

Telco Edge

Current Status and Roadmap



- 1. Telefónica Telco Edge Architecture**
- 2. Telefónica MVP and key use cases tested**
- 3. Edge Federation**
- 4. Edge tight integration with Network Core**
- 5. The importance of OPG and CAMARA initiative**

Background – Telefónica Telco Edge Cloud

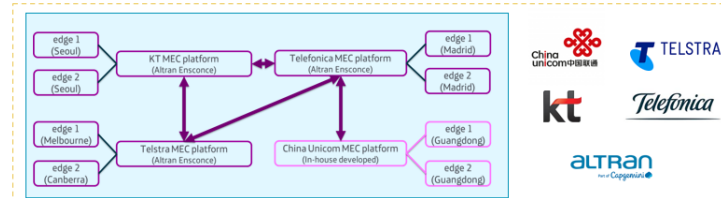
USO INTERNO RESTRINGIDO

2019-20: GSMA TEC

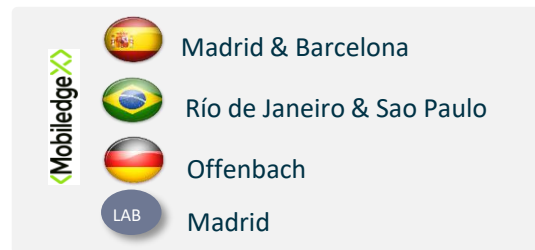


GSMA TEC, trials with DT, BT, TIM, etc.

