



# IoT and Edge Computing II: The Far Edge

NGIoT, CONNECT, AIoTI, ARTEMIS-IA  
7-8 December 2020

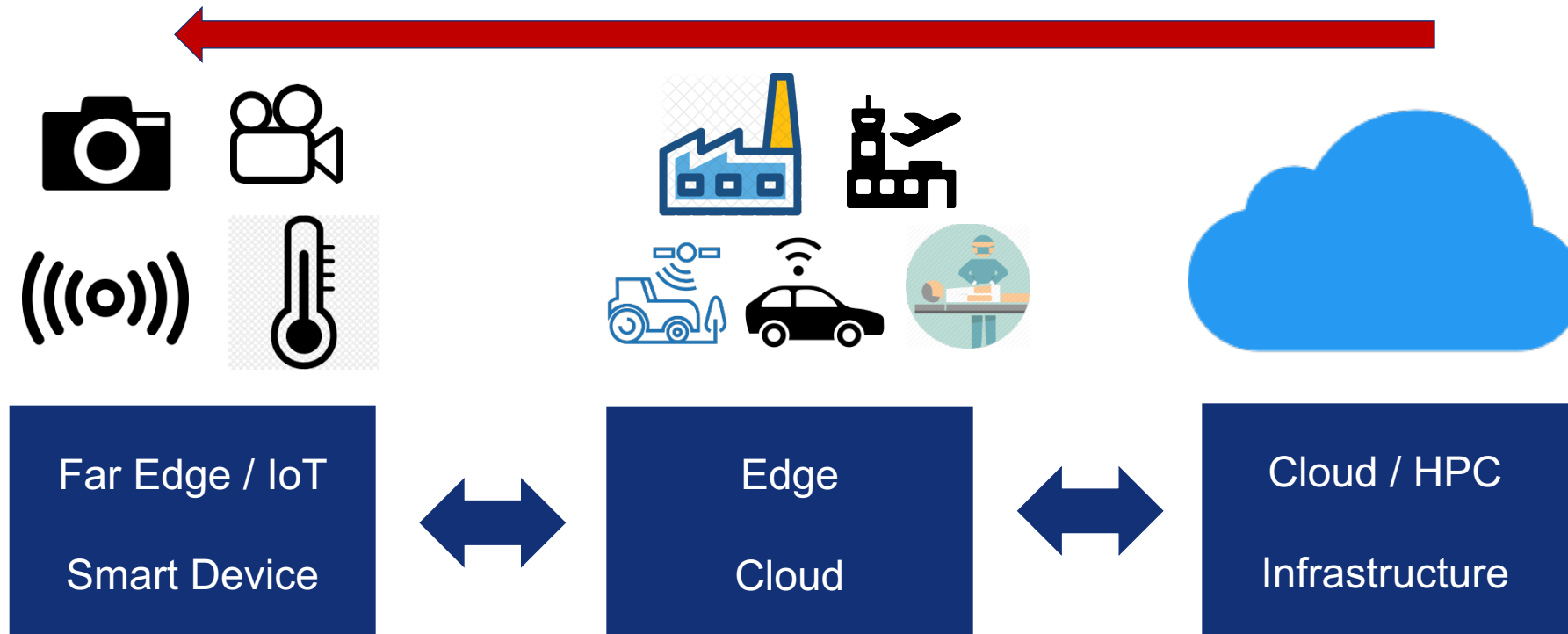
Dr. Max Lemke, Head of Unit IoT  
DG CONNECT/E4  
European Commission

A graphic featuring a blue map of Europe with twelve 3D yellow stars arranged in a circle around it, mimicking the European Union flag.

