#HorizonEU

HORIZON-CL4-Destination 3:
Piloting emerging Smart IoT Platforms and decentralized intelligence

ROLF RIEMENSCHNEIDER
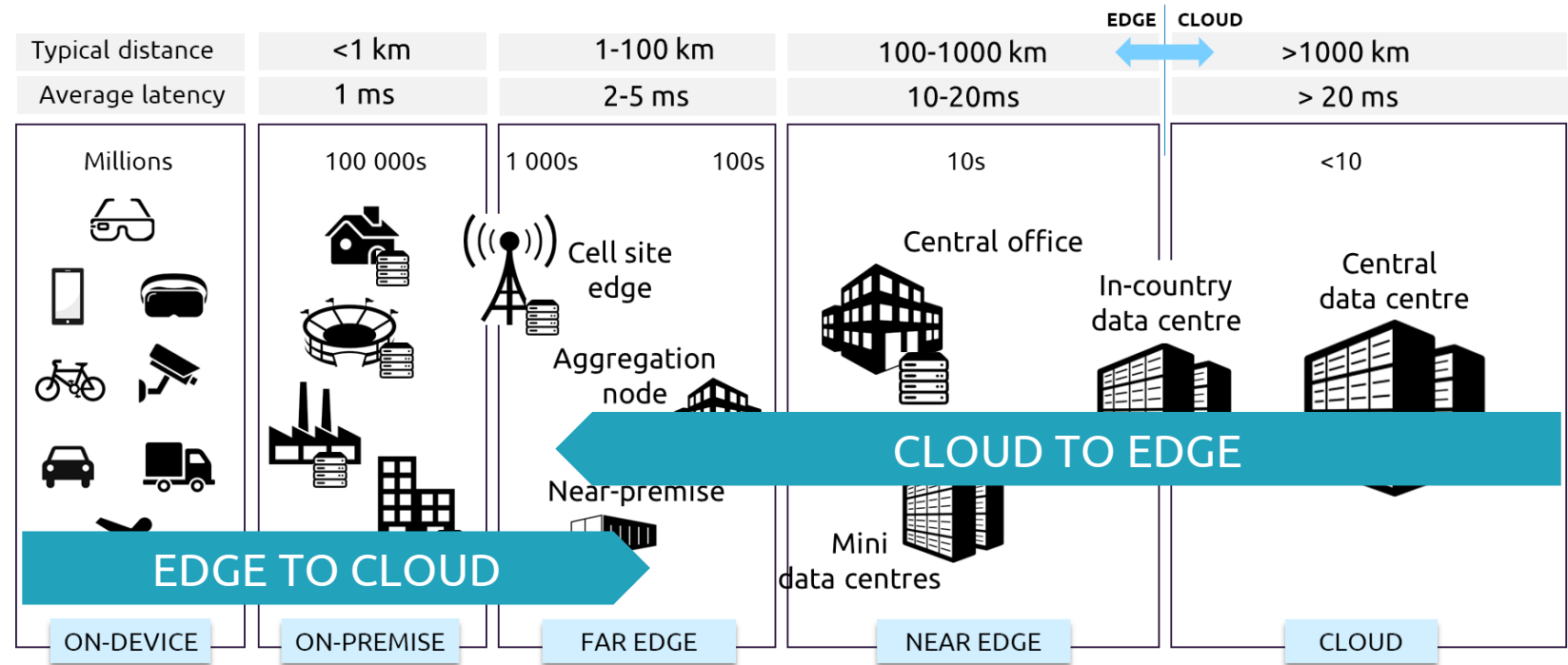**HEAD OF SECTOR IOT**
European Commission
DG CONNECT / E4
Internet of Things

Brussels, 12 October June 2024

Research and Innovation

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

2030 DIGITAL COMPASS
THE EUROPEAN WAY FOR THE DIGITAL DECADE

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

			EDGE | CLOUD	
Typical distance	<1 km	1-100 km	100-1000 km	>1000 km
Average latency	1 ms	2-5 ms	10-20ms	> 20 ms

