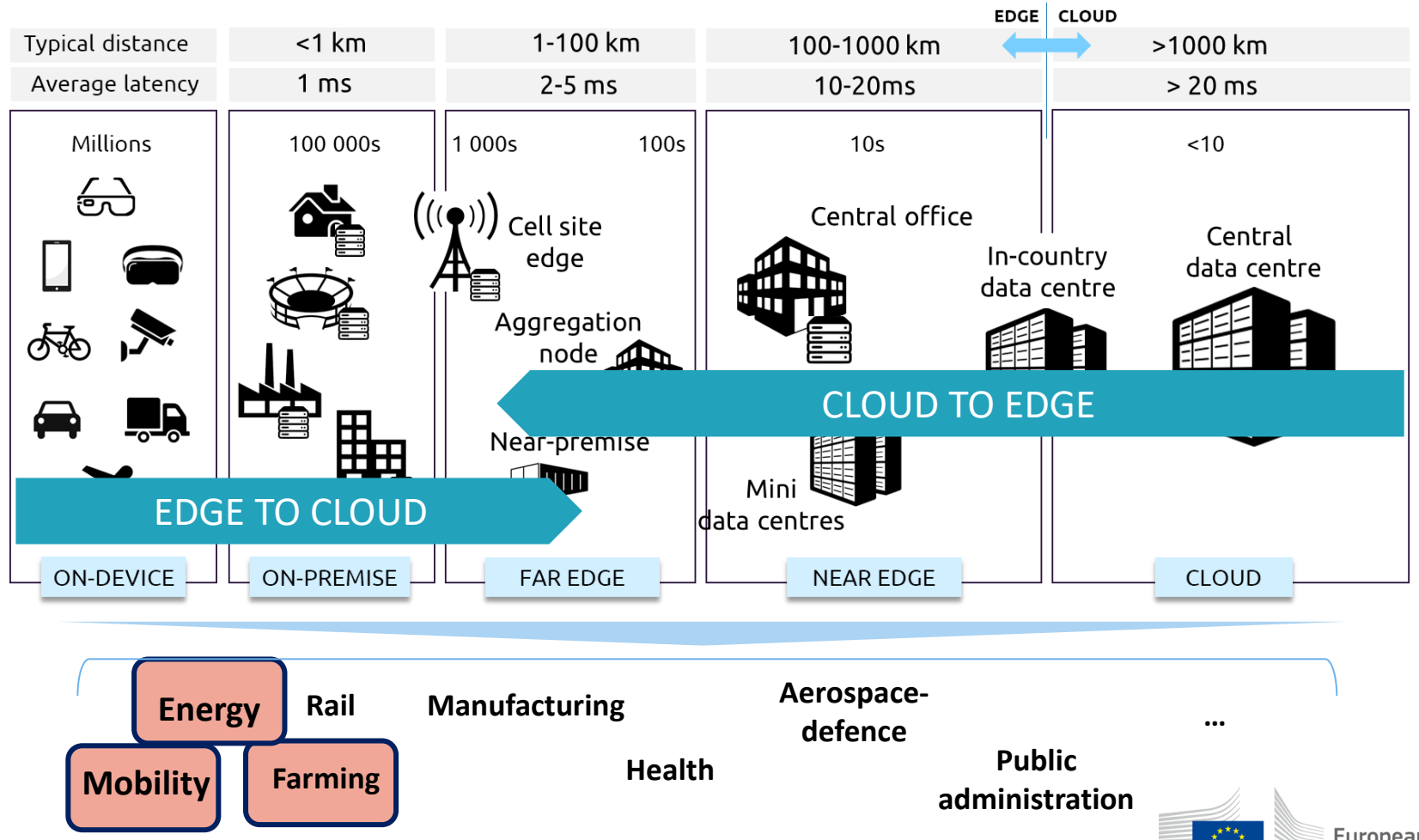
Research and Innovation

Digital Decade objectives for the cloud & edge computing continuum by 2030

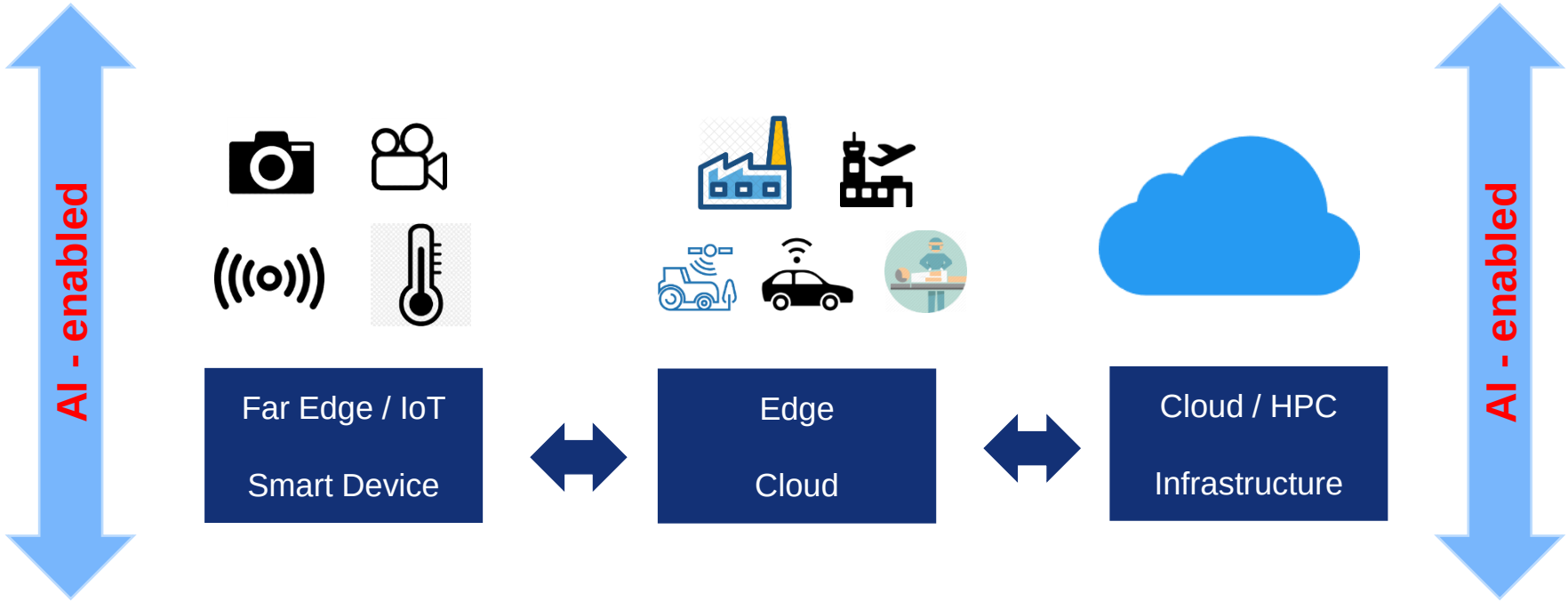
- ✓ **>10.000 edge nodes by 2030**
- ✓ **75% of cloud uptake by EU enterprises in 2030**



European Commission

Cloud – Edge – IoT computing continuum
R&I on the next generation Cloud-to-Edge-to-IoT technologies

