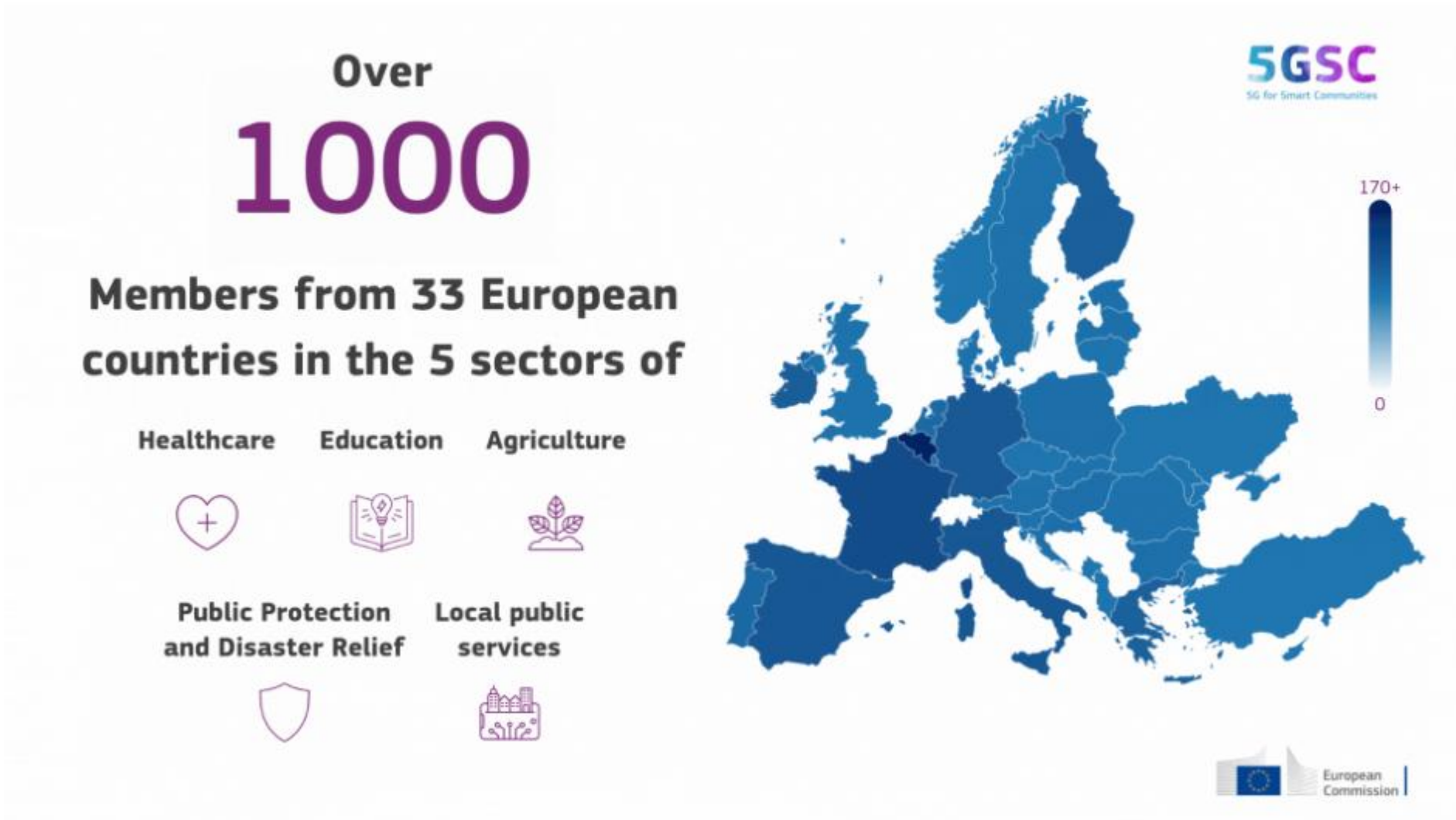


# 5GSC

## Cloud and EdgeAI

17.07.2025

Visit our online networking and knowledge-exchange community for '5G for Smart Communities'



Welcome

5GSC

5G for Smart Communities

[www.5GSC.eu](http://www.5GSC.eu)



# Save the dates



**Thursday September 18, 2025 – Online**

Working Group 3 - Business and investment models for 5G pilots



**Tuesday, October 7, 2025 - Brussels**

CEF Conference & European Digital Connectivity Awards



**Wednesday October 8, 2025 - Brussels**

5G Community Conference

# 5G Deployment Guide

The 5G Deployment Guide, developed by the 5G for Smart Communities Support Platform, serves as a vital resource for public and private stakeholders aiming to bring 5G quality connectivity to life. Grounded in practical experience and shaped by collective expertise, the Guide provides clear direction for the establishment, funding, and implementation of 5G projects across Europe.



Learn more and  
download the 5G  
Deployment  
Guide here



# 5G Community Survey

A new study by the 5G for Smart Communities (5GSC) Support Platform offers a detailed overview of the public funding support made available at national level across the EU-27 for 5G deployment. The research spans the 2022–2024 period, while also looking ahead to planned support schemes for 2025–2027. The study captures not only the current state of investment but also highlights best practices, use case trends, and national project repositories.



Learn more and  
download the 5G  
Community  
Survey here



# Welcome Remarks

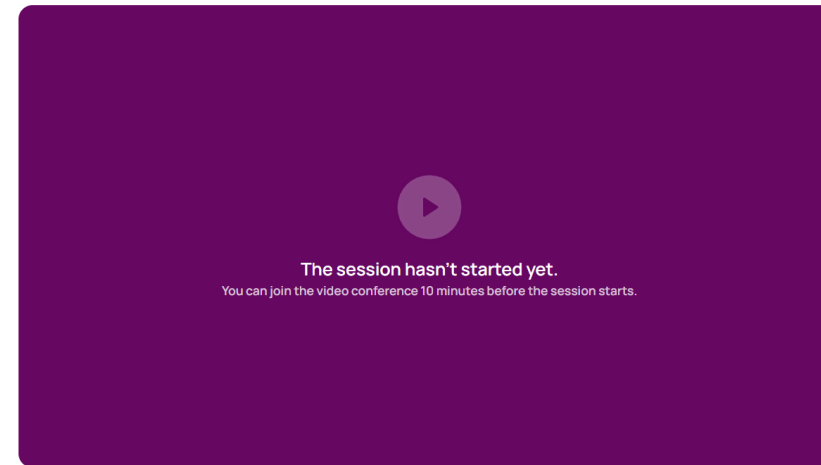
Chair: Edgar Tamaliunas, Consultant, 5GMEC4EU

# Live interaction



slido

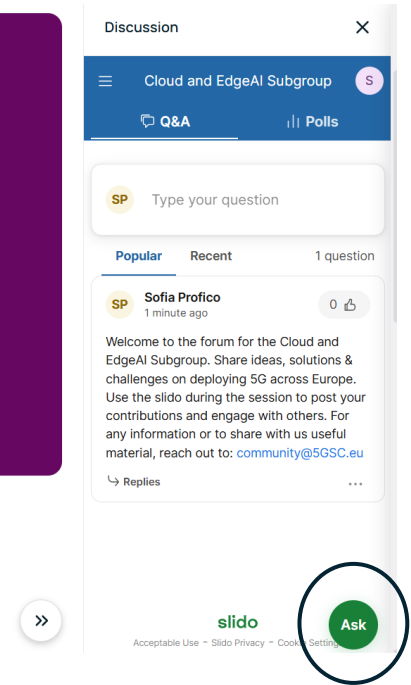
OR



Thursday 17 July 2025 11:00 - 12:00

Cloud & EdgeAI subgroup

- Video conferencing
- Capacity Buildings / Working Groups
- CEF Digital
- 5G for Smart Communities
- Connectivity
- Funding for Digital



# Unlocking 5G MEC Potential

## Challenges, Risks, and Opportunities for EU Digital Infrastructure

17.07.25



Funded by  
the European Union

# Agenda

<b>01</b>	<b>Welcome and Introduction</b> Intro of Community and Challenge Overview	10 min	<b>Edgar Tamaliunas</b> , 5GMEC4EU
<b>02</b>	<b>Deploying 5G for Public Services</b> Real-time water management to enhanced emergency response	15 min	<b>Goran Živec</b> ,VAHTA
<b>03</b>	<b>5G Risk Assessment</b> Ontology for supply chain resilience and security	10 min	<b>Andrew Paskauskas</b> , Lithuanian Cybercrime Center of Excellence for Training, Research and Education
<b>04</b>	<b>Open Discussion</b>	15 min	All
<b>05</b>	<b>5G-Core-as-a-Service</b> Access flexible, scalable solutions tailored to your specific needs	20 min	<b>Johannes Weicksel</b> , CampusGenius
<b>06</b>	<b>Open Discussion</b>	25 min	All
<b>07</b>	<b>Socio-economic value transfer model</b> TBD	10 min	<b>Hendrik Grosser</b> , 5GMEC4EU
<b>08</b>	<b>Open Discussion</b>	10 min	All
<b>09</b>	<b>Closing Remarks</b>	5 min	<b>Dimitra Vasilias</b> , 5GSC

# Welcome to our MEC4EU-Community

## Implementers

- ▶ Sharing Best Practices
- ▶ Showcasing Architectures
- ▶ Addressing Challenges
- ▶ Gathering Requirements



**ED5GE**  
**5G-Metro**  
**5G- Become**  
**5G-WAT- ERR**  
**5G-CDD**

## Project Acronym:

**ED5GE**

**5G-Metro**

**5G-Become**

**5G-WAT-ERR-IB**

**5G-CDD**

## Project Coordinator:



## Main Contacts:

cagatay.yilmaz  
@ri.se

sylvain.leroux  
@orange.com

etompras  
@ote.gr

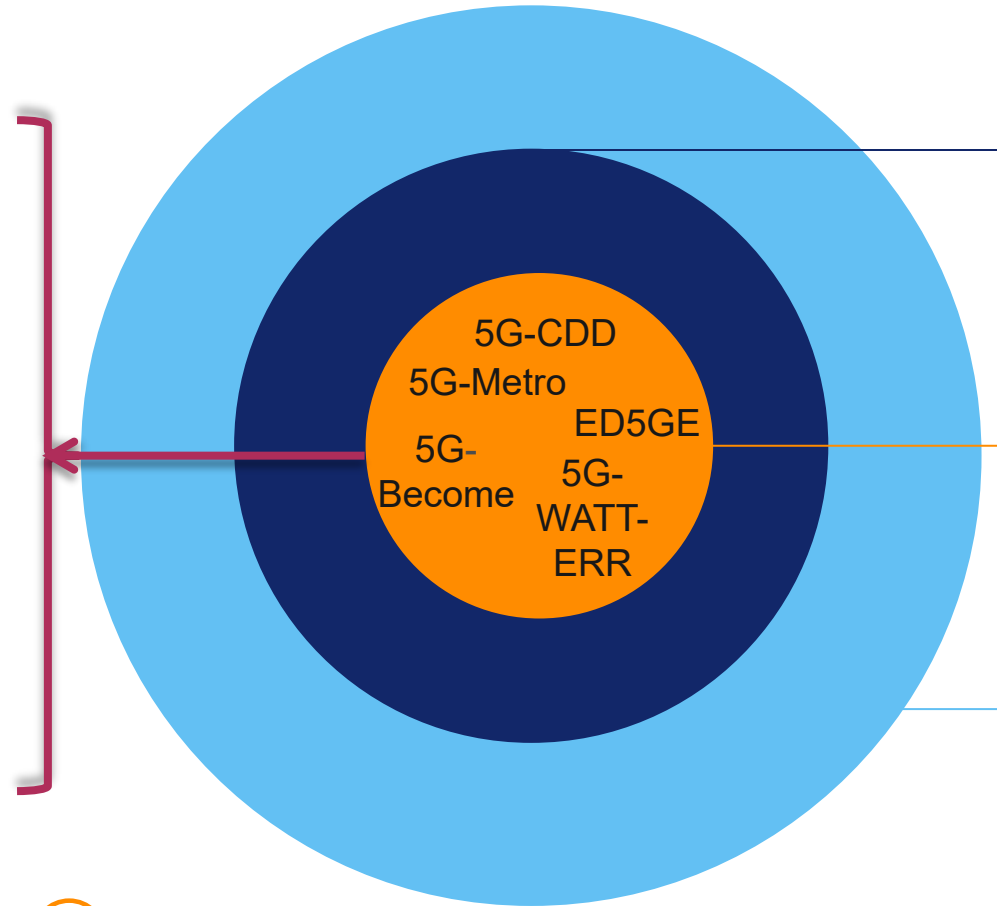
goran@vahta.eu

cristian.patachia  
@orange.com



# With the help of the community, we want to bring together implementers, explorers and observers, transfer knowledge and find solutions to challenges.