Millions	100 000s	1 000s 100s	10s	<10

Cell site edge

Aggregation node

Near-premise

Central office

In-country data centre

Central data centre

Mini data centres

CLOUD TO EDGE

EDGE TO CLOUD

ON-DEVICE	ON-PREMISE	FAR EDGE	NEAR EDGE	CLOUD

Energy   **Rail**   **Manufacturing**   **Aerospace-defence**   **...**

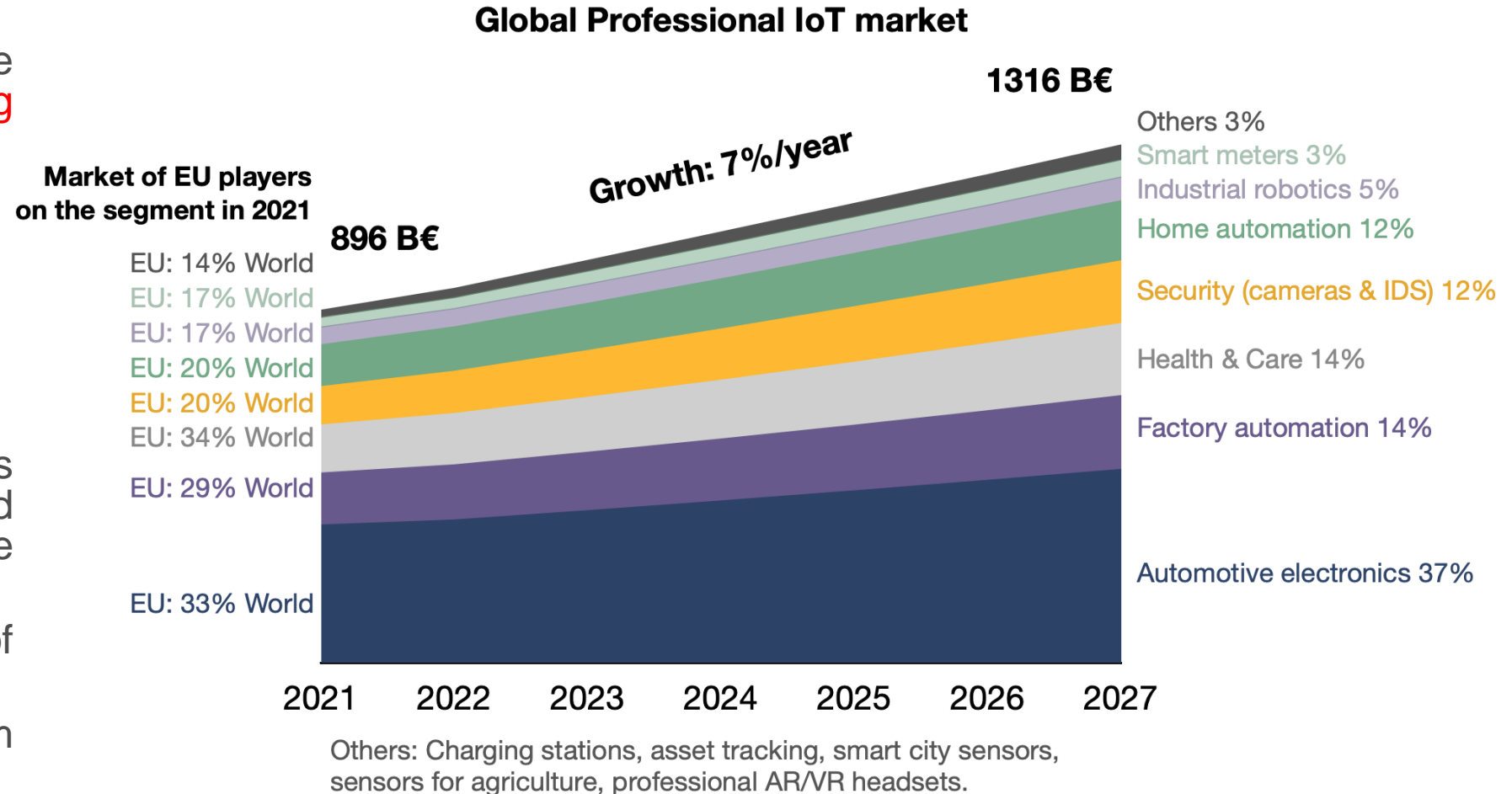**Mobility**   **Farming**   **Health**   **Public administration**

European Commission

Growth in Industrial Edge-IoT Markets

In 2021, the EU players are well positioned in the leading professional IoT segments:

- Automotive electronics
- Factory Automation
- Energy
- Health & Care

EU ecosystems face numerous challenges that should hampers its global competitive position:

- Reversing the trend of outsourcing to Asia
- Competition from Hyperscalers

Global Professional IoT market

1316 B€

Growth: 7%/year

Market of EU players on the segment in 2021

896 B€

EU: 14% World
EU: 17% World
EU: 17% World
EU: 20% World
EU: 20% World
EU: 34% World

EU: 29% World

EU: 33% World

Others 3%
Smart meters 3%
Industrial robotics 5%
Home automation 12%

Security (cameras & IDS) 12%

Health & Care 14%

Factory automation 14%

Automotive electronics 37%

2021   2022   2023   2024   2025   2026   2027

Others: Charging stations, asset tracking, smart city sensors, sensors for agriculture, professional AR/VR headsets.

Source: DECISION Etudes & Conseil
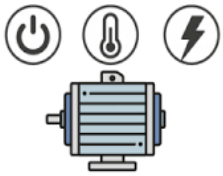
European Commission

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*
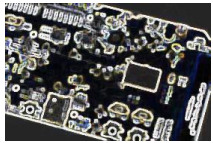
  - *Avoid Vendor Lock-in - Open, vibrant ecosystem*

Edge Value Chains

IoT ecosystem: From Smart devices to Cloud

Smart devices

IoT modules

- Hardware
- Software
- IA/ML

Network

- LP WAN
- WiFi
- LTE-M
- 5G
- Bluetooth
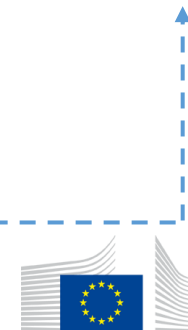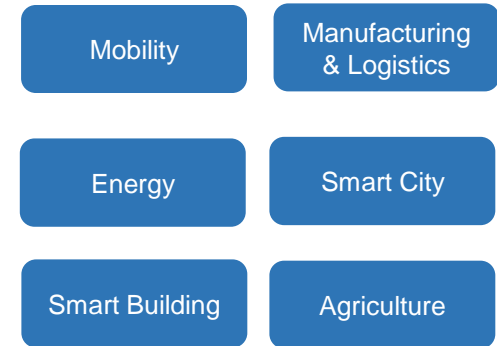- MQTT

