The Telco Edge Cloud
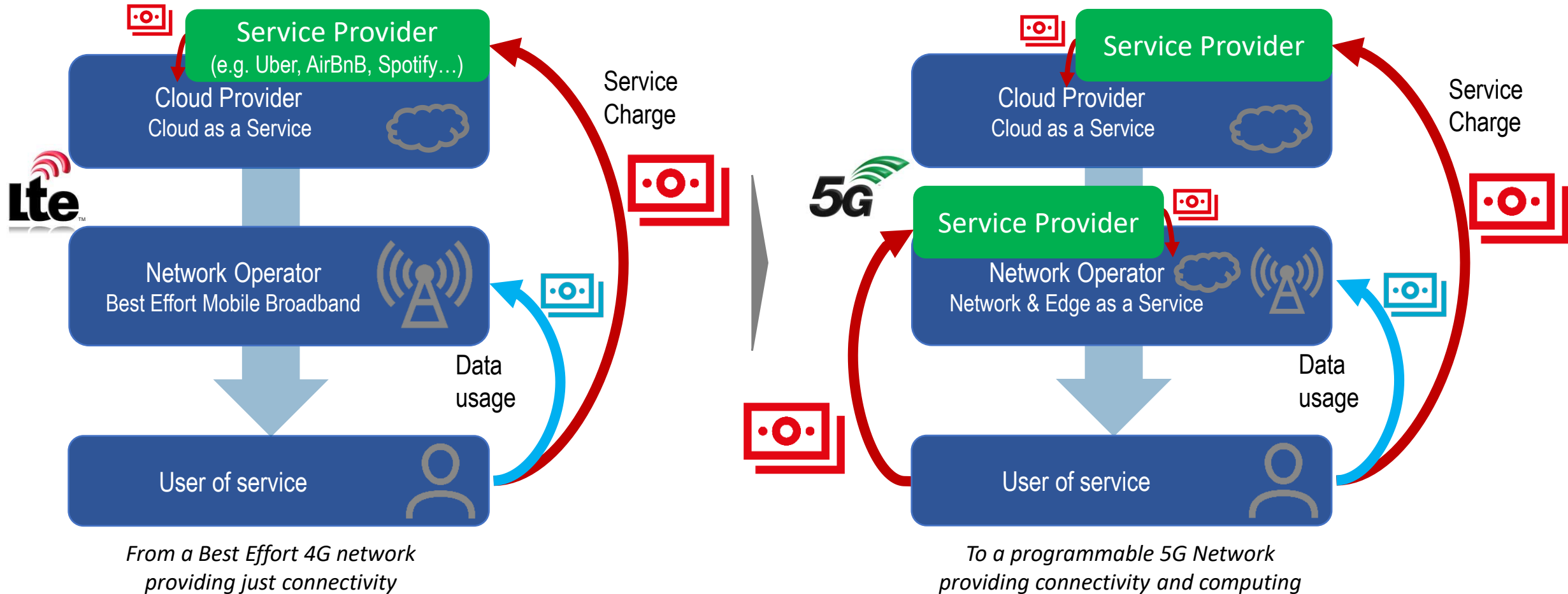## What it is and where we are

