F5G as a Multiple Access Aggregation over PON solution (MAAP)

EMAQD as the fixed fifth generation network goals for Altice Portugal

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F5G Event in BBWF 2020

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ALTICE PORTUGAL STRATEGY

- INNOVATION
- INVESTMENT
- PROXIMITY
- QUALITY OF SERVICE
- SOCIAL RESPONSIBILITY

Together.
Has.
No Limits.

TO BE THE LEADER IN ALL MARKET SEGMENTS, PRODUCTS AND SERVICES

2020

ON THE ROAD TO 5.5 MILLION HOMES PASSED...AND BEYOND

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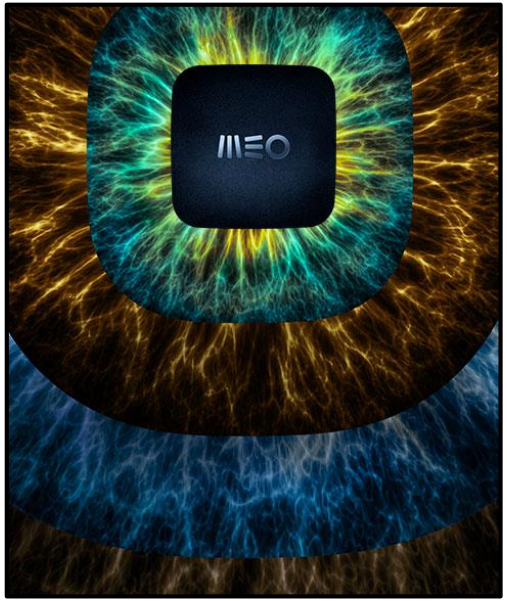
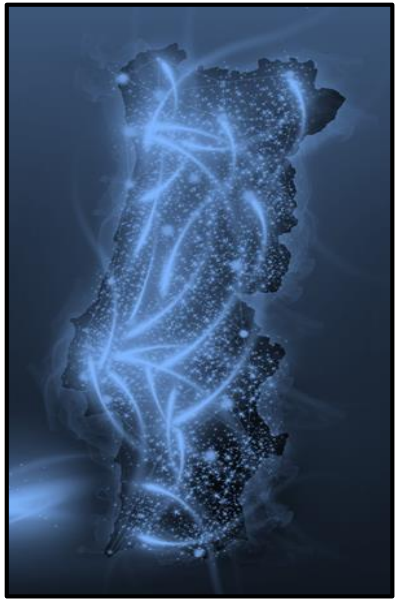
ALTICE PORTUGAL RECENT ACHIEVEMENTS

LEADER
of the STVS
(1H2020)



BEST
FTTH coverage
(5.3 MHP)



BEST
TV experience
(2020)

*Subscription TV Service (STVS)

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PON AS THE EFFICIENT AND MULTIPLE ACCESS AGGREGATION SOLUTION

B2C Market

TV+NET+Voice+Mobile

TV+NET+Voice

- 30M/30M
- 100M/100M
- 200M/100M
- 500M/100M
- 1G/200M

TV+Voice

NET+Voice

B2B and Wholesale Market

- FIBER@CORPVPN
- FIBER@EtherWEB

- Symmetrical Bitrates
  From 2M to 300M
- Asymmetrical Bitrates
  From 30M/3M to 1G/200M

- 4 Classes of service
- 4 Bitrate Assurance
  UBR, 10% PIR; 50%PIR; 100%PIR

- Until 4 connectivities per access (1 to CPE management)

MobileBackHaul

FIBER@MBH

- 10M/5M (100% PIR)
- 150M/75M (30% PIR)
- 300M//150M (30% PIR)
- 600M/300M (30% PIR)
- 1G/500M (25% PIR)

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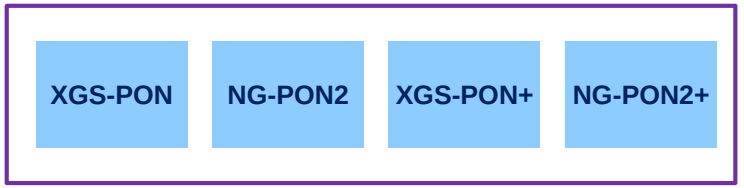
FIXED ACCESS NETWORKS AND PON NEW CHALLENGES

RAN technology evolution, and namely new functionalities like 4G CoMP or 5G (TDD and FDD), requires MBH's new functionalities

Current PON solutions have limitations to comply with those requirements, namely:

- **Transport bandwidth up to tens of Gbps**
- **Synchronization phase transparency**
- **Upstream latency, in the order of milliseconds (due to the actual DBA schema)**

Bitrate (down/up)



Latency (up)

Sync Phase Transparency

Enhanced Transport Sync functionalities (like TSN)

