

5G

Stakes and challenges

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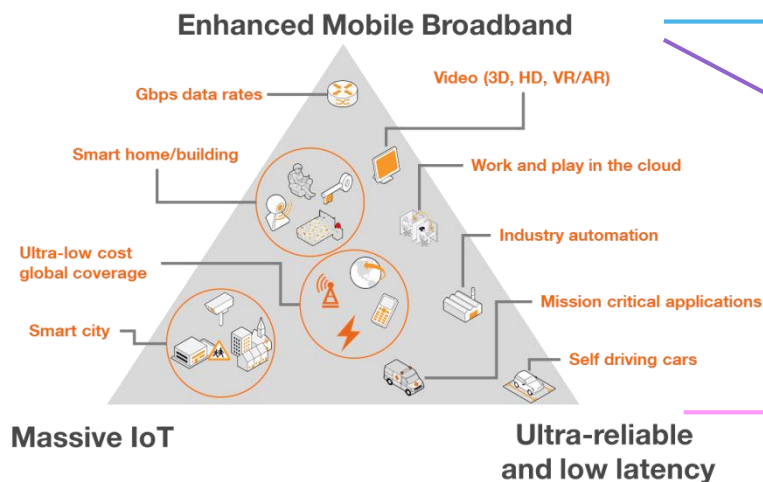
5G will create new business opportunities

5G is a new wireless standard

- will drive the wireless technology until 2030
- first phase of the standard: mid 2018 and devices/networks 6-12 months later
- new spectrum and new equipment

5G means

3 core opportunities



enhanced Mobile Broadband (eMBB)

- more speed, lower latency
- multi-service : QoS by type of object ?

Fixed Wireless Access (FWA)

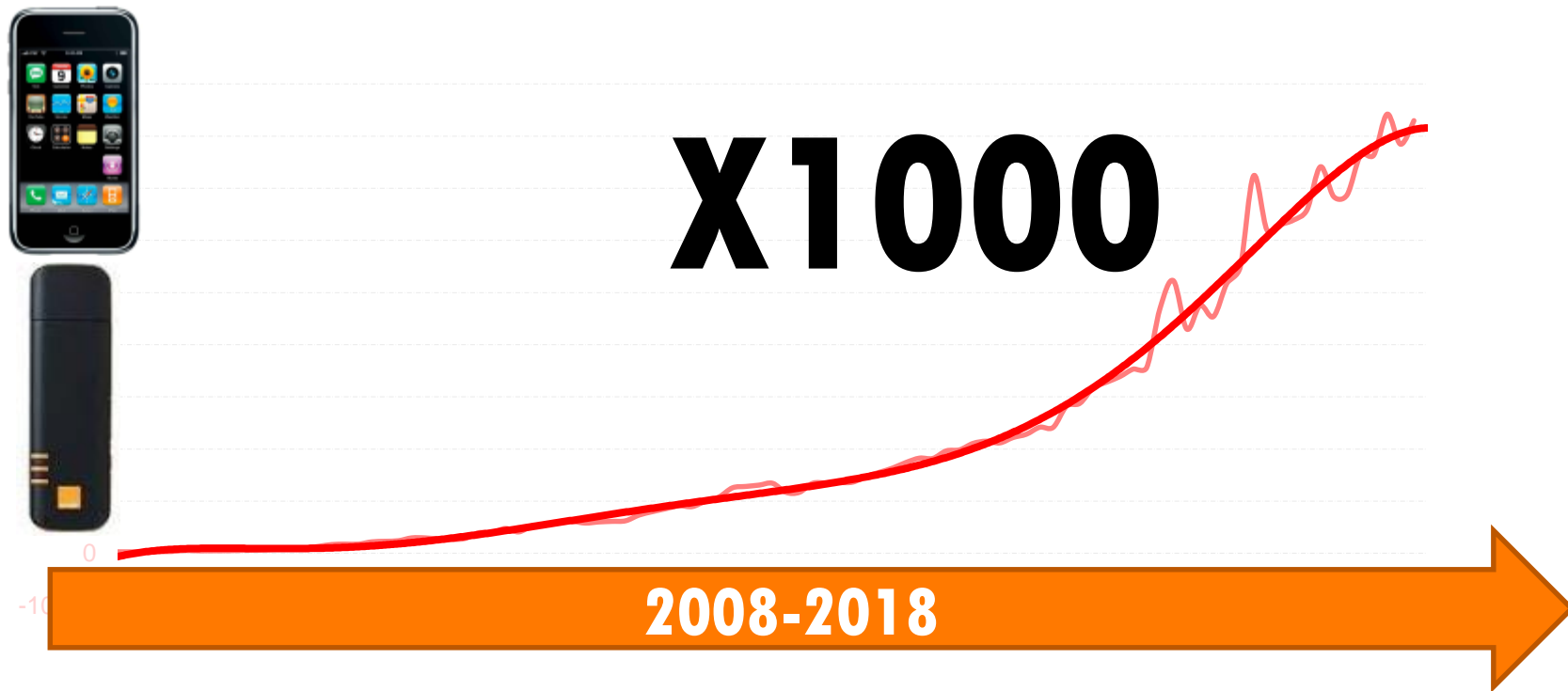
- 5G Fiber to connect households
- not before 2022