DroidCon, 26th Nov
Juan Carlos García
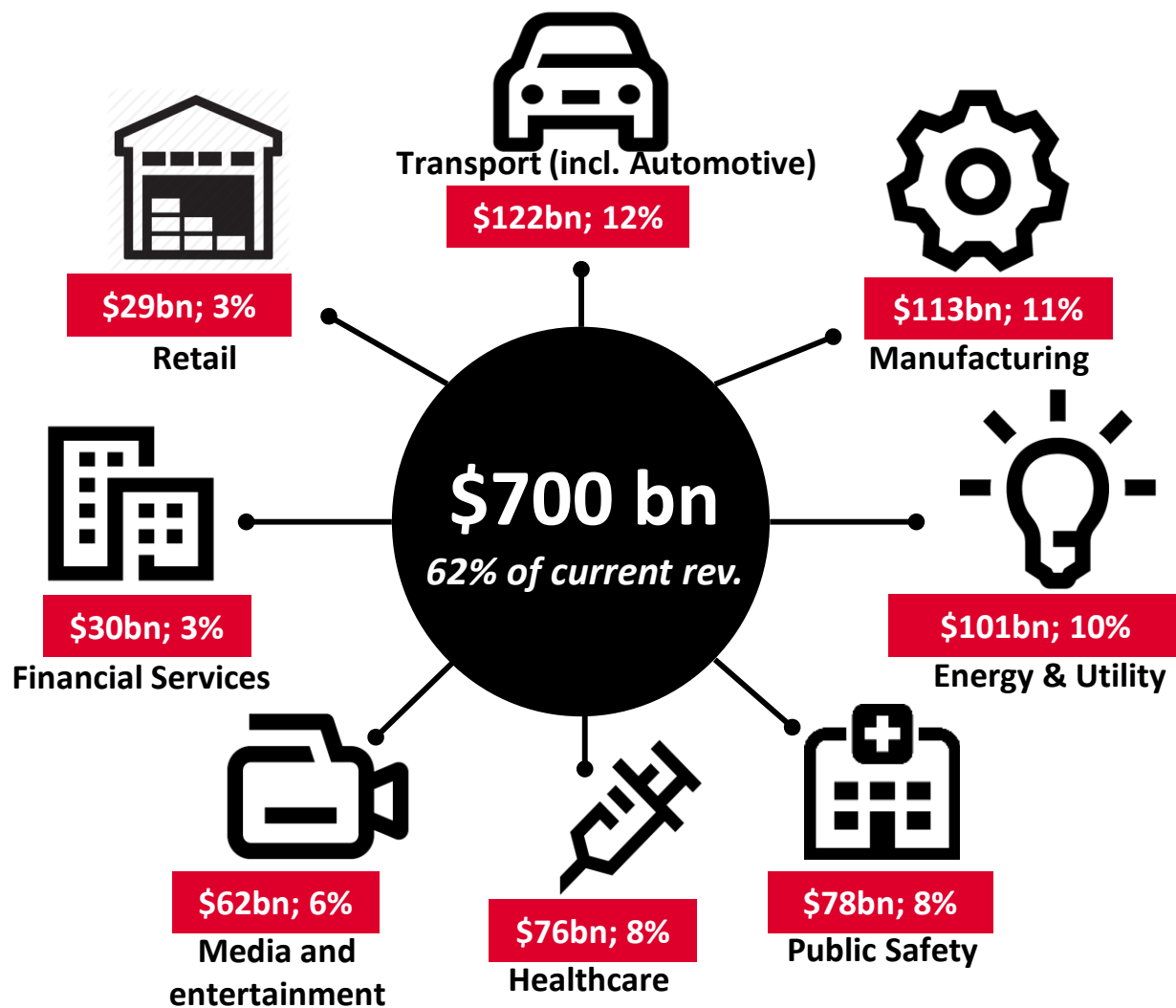SVP Technology & Ecosystem – Telefonica
Chairman of Telco Edge Cloud taskforce

Operator Platform – Problem statement

5G provides opportunities for operators to further monetize their Network investment

From a Best Effort 4G network providing just connectivity

To a programmable 5G Network providing connectivity and computing

Size of the opportunity

Retail
$29bn; 3%

Transport (incl. Automotive)
$122bn; 12%

Manufacturing
$113bn; 11%

$700 bn
62% of current rev.

Financial Services
$30bn; 3%

Energy & Utility
$101bn; 10%

Media and entertainment
$62bn; 6%

Healthcare
$76bn; 8%

Public Safety
$78bn; 8%

From providing services to enabling services

- Operators can tap into the $620bn revenue opportunity from the enterprise segment

- Mix of B2B (about 60%) and B2B2C relationships
  - Public Safety opportunity is mostly B2B
  - Media and entertainment is mostly B2B2C

- Engaging with Enterprise requires a change of mind-set and refresh of business processes

- If Operators do not adapt, the opportunity will be provided by others or developed by themselves (e.g. Ocado)

Source: GSMA

The Telco Edge Cloud is evolving fast

Future Networks Programme

Operator Platform Concept Whitepaper
January 2020

https://www.gsma.com/futurenetworks/resources/operator-platform-concept-whitepaper/

Prepare for Service launch

25 Operators

Define the Technical framework

30 Operators and 15 Technology providers

Telco Edge Cloud taskforce

Edge Service Description and Commercial Principles

https://www.gsma.com/futurenetworks/resources/telco-edge-cloud-october-2020-download/

