# 5G for Smart Communities

# Healthcare subgroup

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5G MEC
For EU Corridors and Smart Communities

Funded by the European Union

# 5GMEC4EU: Who are we?

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## 5GMEC4EU in a Nutshell

Project Duration: **30 Months**

Project Start: **January 2024**

Consortium: **Monotch & Detecon**

Funding: **CEF Digital**

Managed by: **HaDEA**

Type: **Coordination & Support Action (CSA)**

Main Stakeholders: **5G Smart Communities** & **5G Corridors**

The **5GMEC4EU** project supports the establishment of a "**Connected Collaborative Computing**" – "**3C Network**" to align 5G infrastructure and share knowledge across stakeholders. It supports **5G Smart Communities** and **5G Corridors** in implementing **edge computing** through their 5G projects, enhancing Europe's edge capabilities and fostering profitable **business models**.

monotch
SMART MOBILITY PLATFORMS


Paul Potters


Menno Malta


Nicolas Mercier

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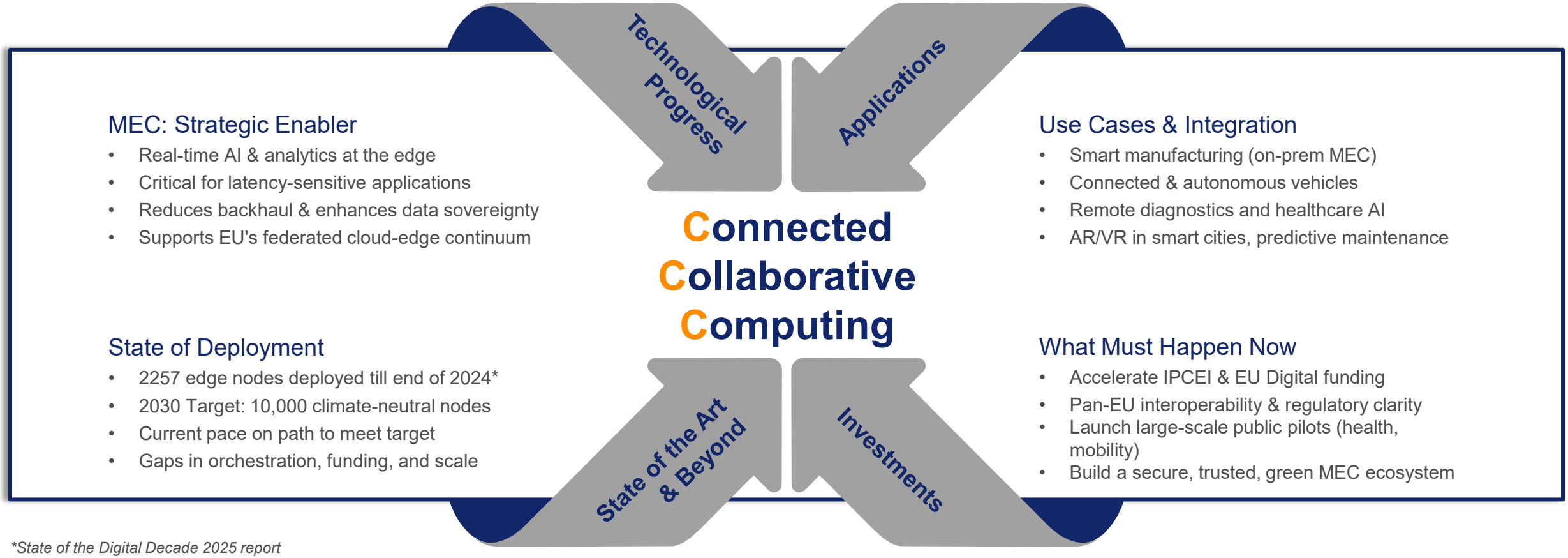
# Creating the “3C Network” - “Connected Collaborative Computing”

