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5GMEC4EU

European Network Edge Ecosystem Approach

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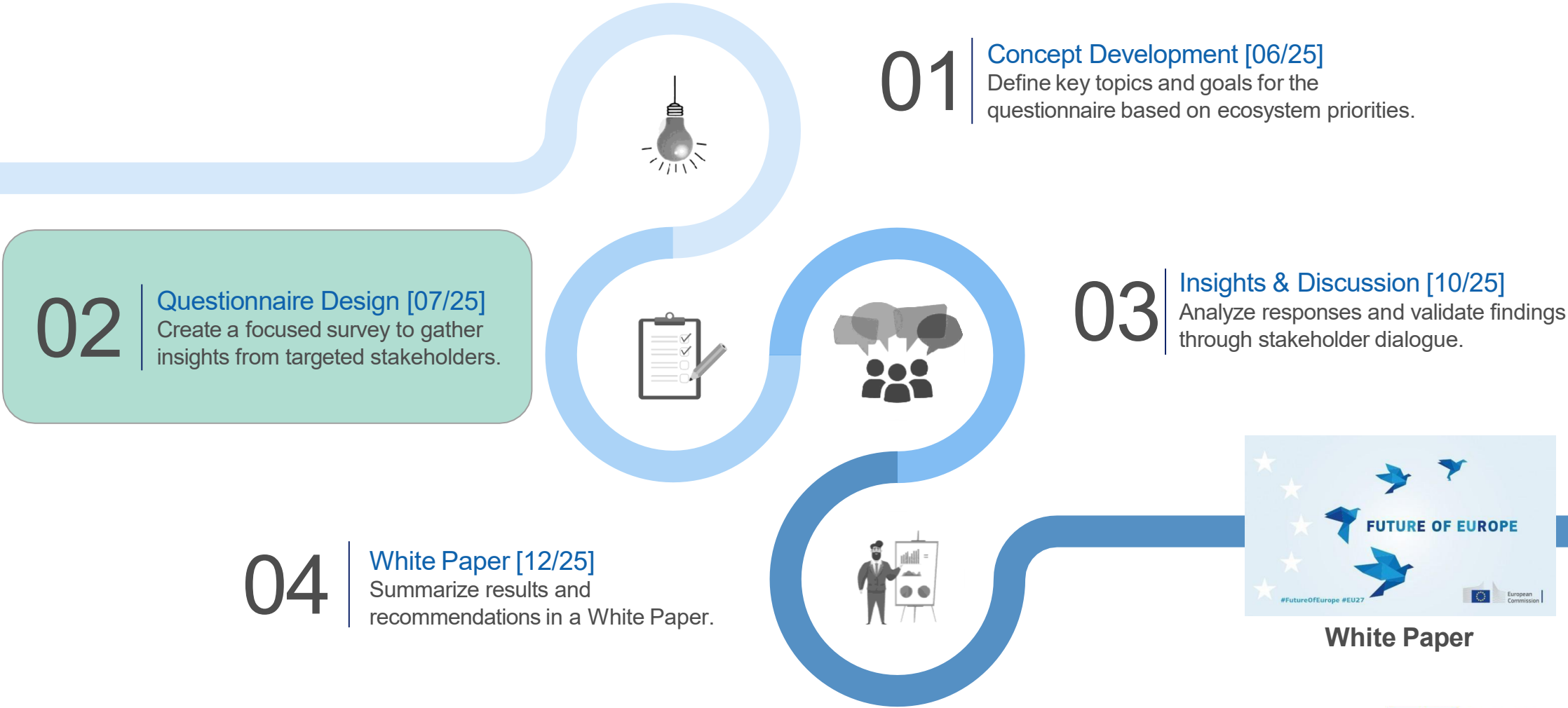
We aim to engage key stakeholders in the edge ecosystem through a structured questionnaire, with the resulting insights forming the basis of a white paper.

01 Concept Development [06/25]
Define key topics and goals for the questionnaire based on ecosystem priorities.

02 Questionnaire Design [07/25]
Create a focused survey to gather insights from targeted stakeholders.

03 Insights & Discussion [10/25]
Analyze responses and validate findings through stakeholder dialogue.

04 White Paper [12/25]
Summarize results and recommendations in a White Paper.

FUTURE OF EUROPE
#FutureOfEurope #EU27
European Commission

White Paper

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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

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Participation in the Questionnaire & Interview process is connected with significant benefits.

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:

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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.

