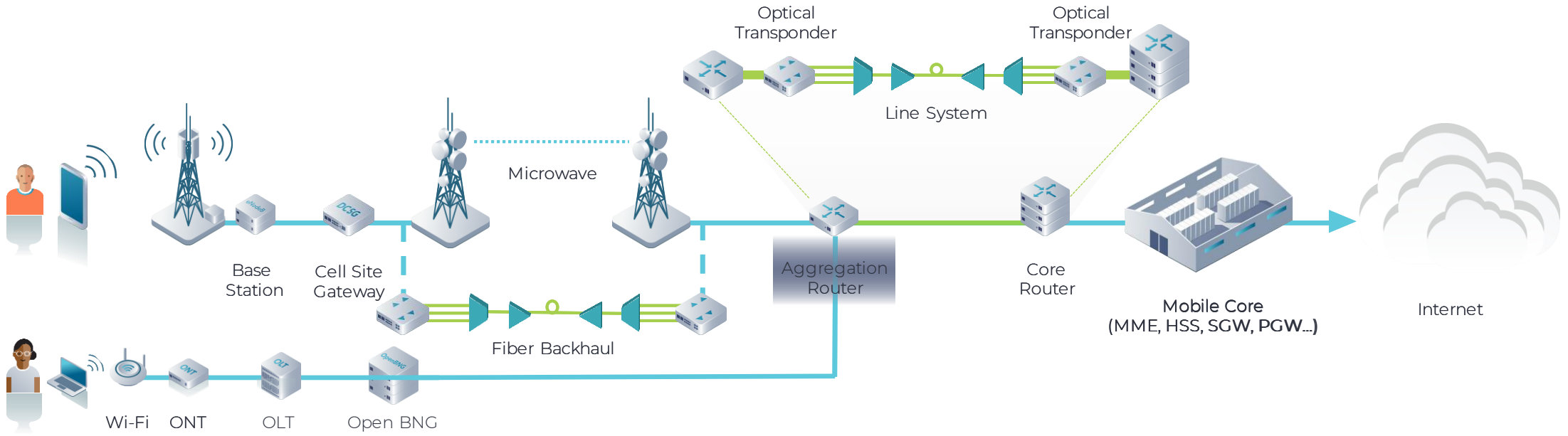
STRATEGY TOWARDS OPEN BROADBAND

ONF Berlin Meetup Meeting

20/05/2022 – Rafael Cantó - CTIO Unit

Telefonica Strategy towards Open and Disaggregated Networks

HOME | ACCESS | TRANSPORT | CORE



Telefónica's Open Transport Strategy

3 Stages

Transformation of IP and optical networks completed with a **multiservice, multilayer flattened network** approach, providing support for 5G, FTTH and Edge services

TECHNOLOGY EVOLUTION

SDN Control Plane

SDN brings **intelligence to IP and Optical network**. Traffic Engineering is simplified. Basic for **automation, disaggregation and slicing**

Disaggregation

First trials and deployments of both **IP and optical disaggregation**

Open Transport

Network Transformation

IP Network (FUSION architecture)

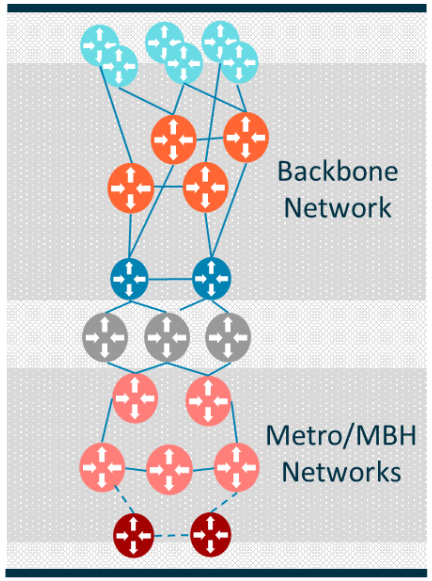
IP NETWORK

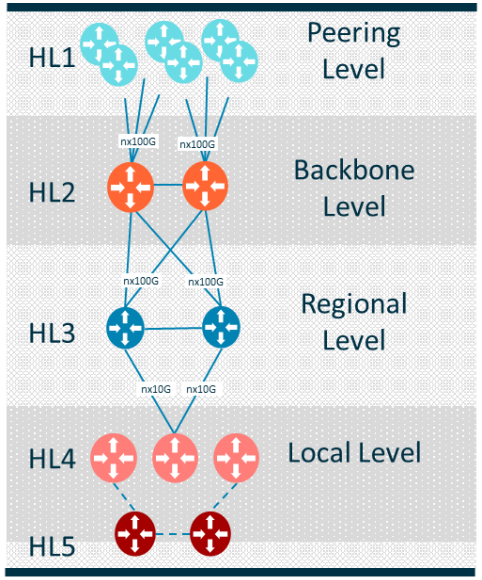
Objectives:

- **Higher capacity**
- **Better quality of experience**
- **Legacy switch off**
- **Network** more **efficient** in terms **of CAPEX and OPEX**

Strategy:

- **Reduction** of number of **hops**
- **Multiservice Node**: Multiple functions are collapsed into a **single** node
- Metro networks: Evolution from **ring to star** topologies over existing fibre infrastructure
- **Mobile stations to 10G**





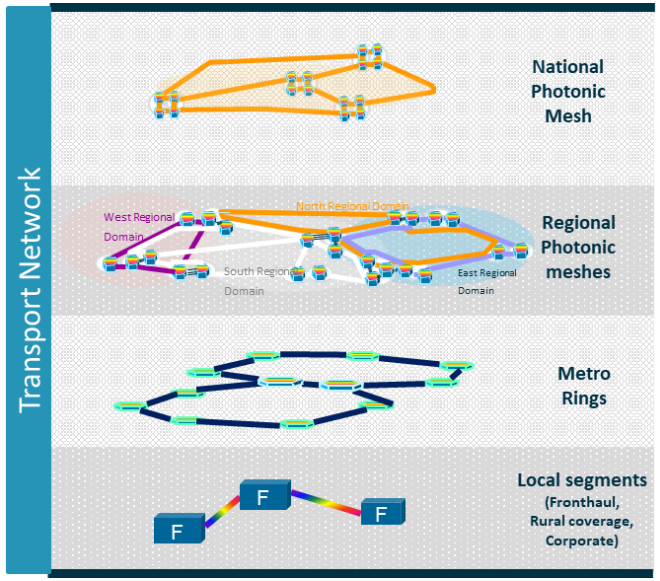
OPTICAL NETWORK

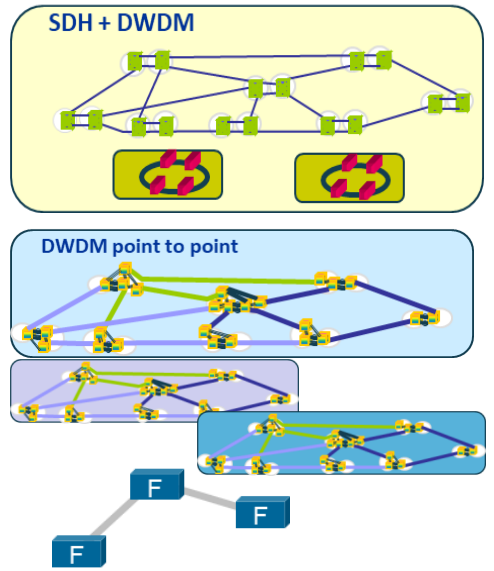
Objectives:

- **Survivability** against **multiple fibre cuts**
- **High-capacity long-haul networks**
- **Legacy SDH switch off**
- **Network** more **efficient** in terms **of CAPEX and OPEX**

Strategy:

- **Migration** from **point to point** to **Photonic Mesh** topologies with **dynamic restoration**
- **Migration** from **hybrid 10G/100G DWDM** to **pure coherent 100G** networks
- **TDM service migration to OTN/DWDM**





How can we achieve SDN deployment?