Near Edge Cloud

Network / joint server

Actility
kerlink
communication is everything

Security / IAM

THALES
nexus INGROUPE

Application

Bosch IoT Insights
legrand
SIEMENS

Far Edge Cloud

Hyperscalers
Big Data Cloud

aws
Microsoft Azure

Applications

Mobility	Manufacturing & Logistics
Energy	Smart City
Smart Building	Agriculture

European Commission

Industrial IoT Use cases underpinning the trend towards the edge

Carbon Footprint

Privacy

Safety

Security

Closing: March 2024

**Orchestration of resources:
storage – network – computing centres**
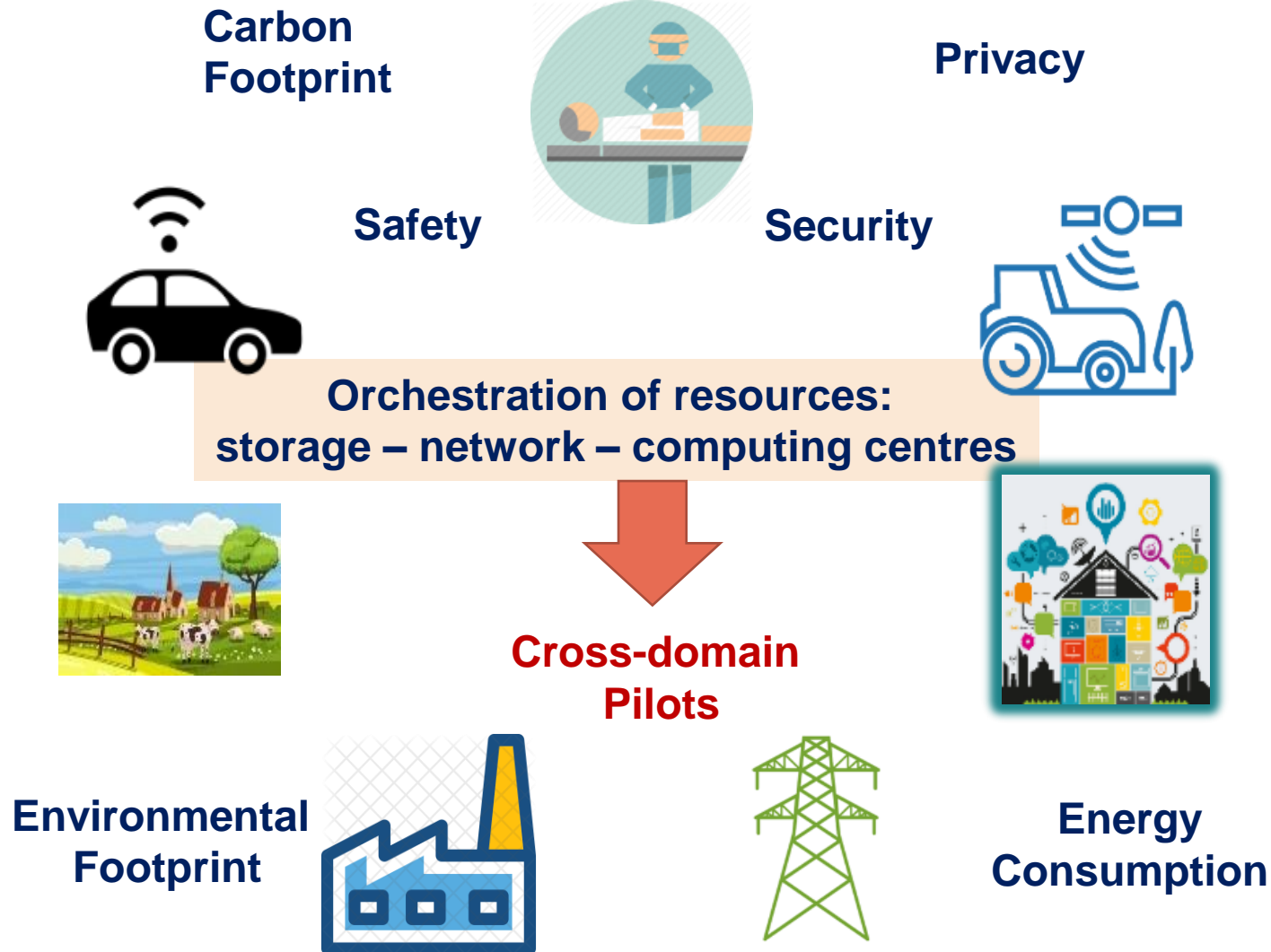
Strategy:
A Platform Approach to share hardware and foster an Open Ecosystem

Cross-domain Pilots

Environmental Footprint

Energy Consumption

European Commission

Piloting Smart IoT Platforms + decentralised Intelligence

➢ **More Computing Capacity at the Edge**

  • Leverage next generation of **chip supply in Europe**

➢ **Platform Economy at the Edge**

  • Open APIs .. Towards an **App Store at the Edge**

  • Up to 20% for Open **Call for Edge applications**

➢ **Fostering the Green and Digital Transition**

  • **Edge services spanning across different key domains**
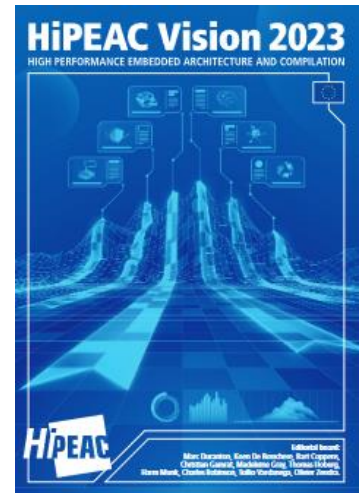
  • **Common architectures and open standards**