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)

"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.
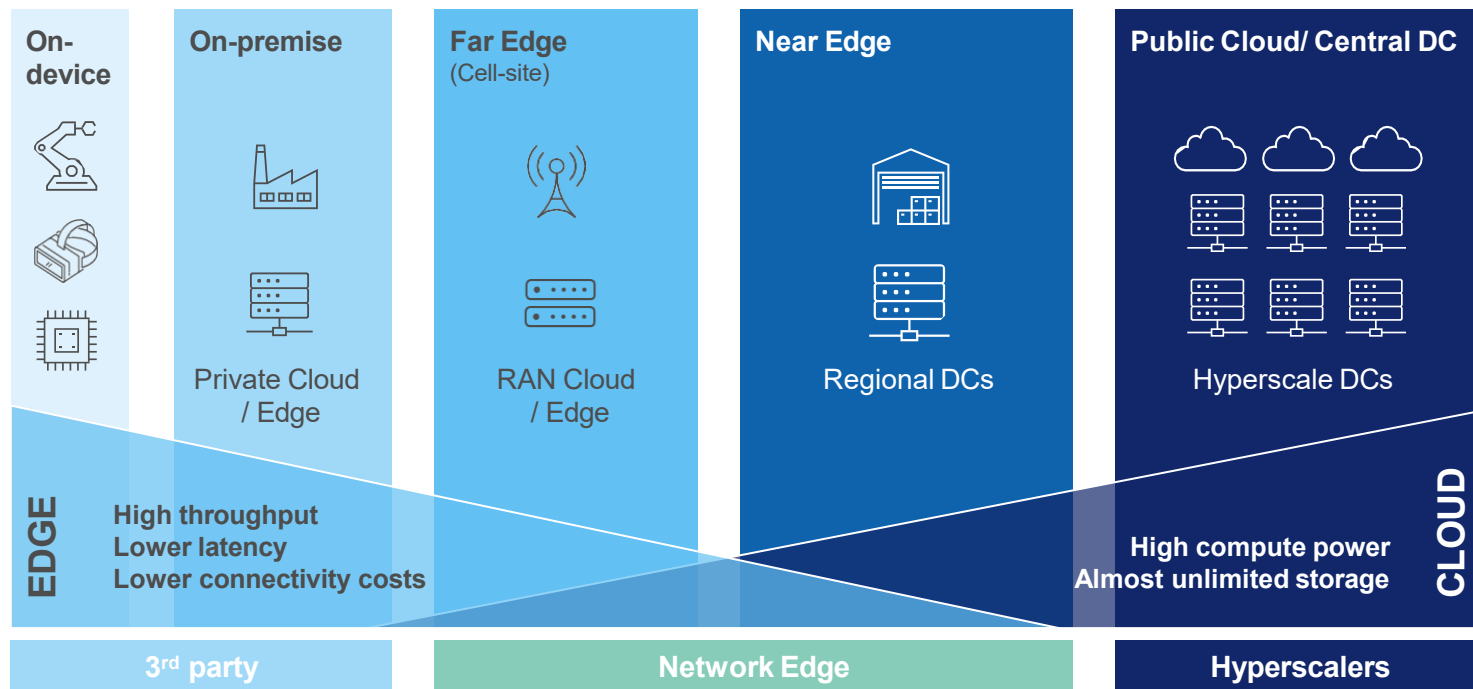

Chinese data sovereignty regulation & licensing regime essentially prevents market access to external players.

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

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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

On-device	On-premise	Far Edge (Cell-site)	Near Edge	Public Cloud/ Central DC
	Private Cloud / Edge	RAN Cloud / Edge	Regional DCs	Hyperscale DCs

