

"Open Source Stack for the AI-powered Edge-IoT"

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European Commission

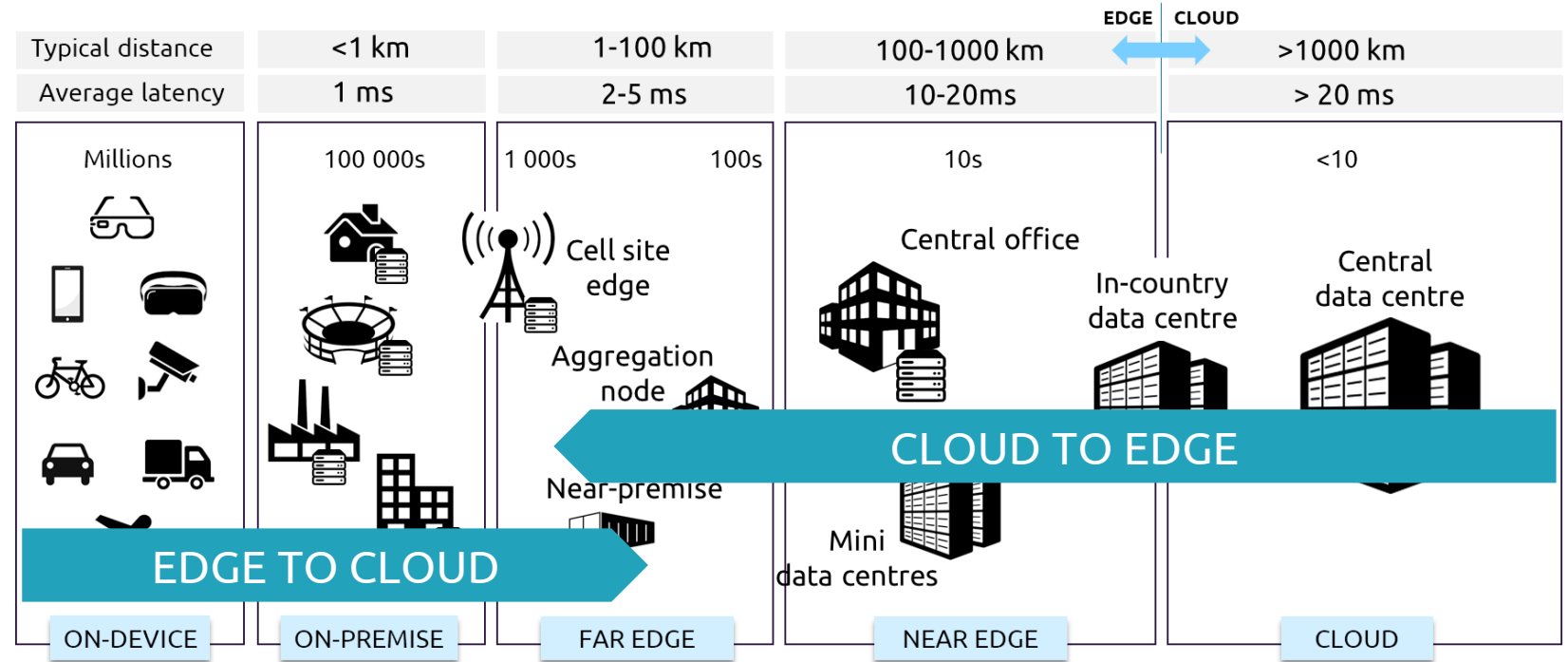


From Cloud to Edge to IoT for European Data

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

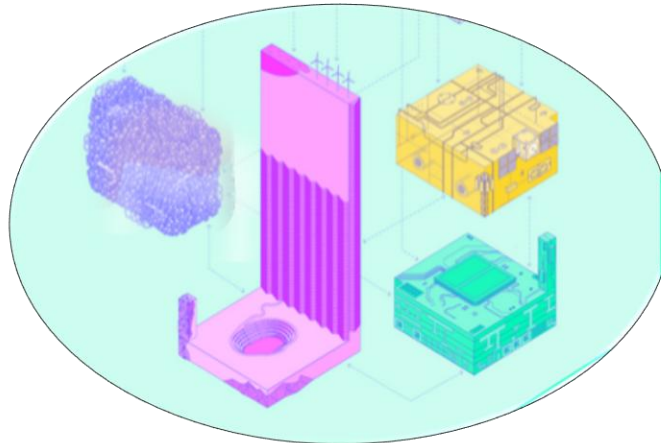
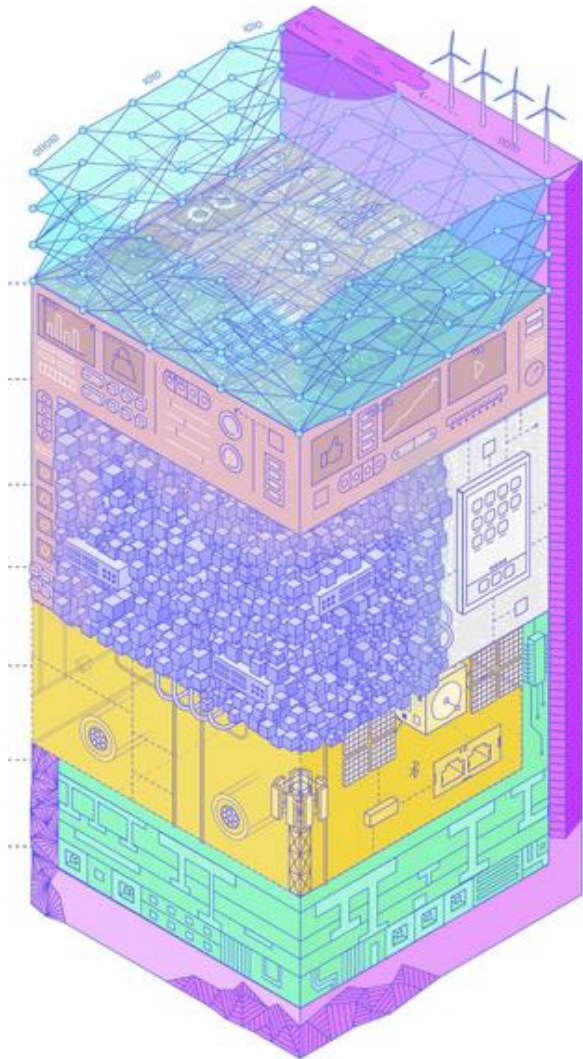