2020: MOM: inter-MNO platform trial with Altran



Platform production trials in OBs with MobileEdgeX

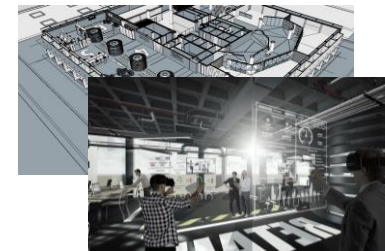


GSMA TEC inter-MNO service trials



2021: 5G Use Case sandbox- Trials Built upon MEX platform

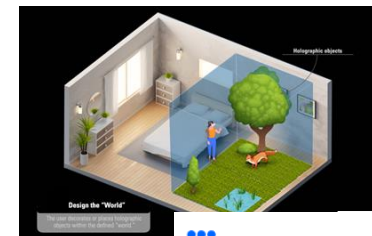
5G edge Labs



2021 MVP nodes



Multi-MNO service trial: Holoverse



Telefónica

DoubleMe

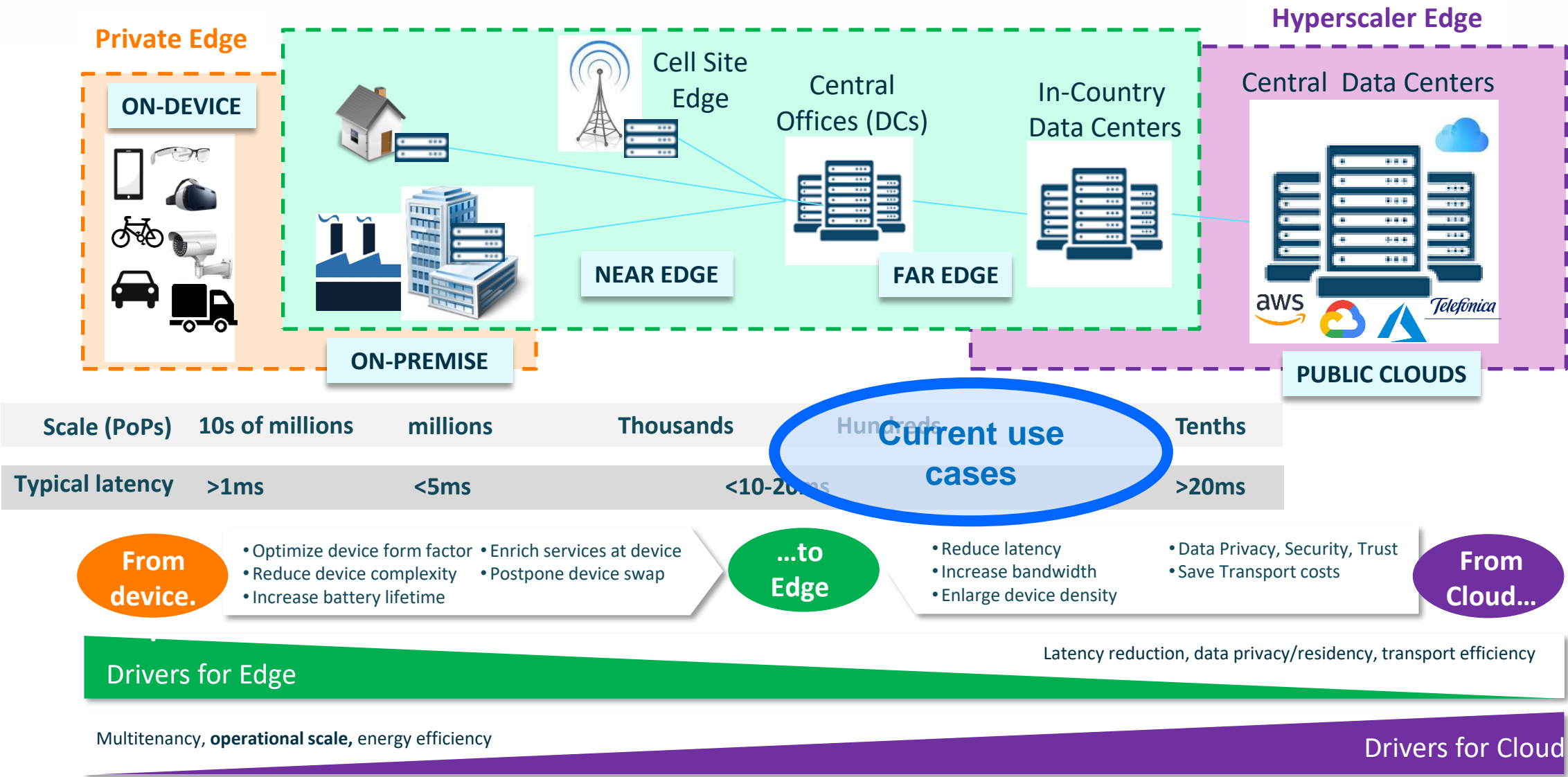
TIM

T..

MobileEdgeX

2022-2024 Industrialization & massification (IPCEI)

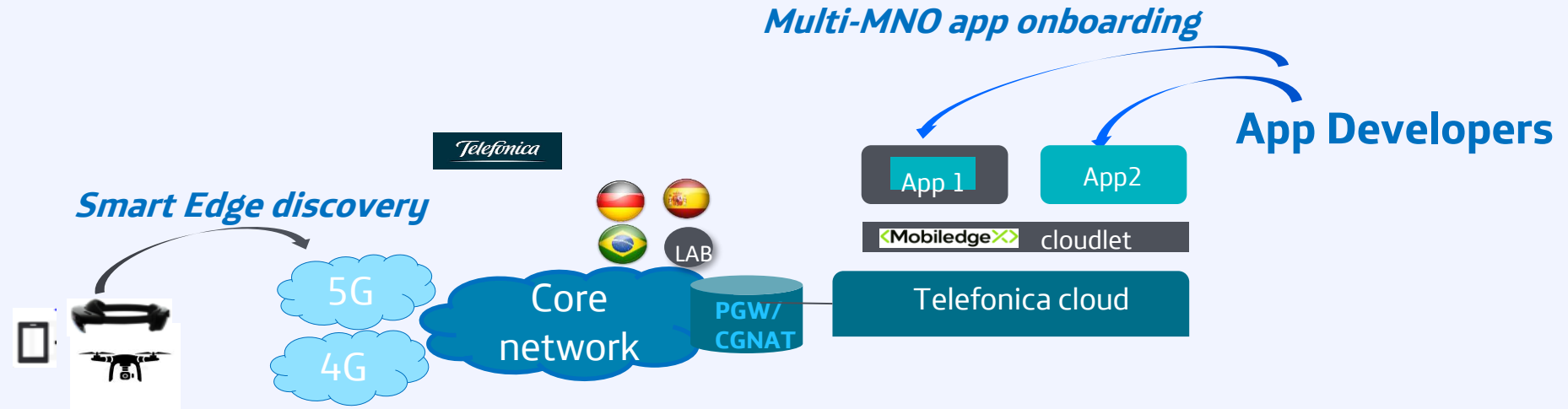
What have we learnt?