Operator Platform Group

Operator Platform Edge Requirements overview

https://www.gsma.com/futurenetworks/resources/op-telco-edge-proposal-whitepaper/
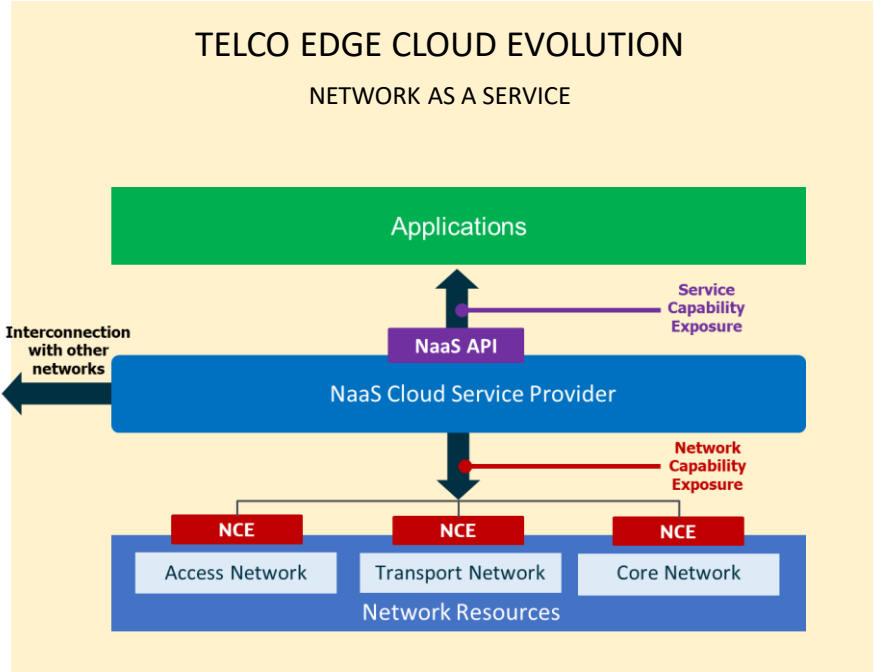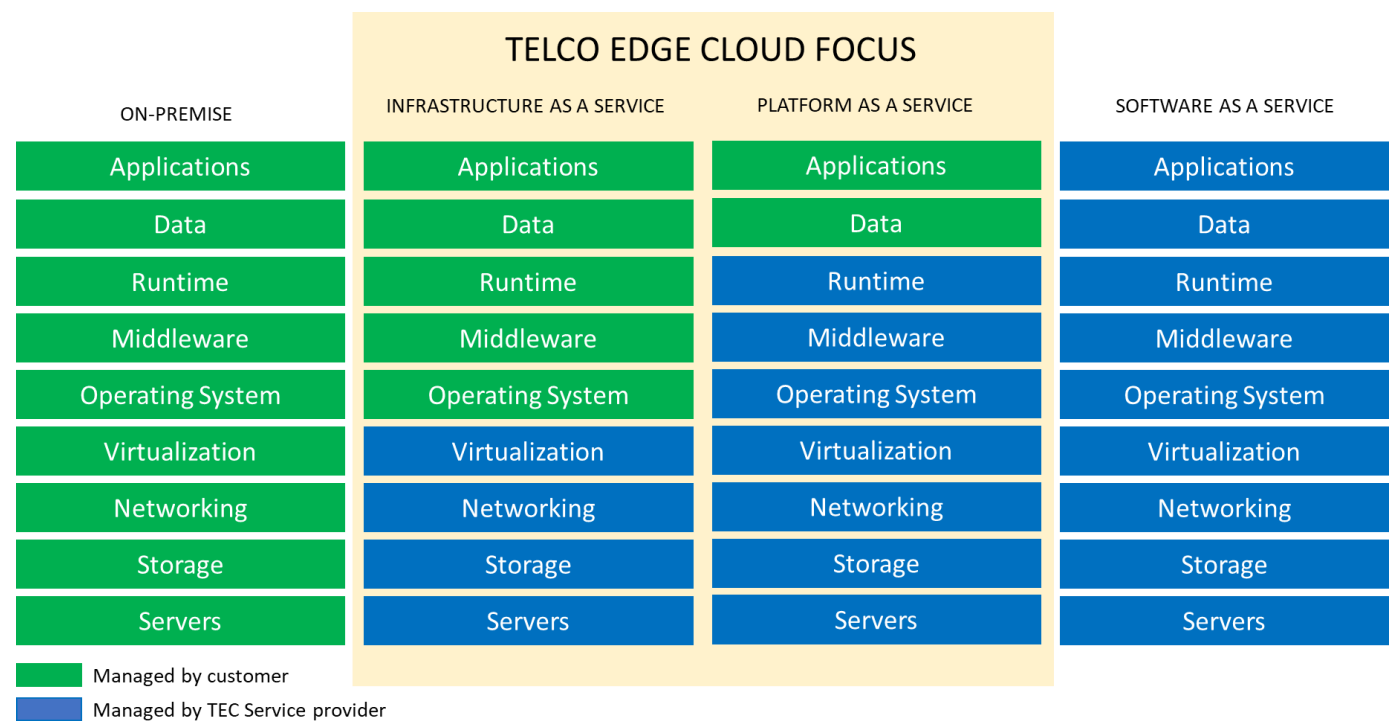
Telco Edge Cloud concept

- The Telco Edge Cloud is a global distribution system that offers Edge Computing services for customers to **develop, deploy and manage edge-based solutions over a global footprint**, benefiting from the unique capabilities that Telecom operators offer.