Specialized Services (B2B) :

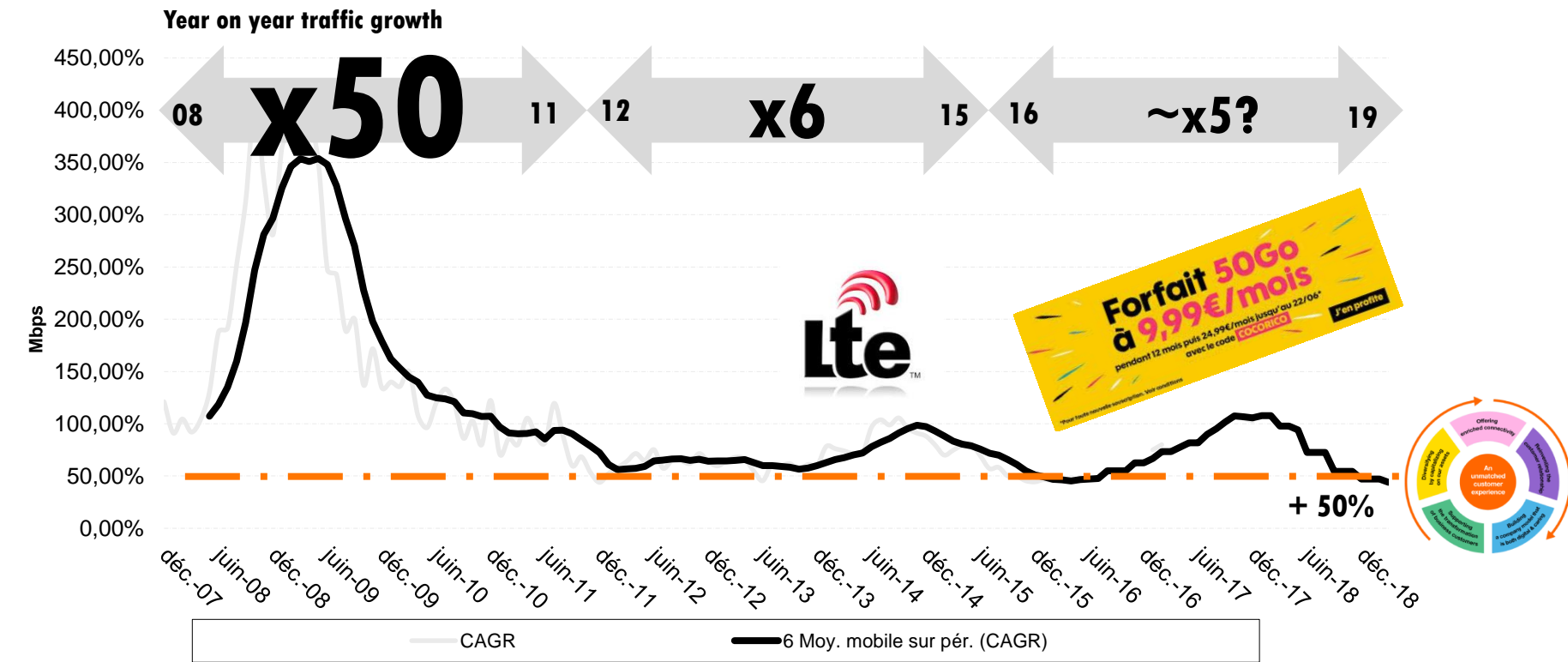
- Class of Services
- P&L approach

1-MBB

iPhone in western Europe and 3G dongles in eastern Europe triggered a massive traffic growth in 2008



In France, Data ‘explosion’ is meaningful until 2011 but calm down later. LTE reboosted the growth, next wave is most likely unlimited plans