- **Raising Awareness** – Promoting the benefits and potential of MEC across industries and stakeholders.
- **Showcasing EU Leadership** – Highlighting innovative MEC implementations within EU-funded projects.
- **Building a Knowledge Hub** – Creating a central space for sharing expertise, best practices, and success stories.
- **Engaging Stakeholders** – Connecting researchers, policymakers, and industry leaders to drive MEC adoption.
- **Amplifying Visibility** – Leveraging events, publications, and media to enhance public and professional recognition.
- **Encouraging Collaboration** – Strengthening partnerships across projects to accelerate MEC innovation and adoption.



## Explorers

- Defining Use Cases
- Assessing Feasibility
- Understanding Challenges
- Learning from Implementers
- ...

## Implementers

- Sharing Best Practices
- Showcasing Architectures
- Addressing Challenges
- ...

## Observers

- Monitoring Trends
- Exploring Opportunities
- Gathering Insights
- ...

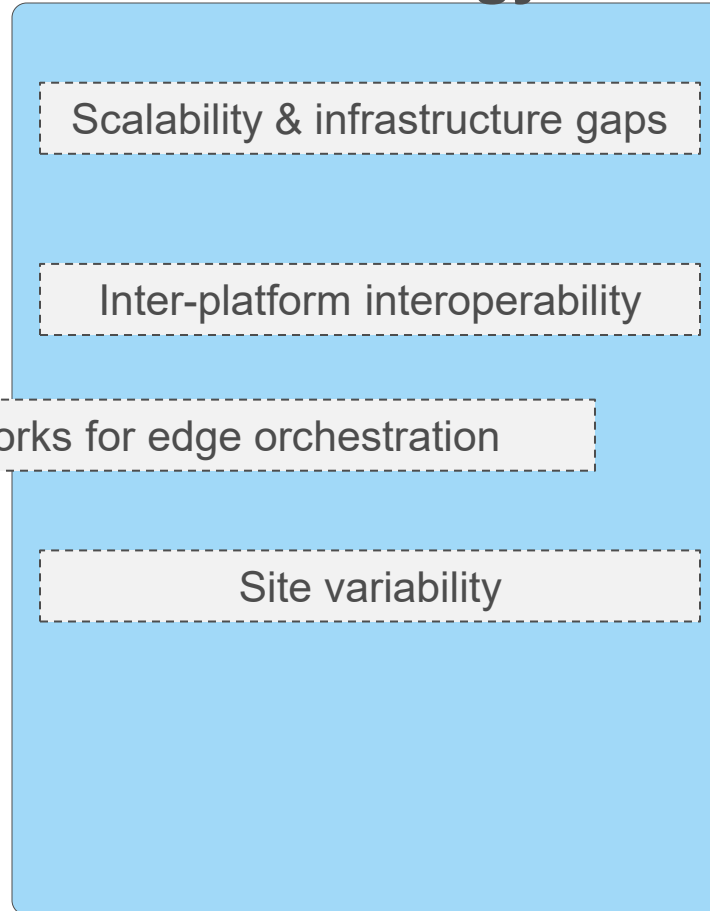
⊕ Researchers, policymakers, and industry leaders

**With the help of the community, we want to bring together implementers, explorers and observers, transfer knowledge and find solutions to challenges.**

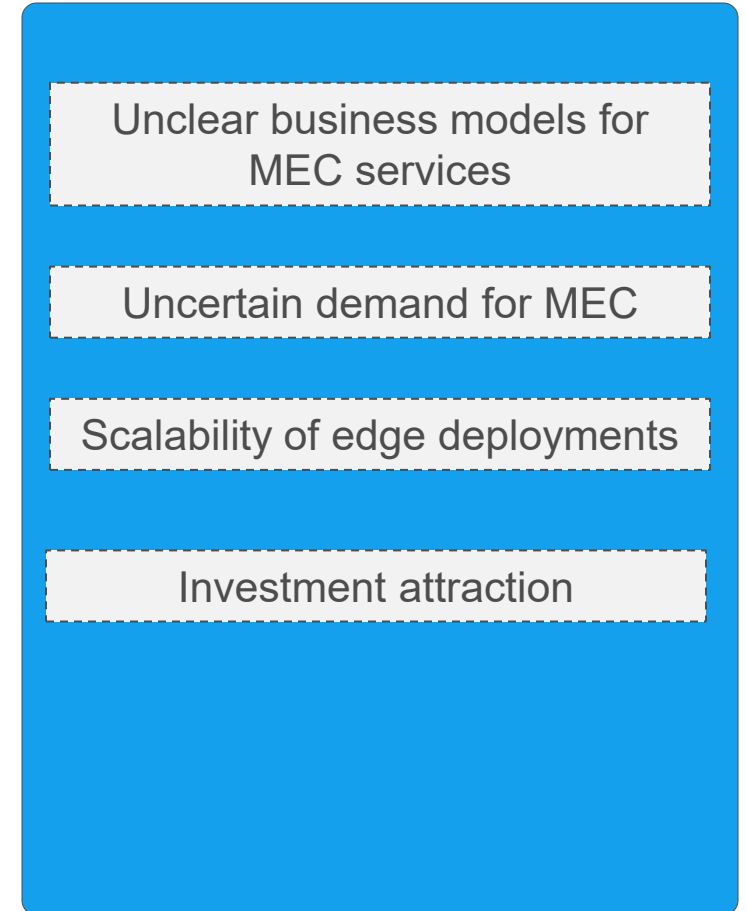
## Regulatory



## Technology



## Business





**Goran Živec**

DIRECTOR  
VAHTA D.O.O.

## **5G-WAT-ERR-IB: Deploying 5G for Public Services**

Goran Živec, Director, VAHTA



Co-funded by  
the European Union



# 5G-WAT-ERR-IB: Deploying 5G for Public Services

July 16, 2025

Goran Živec, Vahta

*“Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or [name of the granting authority]. Neither the European Union nor the granting authority can be held responsible for them.”*

Pametnim skupnostim omogočamo  
razvoj z infrastrukturo 5G



# About the Project

## Location

- Municipality of Ilirska Bistrica, Slovenia
- Strategic regional area with aging water infrastructure challenges
- Focus on rural and non-permanently inhabited zones

## Coordinator

- Vahta d.o.o., a private company leading the project
- Responsible for deployment and management of 5G technologies
- Key driver for integrating innovative tech solutions

## Beneficiary

- Municipality of Ilirska Bistrica
- Local government body aiming to enhance public utilities

## Funding & Duration

- EU grant value: €3.7 million
- Total budget: €4.9 million
- Project duration: January 2025 - February 2027 (26 months)

# The Challenge

1

## Aging water infrastructure issues

- Water network experiences up to 70% losses in certain parts due to aging pipes and outdated systems.
- High energy costs compound operational inefficiencies of the water infrastructure.
- Aging infrastructure reduces reliability and increases maintenance needs, impacting service quality.
- Significant water losses contribute to resource wastage and higher operational expenses.

2

## Coverage gaps affecting emergency response

- Non-permanently inhabited areas lack sufficient network coverage, creating blind spots.
- Limited connectivity hampers timely and efficient emergency response in remote and disaster-prone zones.
- Emergency services struggle with communication and coordination due to coverage gaps.
- Improving coverage is essential for enhancing safety and response times during crises.

► The project faces significant challenges due to aging water infrastructure with losses up to 70% and high energy costs, alongside insufficient coverage in non-permanently inhabited areas, which critically limits effective emergency response capabilities.

# Our Solution



## Private standalone 5G network + LoRaWAN + edge computing

Deploying a private 5G network integrated with LoRaWAN and edge computing to support real-time data processing and connectivity.



## Integration with existing fiber infrastructure

Seamlessly integrating the new 5G network with existing fiber optic infrastructure for enhanced reliability and speed.



## Smart water monitoring

Real-time monitoring of flow, pressure, and water quality using IoT sensors across the network for efficient resource management.



## Emergency response system

Trailer mounted 5G base stations for temporary coverage in case of need and a drone equipped with thermal and HD cameras and a mobile 5G base station enable quick deployment and real-time coordination in emergencies.

▶ Our integrated solution leverages a private standalone 5G network combined with LoRaWAN and edge computing to enable smart water monitoring and rapid emergency response, enhancing efficiency and coverage.

# Use case 1 - Smart water supply

Deploying IoT sensors on a 200 km network enables real-time monitoring for leak detection and resource optimization, aiming to reduce water losses by 5% and provide reliable service to 13,500 residents and businesses with lower energy consumption.

## Detailed overview of the smart water supply use case and its benefits

- 200 km of water network monitored continuously by IoT sensors providing real-time data on flow, pressure, and quality.
- Primary goal: Achieve a 5% reduction in water leakages through early detection and intervention.
- Enhanced resource utilization leading to lower energy demand and operational costs in water supply management.
- Reliable and consistent water service provision for approximately 13,500 residents and local businesses within the municipality.
- Integration of smart water monitoring technologies to support sustainable water management and reduce environmental impact.

## Use case 2 - Emergency response

Real-time emergency response enabled by advanced 5G technologies and mobile deployment capabilities

- Drones equipped with thermal and HD cameras provide crucial rescue support by capturing detailed live images, enabling responders to locate people in distress even in challenging conditions.
- Mobile 5G trailers can be deployed and set up within 3 hours to establish rapid network coverage in disaster-affected or remote areas where permanent infrastructure is lacking.
- The system ensures reliable 5G coverage for disaster zones and remote locations, overcoming connectivity gaps that typically hamper efficient emergency operations.
- Real-time coordination through the 5G network allows for faster, safer emergency response by enabling continuous communication and data sharing among rescue teams.
- Integration of drones and mobile base stations enhances situational awareness, improving decision-making during critical rescue missions.
- This use case exemplifies how 5G technology facilitates agile and effective emergency responses, reducing risks and potentially saving lives in urgent situations.

The combination of drones with thermal and HD cameras and rapidly deployable 5G mobile trailers ensures comprehensive coverage and real-time coordination in emergency response, significantly enhancing rescue operations in disaster and remote areas.

# Business challenges: CAPEX risks

Supply chain uncertainties pose significant capital expenditure risks. Early equipment acquisition is essential to mitigate delays and ensure project timelines are met.

## Key CAPEX risks

- Supply chain uncertainty affecting equipment availability from diverse regions including the Far East, USA, and Middle East.
- Global logistics disruptions may cause delays and increased costs impacting project capital expenses.
- Dependence on international suppliers introduces vulnerability to geopolitical and trade fluctuations.

## Mitigation strategies

- Suggested solution: Acquire necessary equipment as soon as possible to avoid supply delays and secure project schedule.
- Proactive procurement helps manage risk by locking in prices and availability amid market volatility.
- Early acquisition supports uninterrupted deployment and integration phases, minimizing downtime and cost overruns.

# Business Challenges: OPEX risk

1

## Unstable revenue stream

- Revenue from the public services alone may be unpredictable and insufficient to cover ongoing operational expenses.
- Dependence on a single revenue source increases financial vulnerability against market fluctuations.
- This instability could impact the ability to maintain and upgrade the 5G infrastructure effectively.
- Regular assessment and financial planning are necessary to manage cash flow and operational costs.
- Exploring diversified revenue sources is critical for long-term project sustainability.

2

## Mitigation: ensuring spillovers

- Offering private 5G network services to local companies to generate additional revenue streams.
- Open access 5G for Mobile Network Operators (MNOs) to encourage wider network utilization and collaborations.
- These approaches help stabilize income by leveraging commercial opportunities beyond public service use.
- Spillovers increase the project's economic viability and support ongoing operational costs.
- Partnerships with companies and MNOs create a sustainable ecosystem around the 5G deployment.

► The project faces OPEX risks primarily from an unstable revenue stream, which could impact financial sustainability. To mitigate this, the project aims to ensure spillovers by offering private 5G services to companies and open access 5G to Mobile Network Operators (MNOs), creating additional revenue opportunities and broader network utilization.