- It offers a **digital one-stop shop** for edge computing services, on a trusted and secure environment.

- It presents a **fair and transparent commercial model** across the value chain.

- TEC is built on edge technology based on a combination of **Open Source, Cloud and Telco standards**.
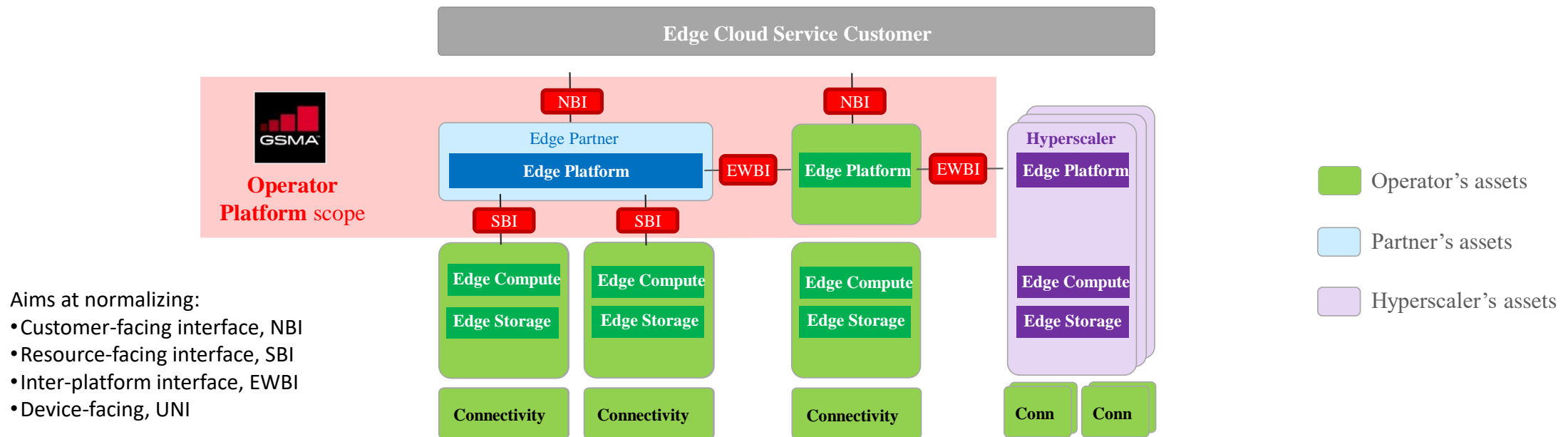
- It provides a **single and simple interface** (GUI, CLI, API), that facilitates the relationship with multiple Service Providers and multiple Mobile Operators, interconnected by **open and standard federation** mechanisms.

- TEC is supported by a group of **25 operators** from Europe, Middle East, Asia-Pacific and the Americas.

Telco Edge Cloud Services

TELCO EDGE CLOUD FOCUS

ON-PREMISE	INFRASTRUCTURE AS A SERVICE	PLATFORM AS A SERVICE	SOFTWARE AS A SERVICE
Applications	Applications	Applications	Applications
Data	Data	Data	Data
Runtime	Runtime	Runtime	Runtime
Middleware	Middleware	Middleware	Middleware
Operating System	Operating System	Operating System	Operating System
Virtualization	Virtualization	Virtualization	Virtualization
Networking	Networking	Networking	Networking
Storage	Storage	Storage	Storage
Servers	Servers	Servers	Servers