“The **advancement of on-device edge technology** is expected to facilitate the presence of significant computational capacity, especially those equipped with AI processors, in a wide range of devices, including robots, drones, **medical devices,** wearables and self-driving cars. Computation is no longer bound to dedicated computing environments such as data centers. Instead, it has become embedded and ubiquitous in almost everything. This will allow to **combine on-device edge with the rest of the broad range of edge computing categories** and different types of cloud services in collaborative computing environments. However, the integration of these different computing resources with various network capacities **will require intelligent orchestration, that also allows optimization for security and sustainability** considerations. “

**White Paper**: “How to master Europe's digital infrastructure needs?”

# MEC's Role in the 3C Network

The **Connected Collaborative Computing** (3C Network) embodies the EU's strategic ambition to create a **federated, AI-powered, secure, and energy-efficient digital infrastructure** that integrates cloud and edge computing across sectors.




## MEC: Strategic Enabler

- Real-time AI & analytics at the edge
- Critical for latency-sensitive applications
- Reduces backhaul & enhances data sovereignty
- Supports EU's federated cloud-edge continuum

## Use Cases & Integration

- Smart manufacturing (on-prem MEC)
- Connected & autonomous vehicles
- Remote diagnostics and healthcare AI
- AR/VR in smart cities, predictive maintenance

## State of Deployment

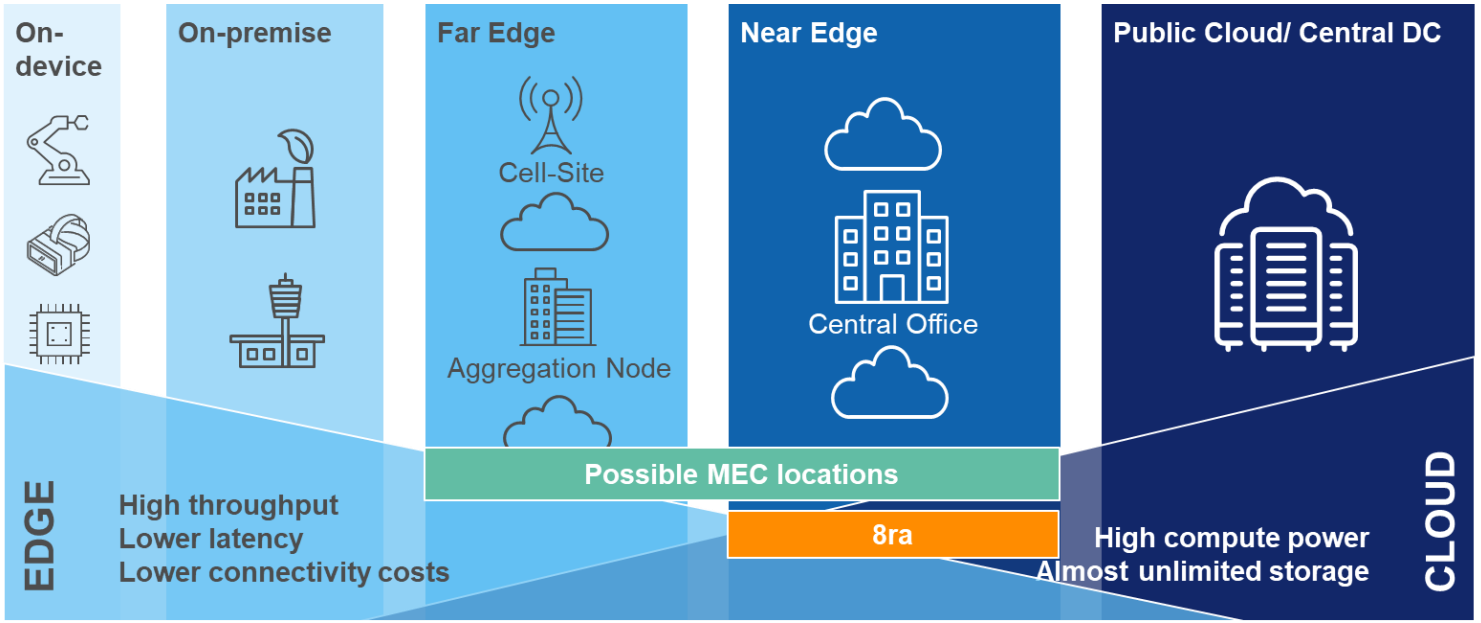
- 2257 edge nodes deployed till end of 2024*
- 2030 Target: 10,000 climate-neutral nodes
- Current pace on path to meet target
- Gaps in orchestration, funding, and scale