EDGE: High throughput, Lower latency, Lower connectivity costs

CLOUD: High compute power, Almost unlimited storage
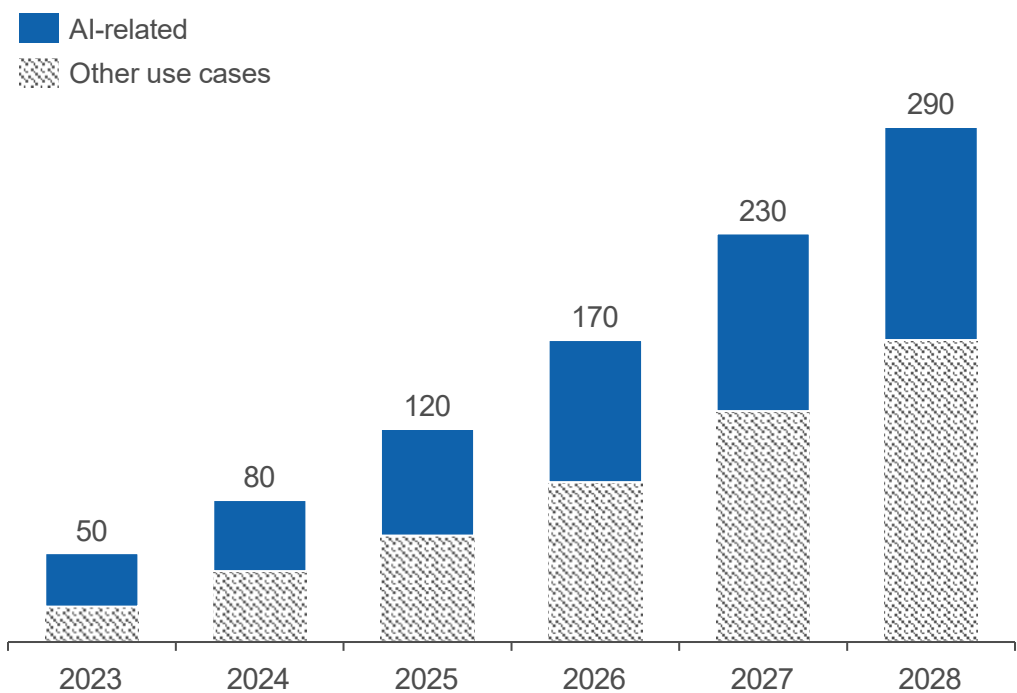
| 3rd party | Network Edge | Hyperscalers |

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$)

Legend:
- AI-related
- Other use cases

Year	Total
2023	50
2024	80
2025	120
2026	170
2027	230
2028	290

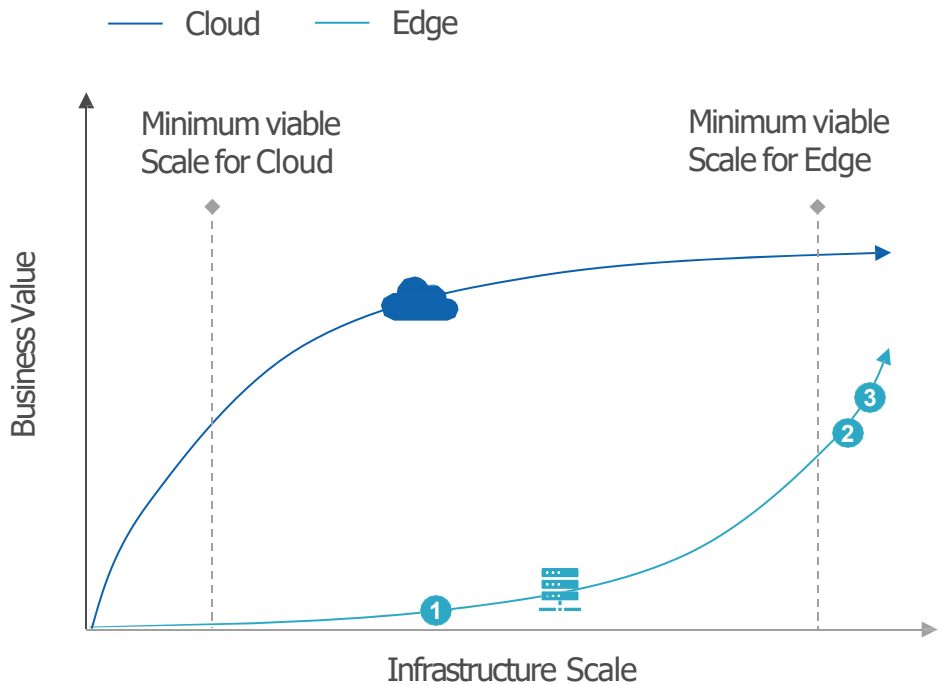Source: STL Partners, 2024. McKinsey, 2025.