Pametnim skupnostim omogočamo  
razvoj z Infrastrukturo 5G



Thank you



**Andrew  
Paskauskas**

RESEARCHER  
L3CE

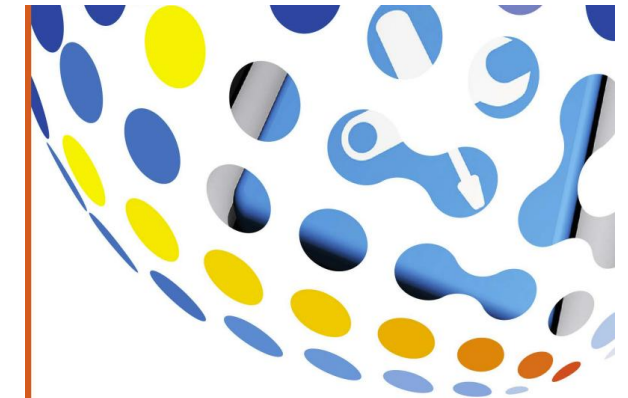
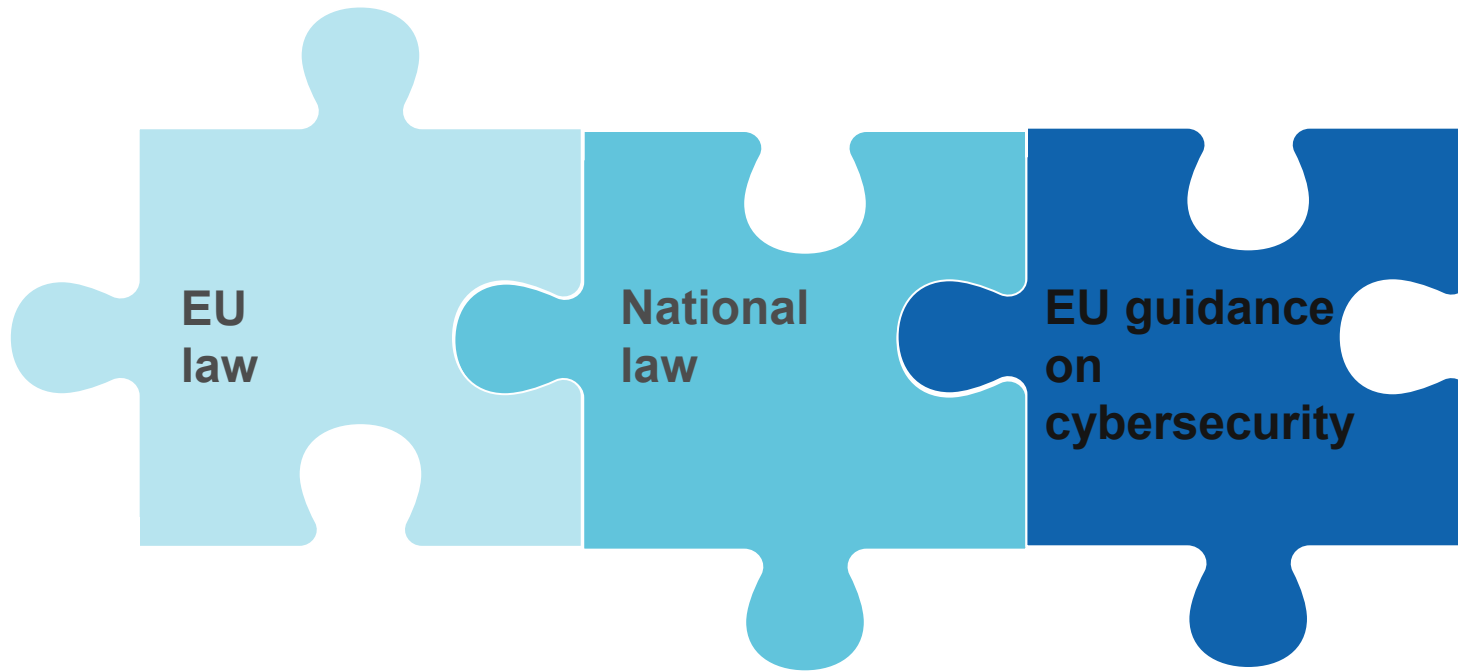
## 5G Risk Assessment

Andrew Paskauskas, L3CE

# Security Requirements in Focus: What the CEF-5GSMARTCOM Call Demands

## Call-Document 5GSMARTCOM

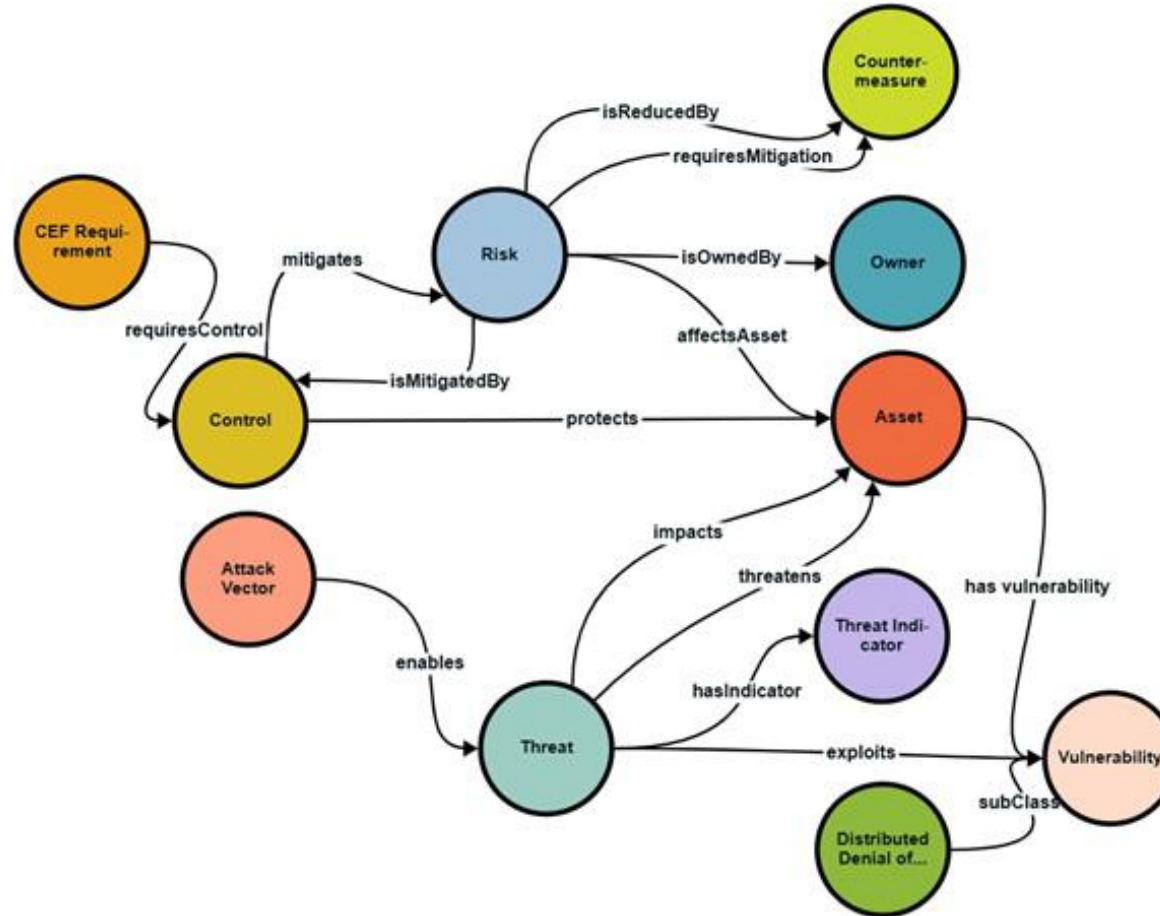
“All the proposals submitted to this topic must include security declarations by participating entities, which confirm and demonstrate that the network technologies and equipment (including software and services) funded on the basis of the CEF programme **comply with security requirements as specified in the present call text, in accordance with the applicable EU law, national law, and EU guidance on cybersecurity...**”



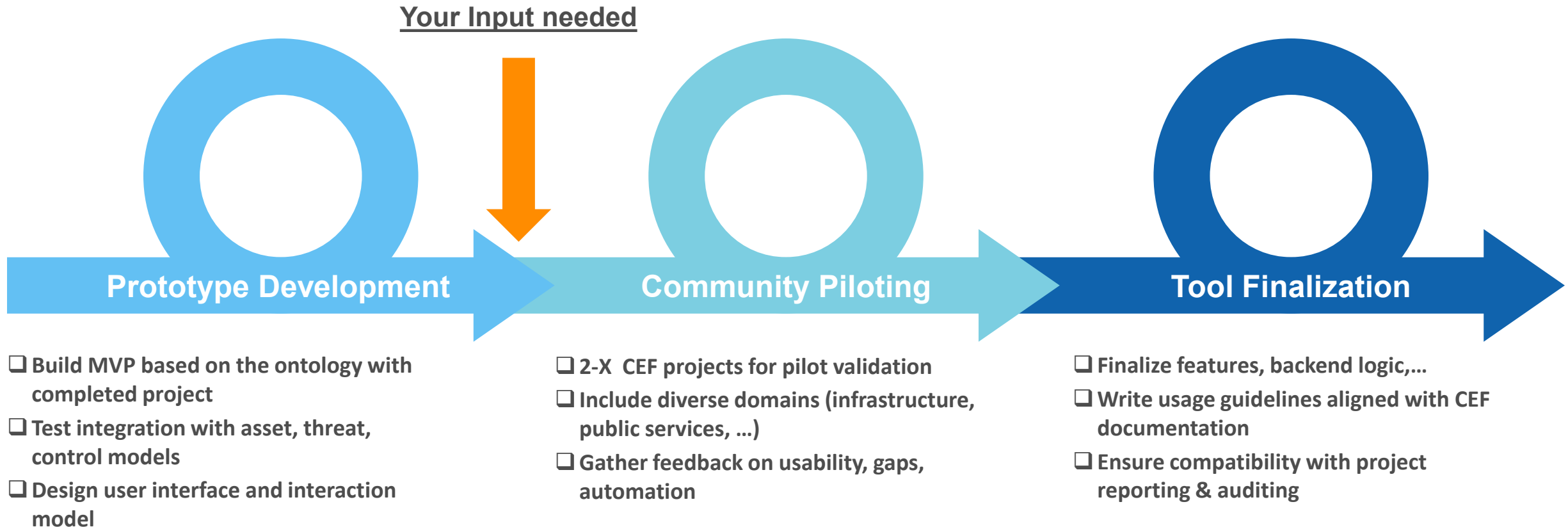
Cybersecurity of 5G networks  
EU Toolbox of risk mitigating  
measures

<https://digital-strategy.ec.europa.eu/en/library/cybersecurity-5g-networks-eu-toolbox-risk-mitigating-measures>

This ontology-based approach supports CEF projects in aligning with EU law, national regulations, and cybersecurity guidance—paving the way for a customized risk assessment tool.



# Roadmap to a 5G Risk Assessment Tool for CEF Projects



# Open discussion

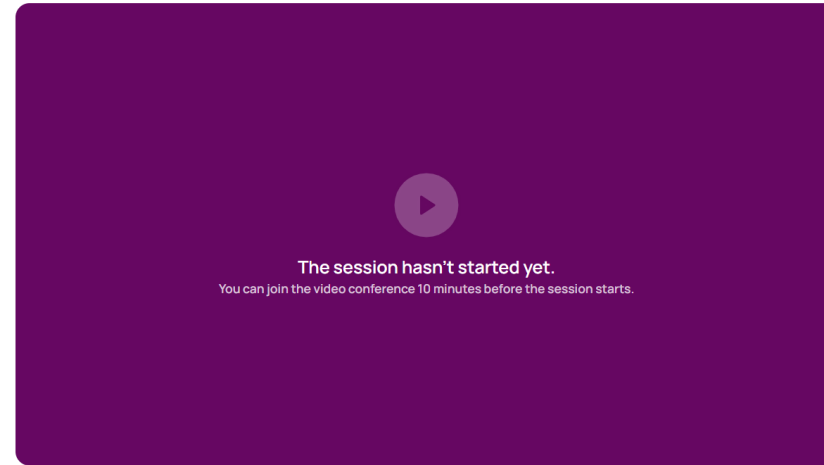
Chair: Edgar Tamaliunas, Consultant, 5GMEC4EU

# Live interaction



slido

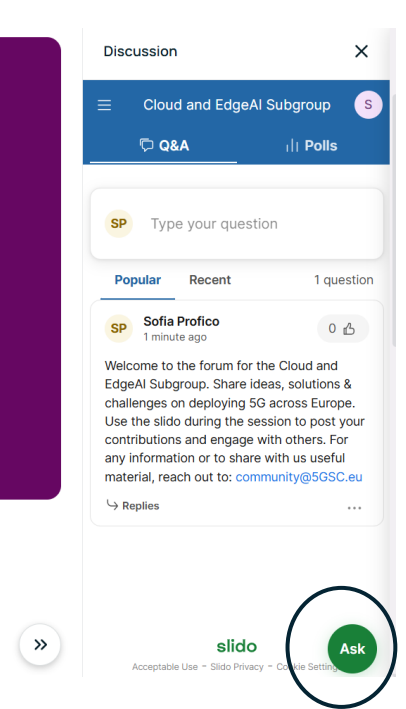
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Thursday 17 July 2025 | 10:00 - 12:00