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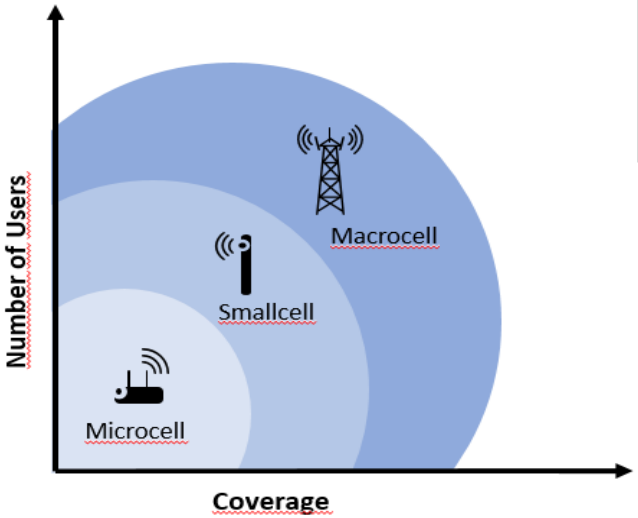
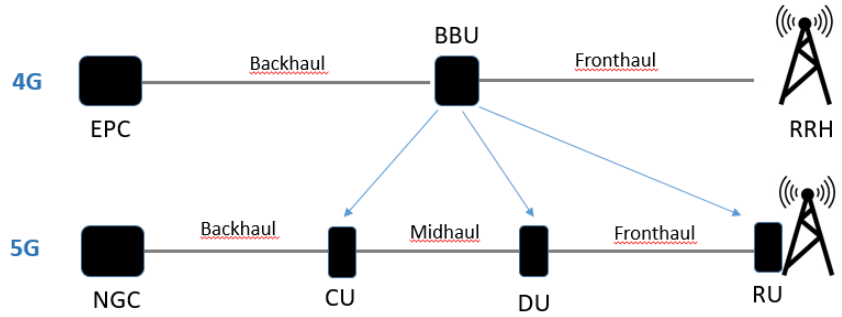
5G TRANSPORT AS THE MOST DEMANDING APPLICATION

The most demanding requirements are those associated with 5G transport and therefore, if technology supports those requirements, it will naturally support the Residential and Enterprise market needs.



Cellsite Type	Number of users	Coverage	Location	Application	Access type
Microcell	1 to 50	10 to 100m	Indoor	Homes, small oficces	B2C/B2B
Smallcell	50 to 1.000	100m to 2km	Indoor/Outdoor	Shopping centers, stadiums, temporary events, Building Ofices, Hotels	xHaul
Macrocell	>1.000	2km to 30km	Outdoor	City and rural areas, suburban	xHaul



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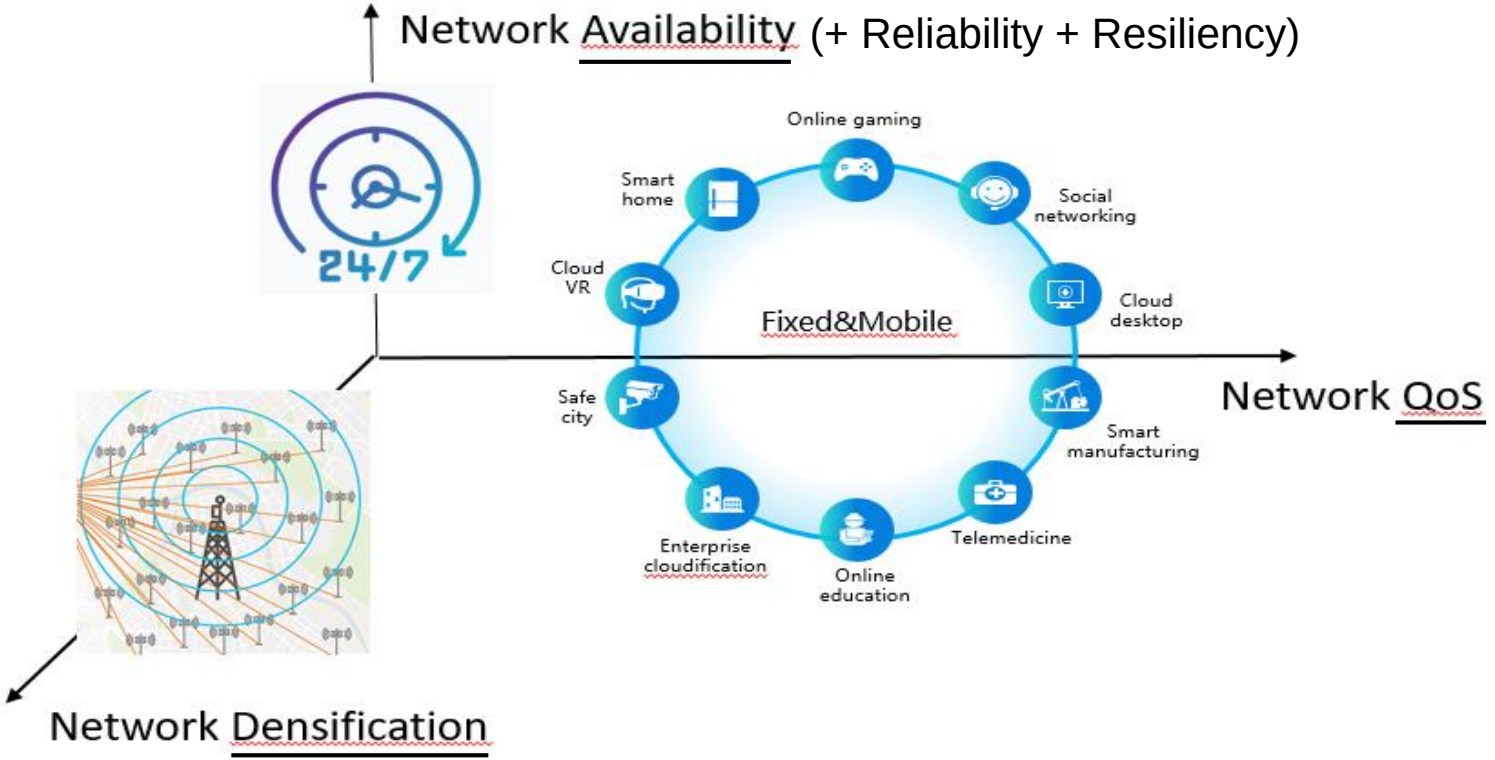
THE FIXED FIFTH GENERATION NETWORK MAIN DESIGN GOALS (1/2)