- ✓ >10.000 edge nodes by 2030
- ✓ 75% of cloud uptake by EU enterprises in 2030

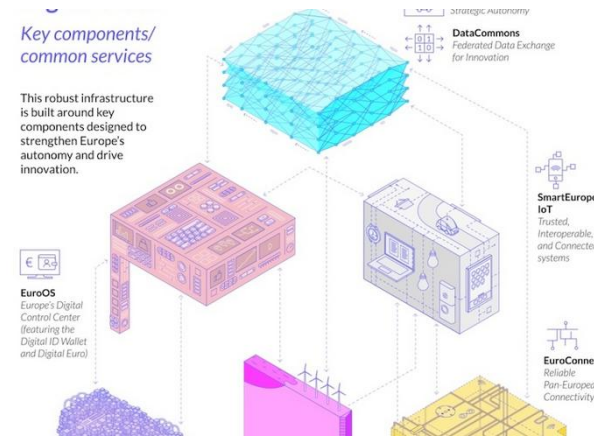


Energy Rail Manufacturing Aerospace-defence ...
 Mobility Farming Health Public administration

Open Source Stack for European Sovereignty



Modular
building blocks



IoT connecting
Systems



SW-driven
Systems

EuroStack key to European Sovereignty

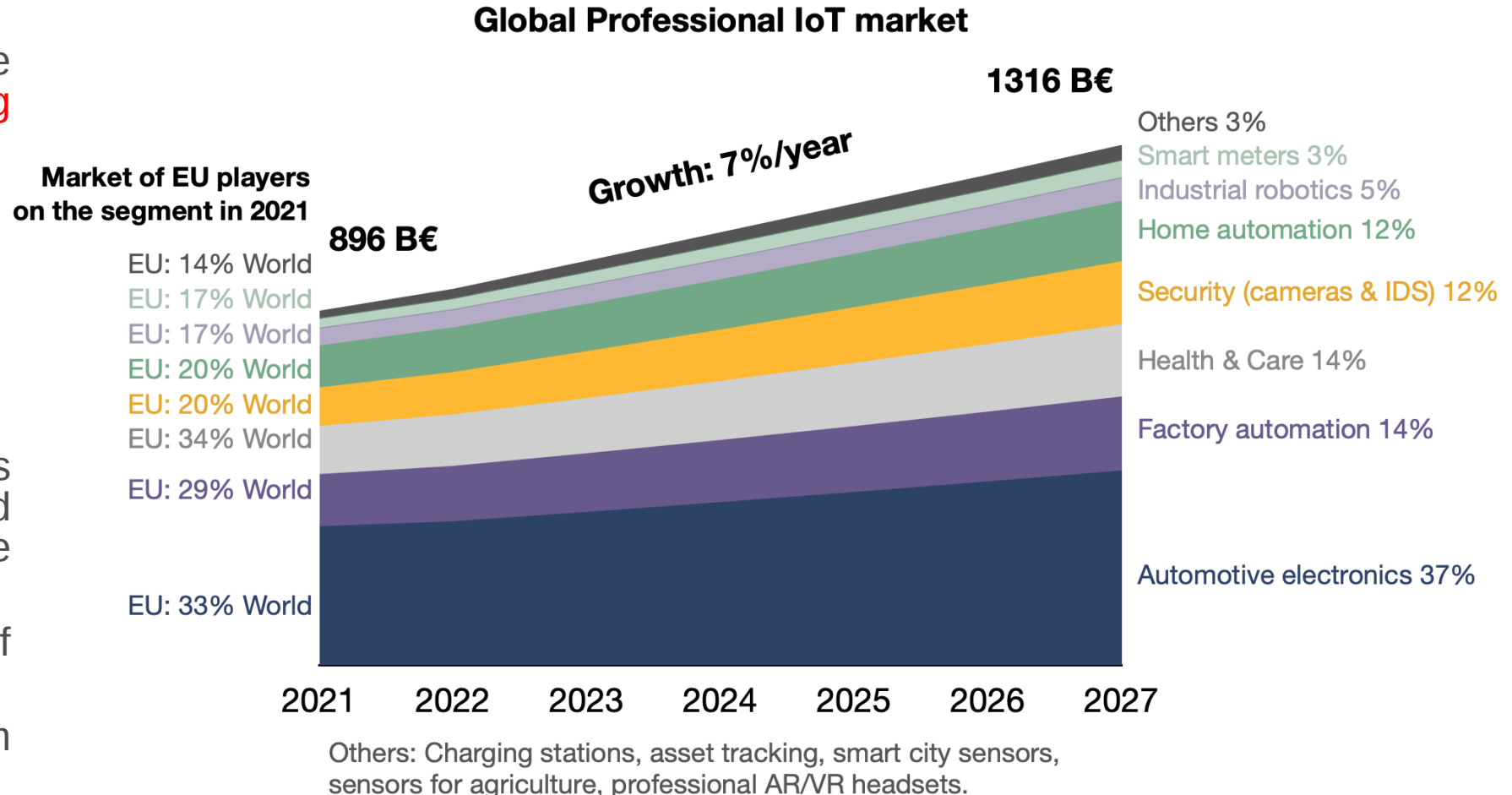
Growth in Industrial Edge-IoT Markets

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 hamper its global competitive position:

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

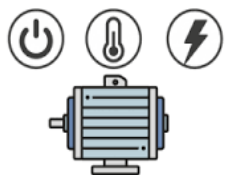


Source: DECISION Etudes & Conseil

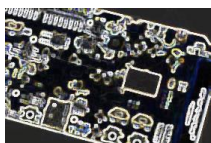
Edge Topology

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



Security / IAM



Application



Far Edge Cloud

Hyperscalers
Big Data Cloud



Applications

Mobility

Manufacturing
& Logistics

Energy

Smart City

Smart Building

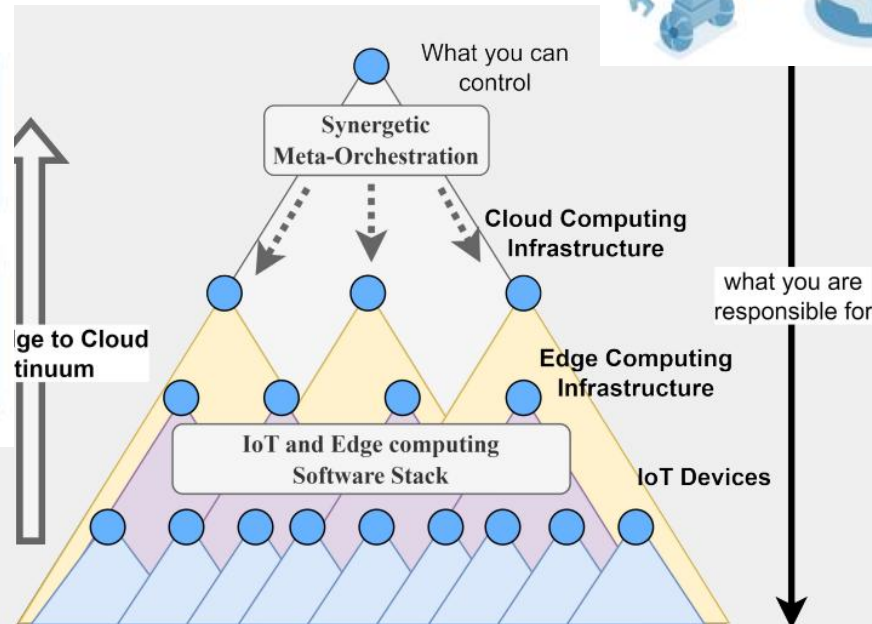
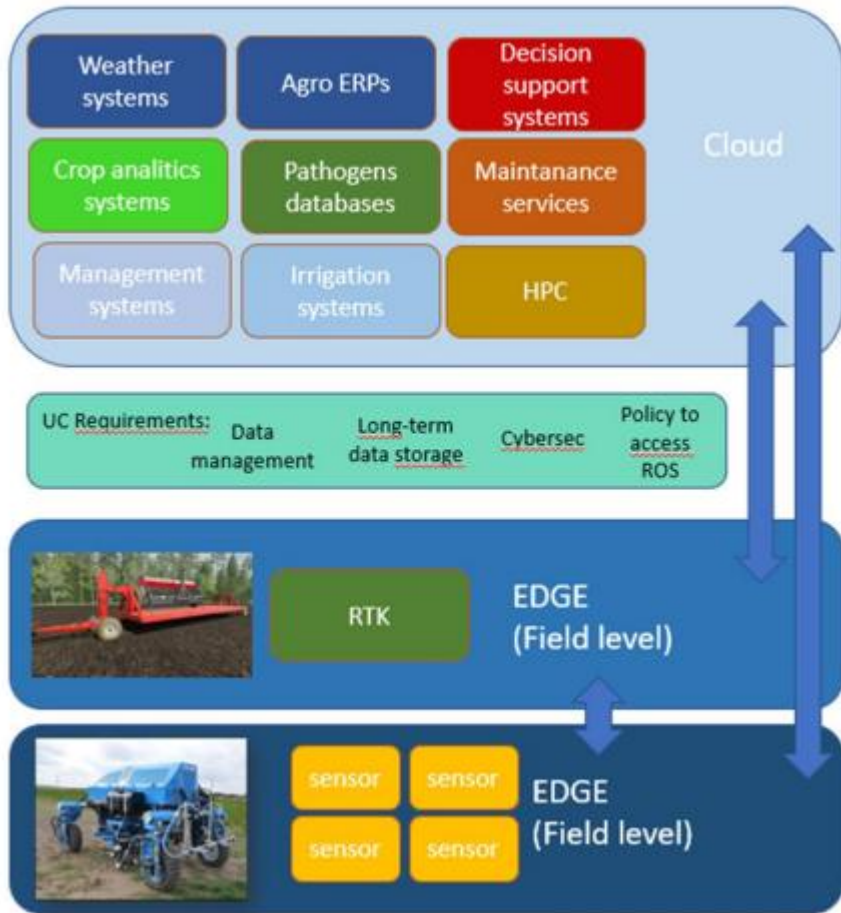
Agriculture