Functional Architecture
Standard agreed NBI and SBI

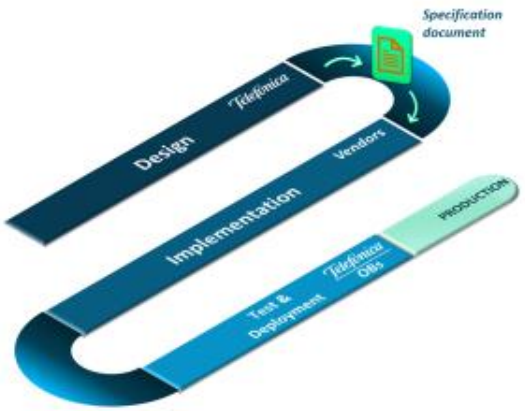
Reference Model

Use Case Oriented

Standards Based

Network Abstraction Model

Step by step
Provide value



Network Operators

Suppliers

Collaboration Fora

TELECOM INFRA PROJECT
MUST

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Industrial alliances
Follow mature standards

E2E network view
Minimize entrance barriers

OPEN NETWORKS

Drivers

1

Simplification

2

Differentiation and Efficiency

3

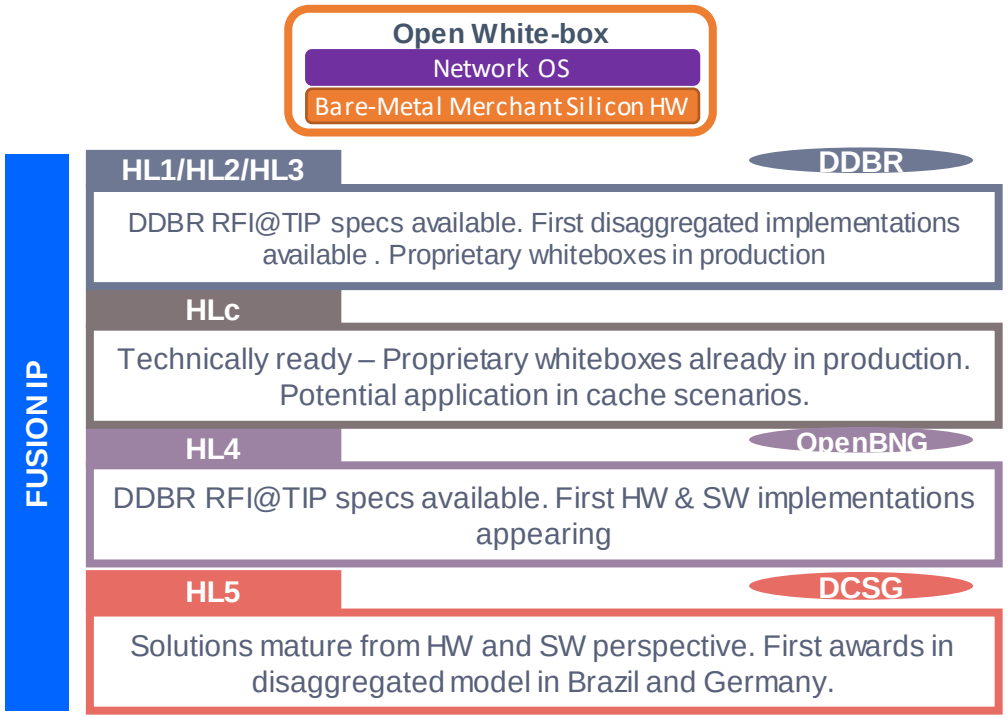
Stronger Ecosystem

Sustainable 5G

Open Fusion

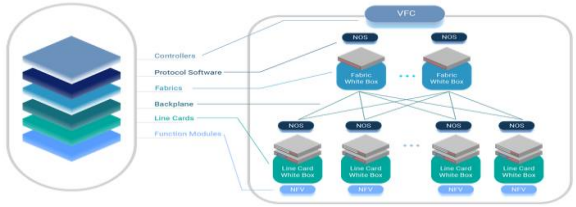
Vertical (HW and SW decoupling) and **horizontal** (functional decomposition) **disaggregation** to provide **openness in transport domain: t**ake advantage of economies of scale, reduce entry barriers to increase market competition and diversify supply chain, leveraging the transformed and simplified **FUSION** architecture and **iFUSION** SDN control plane to provide required performance and ease of integration for the introduction of disaggregated technologies

VERTICAL DISAGGREGATION



One clear silicon market leader → General purpose or another lock-in?