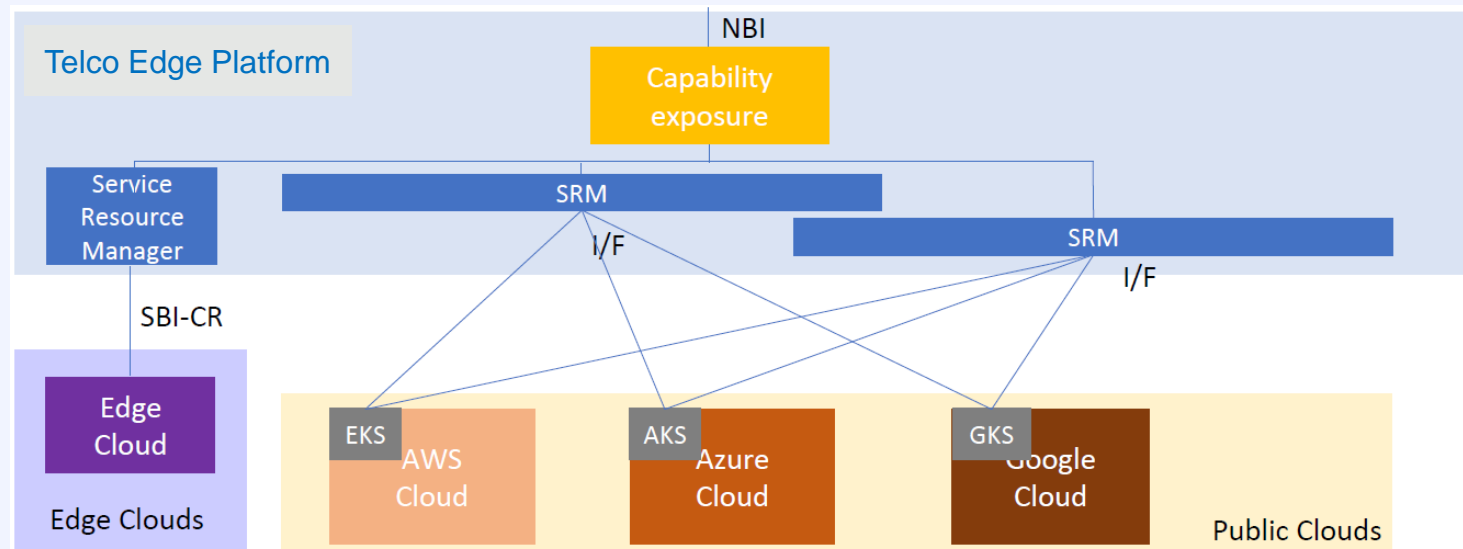
What have we learnt?

USO INTERNO RESTRINGIDO

Topology



Architecture



Telefónica MVP – Key Telco Edge Features

USO INTERNO RESTRINGIDO

This architecture will bring new disruptive use cases leveraging on the integration between EDGE Platform and 5G MNO network capabilities



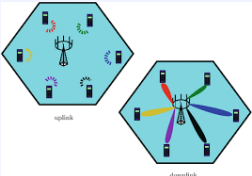
5G Network capabilities

Edge Platform will guarantee services with bandwidth optimization, Identity Management and QoS.



Roaming

Edge platform will enable services in visited networks when the user is outside the operator's footprint.



Smart EDGE Discovery

The service will be provided on the Edge Platform location based on network topology awareness and network load status.



MNO Federation

Provide a multi-MNO federated global TELCO Edge service, that aggregate Mobile EDGE TELCOs footprint from multiple players.



Mobility Management

Edge Platform will manage the mobility across 5G networks.



Data Residency

Edge Platform will enable data sovereignty withing the country border guaranteeing residency at national and regional level.