European
Commission



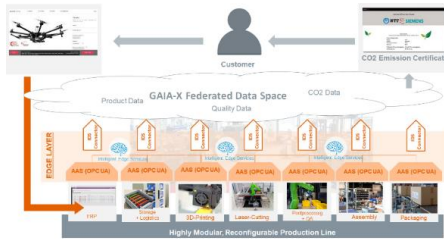
Cloud-Edge Platform



Key Use cases requiring Edge Computing



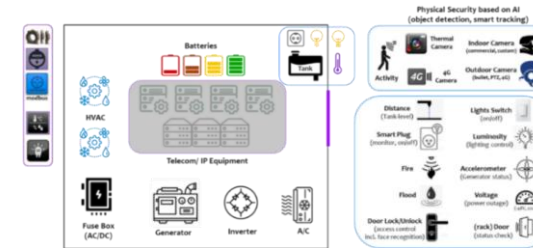
Manufacturing:
Data-Driven Cognitive Production Lines (Manufacturing Autonomy Level 4 – MAL4)



Renewable energy:
Containerised Edge Computing near Renewable Energy Sources



Smart Buildings:
Energy Efficient, Health Safe & Sustainable Smart Buildings



Logistics:
Cloud/Edge for automated routing and warehouse solutions



Renewable energy:
Cloud/Edge for secure and sustainable solutions
Flexibility adapted to consumer needs