Cloud & EdgeAI subgroup

- Video conferencing
- Capacity Buildings / Working Groups
- CEF Digital
- 5G for Smart Communities
- Connectivity
- Funding for Digital





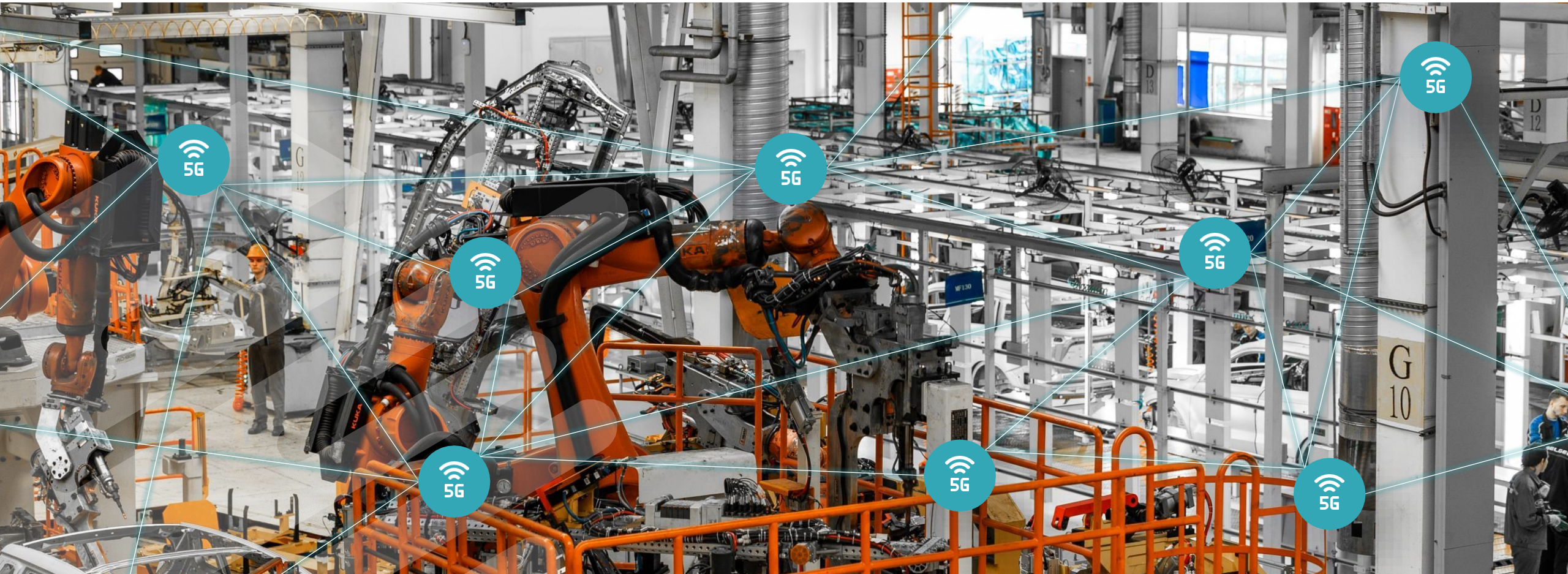
**Johannes  
Weicksel**

HEAD OF BUSINESS  
DEVELOPMENT  
CAMPUSGENIUS

## 5G-Core-as-a-Service

Johannes Weicksel, Head of Business  
Development, CampusGenius

# 5G-as-a-Service for Enterprise Applications



# CampusGenius Who We Are

2020  
Founded



23  
Employees



5GACIA



xG-ALOE

Werner-von-Siemens Centre  
for Industry and Science

NOKIA

airpuls

is-wireless™

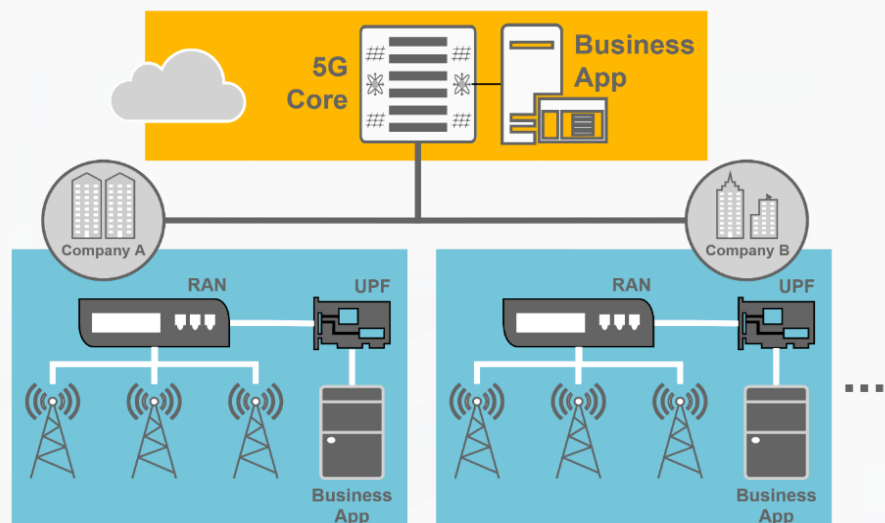
Microamp



OUR PORTFOLIO

# Experts for private 5G

## 5G-Core Development



CampusGenius 5G-SA GeniusCore Cloud Deployment

## Turkey solutions



End-to-end solutions



Tailor-made for our customers



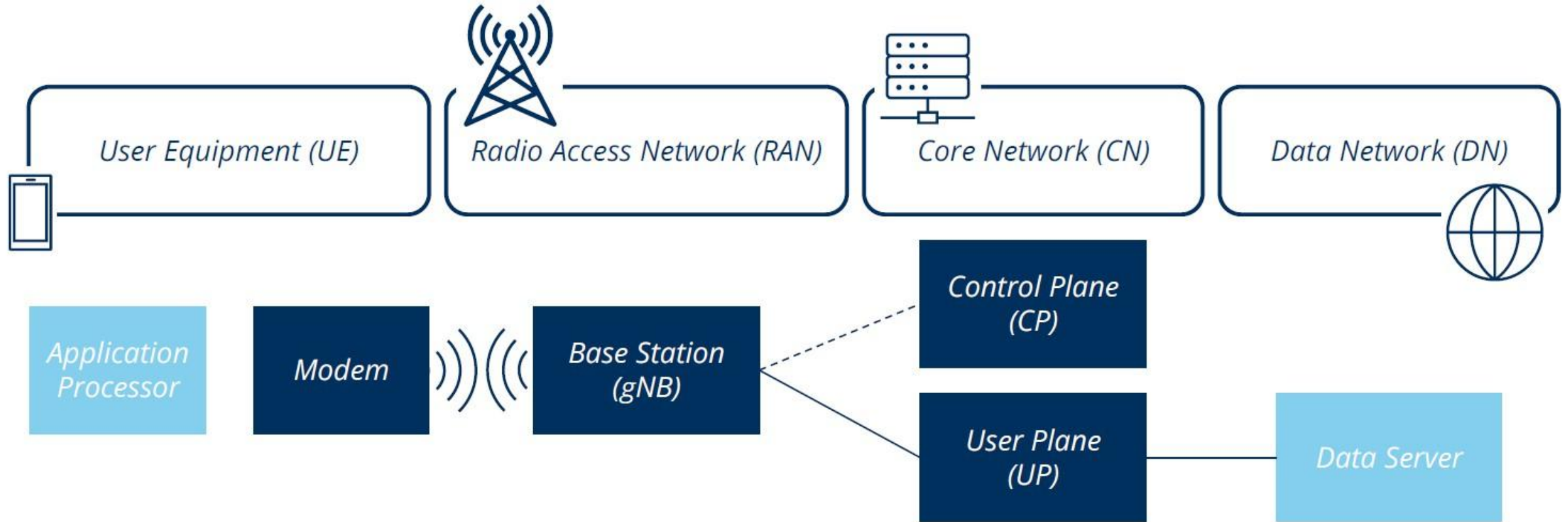
Fully integrated and pre-configured



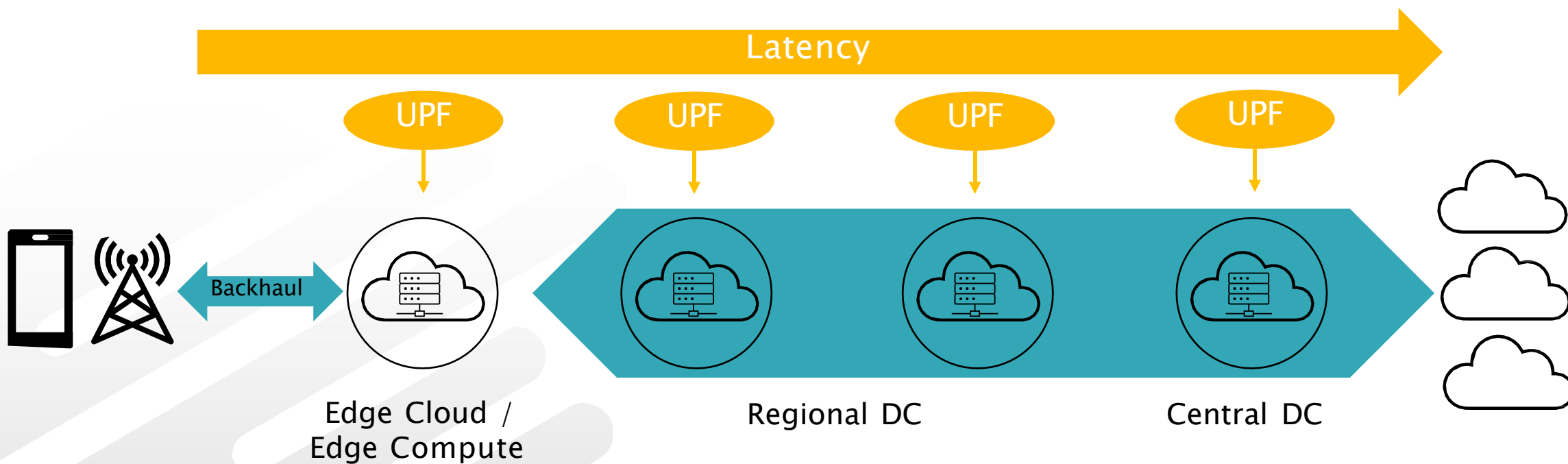
Operation and monitoring

5G ARCHITECTURE