# Internet of Things

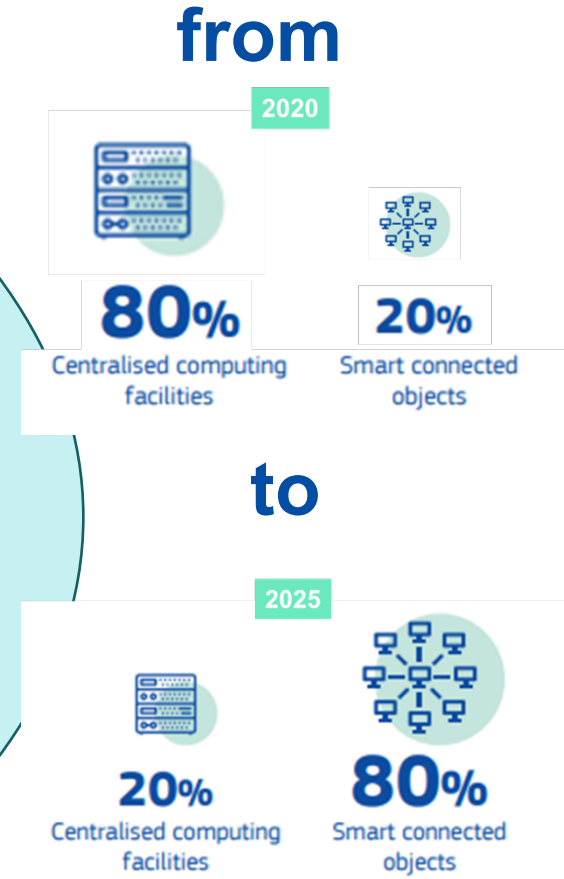
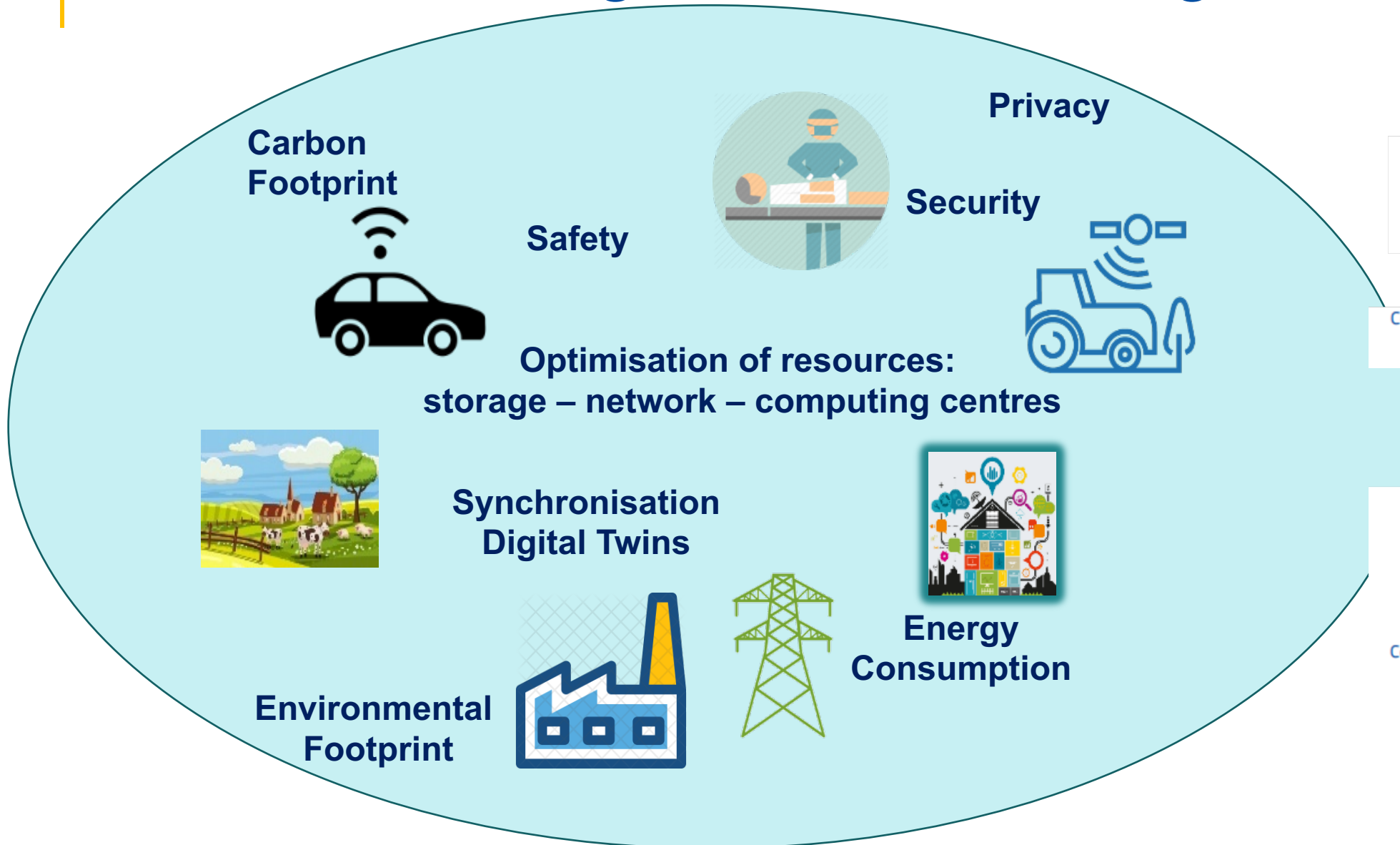
# IoT - a Cloud-centric View