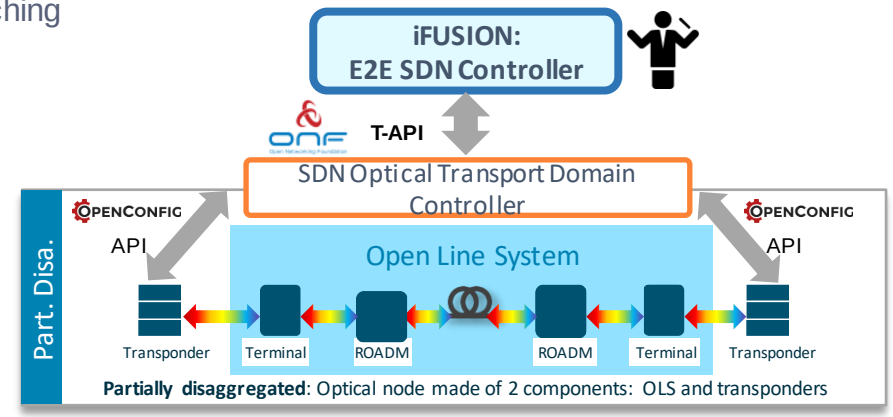
HORIZONTAL DISAGGREGATION



In **IP:** Exploring **disaggregated** chassis architectures

In **Optical:**

- **Partial disaggregation** to separate transponders from optical line systems, leveraging on iFUSION control plane for deployments
- **Third party optical pluggables** to reduce the overall network cost in IP and switching



Telefónica collaboration in disaggregated initiatives

Leveraging when possible shared work with the community to build momentum

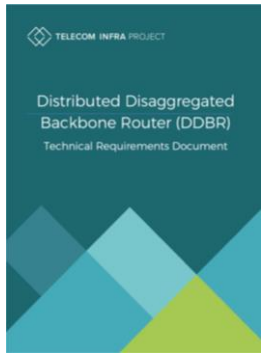
Disaggregated Cell Site Router

- **Launch Oct 2018.** Led byTelefonica, Vodafone and TIM Brasil
- **Production.** Deployed in 2020 in Ecuador, Peru and Germany. Awards in Brazil and Germany 2021
- Single aggregation substrate for all applications (ORAN, OpenOLT)

Open BNG

- Coordinated Open Community started by BT, DT, Telefonica, and Vodafone
- High Level **Specs released Oct 2020** in TIP.
- Testing from H2 2022

DDBR (Open HL1/HL2)



- **Launch 2021.** Project launched within TIP. RFI completed.
- **RFQ** ready with some vendors (P router use case)

Phoenix

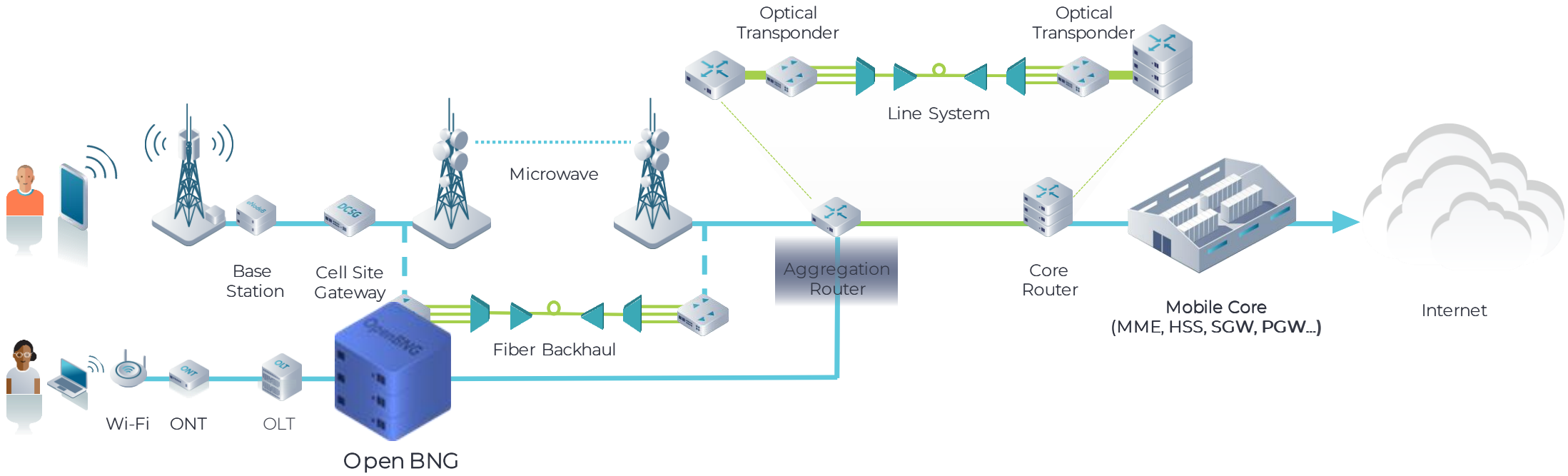
- **Launch March 2020.** Telefonica, Telia, NTT, MTN, DT and Vodafone led the spec definition.
- **Testing.** TEF focus in SDN control of open terminals and DCO interoperability