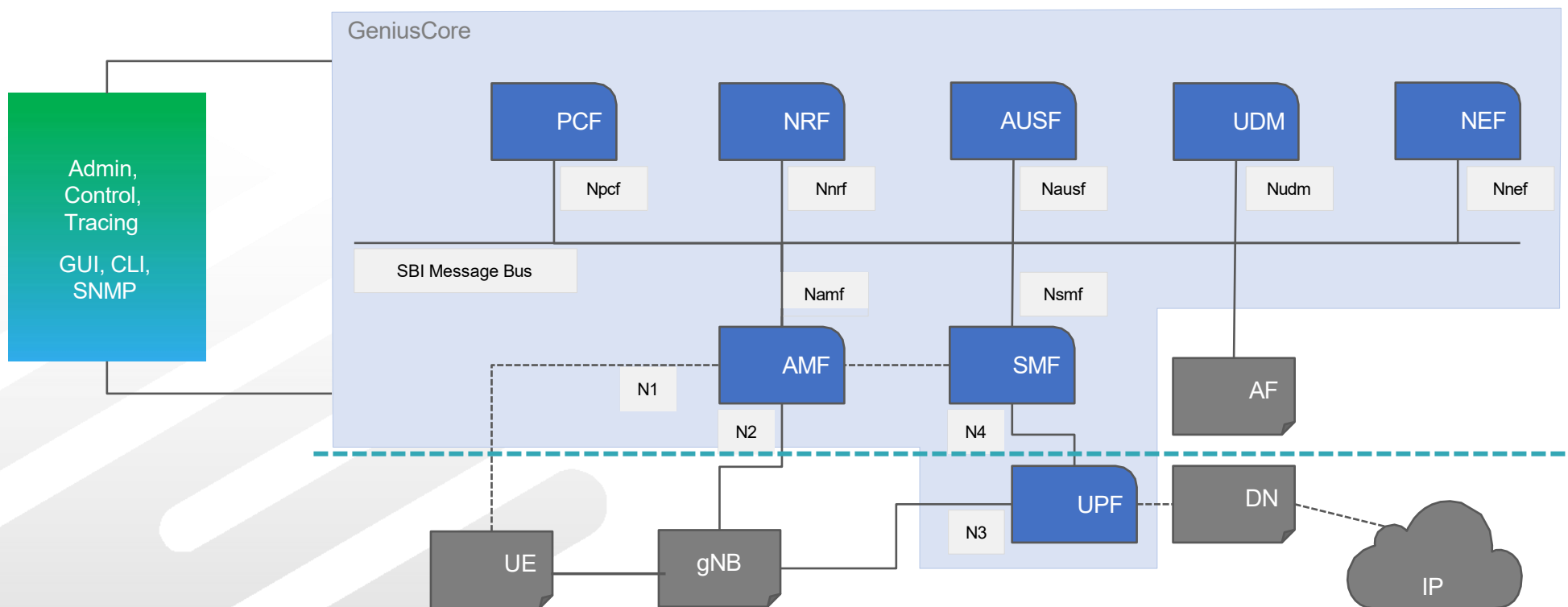
# Architecture and components



# Where's the edge?



# 5G-Core as Enabler for Edge Computing



5G-Core and Edge Cloud

# 5G-Core as Enabler for Edge Computing

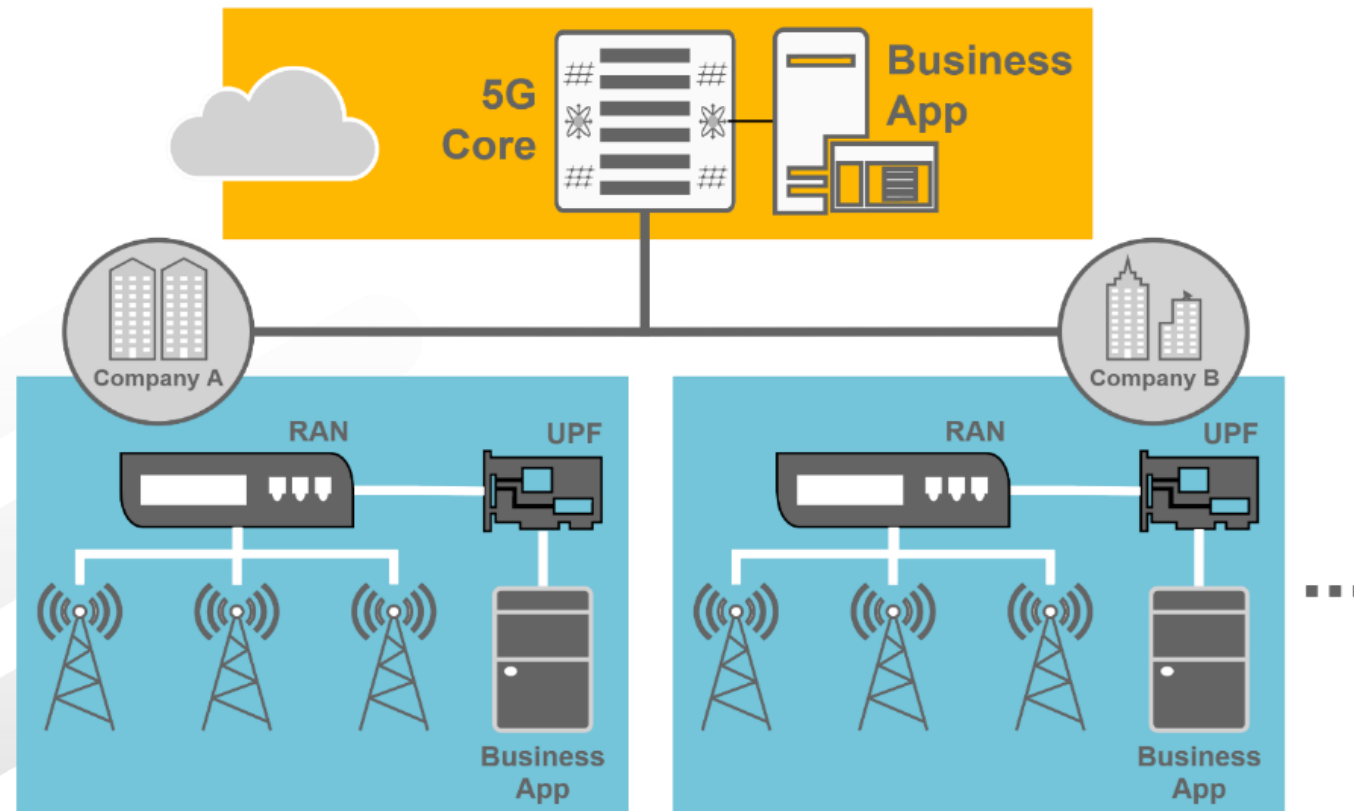


## Pi Stack Demo

Each network function on a single Raspberry Pi 4

1. AMF
2. AUSF
3. SMF
4. NRF
5. PCF
6. UPF
7. UERANSIM
8. UDM + GUI

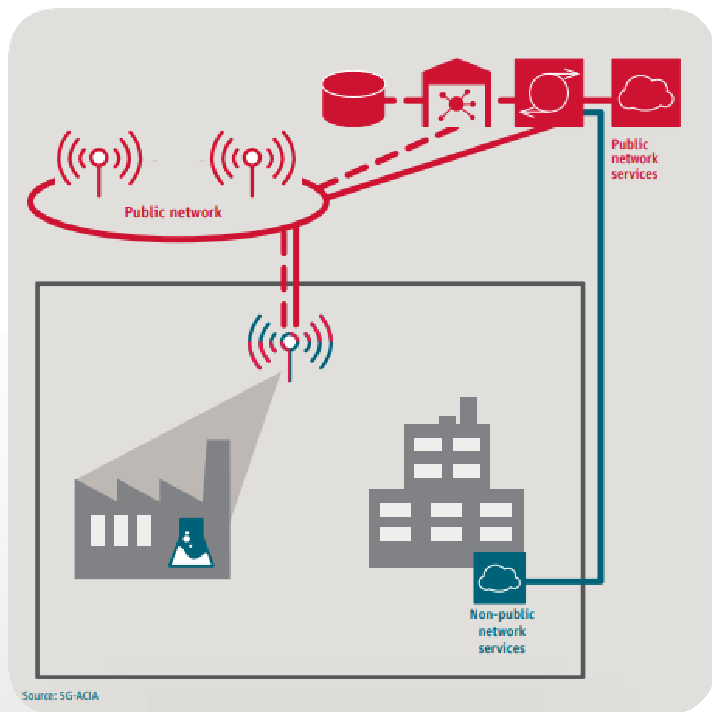
# Control & User Plane Separation (CUPS)



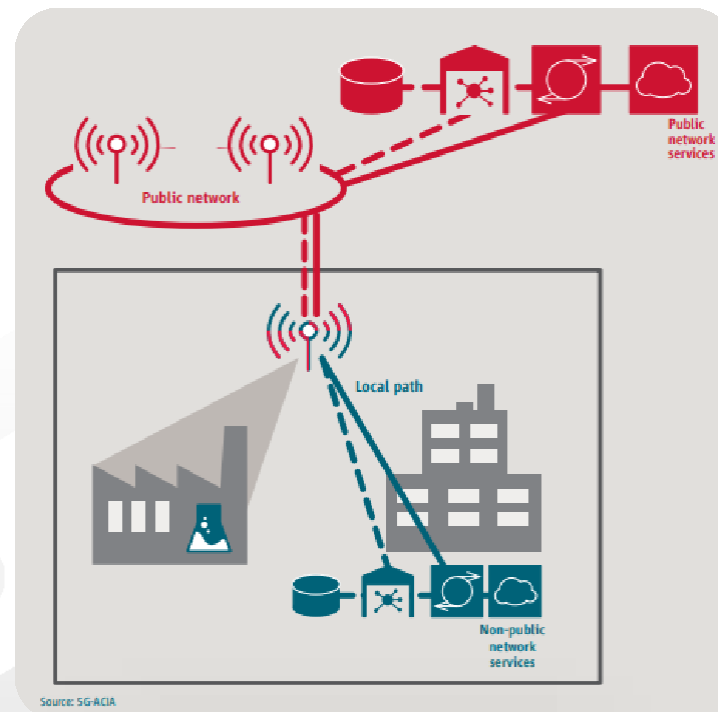
CampusGenius 5G-SA GeniusCore Cloud Deployment

PRIVATE 5G NETWORKS

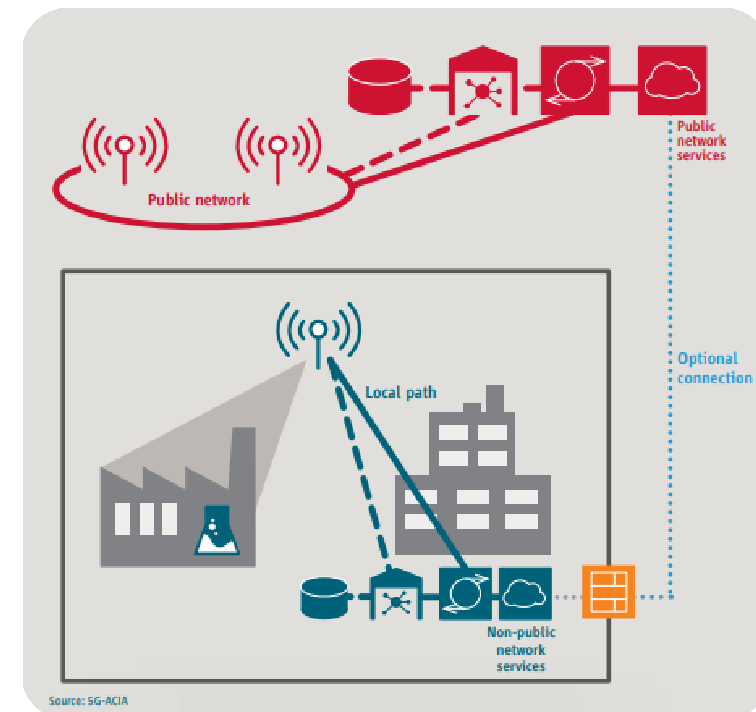
# Deployment models for private 5G



As Network Slice via Public Network



As hybrid network with local data breakout



As Independent 5G-network

# PRIVATE 5G NETWORKS Verticals

Logistics



Production



Agriculture



Media



Education



Medicine



Construction



Smart City



# Verticals

## Hospitals

- Positioning
- Voice Services
- Remote Diagnosis (Video)
- Patient Data Management Systems