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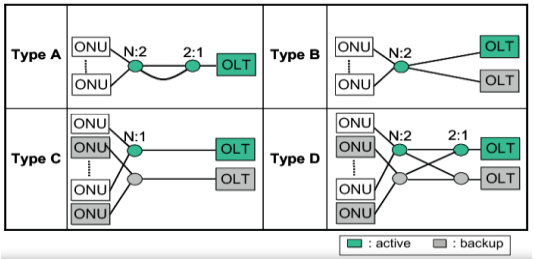
THE FIXED FIFTH GENERATION NETWORK MAIN DESIGN GOALS (2/2)

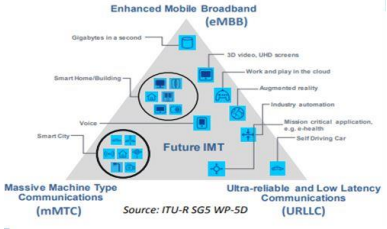
To support **5G Availability** it is essential to ensure the level of E2E protection of equipments and paths. SDN/NFV will contribute to guarantee high availability requirements



Availability by Design

To support **5G QoS** features it is crucial to address the main classes of requirements defined for 5G:

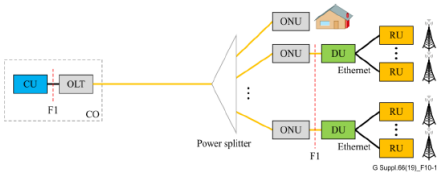
- Enhanced Mobile Broadband (eMBB)
- Ultra-Reliable and Low Latency Communications (URLLC)
- Massive Machine Type Communication (mMTC)



QoS by Design

To support **5G Densification** it is crucial to address the requirements and network architectures to support 5G transport scenarios:

- Backhaul: connection from gNB to 5G core
- Midhaul: connection between CU and DU
- Fronthaul: connection from gNB to transmitter (RU)



Densification by Design

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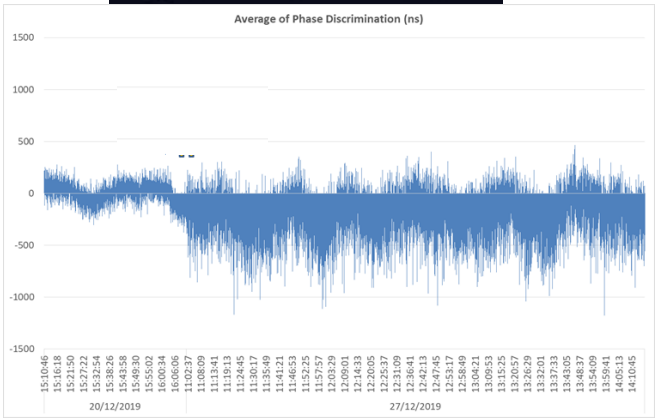
F5G PUSH AS THE SUPPORT FOR 5G TRANSPORT