An AI-enabled Cloud-Edge-IoT Continuum

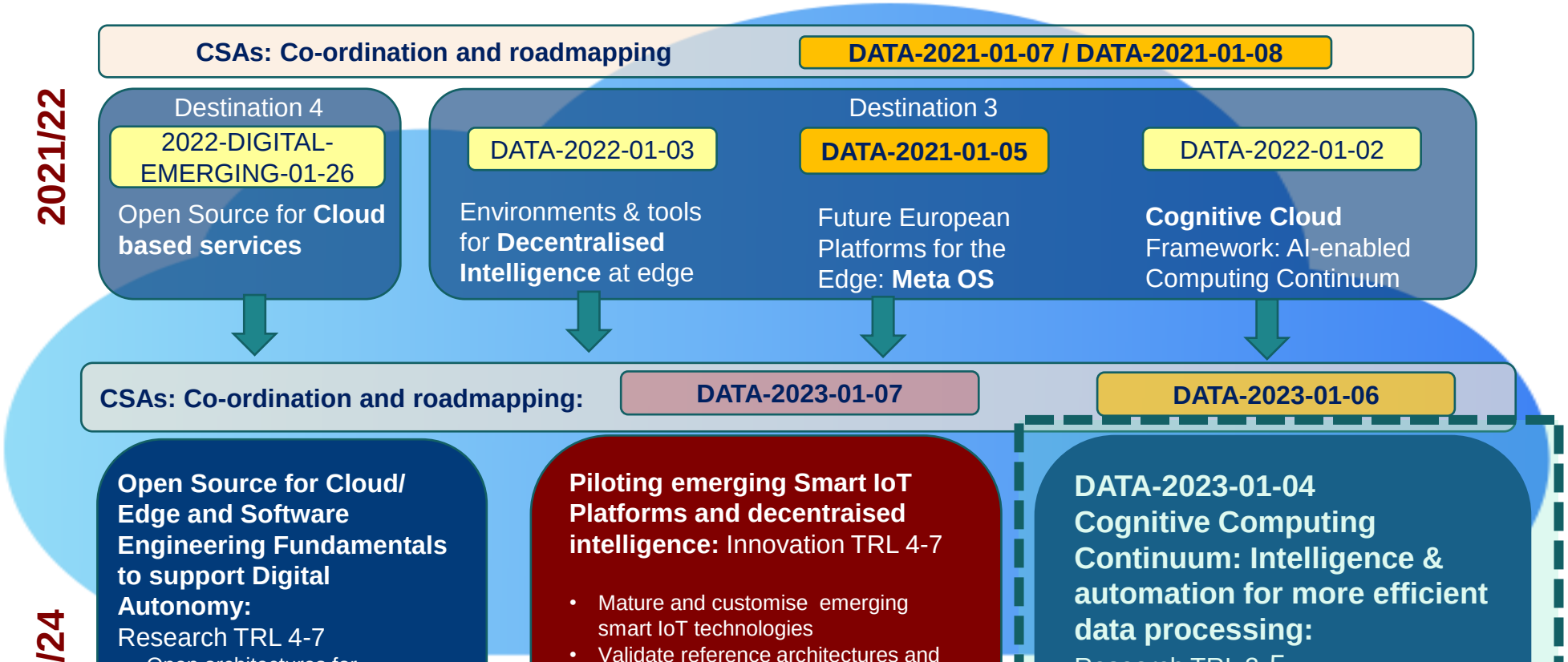


Seamless, transparent and trustworthy integration of diverse computing and data environments spanning from core cloud to edge to IoT

INTELLIGENCE, AUTOMATION and INTEROPERABILITY ➔ ADAPTABILITY

European Commission

From Cloud to Edge to IoT for European Data Horizon Europe Work Programme 2023/24



European Commission

From Cloud to Edge to IoT for European Data - HORIZON-CL4-2023-DATA-01-04: Cognitive Computing Continuum: Intelligence and automation for more efficient data processing (RIA)

28 Million EUR (LUMP SUM)

TRL2-5, 4-6 mil. EUR per project

Scope:

- **AI-enabled Management of the whole computing continuum enabled by Swarm computing and decentralized intelligence. This will allow services and data to be seamlessly processed across various providers, connectivity types and network zones.**
- **Novel automated management tools, programming models, learning and decision-making methods, and approaches able to cope with end-to-end security and identity management, resources heterogeneity, extreme scale and fault-tolerance together with elasticity to flexibly allocate resources and tasks.**
- **Intelligent compute, data and code orchestration mechanisms to allow efficient value extraction from the huge volumes of generated data while supporting resource dynamicity and scalability across the compute continuum.**
- **Optimization of energy efficiency and ecological sustainability taking into account end-to- end data processing across the continuum.**