## Agriculture

- local Coverage (power)
- Fixed Wireless Access

## Media & Events

- Everything Edge
- Midhaul

## Construction

- Coverage (Reflection)
- Positioning

Good to know  
Hardware



Smartphones

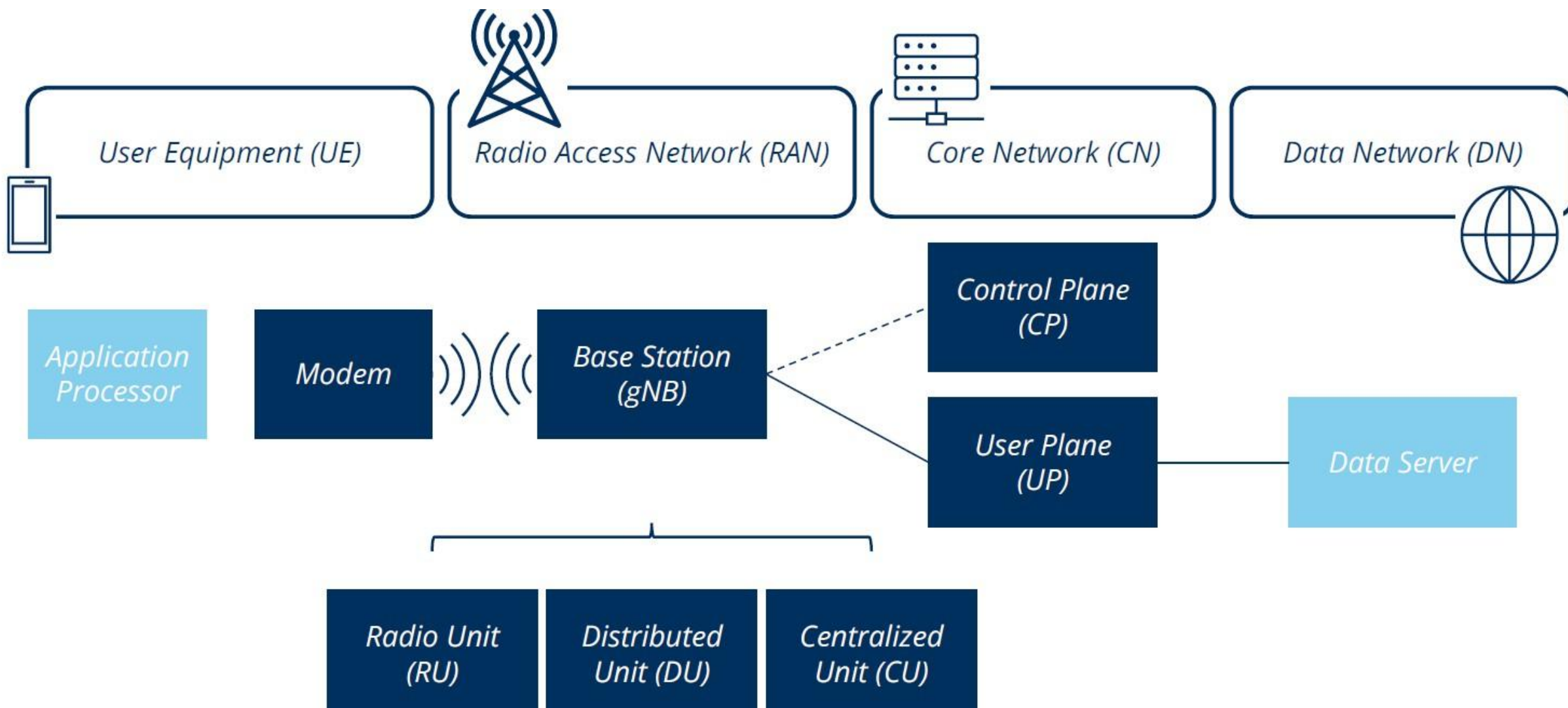
Tablets

Routers

m.2 cards

## 5G ARCHITECTURE

# Control my network at the edge





**We support you if you build more flexible, secure and efficient private 5G networks!**



**Johafifies Weicksel**

**Head of Sales**

**[johafifies.weicksel@campusgefiius.com](mailto:johafifies.weicksel@campusgefiius.com)**

**+49 151 400 34 034**

# Open discussion

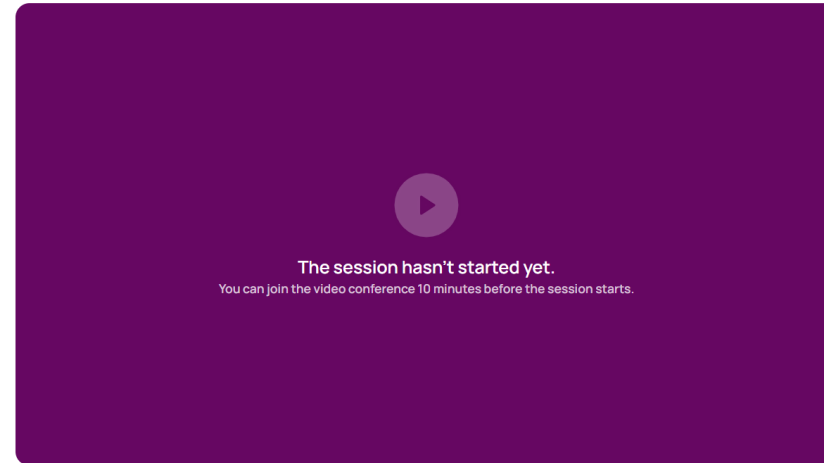
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# Live interaction



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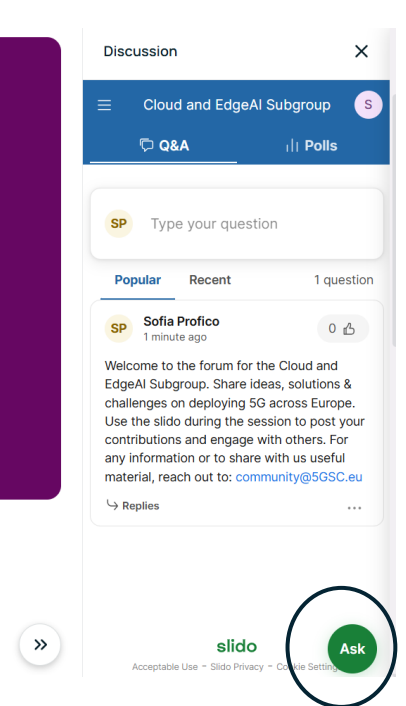
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- 5G for Smart Communities
- Connectivity
- Funding for Digital





**Nicolas Stichel**

SENIOR MANAGER  
5GMEC4EU

## Socio-economic value transfer models

Nicolas Stichel, Senior Manager, 5GMEC4EU

# 5GMEC4EU

European 5G Network Edge  
Ecosystem Approach

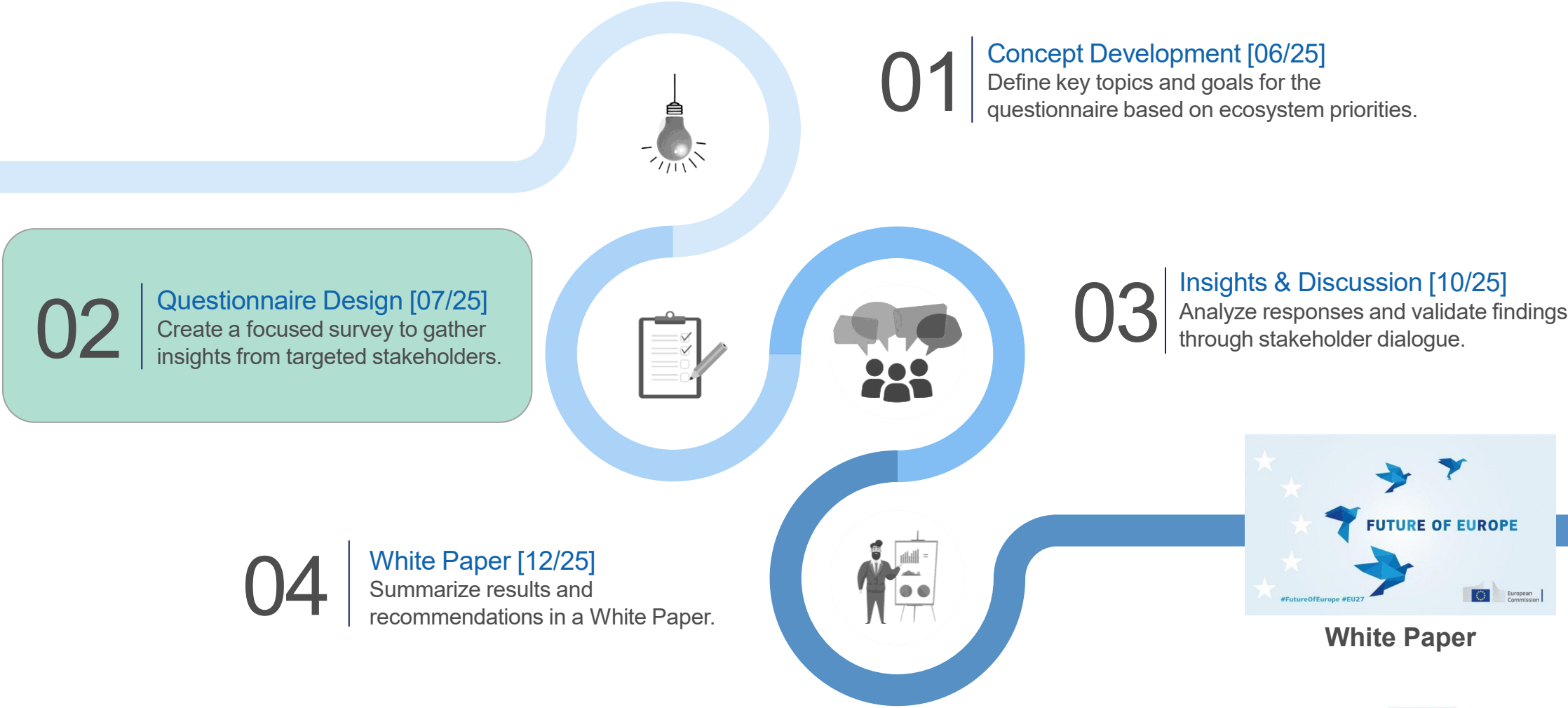
**Date:**  
July 17, 2025



Funded by  
the European Union



# We aim to engage key stakeholders in the edge ecosystem through a structured questionnaire, with the resulting insights forming the basis of a white paper.

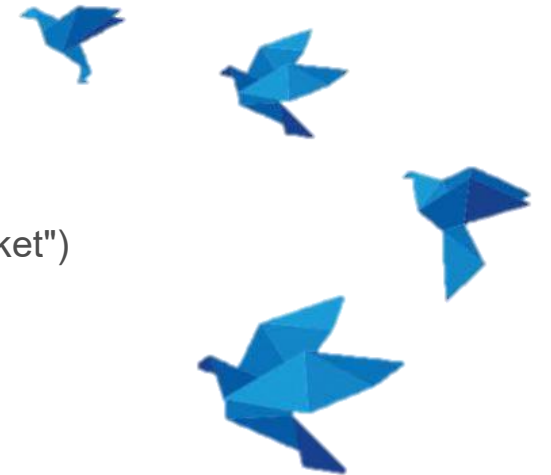


# The goal of our White Paper is to identify the socio-economic context to establish a modern and viable 5G and Edge Infrastructure ecosystem.

Central research question:

## What are the key socio-economic conditions that enable the sustainable development of 5G and Edge infrastructure ecosystems within the EU?

- ▶ Identifying viable ownership, business, and operating models tailored to the European context...
- ▶ ... to enable the emergence of a harmonized, cross-border 5G/Edge infrastructure ecosystem ("Single Market")
- ▶ ... while maximizing socio-economic and environmental value for European citizens.



**Methodology:** Stakeholder interview-based White Paper

# We will ensure a concise communication approach by using EU-centric as well as proprietary Detecon networks to contact our key stakeholders.

## Your general benefits by participating

### Exclusive Access to Concept & White Paper

- Potentially shape EU policy and funding priorities
- Get early access to survey results and the concept paper on a European 5G Edge Ecosystem

### Recognition and Acknowledgment

- Potential public visibility in the published report
- Invitations for speaker slots on follow-up events such as publication.

### Networking Opportunities

- Contact and alignment with other 5G / MEC stakeholders on both demand & supply-side
- Invitations to community meetings (Roundtable in Brussels)

## Selected overview and snippets of our concept paper:

### A Visionary Network Edge Ecosystem:



### Use Case Evaluation:



### Innovative Architecture Approaches & Business Models:



# A Sovereign European Cloud Ecosystem is essential amid increasing mistrust among Continental Technospheres.

## American Technosphere

Dominated by Hyperscalers (AWS, Microsoft, Google) with a focus on global scale.

aws Azure Google ...

Trump signs CLOUD act in 2018, permitting U.S. law enforcement to access data stored overseas.

## European Technosphere

Seeking autonomy through regulations like GDPR and fostering cloud sovereignty initiatives (e.g. GAIA-X).

EU Sovereign Play (TBD)

aws Azure Google

SAP Atos T-Mobile Orange

new STACKIT GAIA-X OVHcloud

"I will push to create a new European Sovereignty Fund. Let's make sure that the future of industry is made in Europe."

## Chinese Technosphere

Focused on state-controlled technology giants (Alibaba, Tencent) and strict data localization laws.