Trend/Paradigm Shift: from Cloud to Edge  
Bringing compute resources closer to the data



Federating far edge resources ad hoc via 5G  
to provide cloud resources close to the edge

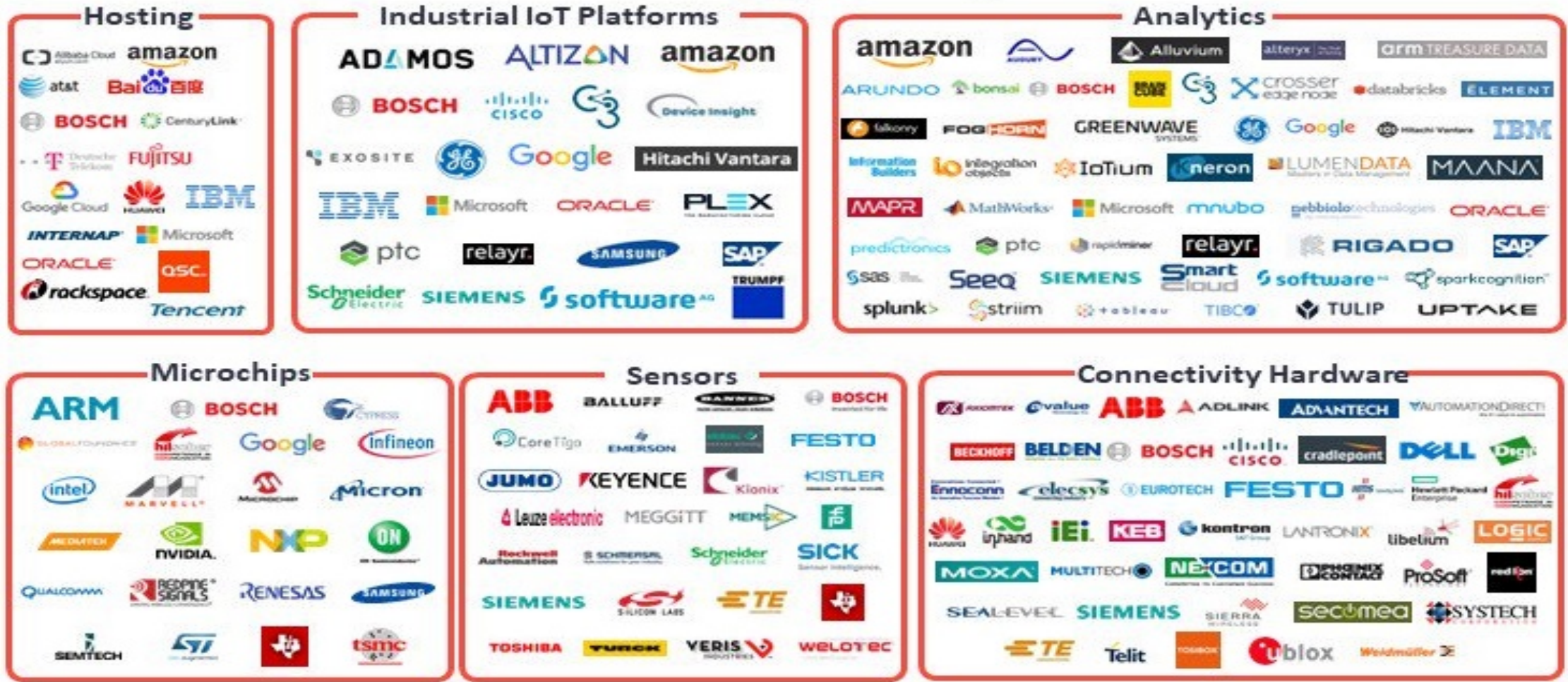
# Use cases underpinning the trend towards the edge and the far edge





# Far Edge and IoT Market Reality

The closer to the far edge, the higher are Europe's competences and market shares.