IP

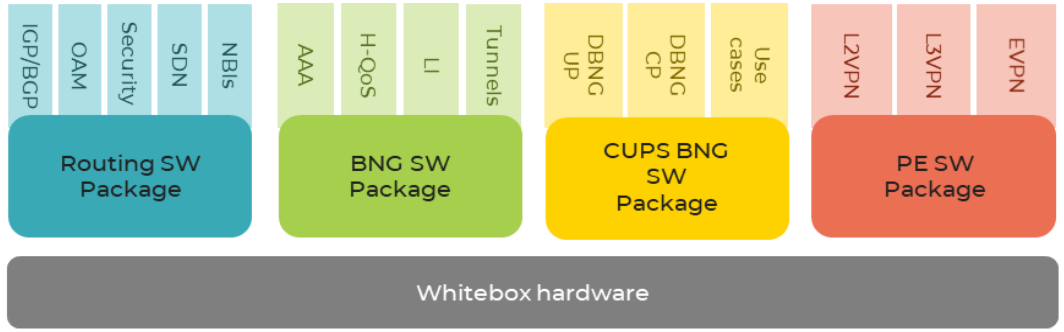
Optical

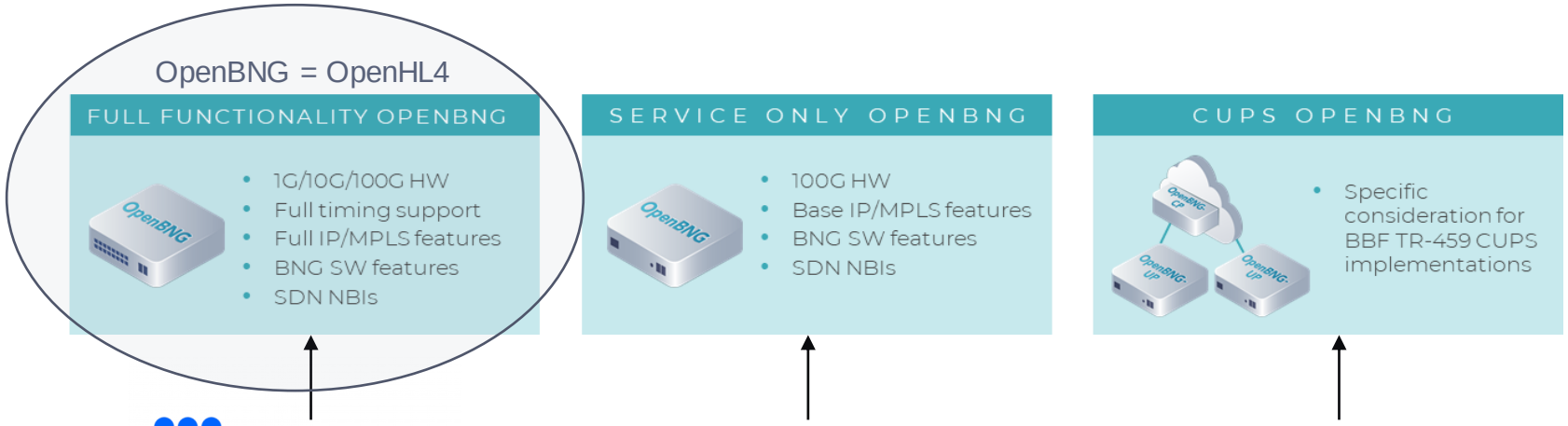
OPEN BROADBAND

Open BNG



Open BNG TIP RFI





Telefónica

Most widespread use case for Telefonica (Highly distributed BNG & PE functions)

Applicable for standalone LAC/LNS

Implies architectural change (Control and User Plane separation)