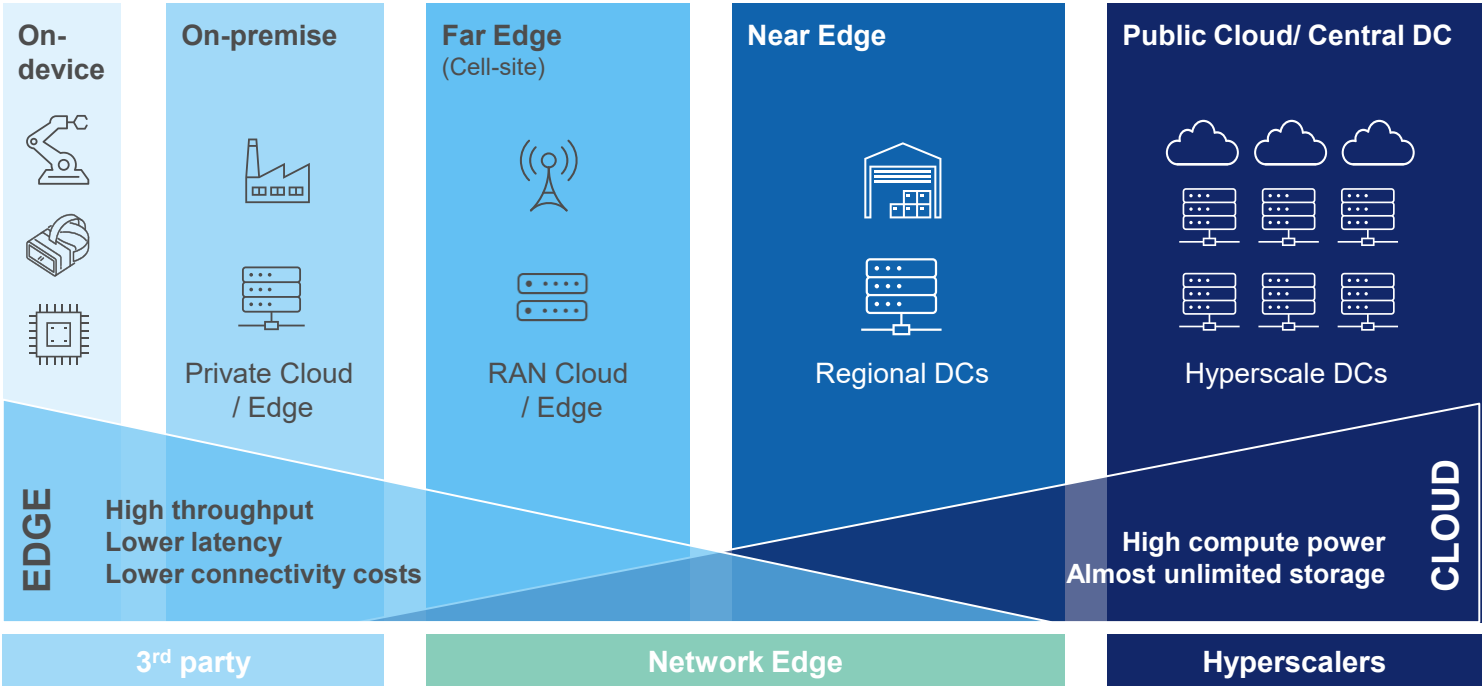
HUAWEI Alibaba Cloud Tencent Cloud

Chinese data sovereignty regulation & licensing regime essentially prevents market access to external players.

Increasing Demand of Sovereign Cloud Solutions especially by regulated Industries like TelCo, Defense, Public & Healthcare

# Within the Cloud / Edge Continuum, the Network Edge represents a window of opportunity to enable (partial) digital Autonomy via European ownership!

The Cloud / Edge Continuum is a fluid ecosystem of many participants

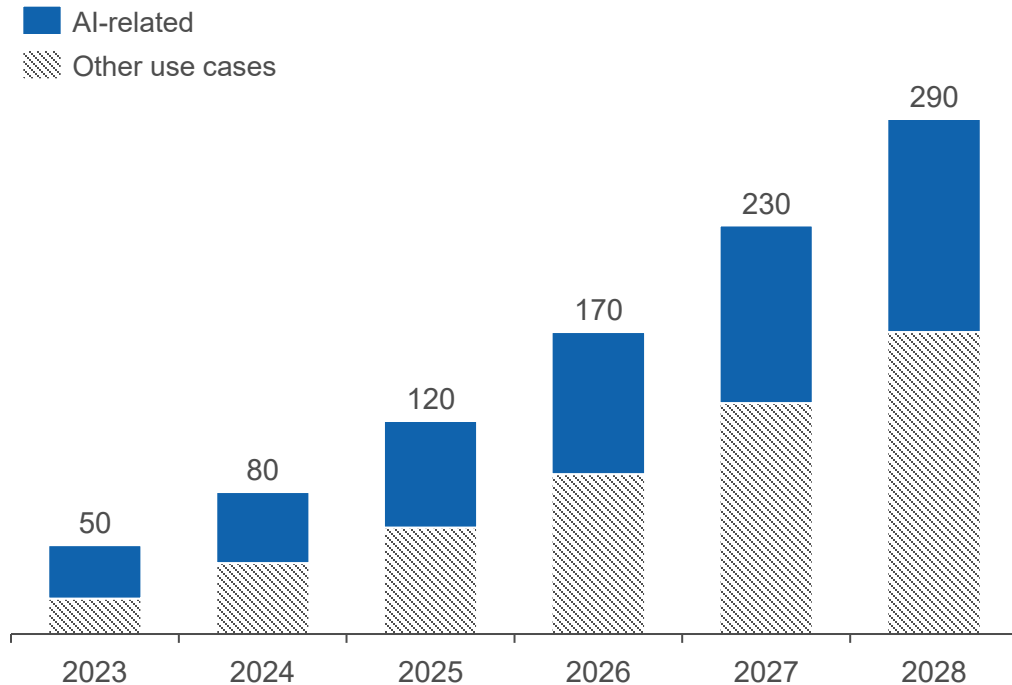


### Comments:

- The Cloud/Edge Continuum spans from on-device computing to hyperscaler-dominated cloud, involving diverse ownership models.
- Unlike the hyperscales, TelCo Edge is not yet dominated by a few large foreign players, offering a window of opportunity for European companies.
- European participation in this domain could allow digital autonomy as especially critical workloads will be deployed on the edge-part of the continuum.
- However currently scalable and viable models of infrastructure provisioning have not yet developed.
- **A thorough evaluation of ownership-, operating & underlying business Models is essential to enable a future autonomous European Edge Cloud ecosystem.**

# Especially (Sovereign) AI-related workloads will fuel the need for Edge computing infrastructure around the globe.

Total Revenue from Edge-related use cases (Global, B\$)



Source: STL Partners, 2024. McKinsey, 2025.

## Specifically, AI-RAN is a valuable opportunity for TelCos

- **AI-RAN concept:** Share GPU-based hardware for both RAN and AI workloads, transforming RAN deployments and enabling new revenues.
- **AI-RAN Alliance:** Formed in early 2024 by telco and AI players to explore embedding AI in RAN.
- **Technical shift:** Replace traditional baseband units (BBUs) with GPU-based hardware for dual RAN and AI processing.
- **Efficiency gains:** AI optimizes RAN workloads, improving spectral efficiency, network performance, and resource management.
- **New business model:** Telcos offer distributed GPU-as-a-Service (GPUaaS) for AI workloads via mobile network sites.
- **Edge advantage:** Leverages existing site locations to solve latency, congestion & grid energy load

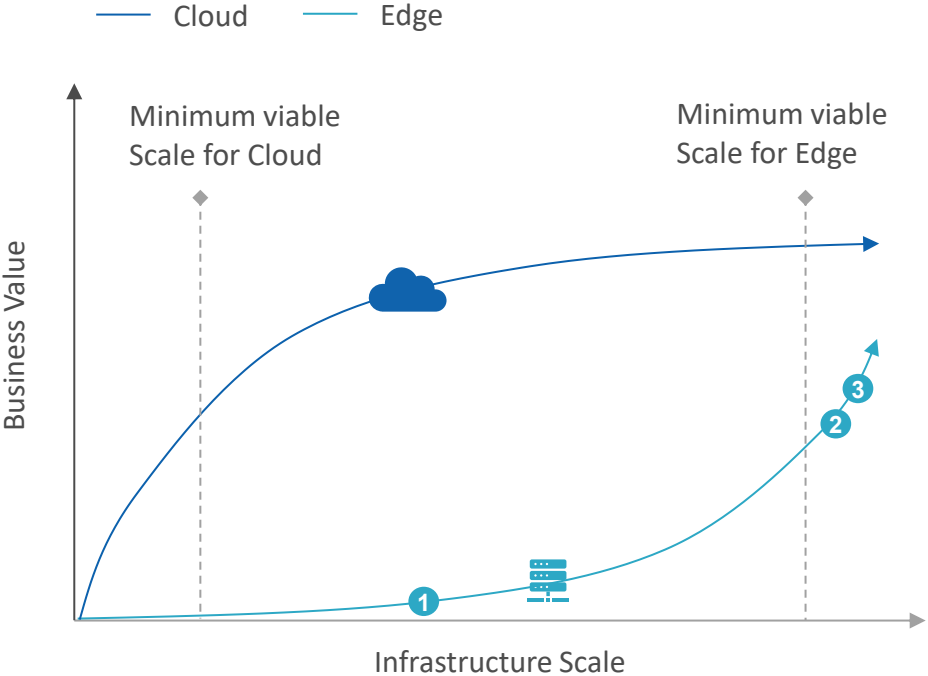
AI-RAN  
ALLIANCE



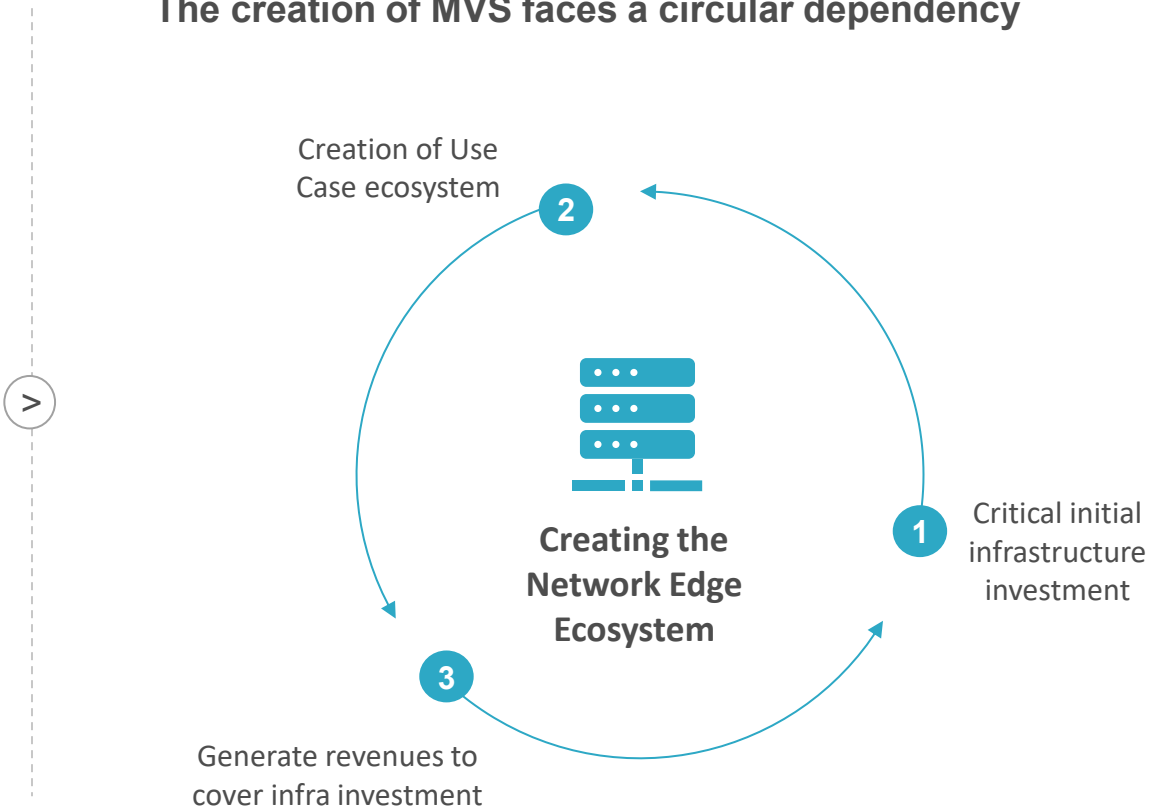
SoftBank

# But the needed investments for the Network Edge pose a challenge as reaching a minimum viable scale (MVS) and hence positive ROI is essential yet difficult.