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 · **T** · SoftBank

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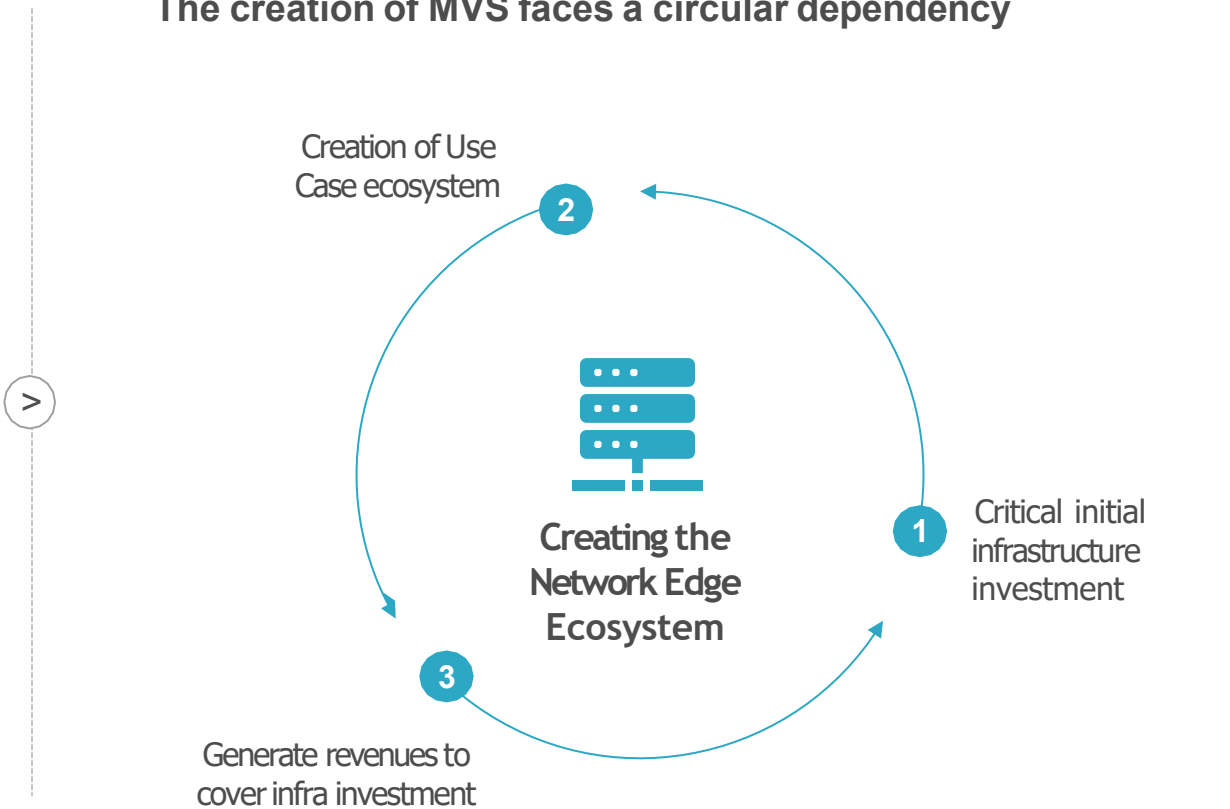
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But the needed investments for the Network Edge pose a challenge as reaching a minimum viable scale (MVS) and hence positive ROI is essential yet difficult.

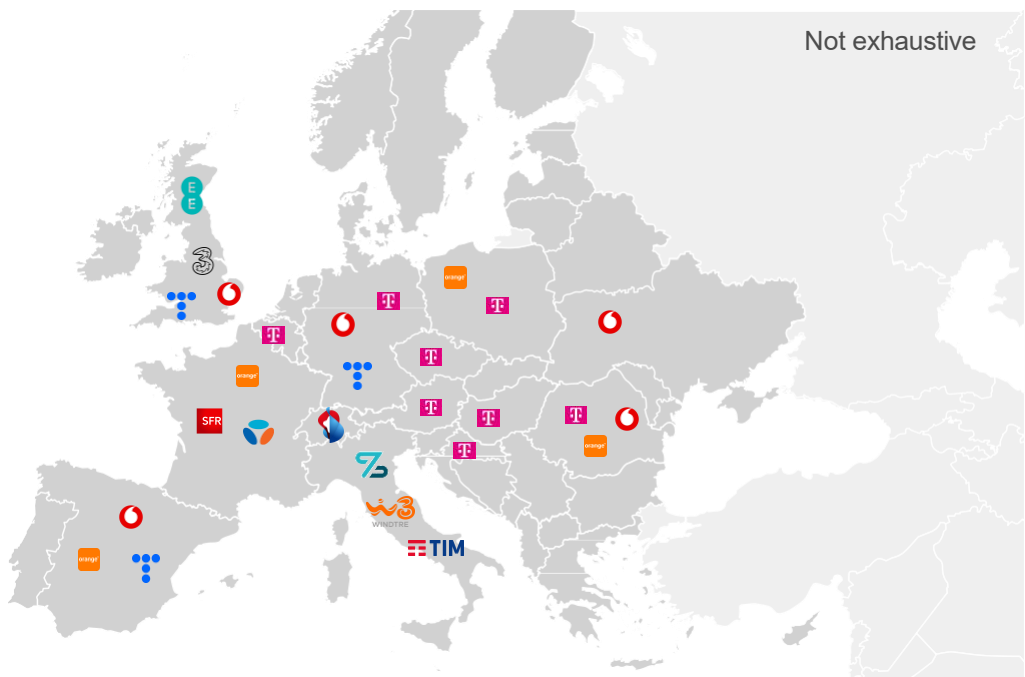**Reaching minimum viable scale is challenging for Edge**