## What Must Happen Now

- Accelerate IPCEI & EU Digital funding
- Pan-EU interoperability & regulatory clarity
- Launch large-scale public pilots (health, mobility)
- Build a secure, trusted, green MEC ecosystem

**State of the Digital Decade 2025 report*

# The 5G Cloud-Edge-Continuum enables application owners to run workloads at the exact location, which satisfies the desired service characteristics.




**Indoor/ Small scale**
- Industrial UCs
- Smart Home/ Hospital
- Limited-area deployments

**Outdoor / Large-scale**
- Mobility Use Cases
- Railway use cases
- National and multi-national deployments

**Other**
- All other Use Cases

The **Cloud-Edge-Continuum** refers to the seamless integration of cloud, edge, and on-device computing resources to optimize performance, scalability, and latency.

## Cloud Computing

Cloud computing delivers computing services—like servers, storage, databases, networking, software—over the internet ("the cloud") to offer faster innovation, **flexible resources**, and **economies of scale**. It centralizes data processing in large, remote data centers.

## Edge Computing

Edge computing brings computation and data storage closer to the location where it is needed, to **improve response times** and **save bandwidth**. It reduces latency by processing data near the source, such as IoT devices or local servers.

## Multi-access Edge Computing (MEC)

MEC is a type of edge computing that specifically integrates with mobile networks to provide cloud-computing capabilities at the **edge of the cellular or fixed network**. It enables **ultra-low latency**, **high-bandwidth** services and exposed network functionalities for applications like AR/VR, autonomous vehicles, and real-time analytics.

# Cloud vs. Edge vs. MEC: What's the Difference?

| Feature | Cloud Computing | Edge Computing | MEC |
|---|---|---|---|
| **Location** | Centralized data centers | Near data source (devices, gateways) | At telco edge (base stations, aggregation sites, central offices) |
| **Latency** | High | Low | Ultra-low, optimized for mobile/fixed networks |
| Scalability | Very high, flexible | Limited, local | High, telecom-grade, supports many sites |
| Management & Operations | Centralized, automated, managed via cloud platforms | Local, often manual or semi-automated, site/device-specific | Automated, orchestrated, integrated with network management and lifecycle operations |
| **Telco Network Integration** | General internet | Limited | Deeply integrated with mobile and fixed networks, supporting QoS, QoE, and SLAs. |
| Use Cases | Data storage, analytics, SaaS | IoT, industrial, local automation | Real-time apps, 5G/4G, AR/VR, connected vehicles |
| Data Privacy/Control | Depends on provider/location | More local control | High, with network-level data access |
| **Standards** | Cloud provider-specific | No single standard | ETSI standard, APIs for developers |
| Cost | Variable, usage-based, scales with resources | Higher per site/unit, lower central infrastructure costs | High, due to telecom infrastructure and SLA requirements |

*MEC uniquely combines the ultra-low latency and local data control of edge computing with the scalability, reliability, and **deep network integration** of the cloud, making it essential for real-time, high-performance, and **telecom-enabled** digital services.*