- Managed by customer
- Managed by TEC Service provider

TELCO EDGE CLOUD EVOLUTION

NETWORK AS A SERVICE

Applications

Interconnection with other networks

Service Capability Exposure

NaaS API

NaaS Cloud Service Provider

Network Capability Exposure

NCE   NCE   NCE

Access Network   Transport Network   Core Network
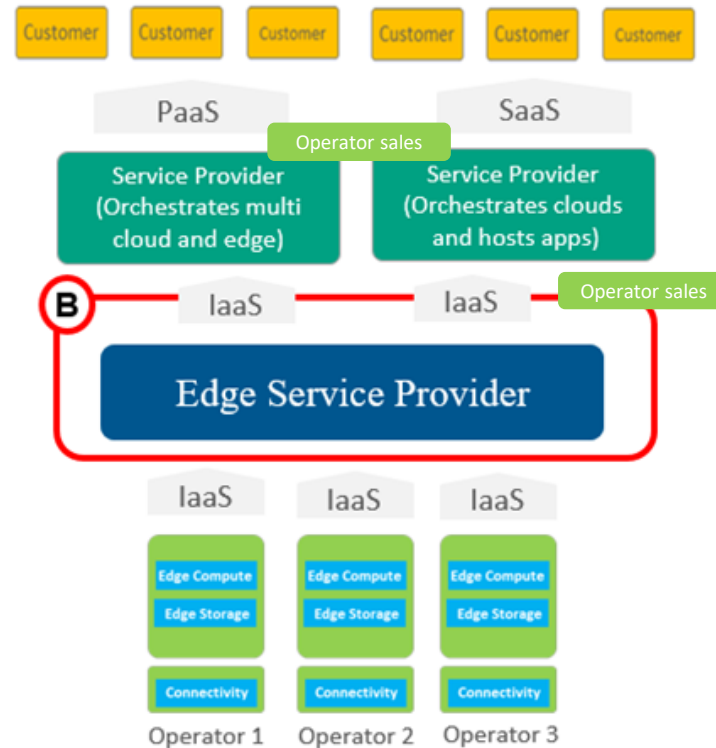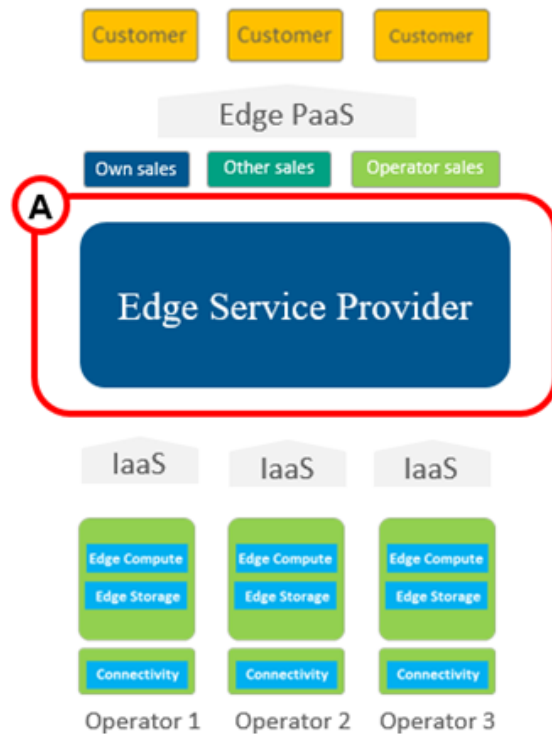
Network Resources

Federation: the challenge of creating a global Telco Edge Cloud

Aims at normalizing:
- Customer-facing interface, NBI
- Resource-facing interface, SBI
- Inter-platform interface, EWBI
- Device-facing, UNI
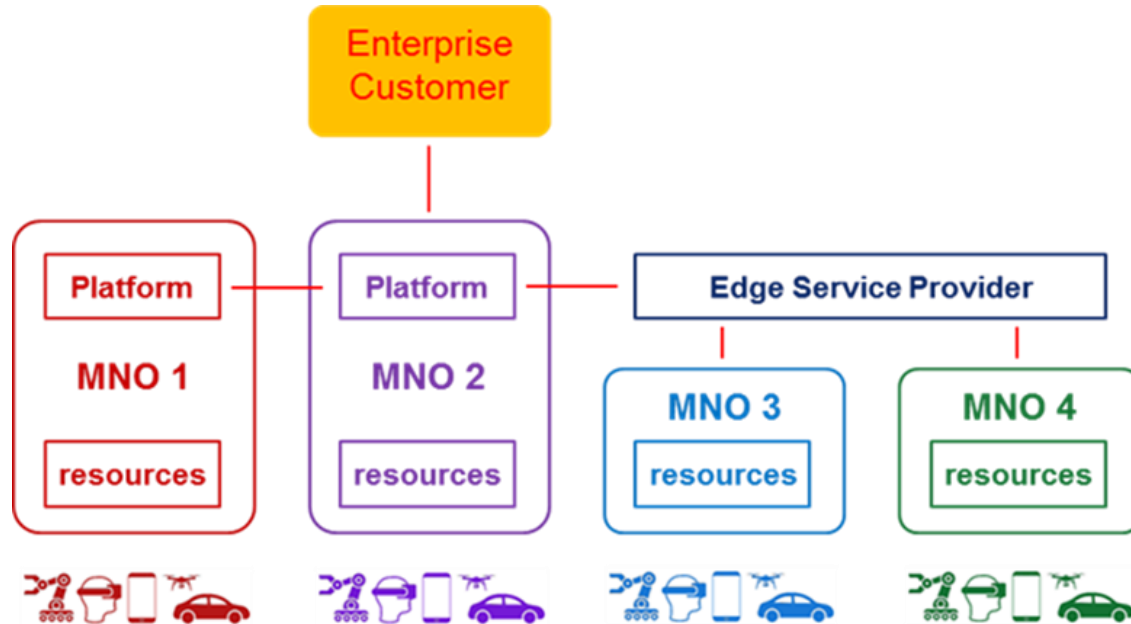
Aggregation using Edge Service Providers