Railway:
Cloud/Edge for Structural Alert Monitoring system, local safety

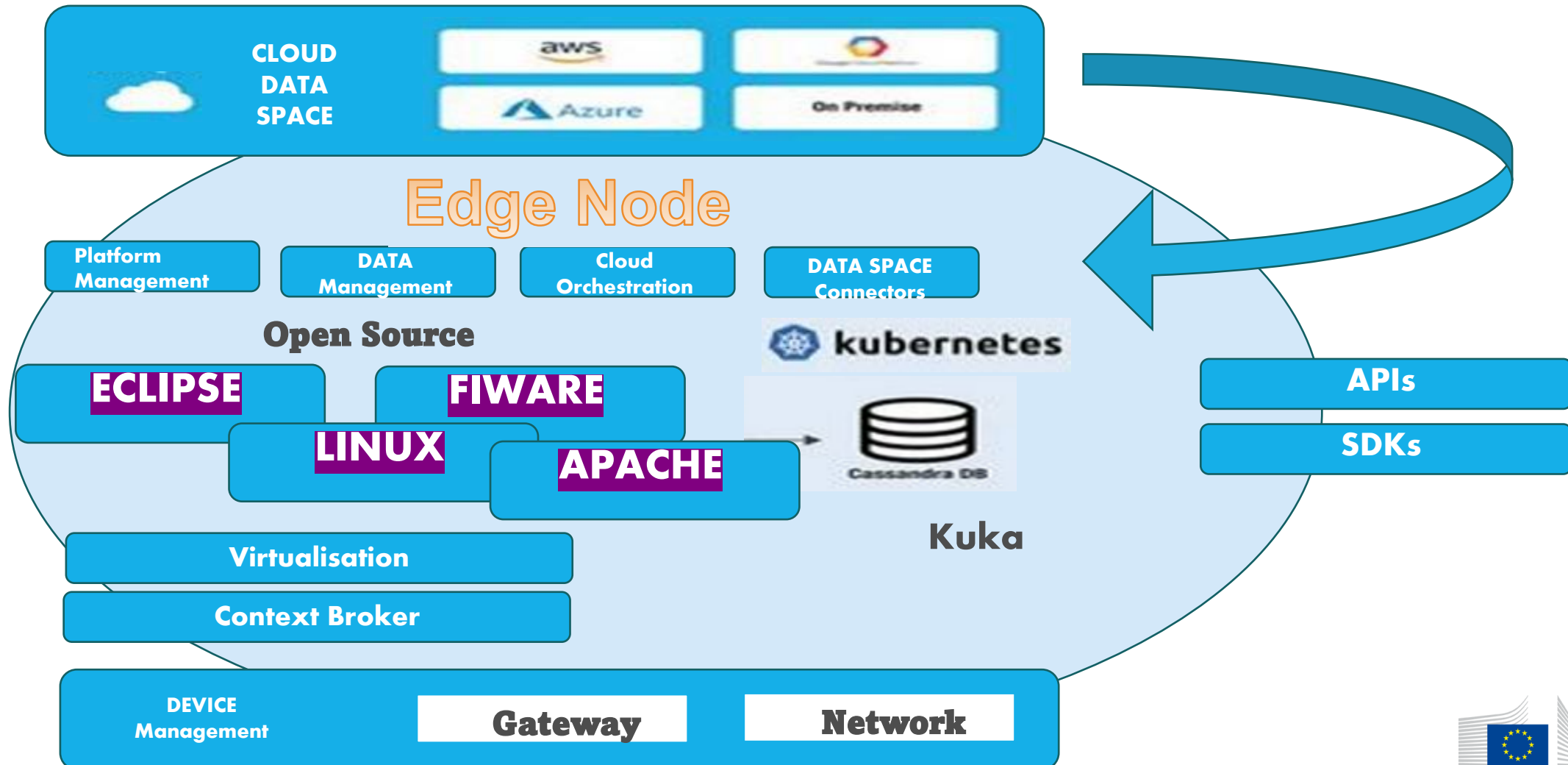


SW-defined Vehicle:
Cloud/Edge for onboard intelligence and connected infrastructure
In-car multimedia management



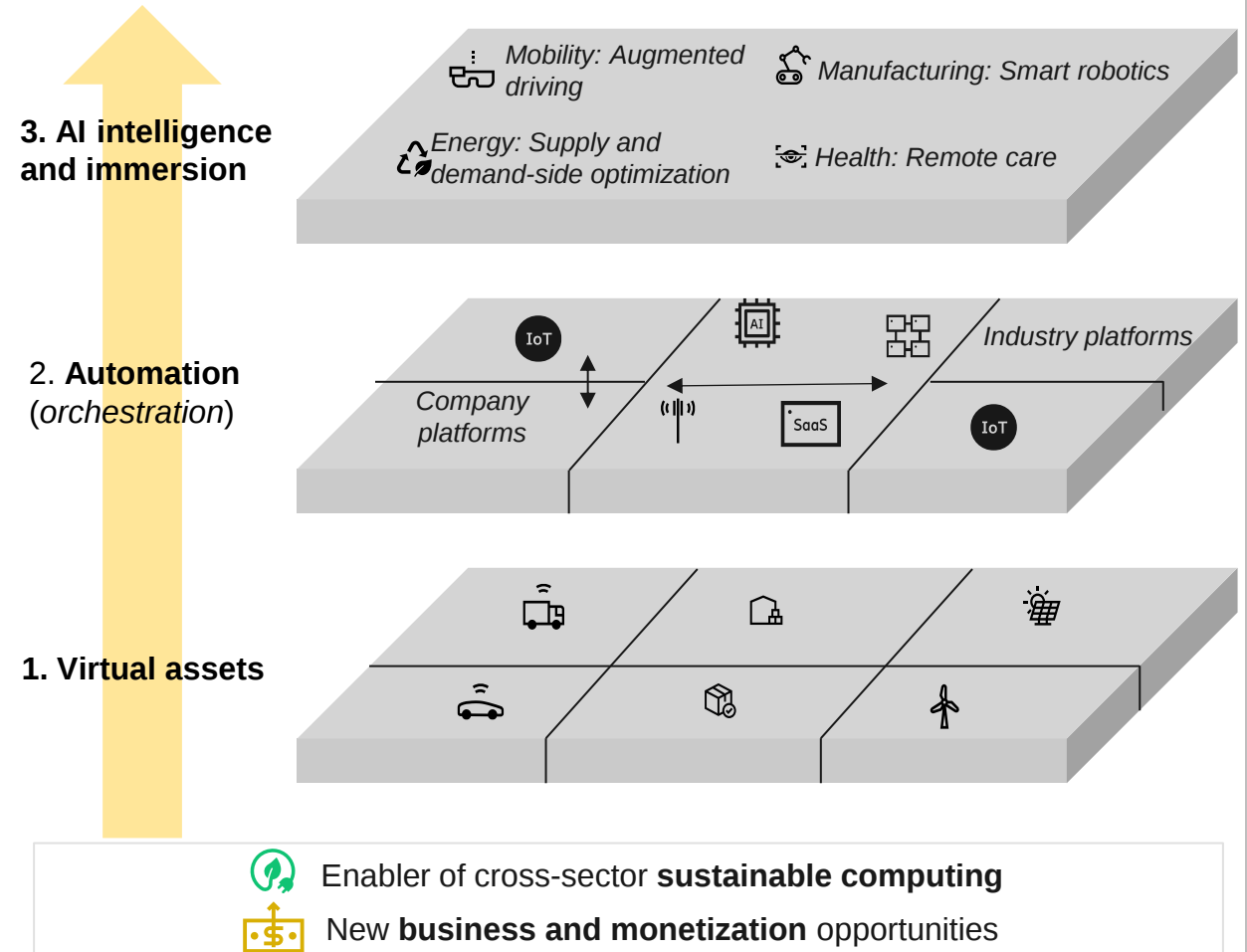
Farming:
Agriculture Operational Robotic Platform