OpenBNG RFI Shortlist

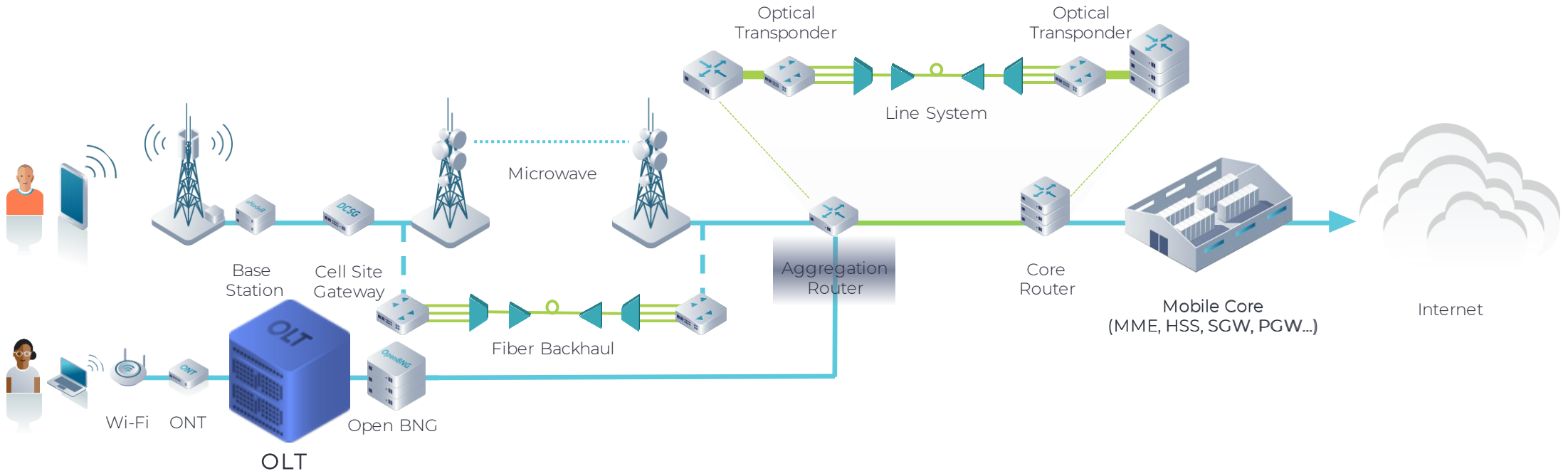
Testing & PoC in H2'2022 aligned with TIP T&V process

Focus @TEF:

- Technology scalability and performance validation of HW platforms
- SW Roadmap validation (BNG, Routing/MPLS, PE, timing)
- SDN Programmability

OPEN BROADBAND

Open Fixed Access



Telefónica's Open Broadband program for fixed Access networks

Open Broadband program consists in the **development of a new multi-vendor open fixed access environment, with a new scalable and virtualized architecture** that will allow us to **enlarge and improve our map vendor ecosystem**, with new innovative players allowing programmability of the access networks

Enlarge vendor map and guarantee business continuity

- **Expand the vendor ecosystem and competition**
- With SDN/NFV new and innovative players emerged