Telefónica MVP – Key Edge Features

USO INTERNO RESTRINGIDO

This architecture will bring new disruptive use cases leveraging on the integration between **EDGE Platform** and **5G MNO network capabilities**

	Network capabilities	Mobility Management	Smart EDGE Discovery	Roaming	Data Residency	MNO Federation
Smart Cities	✓	✓	✓		✓	✓
Smart Logistic	✓	✓	✓	✓		✓
Vehicular Operation	✓	✓	✓	✓		✓
Communications	✓	✓	✓	✓		✓
Media and Entertainment	✓	✓	✓	✓		✓
Health	✓	✓	✓	✓	✓	✓
Industry	✓				✓	✓
Security	✓				✓	✓

Telefónica MVP (nodes)

USO INTERNO RESTRINGIDO



Telefónica Key Use Cases

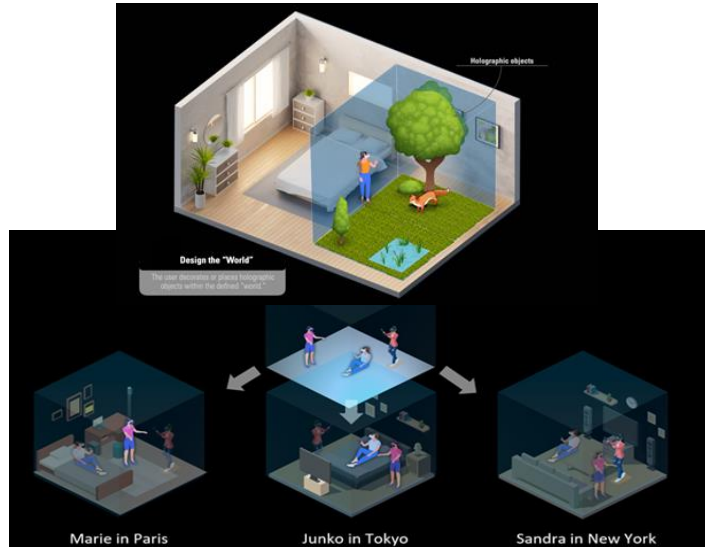
- **Industry/ robotics:** AGVs
- **Industry/ robotics:** autonomous orchestrated drones
- **Industry AR:** remote expert
- **Computer vision**
- **V2X:** Collision Warning
- **Entertainment:** Video 360
- **Entertainment:** synchronous music (Karaoke)
- **Comms:** holographic calls
- **Gaming:** AR games