A reference architecture – edge design space



AI/Edge: An Era of Distributed Operational Intelligence

- **Virtual assets:** An **EdgeOS** builds on virtualization and separation of SW and HW
- **Automation:** **AI @theEdge** fosters learning and automated decision making at the point of interest
- Convergence across the Telco-Cloud-Edge Continuum create an opportunity for Europe to pioneer merging **5G Applications and business models**.
- Leveraging **benefits of cloud computing** such as containerisation, virtualisation and modern approaches to application orchestration and Updates OTA for the OT world
- **Decentralized intelligence** is the foundation to realize the huge potential for AI and generative AI across Europe's core industry



AI/GenAI Edge Use cases: Industrial Edge Platforms



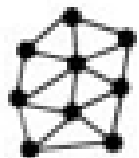
Resource Orchestrator



Digital Twin



AI / ML



Value Networks



Immersive Worlds



IoT-Edge

BMW GROUP

Personal Pilot for automated driving



SIEMENS

Industrial Edge



DASSAULT SYSTEMES

Vehicle virtualisation



European Commission

A digital platform model necessary beyond interoperability

Standardise

APIs

Aggregate

Share Data

Partnership
model

Apps

Smart charging ranks among the main use cases in fast rising cross-industry IoT use cases



The Platform Approach: The hourglass AI model

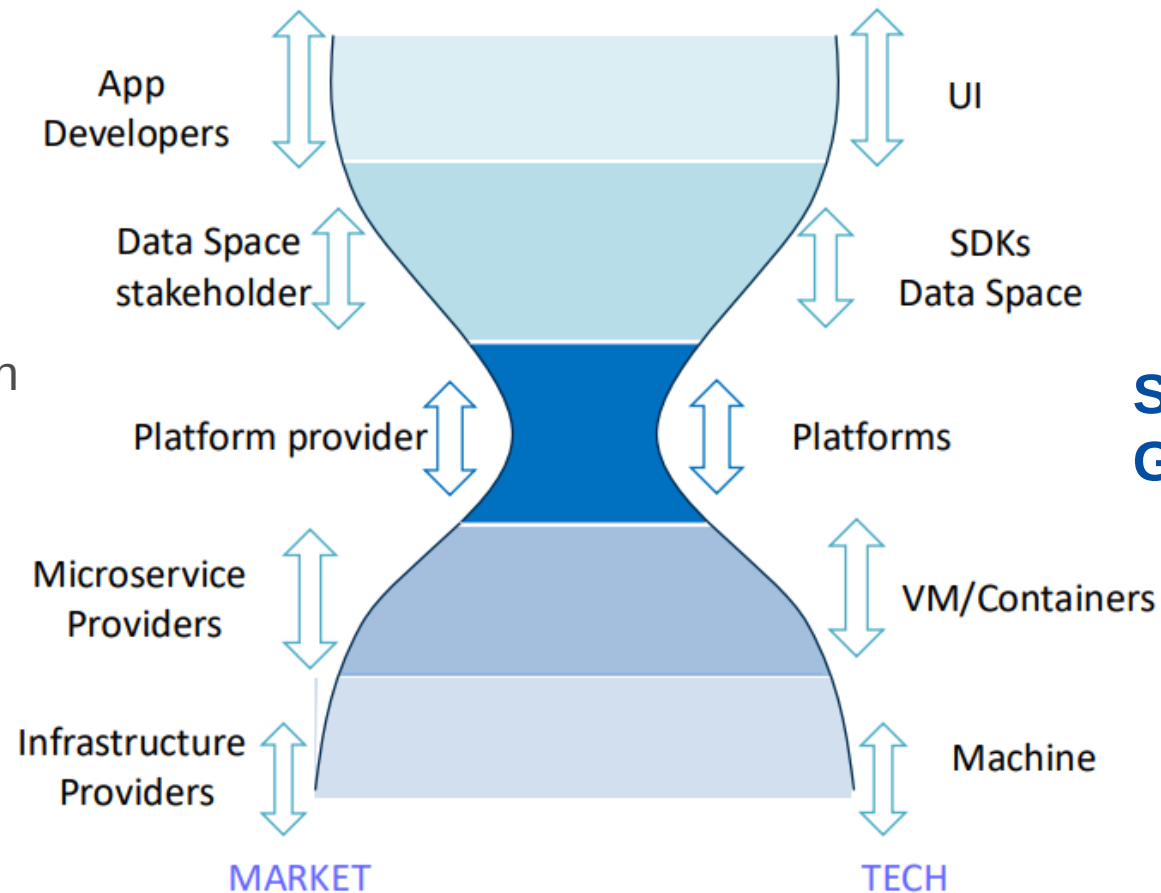
- **Platform Owners**

- To operate infrastructure as a service
- To orchestrate an open AI ecosystem
- Certify safety-critical AI operation
- Ensure system integrity and security
- Enforce graceful degradation in case of emergency

Infrastructure Operators & System Integrators

CEI Sphere

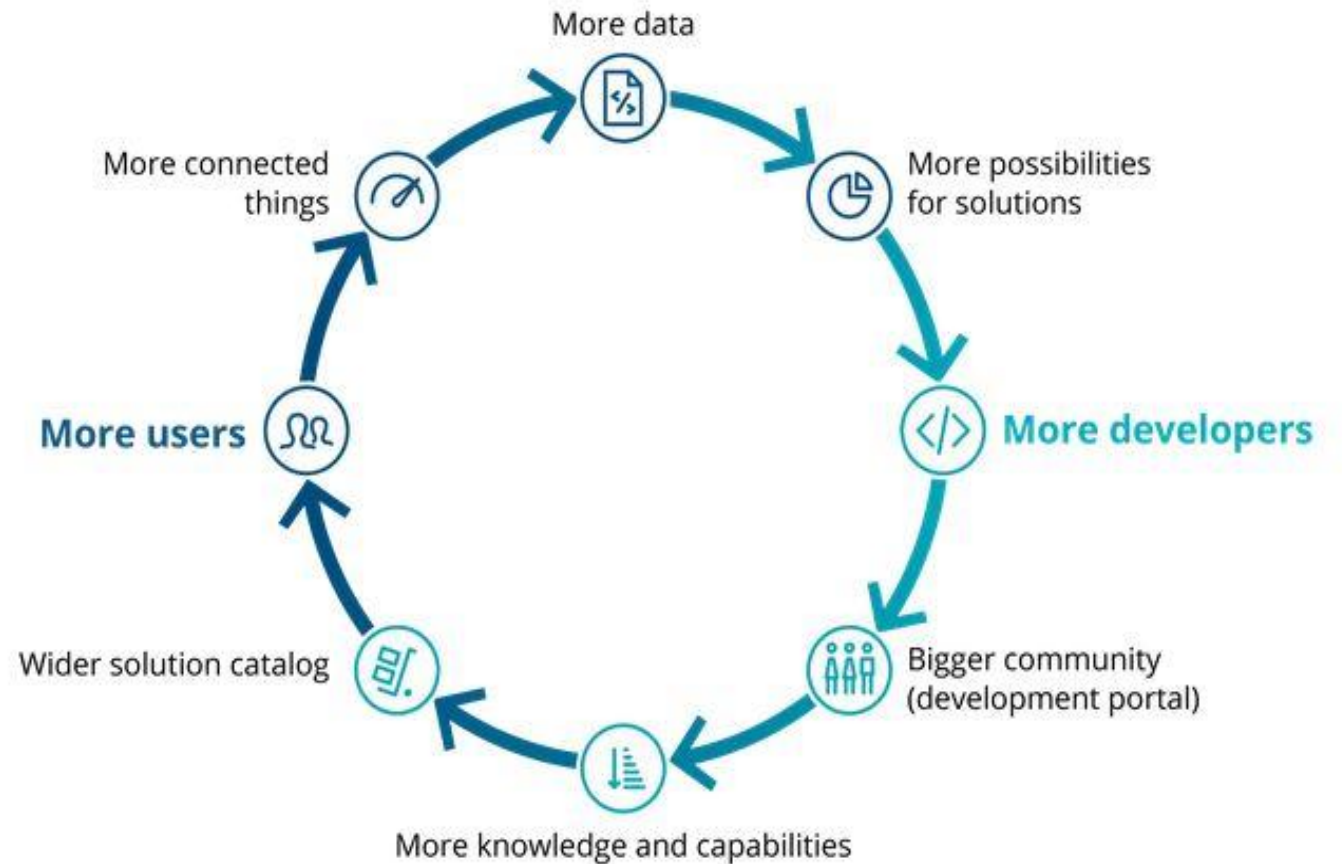
Giga AI Model + App Store



SE Platforms as AI Gatekeeper

Key Take-aways to spur a vibrant IoT ecosystem

- Manage Complexity through *an open platform approach*
- The value of an IoT-Edge Platform corresponds to *the size of its ecosystem* behind the platform
- Require consensus on interoperability and standards as well as ecosystem building in and across verticals
- *Edge platforms* could leverage the momentum of Open Source Communities



Source: Deloitte analysis.