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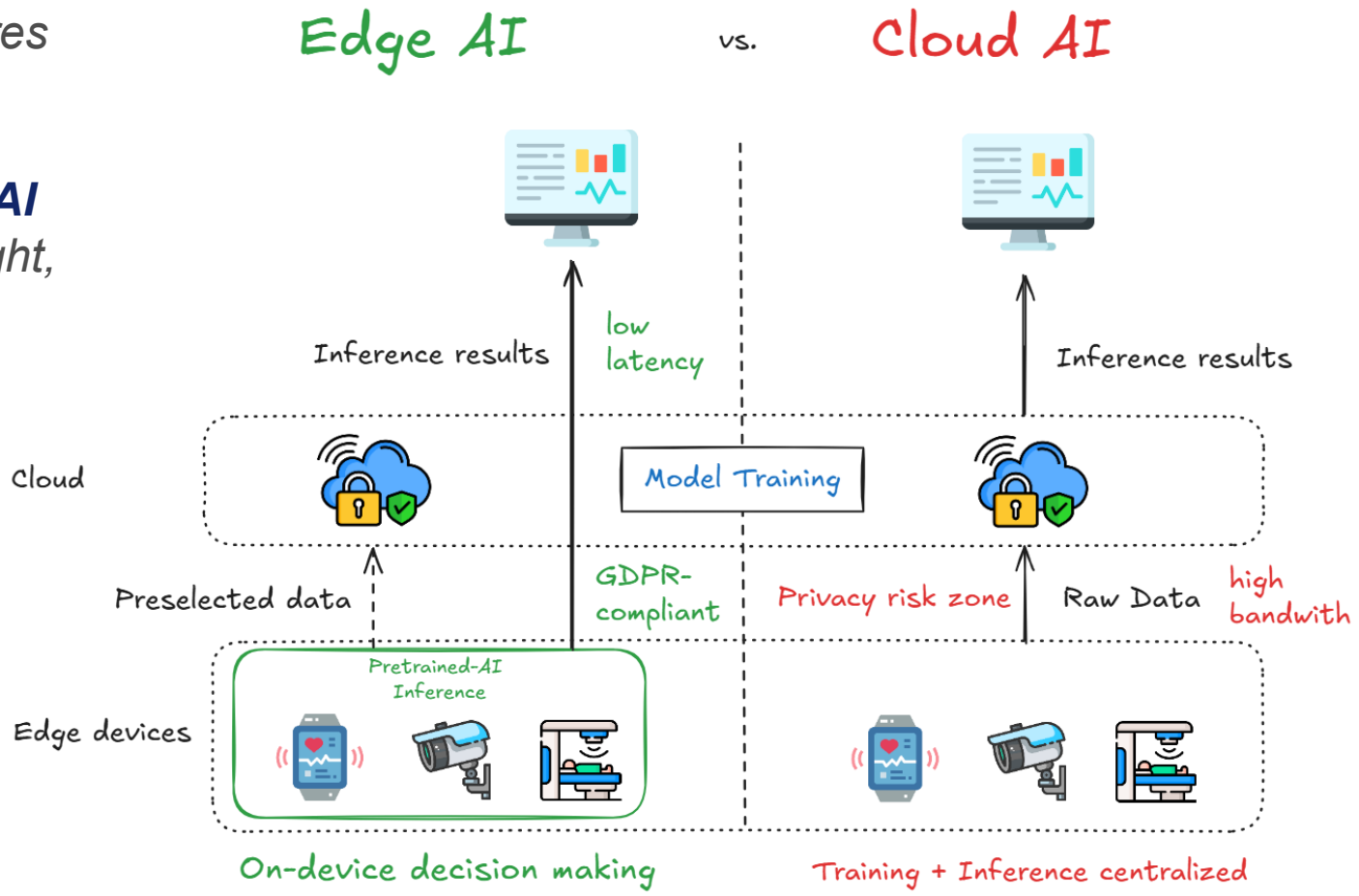
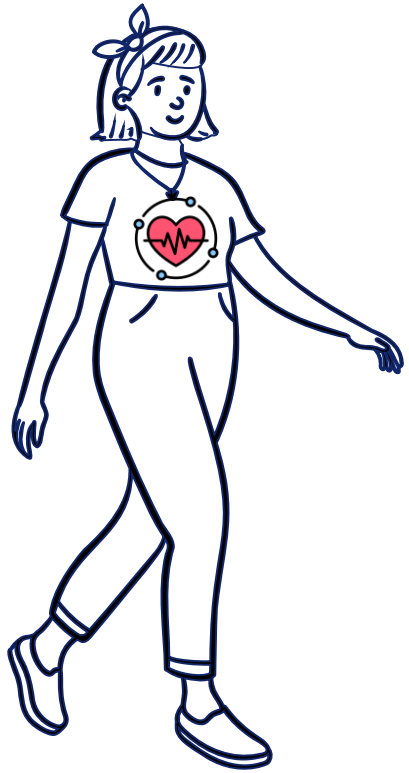
# Edge AI vs. Cloud AI – A Question of Trust, Speed, and Control