2-IoT

Understanding object management is key

Traffic ratio = x1 000 000



4G

LTE-M



LoRa

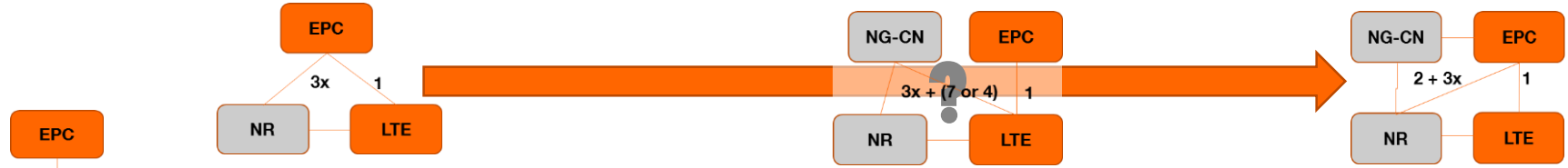
High performance IoT is the next frontier



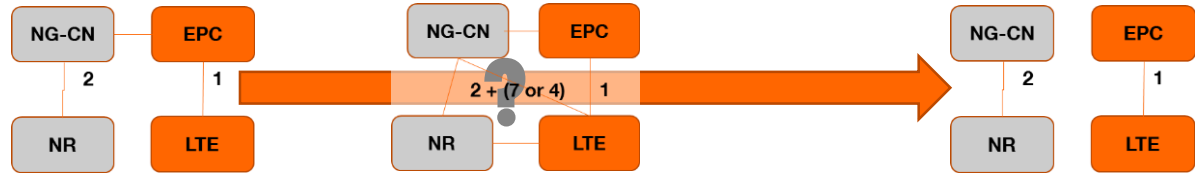
3-Architecture : NSA vs SA, Edge, Virtualization & O-RAN