Programmability of the access network

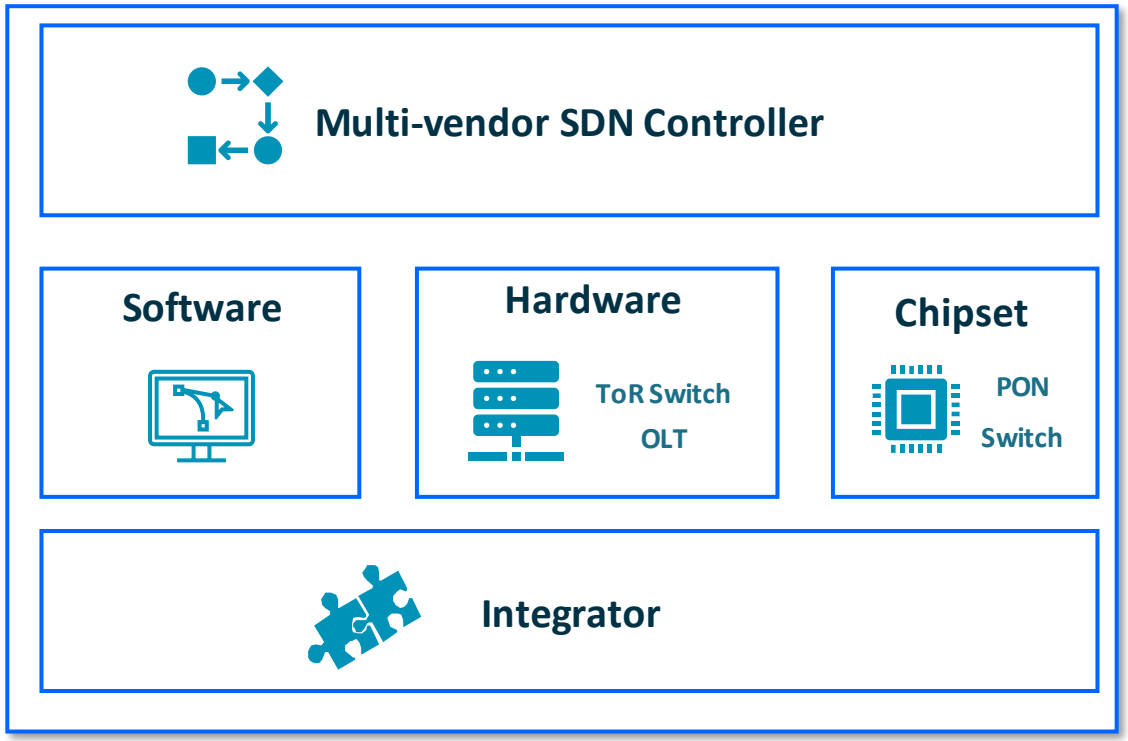
- **Deploy apps in the access network,** allowing **new use cases** such as on-demand customer connectivity, real-time bandwidth self-provisioning, cloud gaming, etc..

Mitigate risks in the supply chain

- Potential **shortages** may impact our operations and OBB introduce **chipset diversity** to avoid it.

Open Interfaces

- Open Interfaces will allow us to easily integrate **new vendors** and **increase interoperability**



Industry Standards

broadband forum

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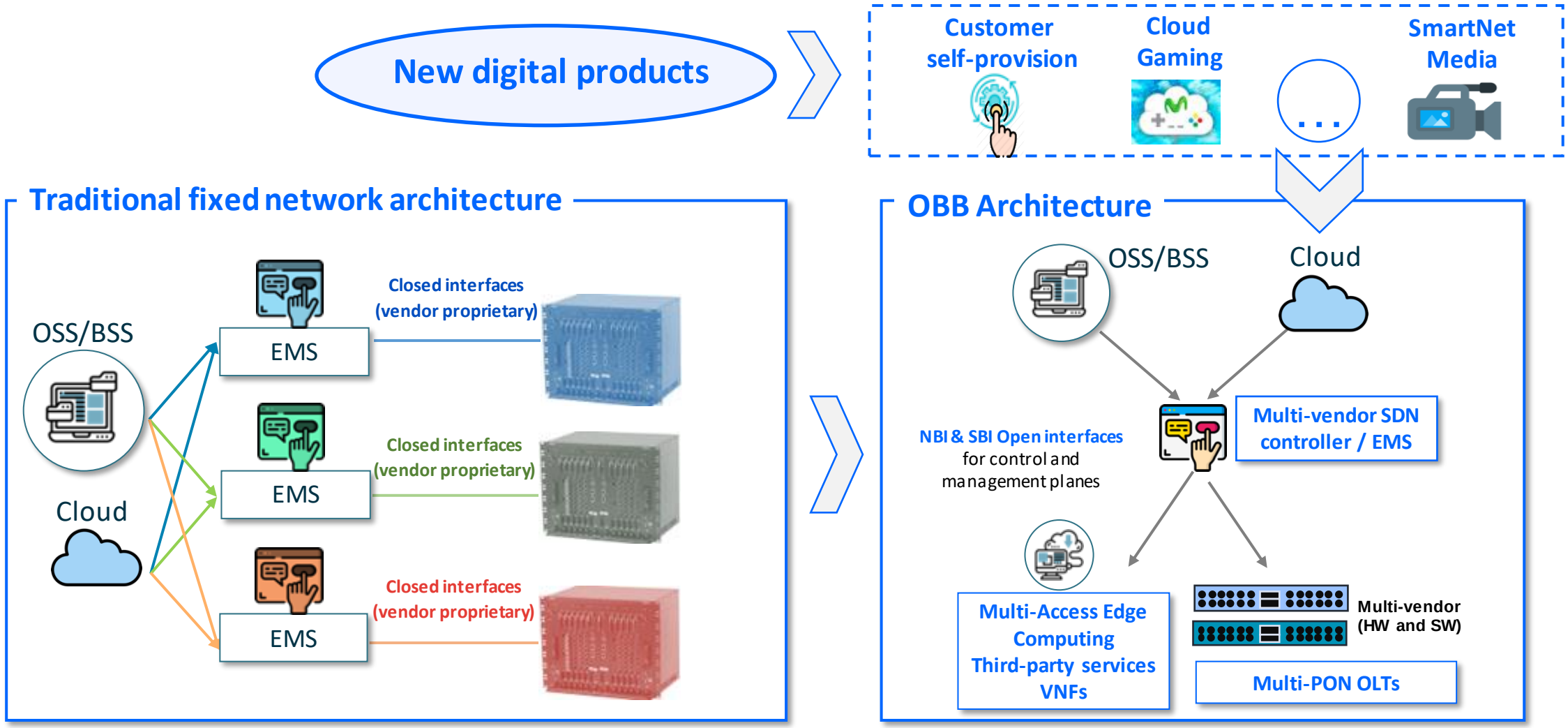
Telefónica's Open Broadband program for fixed Access networks

