Concertation and consultation on the Computing Continuum: from Cloud to Edge to IoT

Opening

Brussels, 10 – 11 May 2023

Pearse O'Donohue, Director CONNECT E – Future Networks
Manuel Mateo Goyet, Deputy Head of Unit E2 – Cloud & Software
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European Commission

Pearse O'Donohue

Manuel Mateo Goyet

The European Data strategy

EU Data Strategy

IPCEI* on Next Generation Cloud
(*Important Project of Common European Interest)

European Alliance for Industrial Data, Edge and Cloud

Cloud actions:
Cloud Rulebook

Co-Investments in **Cloud / Edge Middleware Platform**, services & marketplaces

Data actions:
New legislation (Data Act, Data Governance Act, etc.)

Co-investments in **common European data Spaces**

Common European data spaces

Data Spaces Support Centre
Coordination and governance

Coordination

DIGITAL EUROPE PROGRAMME

Complementing & integrating private and public initiatives, e.g.:

Federation & interoperability standards

Use cases; technical architecture

gaia-x

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

Glasses, smartphone, VR headset, bicycle, camera, car, truck — Millions

Houses, stadium, factory, buildings — 100 000s

Cell site edge, Aggregation node, Near-premise — 1 000s / 100s

Central office, Mini data centres — 10s

In-country data centre, Central data centre — <10

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

Max Lemke

Industrial Internet of Things: the strategic picture for Europe

Next-generation IoT in the Cloud-Edge-IoT computing Continuum

Power to the edge, where the data is

Seamless connectivity

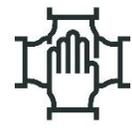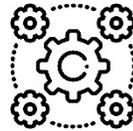AI/Decentralised reasoning and RT decisions

Next-generation operating systems

Decentralised/swarm intelligence

Part of the Cognitive computing continuum Cloud-Edge-Iot

Chips Act

Next-generation chips powering intelligence at the edge
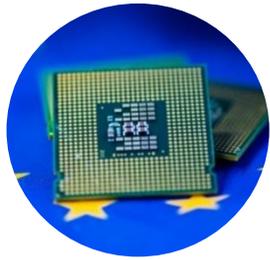
Semiconductor chips made in Europe

Standardisation, interoperability

Vertical, horizontal, x-sector integration

Common Open Digital Platforms & Ecosystem

Competition law, geopolitics

Strategic autonomy

Data and AI Strategies

Investment in Data Spaces

EU 5G & cloud-edge infrastructure/services

AI innovation and TEFs

Data legislation:

- Data Act: access & fairness on data market
- Data Governance Act: foster trust in data sharing & intermediarires
- AI Act

The EU Policy Context:

❑ NextGenerationEU
❑ REPowerEU
❑ Twin Transition:
  ▪ Digital Compass
  ▪ Green: Fit for 55

Transition pathways towards resilient, innovative, sustainable & digital ecosystems
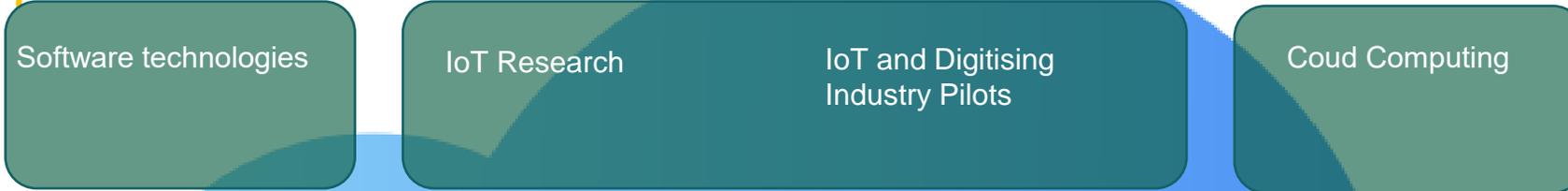
Open, dynamic ecosystems for EU tech businesses

New Industrial Strategy

European Commission

Dr. Max Lemke, CNECT E4

Horizon Europe Work Programmes 2021/22, 2023/24
Innovative technologies for the next generation Cloud-Edge-IoT continuum