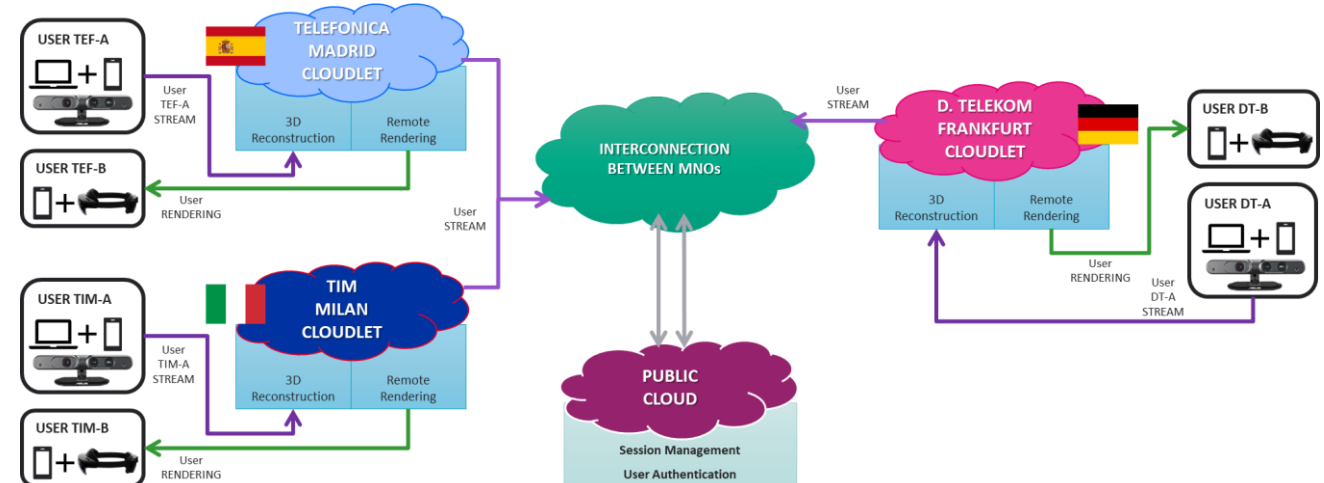
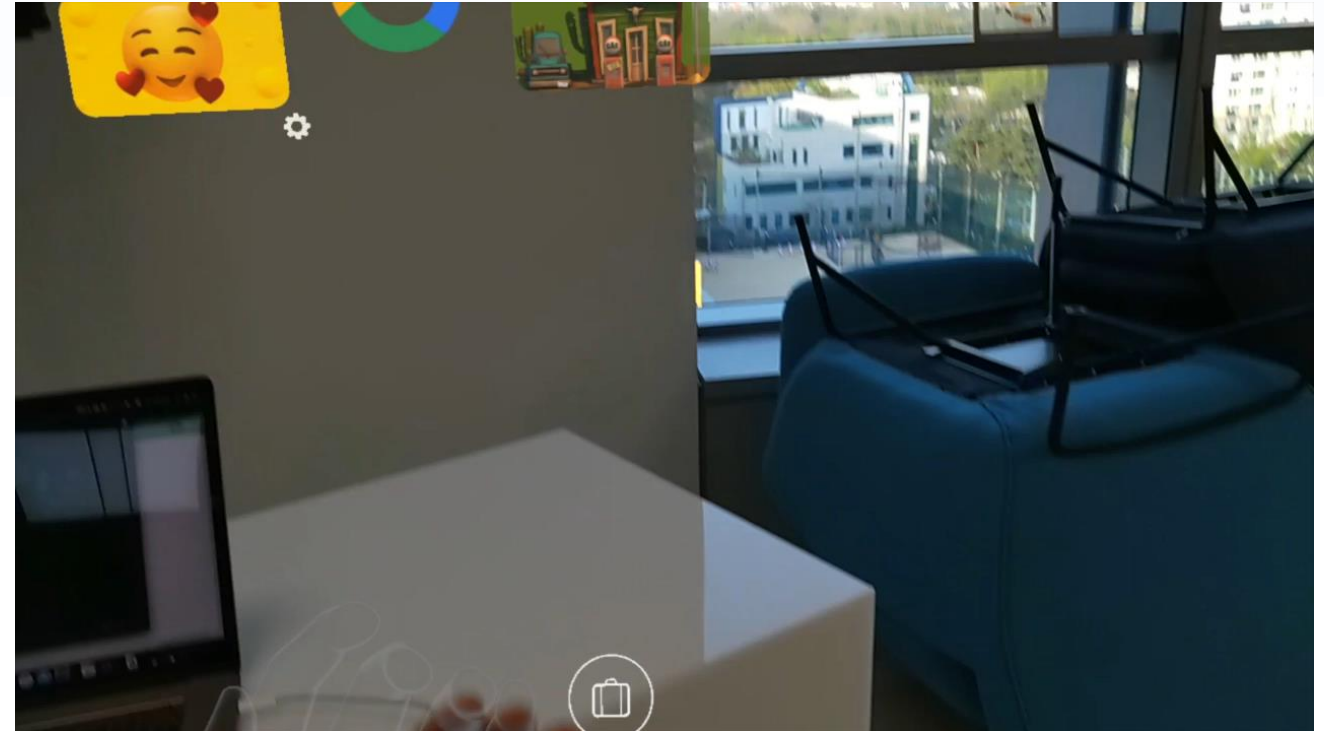
Multi operator Service trial: Holoverse

USO INTERNO RESTRINGIDO

An AR Metaverse: Users can create shared virtual spaces in AR that can decorate with virtual objects and where to collaborate and communicate with other users joining from any country or MNO.