⚠️ *"Edge AI requires efficient **hardware accelerators and highly optimized AI models** – lightweight, low-power, and resilient."*



# From Wearables to Early Warnings – AI at the Edge for Predictive Health

To enable **real-time risk detection** for patients with cardiac conditions, by continuously analyzing vital signs through sensors **without sending raw data to the cloud**.



🔐 **Privacy by design:** All personal data stays on-device, fully GDPR-compliant.

⚡ **Real-time response**: Inference happens instantly — no roundtrip to the cloud.

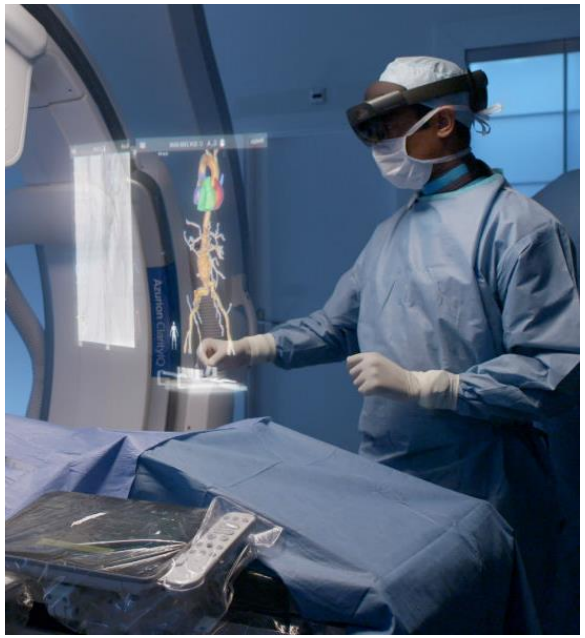
🌐 **Offline-capable**: Works in low-connectivity settings (rural areas, etc.).

🔋 **Low power:** Efficient AI allows long battery life for continuous monitoring.

*Example EU-Horizon Project: https://www.digipredict.eu/*

# Augmented Surgery in Real Time – Powered by Edge AI and 5G

By combining **AR assets with 5G and MEC** medical teams receive visual overlays, step-by-step AI-assisted instructions, and live anatomical guidance — without relying on the cloud.



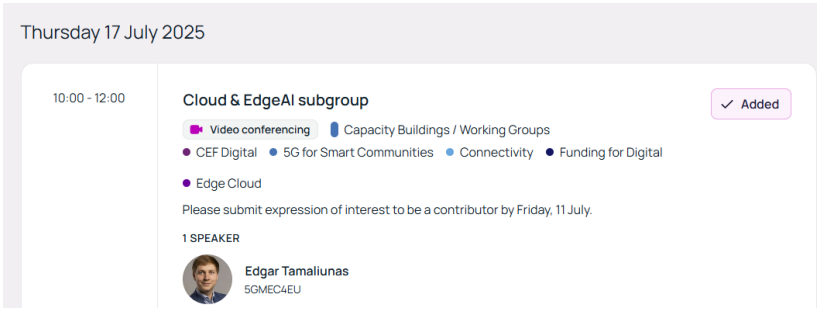
🔐 **Local processing:** No raw video or patient data sent to cloud

⚡ **Ultra-low latency:** Real-time visual overlays during surgery

🌐 **Offline-capable**: Works in low-connectivity settings (disaster sites, etc.).

# Thank you for your attention

Join us:

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Feel free to contact us with any questions, suggestions or assistance.

**5GMEC4EU**