The relationship of the Edge Service Provider with Operators acting as **Infrastructure Providers** is one of **aggregation**
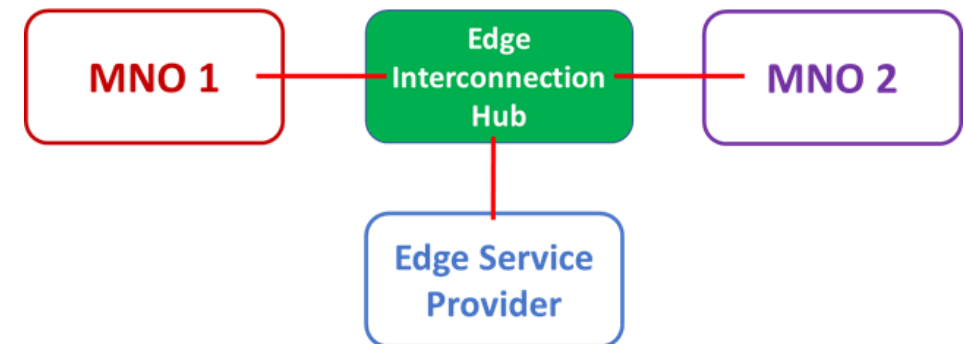
A and B are not exclusive.

Operators may act as sales channel in all options

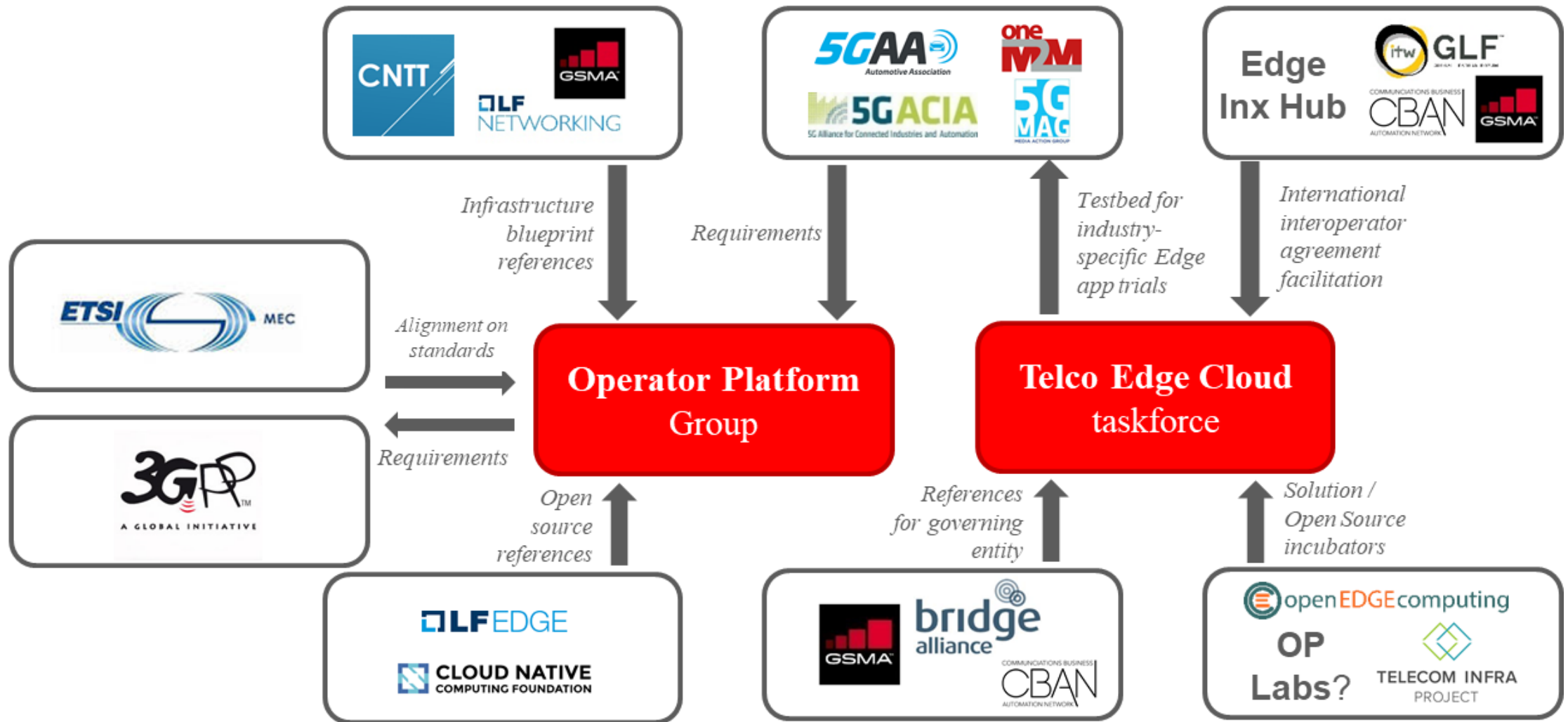# Interconnection as alternative federation mechanism