The creation of MVS faces a circular dependency

Cloud — Edge

Minimum viable Scale for Cloud

Minimum viable Scale for Edge

Business Value

Infrastructure Scale

Creation of Use Case ecosystem

2

Creating the Network Edge Ecosystem

1 Critical initial infrastructure investment

3 Generate revenues to cover infra investment

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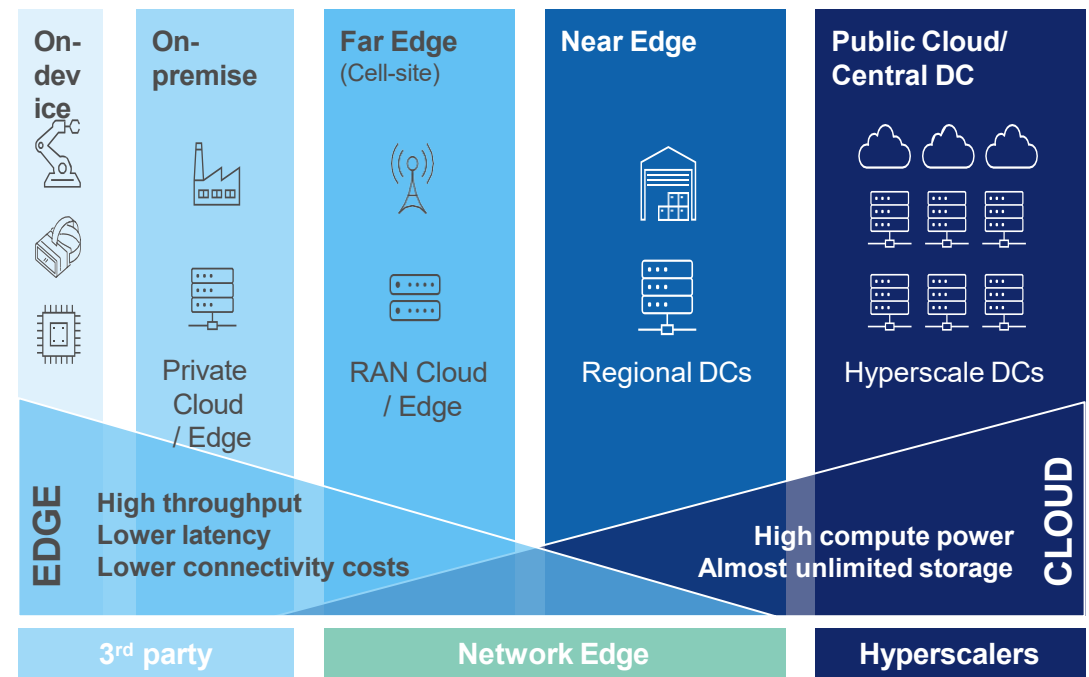
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On top, the required MVS demands both a compatibility between MNOs across various countries, as well as within the larger Cloud / (Device) Edge ecosystem.

Compatibility between MNOs across various countries

Not exhaustive

Integration with Cloud and device Edge

On-device	On-premise	Far Edge (Cell-site)	Near Edge	Public Cloud/ Central DC
	Private Cloud / Edge	RAN Cloud / Edge	Regional DCs	Hyperscale DCs

EDGE
High throughput
Lower latency
Lower connectivity costs

CLOUD
High compute power
Almost unlimited storage

3rd party	Network Edge	Hyperscalers

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:

Guiding Hypothesis:

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.

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.

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

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.

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

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.

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What is your opinion on our hypotheses?