– 2020
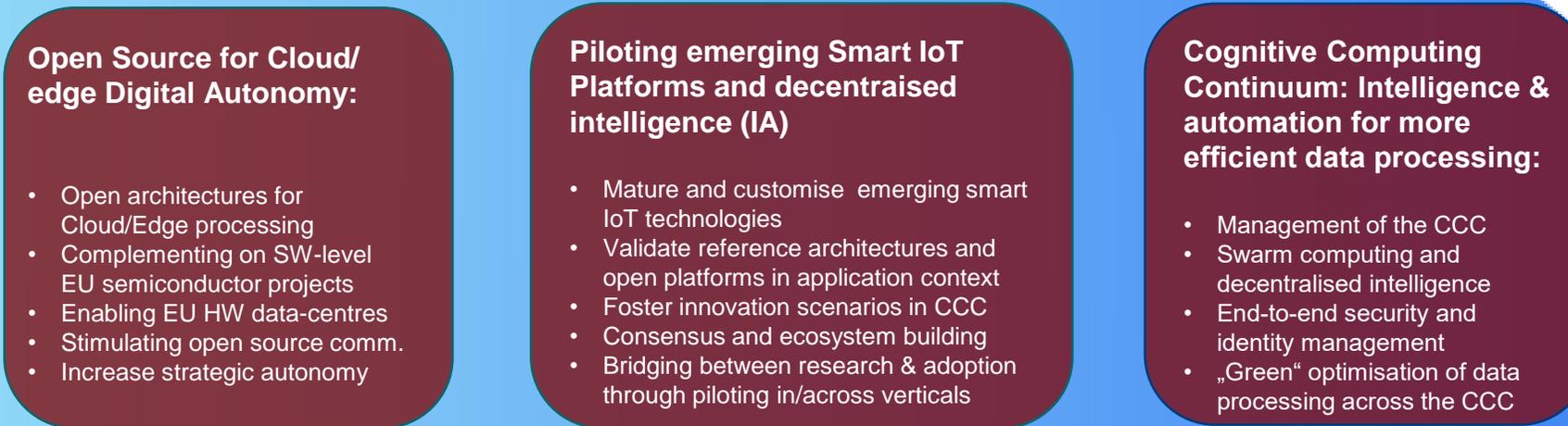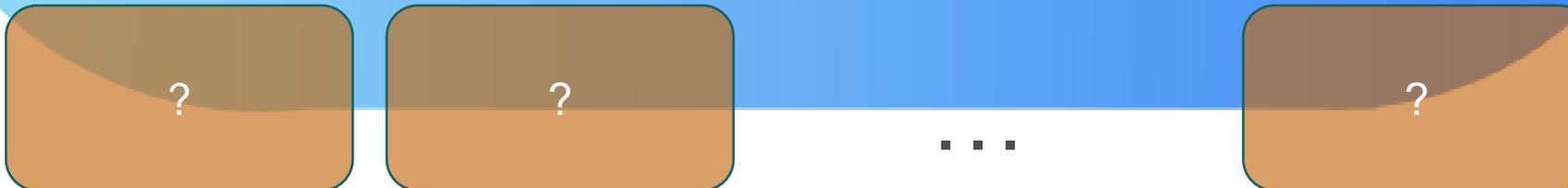
- Software technologies
- IoT Research
- IoT and Digitising Industry Pilots
- Coud Computing

2021/22

- Open Source for **Cloud based services**
- Environments & tools for **Decentralised Intelligence** at edge
- Future European Platforms for the Edge: **Meta OS**
- **Cognitive Cloud** Framework: AI-enabled Computing Continuum

2023/24

Open Source for Cloud/ edge Digital Autonomy:

- Open architectures for Cloud/Edge processing
- Complementing on SW-level EU semiconductor projects
- Enabling EU HW data-centres
- Stimulating open source comm.
- Increase strategic autonomy

Piloting emerging Smart IoT Platforms and decentraised intelligence (IA)

- Mature and customise emerging smart IoT technologies
- Validate reference architectures and open platforms in application context
- Foster innovation scenarios in CCC
- Consensus and ecosystem building
- Bridging between research & adoption through piloting in/across verticals

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

- Management of the CCC
- Swarm computing and decentralised intelligence
- End-to-end security and identity management
- „Green" optimisation of data processing across the CCC

2025 –

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Concertation

WS Report Nov 21: Digital Autonomy in the Computing Continuum

Consultation

European Commission

Opening of the Consultation Meeting on Day 2

Max Lemke

Develop the Vision for Research on the Cloud-Edge-IoT Continuum: 2025 and beyond

Consultation:

- **WP 2025 – 27**
- **Next Commission**

2025 –

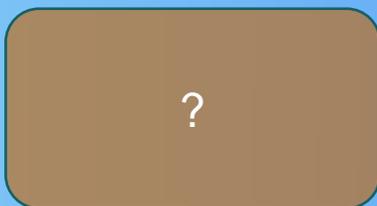Further convergence from components to the full Cloud-Edge-IoT continuum
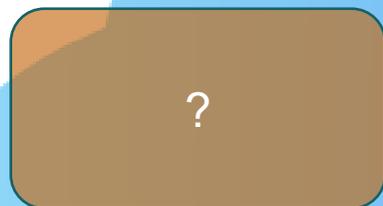
Decentralised Intelligence

Powered by AI

Open Digital Platforms

Open ecosystem: no vendor lock-in

Open Source

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Climate Change

Semantic Language Tools

Open Source HW and SW

Strategic Autonomy

Security Challenges

Geopolitical tensions

Virtual Worlds Immersive Environments

Convergence of IT and OT

European Commission