European Commission

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Expected Outcome:

- Enhanced openness and strategic autonomy in the evolving data and AI economies across the computing continuum including adapted system integration at the edge and at device level, validation of key sectors and nurturing European value chains to accelerate and steer the digital and green transitions.
- Paving the way to strategic industrial cooperation in data processing required to support future hyper-distributed applications by building open platforms, underpinning an emerging industrial open edge ecosystem critical to establishing a mature European supply chain.
- Establishment of adaptive hybrid computing, cognitive clouds and edge intelligence beyond today's investments on data infrastructure.
- Better international collaboration with trusted partner regions, guaranteeing a minimum level of interoperability, portability thereby fostering competition in the Cloud/Edge services market for the European cloud/edge and software industry and facilitate European access to foreign markets.

European Commission

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Other Important aspects:

RIAs:

- **For security and identity management**, proposals are expected to apply state-of-the-art technologies, develop synergies and relate to activities and outcomes in *Cluster 3 (namely, HORIZON-CL3-2023-CS-01-01: Secure distributed platforms (IoT, Edge, Cloud, Dataspaces) and HORIZON-CL3-2023-CS-01-02: Privacy-preserving and identity technologies*).

- Projects are expected to **develop synergies** and **relate to activities** and outcomes of the Digital Europe Programme (DEP) *(topics 2.1.1, 2.1.2 and 2.1.3*) and any existing or emerging Important Projects of Common European Interest (IPCEI) initiative, IPCEI on Next Generation Cloud Infrastructure and Services.

- Interoperability approaches (based on open standards, interoperability models and open platforms) should be considered where appropriate.

RIAs and CSAs:

- **International cooperation** is encouraged, especially with **Japan and S. Korea**.
  - NO FUNDING by the EU for international entities!

  They need to secure their own funding!

European Commission

HORIZON-CL4-2023-DATA-01-04: Cognitive Computing Continuum: Intelligence and automation for more efficient data processing (RIA)

What are we looking for?

- Development of **generic and advanced AI-enabled Cloud/Edge technologies, mechanisms, techniques, etc. covering the whole continuum.**

  Research on cloud/edge technologies! not in AI

  - For example: hyper-distributed computing approaches encompassing resources from IoT and far-edge constrained devices, to federated fog/edge computing nodes to central cloud computing centres and hybrid cloud models which exploit Artificial Intelligence techniques

- **Beyond State-of-the-art**, **not incremental type of research** →cutting-edge novel approaches, TRL 2-5.

- The proposals should **demonstrate the applicability and viability of the proposed technological solutions** across multiple application domains.

What do we NOT want?

- Using existing Cloud/Edge technologies as an enabler for research in other domains (e.g., AI, IoT, BigData, 5G, etc.)
- Any User Application development using existing Cloud/Edge/AI technologies

European Commission

HORIZON-CL4-2023-DATA-01-04 & 06

Current Project Portfolio and Future Outlook

- HE cloud-edge-iot projects https://eucloudedgeiot.eu/
- H2020 Cloud projects https://www.h-cloud.eu/projects/research-innovation/ and Funding and Tenders (F&T) portal: ICT-40 , ICT-15, ICT-16, HE projects on the F&T portal
- Roadmap published by the Alliance on Industrial Data and Cloud
- **White paper on future cloud research** https://www.h-cloud.eu/news/h-cloud-publishes-final-version-of-white-paper-cloud-computing-in-europe/
- Related videos on future research https://www.h-cloud.eu/videos/
- DEP and IPCEI on Next Generation Cloud Infrastructure and Services
- Lump Sum https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/programmes/horizon/lump-sum/guidance and Link to the related training https://ec.europa.eu/research/participants/docs/h2020-funding-guide/other/event221020.htm

Thank you!

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https://digital-strategy.ec.europa.eu/en/policies/cloud-computing