The relationship of the Edge Service Provider with Operators acting as **Platform Providers** is one of **Federation**

Edge Interconnection Hubs may **facilitate the federation** of Edge Service Providers and Operators (as Platform Providers)
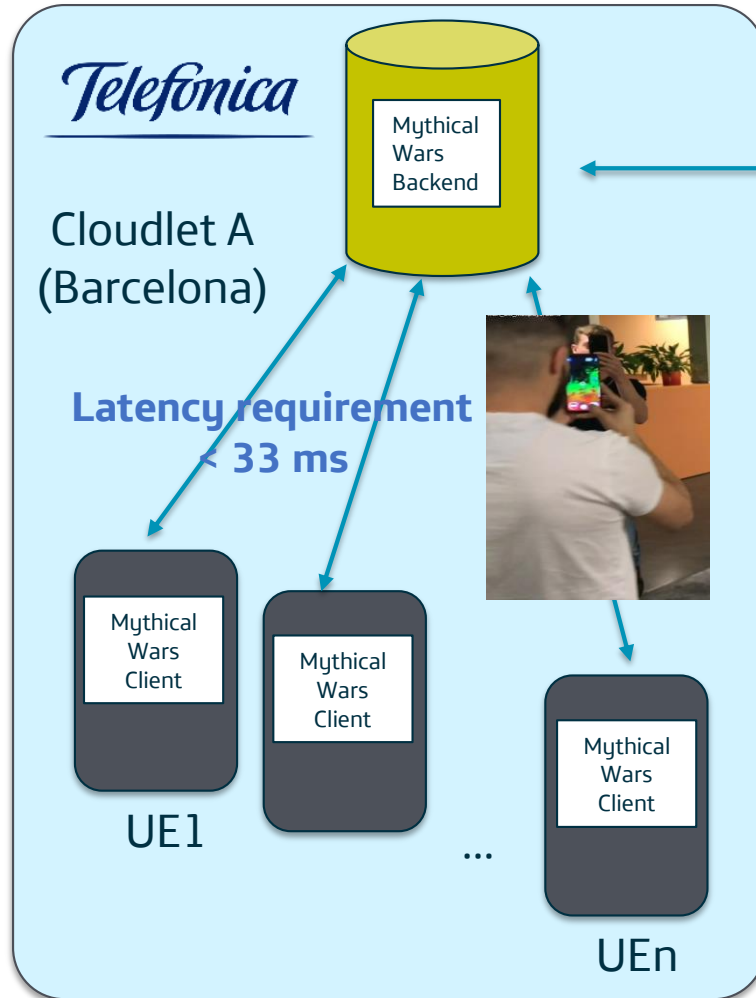
Operator Platform and Telco Edge Cloud
An open and collaborative ecosystem

MultiOperator Mobile XR gaming DT-Telefonica
connecting apps across borders

Cloudlet A (Barcelona)

Telefonica

Mythical Wars Backend

Latency requirement < 33 ms

Mythical Wars Client — UE1

Mythical Wars Client

Mythical Wars Client — UEn

...

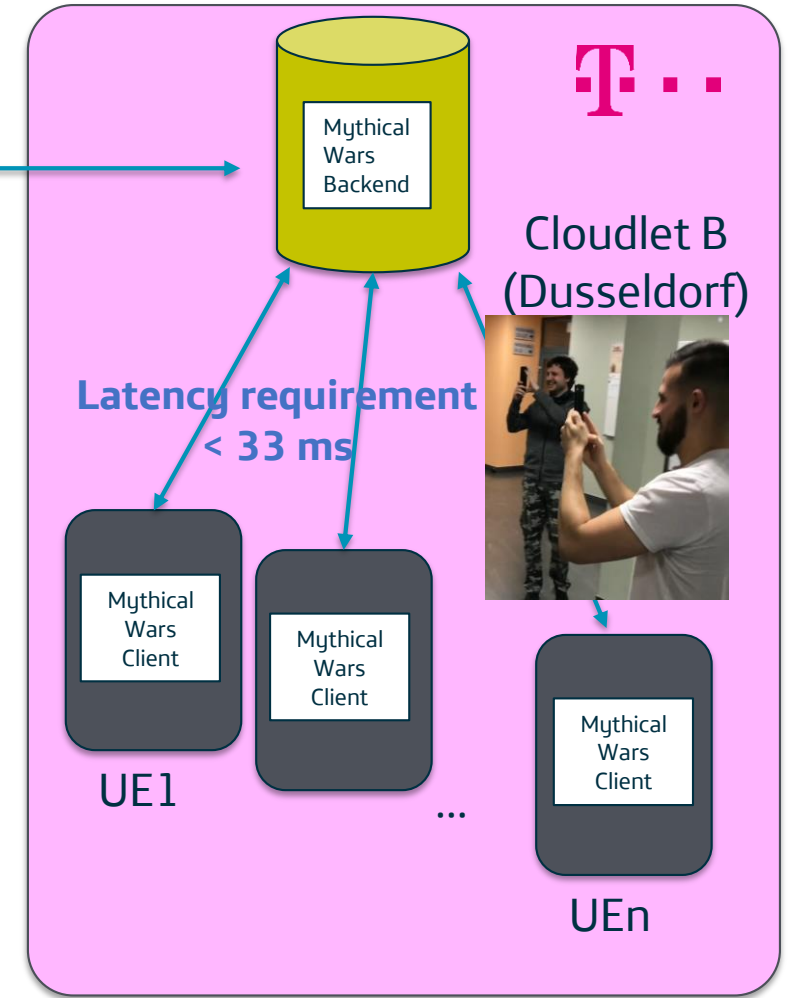**E2e latency requirement from UE/Country A to UE/Country B < 100 ms**