OBB simplifies IT System integration with a Multi-vendor SDN Controller (/EMS) and makes the introduction of new services smoother and easier



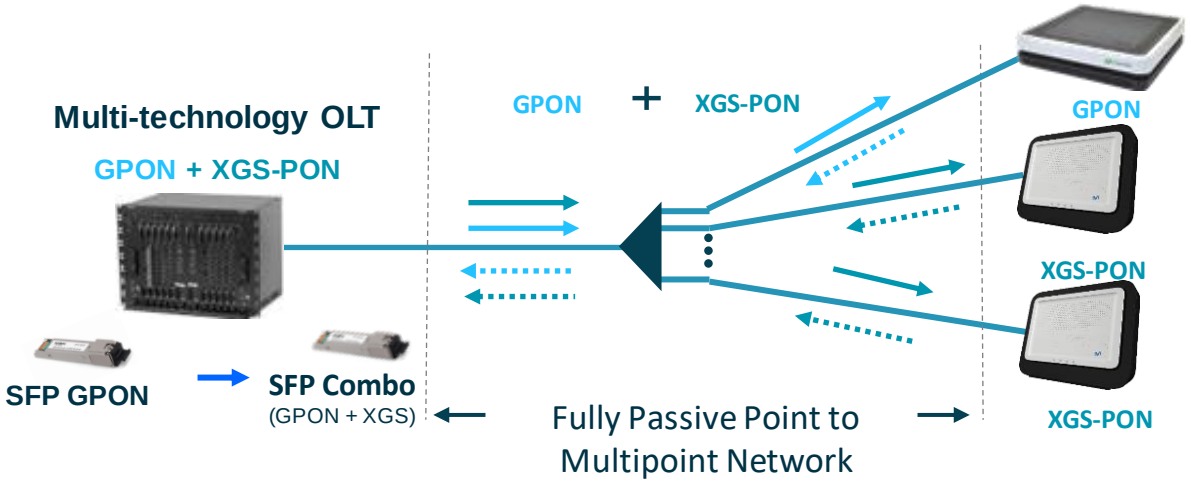
Telefónica's Open Broadband program for fixed Access networks

Development of **a new open multi-vendor fixed access environment** based on **open standard interfaces** that allow a **single integration with new network elements** under a multi-vendor manager.

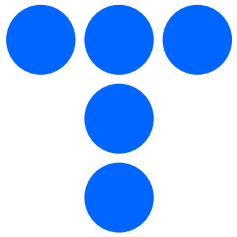
In addition, Multi-PON technology allows **GPON and XGS-PON over the same optical fiber**, to deliver the adequate service to each customer.

A **new multi-vendor ecosystem**, **based on open interfaces** which will allow :

- Smooth introduction of **new vendors and partners,** to ensure the business continuity and reduce supply-chain risks.
- **New services and applications** bringing new revenues streams and improving customer experience.
- **Simplify System Integration**, reducing Opex and TTM.
- **Co-existence** with legacy PON networks and architectures.
- Enable a **New Operative Model**, introducing flexibility and automation.



Multi-PON OLTs can work with only GPON, only XGS-PON and simultaneously GPON & XGS-PON, allowing the simplest migration path from GPON to 10G, port by port.



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