## SECTORAL ACTORS

- Agriculture
- Mobility
- Manufacturing
- Home
- Health
- Energy
- ...
- Smart Communities

# Far Edge: Towards Ubiquitous Decentralisation

- Architecture Challenges

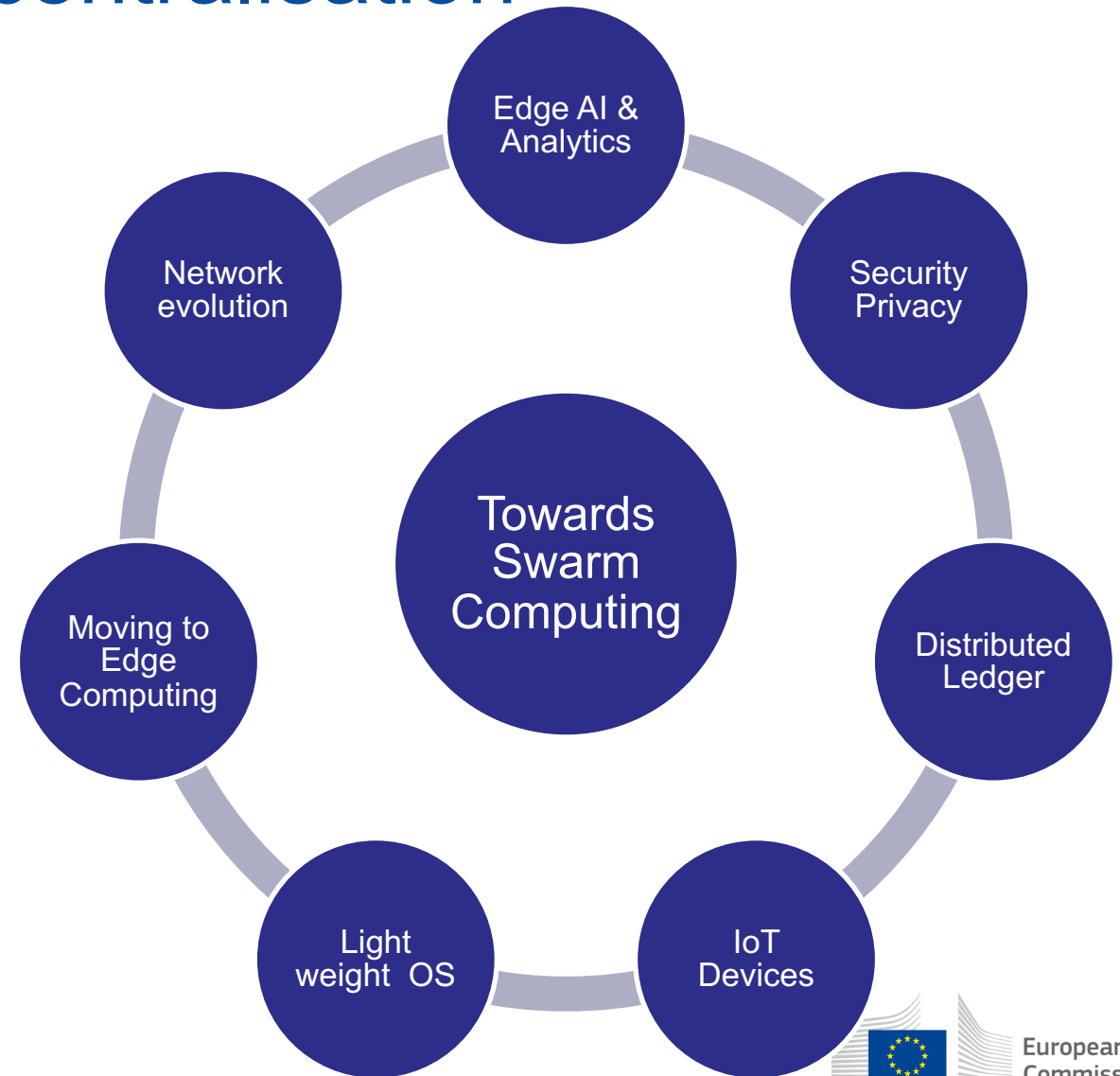
- **A glue between Cloud and Control**
- Swarm intelligence: distributed reasoning, context awareness, decentralised intelligence
- **A new OS** for the Far Edge and for orchestration between cloud-edge-devices
- Device integration at system-level
- Build on 5G campus / mesh topologies

- Edge Nodes

- Build on progress in low-energy data processing
- Integrate AI/ML algorithms at the edge
- Agile, open programming environments

- Approach

- Horizontal development and platform building
- Vertical instantiation, customisation, ecosystems



# Far edge computing and smart IoT: a window of opportunity for Europe for gaining ground in computing

- Building on European strengths at the far edge and in applications
- Take stock on where we stand
- Window of opportunity is small: what is needed in short and medium term ?
  - Research / Innovation / Deployment
  - New programming cycle: HE, DEP, CEF, RRF
- Should we connect our constituencies and visions/SRAs?
  - ARTEMIS-IA, AIoTI, NESSI, GAIA-X, 5G-PPP, HIPEAC, ...
- Who are the European actors needed to lead and to progress?
  - horizontally and vertically – looking for champions