A step by step evolution, allowing more and more services

Non Stand Alone



Stand Alone



Commercial deployment

2019

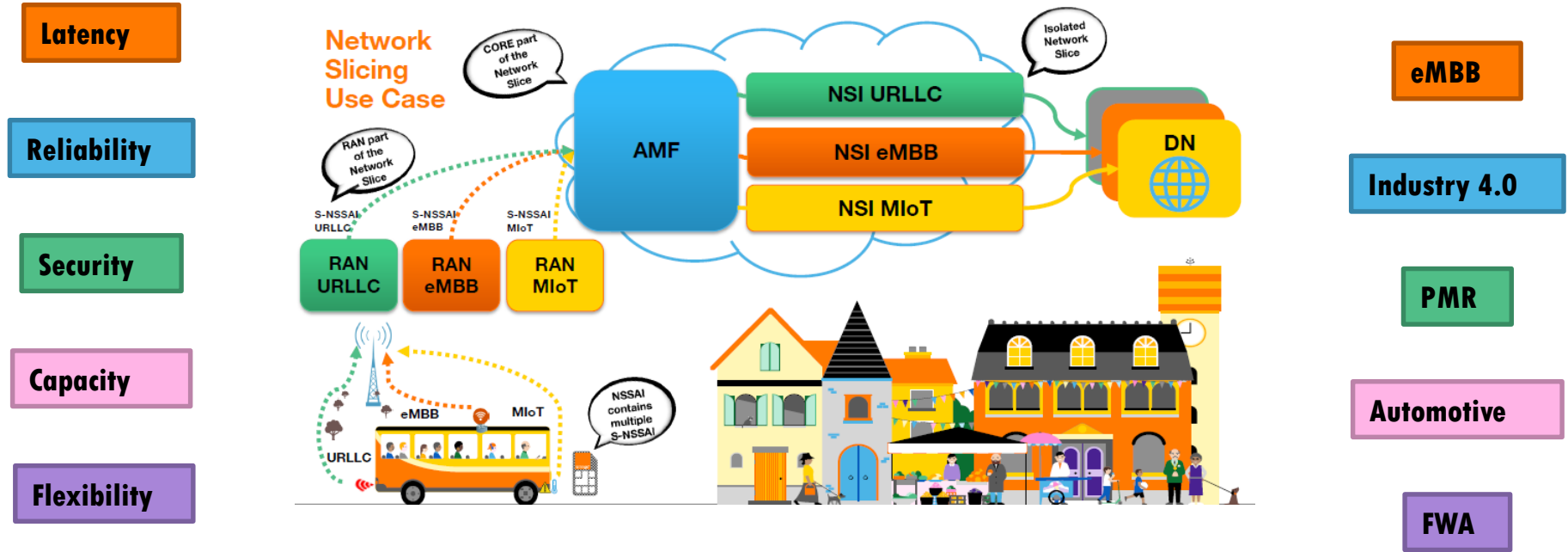
2020

2021

2022