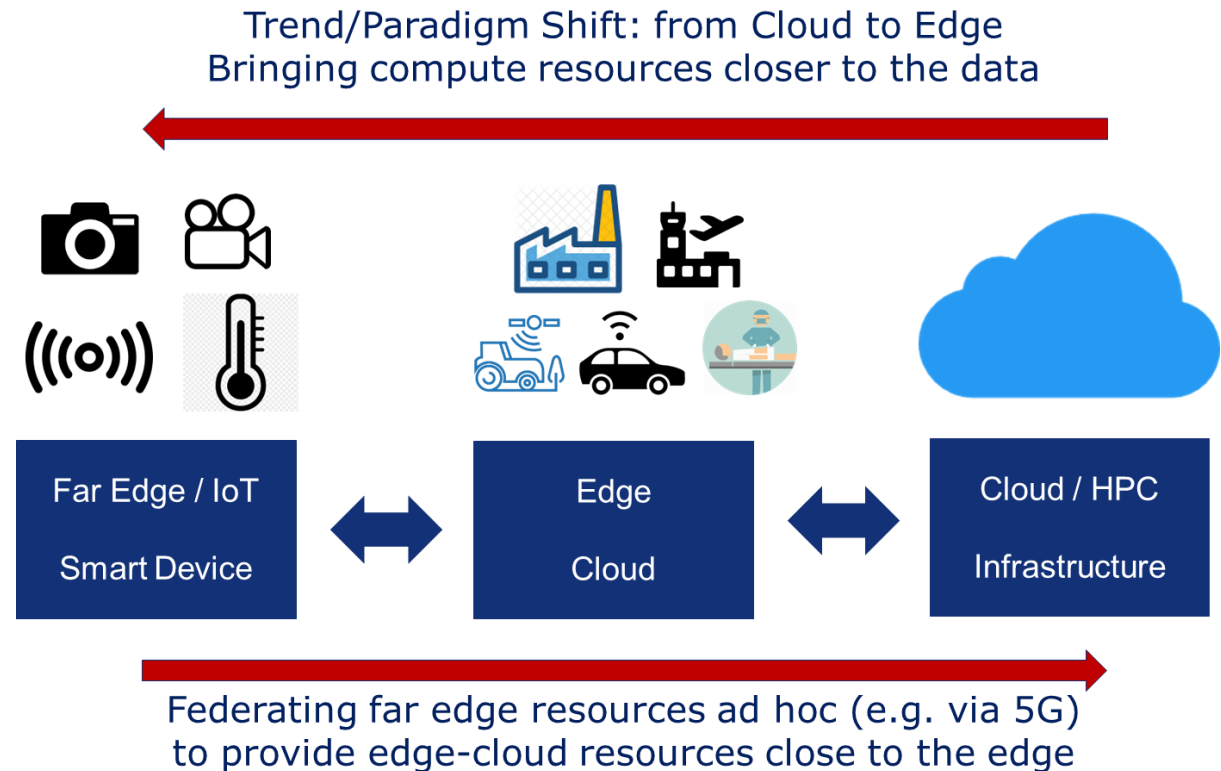
Deloitte Insights | deloitte.com/insights

Pilots to explore new Edge-IoT Paradigms + their Impact of EU Markets

- **An open framework for a vibrant Edge-IoT ecosystem** is key for up-scaling and to leverage economies of scale
 - **Standardisation & Open Source**
 - compliance, **security** as well as synergies across sectors.
 - Underpinning an emerging **open edge ecosystem** including midcaps, SMEs and start-ups,

O-CEI OPEN CALL

- ▶ Up to €100,000 equity-free funding
- ▶ For SMEs & Startups in Cloud-Edge-IoT



OSS Recipe for an AI-powered Edge-IoT Innovation

- **Trends like edge technologies and Artificial Intelligence** will reshape the IoT landscape,
- **Open Architecture for a vibrant IoT ecosystem** is key for up-scaling and to leverage economies of scale
- **Re-usable modular Building blocks** require open APIs and standards
- **A SW Maintainer** to track releases
 - **HW Development Kit or SW Toolbox**
 - Following Policy requirements
- Building **a vibrant ecosystem** in support of the edge-IoT platform
- **AI Gatekeeper** for deploying AI models



THANK YOU

Useful links:

- **Cloud-Edge-IoT Portal** – see www.EUCloudEdgeIoT.eu
- **MetaOS Projects** at the IoT Expo Amsterdam 24-25 Sept.
→ <https://www.iottechexpo.com/europe/>
- **IoT Platform Pilot Project O-CEI** –
→ **Open Call:** <https://o-cei.eu/>
- **Open Source Tender on Home Energy Management Systems**
<https://elaad.nl/en/open-tender-developing-interoperability-in-home-energy/>
- **Data Space Support Center** - <https://dssc.eu>
 - Energy Data Space – <https://insieme.energy/>
 - Common Energy Reference Framework for Energy Saving Apps – <https://eclipse-digital.eu>
- **V2G Leaders Event – Open source and standardisation**
20 Nov. 2025 in Brussels → <https://v2gleaders.com/>