Reaching minimum viable scale is challenging for Edge

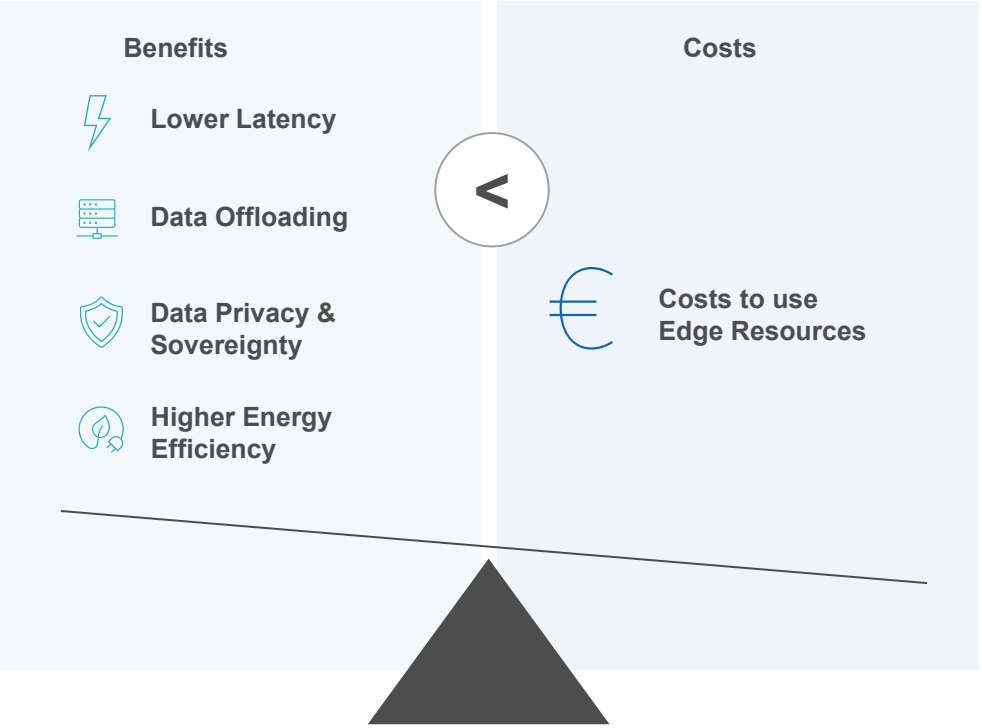


The creation of MVS faces a circular dependency

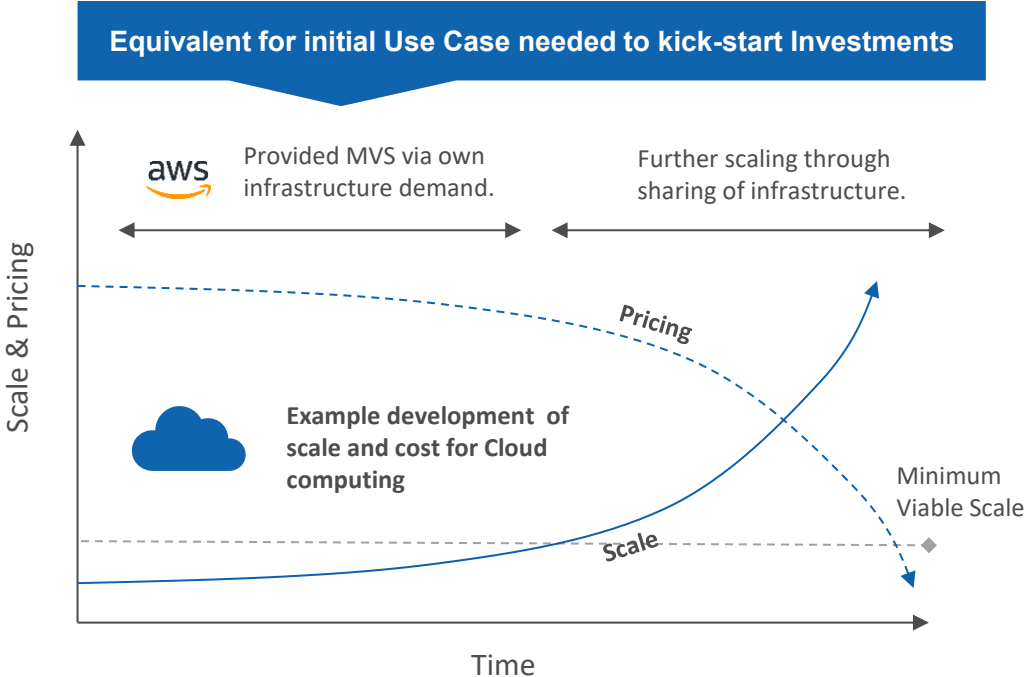


# Moreover, currently the benefits of Network Edge do not outweigh the cost – there needs to be an initial demand to reduce costs to a reasonable level.

Benefits of Edge (vs Cloud) do not outweigh the costs

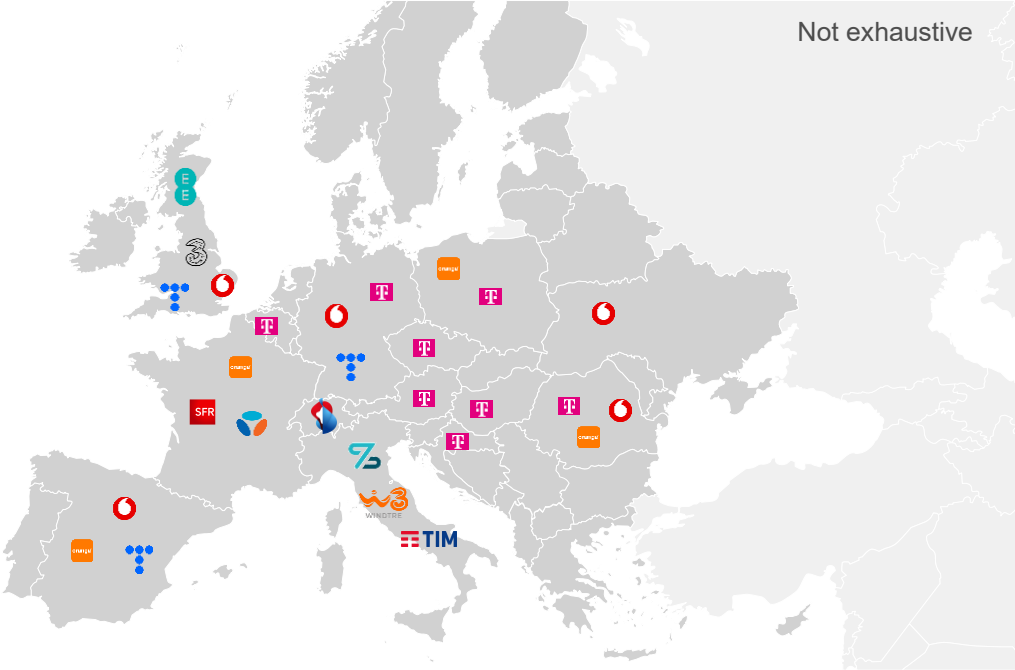


An initial Spark is needed to start driving down prices

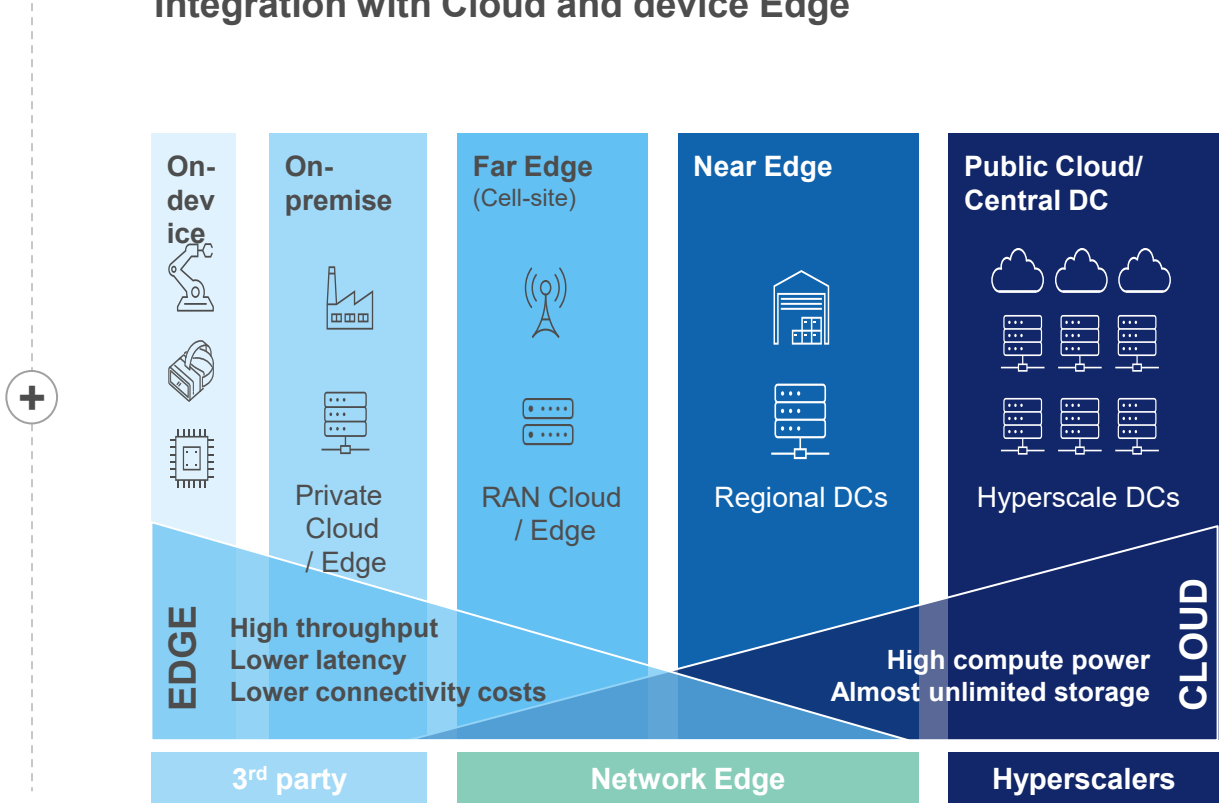


# On top, the required MVS demands both a compatibility between MNOs across various countries, as well as within the larger Cloud / (Device) Edge ecosystem.

Compatibility between MNOs across various countries



Integration with Cloud and device Edge



# To address these challenges, we propose 3 key guiding hypotheses which act as foundation for our concept paper and will be validated with stakeholders.

## Overview of key challenges:

**I** **Ecosystem compatibility:** The network edge is embedded in a fragmented computing continuum across different ownership domains (device, private, public), making E2E workload integration complex.

**II** **Initial demand & economic viability:** Current benefits of Network Edge do not justify the high costs, and a critical mass of initial demand is needed to drive down prices and reach economic viability

**III** **Minimum viable scale:** A viable Network Edge-based computing ecosystem can only be established at minimum European scale.

## Guiding Hypothesis:

**One cloud continuum:** End-to-end workload integration at the network edge requires an open architecture that spans hyperscalers, private edge, device and MNO domains.

**One key customer:** MNOs are currently the only actors with strict demand for the network edge; to accelerate broader adoption, they must share the capacity already required for their own workloads.

**One orchestrator:** A single, federated orchestration layer is required across the network edge, but MNOs are not positioned to fulfill this role, as their operations are limited to national markets. Potentially a Joint Venture of European MNOs would be suited well to do so.

# What is your opinion on our hypotheses?



# Open discussion

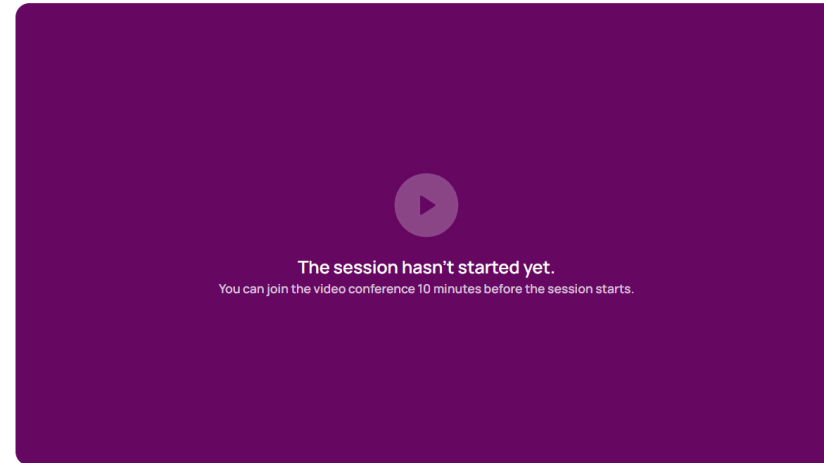
Chair: Edgar Tamaliunas, Consultant, 5GMEC4EU

# Live interaction



slido

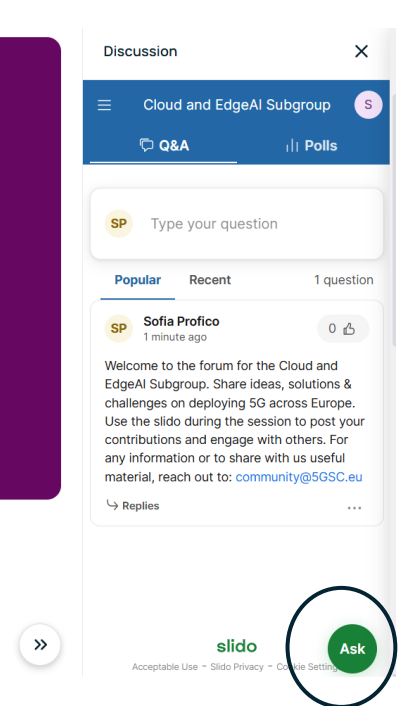
OR



Thursday 17 July 2025 | 10:00 - 12:00

Cloud & EdgeAI subgroup

- Video conferencing
- Capacity Buildings / Working Groups
- CEF Digital
- 5G for Smart Communities
- Connectivity
- Funding for Digital



# Closing Remarks

Dimitra Vasilia, Project Manager, 5G for Smart Communities Support Platform