5G: a multi services network, thanks the slicing



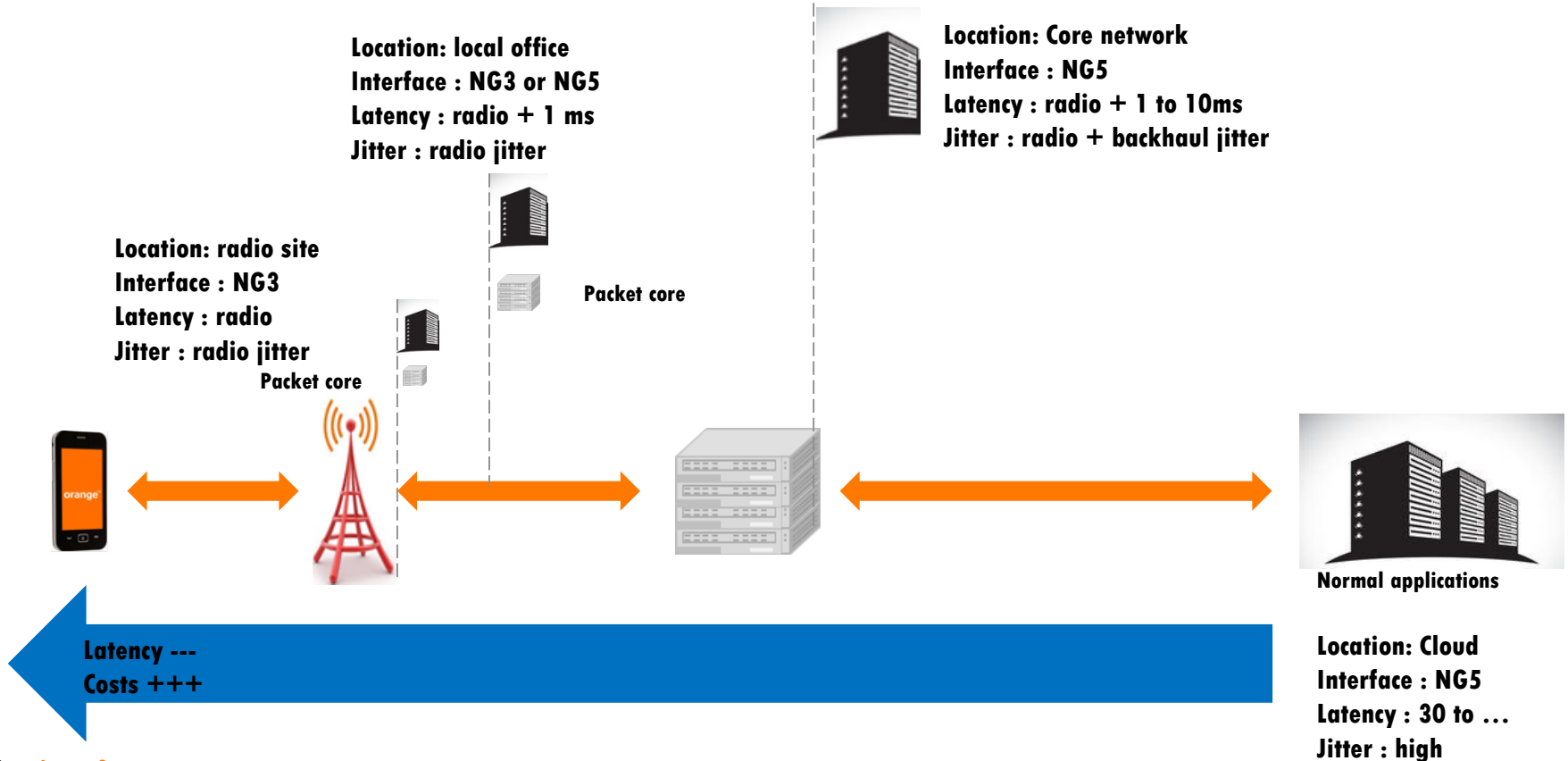
The slicing will allow to manage all these services



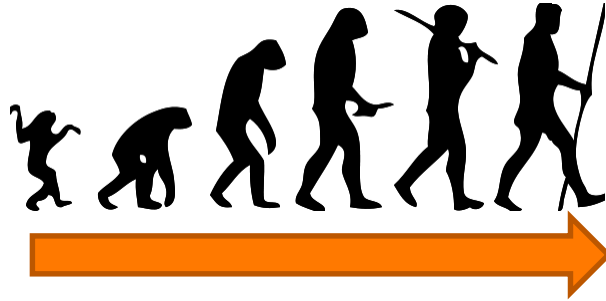
Light is too slow...