- 2 countries: Spain and Germany
- 2 Operators: Telefonica and Deustche Telekom
- 1 gaming experience across the 2 countries

MobiledgeX

SLAVIC MONSTERS

https://youtu.be/05IO7-W-VHk

Cloudlet B (Dusseldorf)

Mythical Wars Backend

Latency requirement < 33 ms

Mythical Wars Client — UE1

Mythical Wars Client

Mythical Wars Client — UEn

...

Video of the Mobile XR Gaming trial

https://youtu.be/05IO7-W-VHk

TEC Trials workshop – 2-3 December

Operators

Participants

- On 2-3 Dec we'll be running a matchmaking workshop connecting operators and industry partners with innovative proposals, addressing different vertical needs.

- **Examples use cases include: Manufacturing/IoT, AR/VR in manufacturing and broadcasting, Gaming, Healthcare, Automotive, Blockchain and more**

- Contact GSMA Future Networks team futurenetworks@gsma.com to be considered in future!

What is next for Telco Edge Cloud?

Telco Edge Cloud taskforce

October 2020

FUTURE NETWORKS RESOURCE

Telco Edge Cloud: Edge Service Description & Commercial Principles Whitepaper

5G | Operator Platform | Telco Edge Cloud

DOWNLOAD

Edge Service Description and Commercial Principles

https://www.gsma.com/futurenetworks/resources/telco-edge-cloud-october-2020-download/

2021

Set up of the GSMA Telco Edge Cloud Forum

↓ promote and support

Launch of regional Telco Edge Clouds

Further Telco Edge precommercial trials

apply commercial principles in live implementations

apply technical reference

Commercial requirements

Operator Platform Group

October 2020

FUTURE NETWORKS RESOURCE

Operator Platform Telco Edge Proposal Whitepaper

5G | Operator Platform | Technical Requirements

DOWNLOAD

Operator Platform Edge Requirements overview

https://www.gsma.com/futurenetworks/resources/op-telco-edge-proposal-whitepaper/

SDO specification references and gap analysis

Operator Platform: Technical Requirements
Permanent Reference Document
October 2020

Q1-Q2 2021

Operator Platform: Edge Cloud Technical Requirements

Operator Platform: Technical Requirements
Permanent Reference Document
October 2020

Q3-Q4 2021

Edge Connectivity (NaaS) Technical Requirements

Operator Platform: Technical Requirements
Permanent Reference Document
October 2020

2022

Network Slicing Requirements

Summary

- Operators are moving forward in the definition of the **Telco Edge Cloud Services** both from a Technical and Commercial perspectives, opening the opportunity for application providers to develop and deploy Edge applications over a **global footprint**, delivering an **optimal and controlled experience** (latency, jitter, bandwidth…) over a **secure and trusted environment**.

- **First documents** have been delivered in October and further releases are planned for Q1-Q2 next year.
    - https://www.gsma.com/futurenetworks/resources/telco-edge-cloud-october-2020-download/
    - https://www.gsma.com/futurenetworks/resources/op-telco-edge-proposal-whitepaper/

- Telco Edge Cloud is moving to execution mode, with **precommercial trials** with customers in 2020 and **initial rollouts** at regional level in 2021.

- In parallel, **Operator Platform** Group has started setting the reference Technical framework for a Telco-based Edge Computing in 2020 and will add new functionalities in subsequent phases (2021: Edge Connectivity on Demand, **NaaS**, 2022: likely **Network Slicing**)

Thanks!