Users can be present in their virtual space as 3D avatars as well as as realistic holograms



Edge Federation Progress with Bridge Alliance

USO INTERNO RESTRINGIDO

GSMA TEC TRIAL FOUNDRY PROJECT

[GSMA | Telco Edge Cloud Trials - Future Networks](#)

01

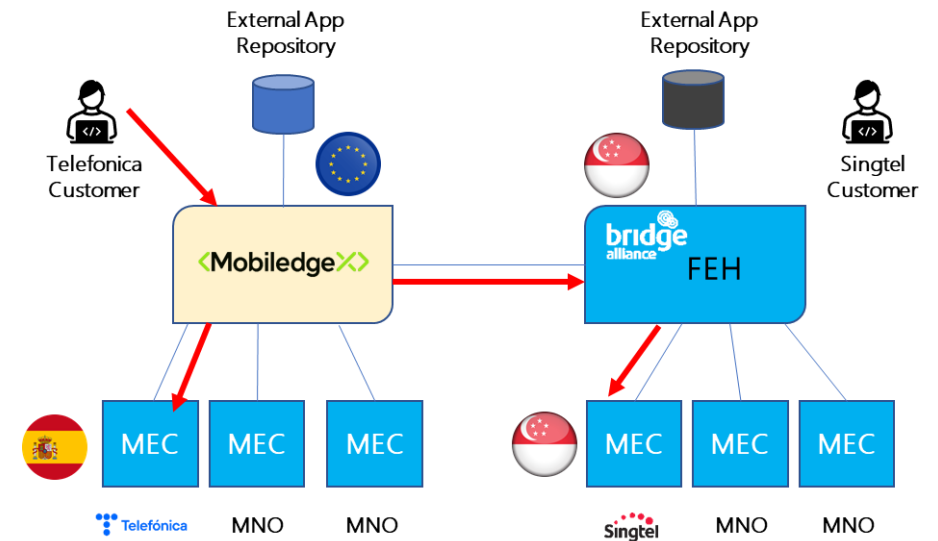
Hub-to-Hub interconnection
MEX & Bridge Alliance Federated Edge Hub

02

East-West Interface implementation

03

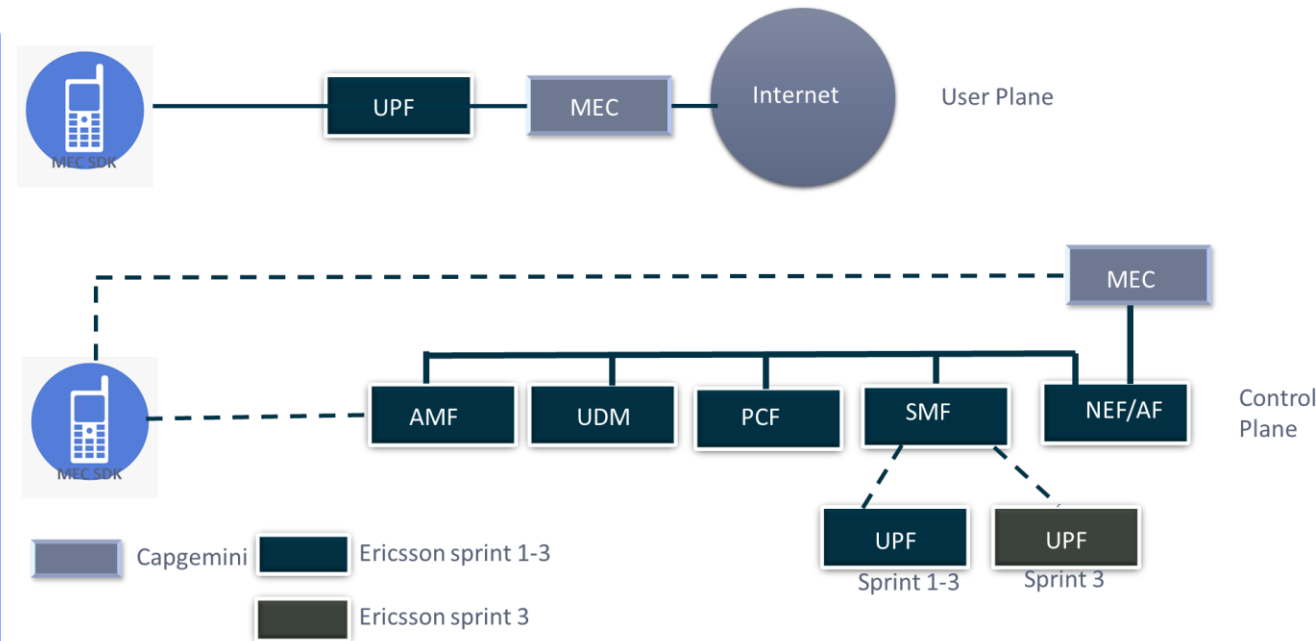
App Deployment by Developer
from one Hub to the other