...so intelligent edge computing is needed for 5G

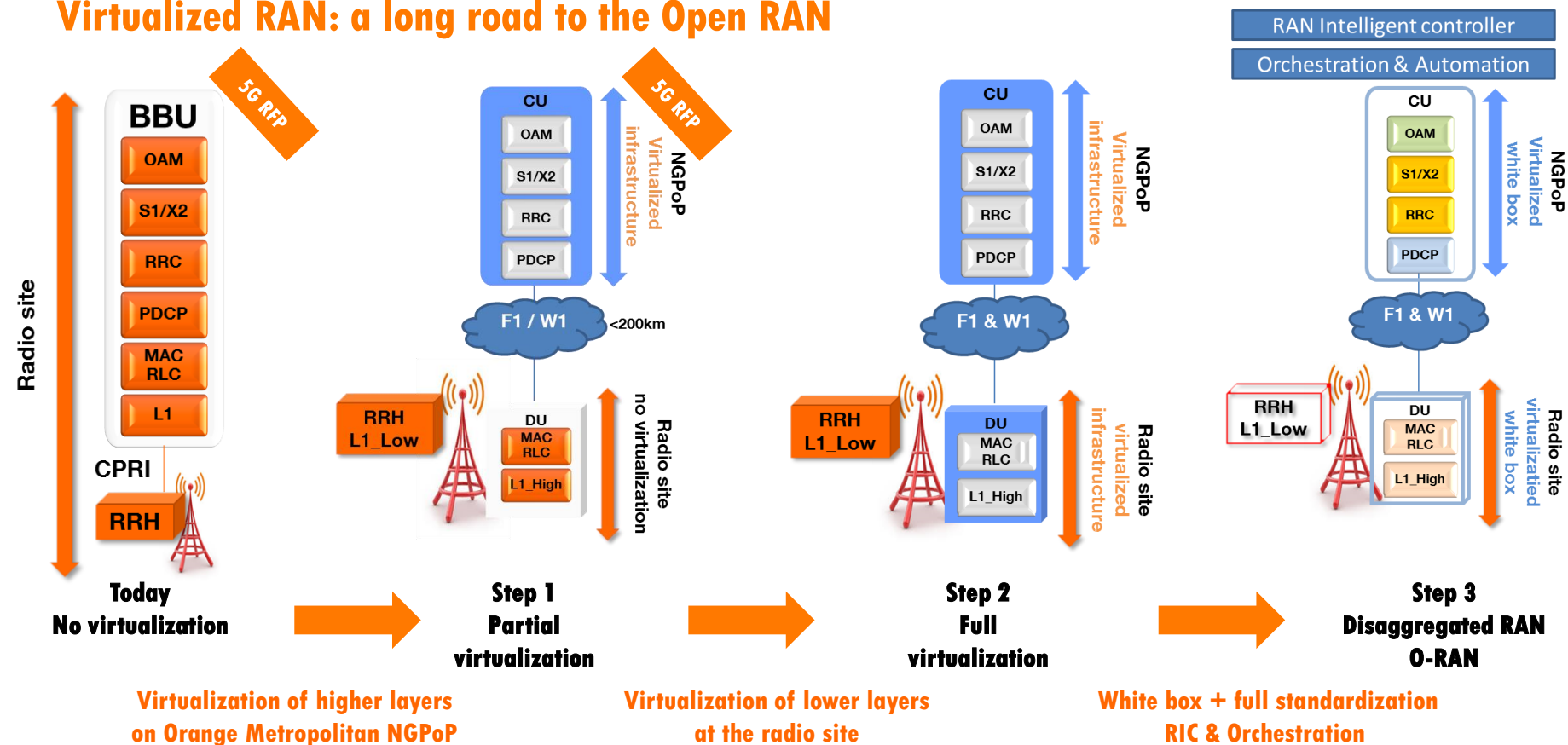
MEC topology: the location shall be in line with application requirements



Virtualisation and Openness can bring to mobile networks unlimited flexibility and accelerated innovation



Virtualized RAN: a long road to the Open RAN



O-RAN – Membership Status (April)

- 62 companies (17 from c-RAN; 29 from x-RAN; 14 from Other sources) joined O-RAN
- 19 Operators:



- 43 Contributors:



4-Radio sites evolution : Massive MIMO, FR1 & FR2

5G Frequency bands : FR1 first and FR2 in a second steps



**26GHz
FWA**



**26GHz
Small cells**

FR2 bands



**3500MHz: macro deployment in NSA
mode with 4G and massive MIMO**

A low frequency for the coverage

New FR1 bands

4G refarming to 5G

FR1 bands



**Frequency bands are not yet allocated
Usages are not known**

Conclusions

5G is for multiple usages, which are under investigations

5G architectures will dramatically evolve according to these use cases

5G frequency bands will impact the network architecture

The first 5G is answering to the eMBB use case, which drives the capacity roadmap

Next use case like the Industry 4.0 will trigger these evolutions inducing new requirements

Flexibility

Security

Reliability

Latency