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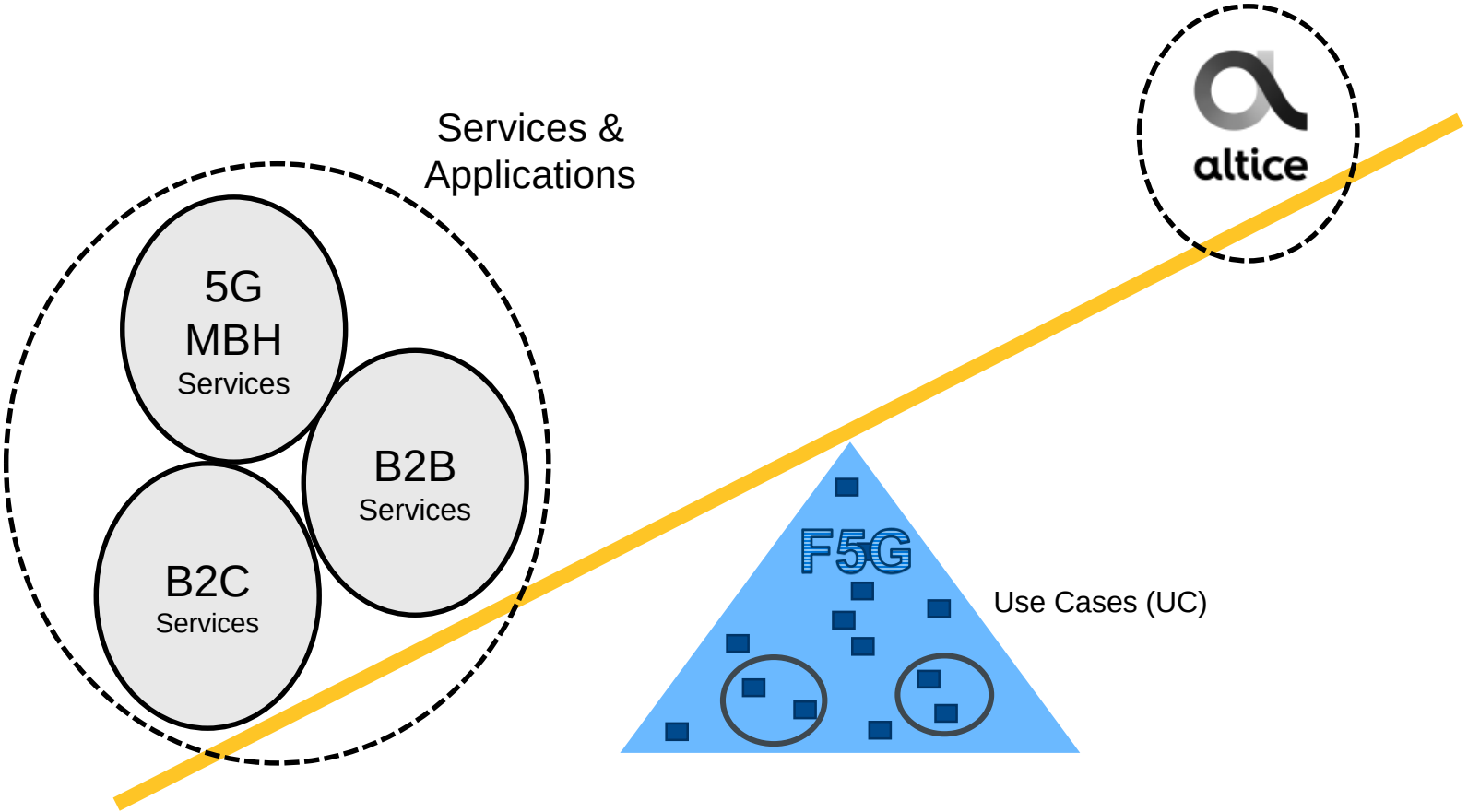
F5G CONTRIBUTION AS THE UBIQUITOUS SUPPORT NETWORK



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F5G AS A MULTIPLE ACCESS AGGREGATION OVER PON SOLUTION (MAAP)

1. Providing high quality of service, costumer experience and addressing with incomparable **Efficiency (E)** all the services and network requirements, the PON networks and technologies will constitute a *de facto* solution for achieving **Multiple access (M)** aggregation networks

2. PON networks and technologies will continue to evolve, offering **Availability (A)**, **QoS (Q)** and **Densification (D)** by design, in order to support the most demanding network services, like 5G transport

3. Providing **EMAQD, the fixed fifth generation** will be considered a future proof aggregation network that brings value to customers, to operators, to vendors, to the telecommunications industry and to the global economy

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THANK YOU
GRACIAS
MERCI
DANKE
OBRIGADO

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