Edge tight integration with Network Core

USO INTERNO RESTRINGIDO

- End to End use case based on IA and video analytics in real-time
- Main objective: To demonstrate the importance of the integration between the 5G SA core and the Edge Computing Platform performing a network optimization to ensure dedicated QoS.
- The tests executed consist of analyzing the behavior of the data traffic received from a video camera:
 - Default Network: > 30% packet lost, 40% BW reduction
 - Dedicated QoS configured automatically by Edge Platform: 0% packet lost, > 35% BW increase



<https://www.5tonic.org/news-20210412-5tonic-laboratory-completes-pioneering-tight-integration-between-5g-sa-network-and-edge-platform/>

Key features for network integration:

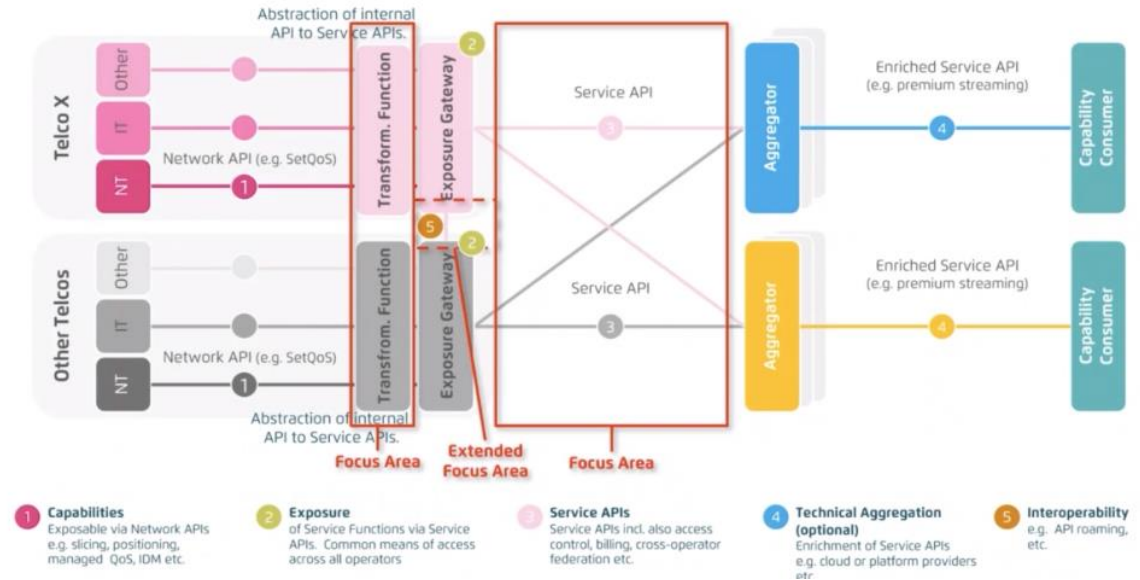
- NaaS **APIs exposure** to app developers
- Management of coordinated **network mobility** for edge applications
- Management of network LBO for edge **roaming**.
- Enforcement of **QoS** assurance through slicing and NaaS (NEF)

NaaS and Edge: the importance of CAMARA and OPG

USO INTERNO RESTRINGIDO

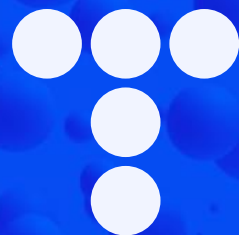
- App developers doesn't need to understand network complexity.
- Network APIs as they are (e.g. NEF APIs) – are still low level network-oriented APIs
- It is needed to abstract **Network APIs into Service APIs**
- **Camara** intends to provide a Service API definition and reference implementation for the community, while GSMA OPG is working on the mapping to **network APIs**.

API architecture



What is the relationship to Edge applications?

- **Service APIs** will be offered through the Edge Platform to developers. Depending on the API nature these will be
 - Integrated on the Edge platform's developers tools for life cycle management (e.g. APIs for QoS, slicing, edge federation, etc.)
 - Exposed to app business logic for the app developer to use them within their app (e.g. user location)



Telefónica