• **HE WP2024 call for Innovation Actions with 45 Mill €**

19 March 2024

Related Background

- **Horizon Europe**:
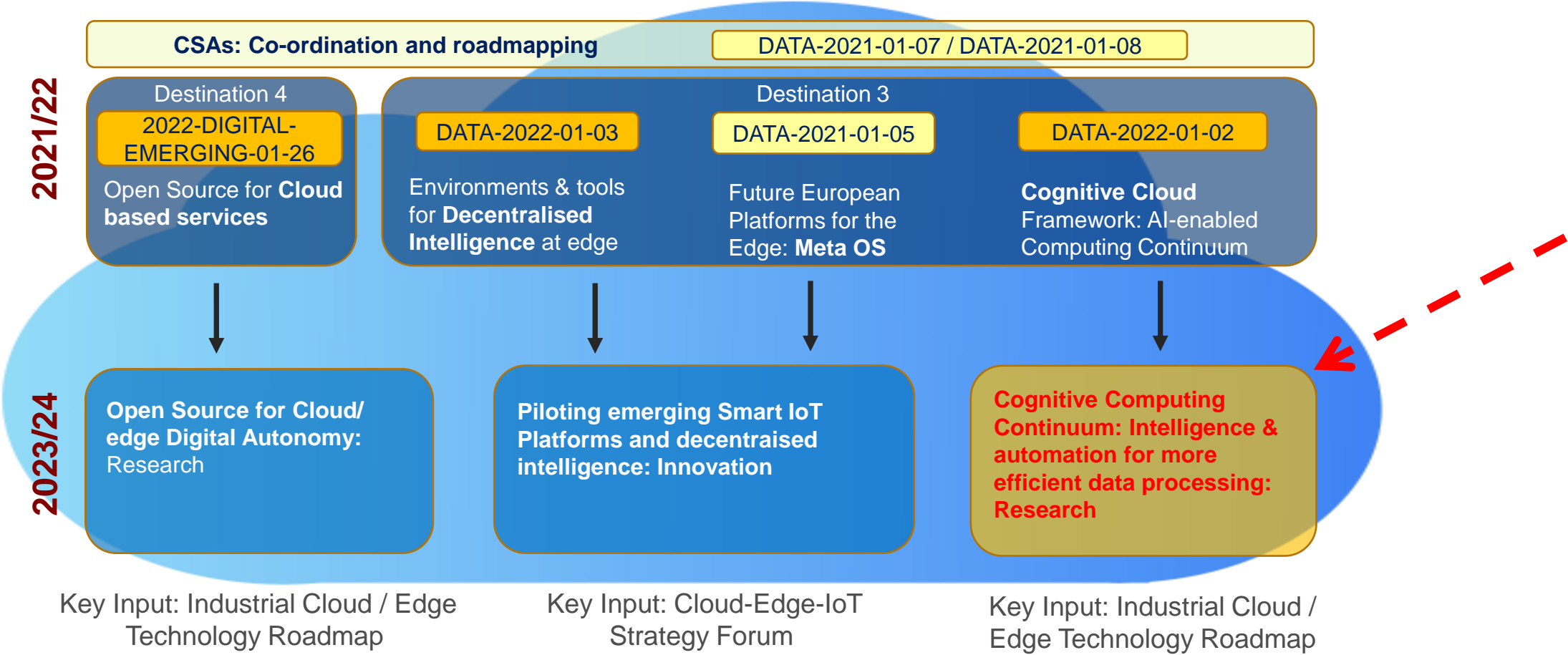 → Calls, topics, deadlines WP2023-24

- **Position Papers and Event Reports**
  → Alliance AIOTI Strategic Foresight : IoT and Edge Computing Convergence

- **Cloud-Edge-IoT Portal** – see www.EUCloudEdgeIoT.eu

- HIPEAC Vision https://www.hipeac.net/vision/#/latest/

- Edge-IoT Policy on Europa

➢ **Consultation Meeting 11 May 2023 ..** *Report available*

BACKUP SLIDES FOR PANEL

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

CSAs: Co-ordination and roadmapping | DATA-2021-01-07 / DATA-2021-01-08

2021/22

Destination 4
2022-DIGITAL-EMERGING-01-26
Open Source for **Cloud based services**

Destination 3

DATA-2022-01-03
Environments & tools for **Decentralised Intelligence** at edge

DATA-2021-01-05
Future European Platforms for the Edge: **Meta OS**

DATA-2022-01-02
Cognitive Cloud Framework: AI-enabled Computing Continuum

2023/24

Open Source for Cloud/ edge Digital Autonomy: Research

Piloting emerging Smart IoT Platforms and decentraised intelligence: Innovation

Cognitive Computing Continuum: Intelligence & automation for more efficient data processing: Research

Key Input: Industrial Cloud / Edge Technology Roadmap

Key Input: Cloud-Edge-IoT Strategy Forum

Key Input: Industrial Cloud / Edge Technology Roadmap

A reference architecture – edge design space