

# O-RAN and the Enterprise

Private 5G is a special interest area for the O-RAN community, lets explore why.

24<sup>th</sup> May 2022   Anthony Magee

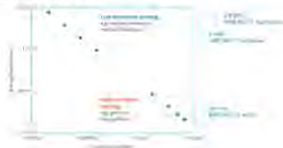
# Do Enterprise/Private networks need 5G/O-RAN?

**Wi-Fi well accepted, deployed in massive volume...continues to evolve**

New 802.11 Radio technologies are under development to meet expanding market needs and leverage new technologies



- 802.11az – 2<sup>nd</sup> generation positioning features.
- 802.11ba – Wake up radio. Low power IoT applications.
- 802.11bb – Light Communications
- 802.11bc – Enhanced Broadcast Service
- 802.11bd – Enhancements for Next Generation V2X
- 802.11be – Extremely High Throughput in 2.4, 5 and 6 GHz bands
- 802.11bf – WLAN Sensing
- 802.11bh – Randomized MAC Addresses
- 802.11bi – Enhanced Data Privacy



July 2023

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**Wi-Fi does not have a monopoly...other technologies can evolve**

The Elephant in the Room.



Simple answer is “probably not”. But customers are talking to me about it.

# 5G has always aimed at new use cases

Remember the 5G triangle...

2017

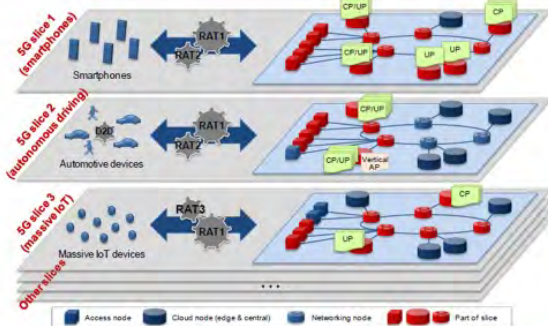
## Multiple Use Cases – Network Slicing

Source: NGMN

eMBB

uRLLC

mMTC



5G Will be much more than a new Radio interface

High Bandwidth  
10/25Gbit/s  
(<1Gbit/s today)

Low Latency  
1/5/10ms  
(>30ms today)

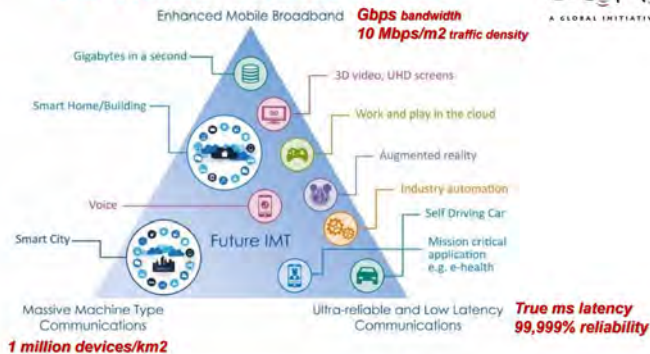
Scale/Densification  
(from Mobile  
Phones to IoT)



BT wholesale

2018

## 5G vision - at the outset



3GPP Workshop - Tokyo, Japan, October 17, 2018

© 3GPP 2018

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Has 5G delivered on its promise? What is the killer app?

# High Level trends on mobile use case

## MNOs vs Private networks

Co-existence with  
previous 'G's



**MNOs** – Public services, Macro networks  
Some Small Cell densification for coverage

Higher speeds  
Mobile broadband

**Price / Scale / volume**  
**Restricted feature sets**  
**Baggage – legacy vs. new entrants**

**Speed vs Coverage**

Co-existence with  
wired, Wi-Fi etc.  
  
Some  
people/customers  
sense improvements in  
business from 5G



**Enterprise Private / NHNs** – Machine to Machine

Latency / Time Sensitive  
More accurate  
Secure

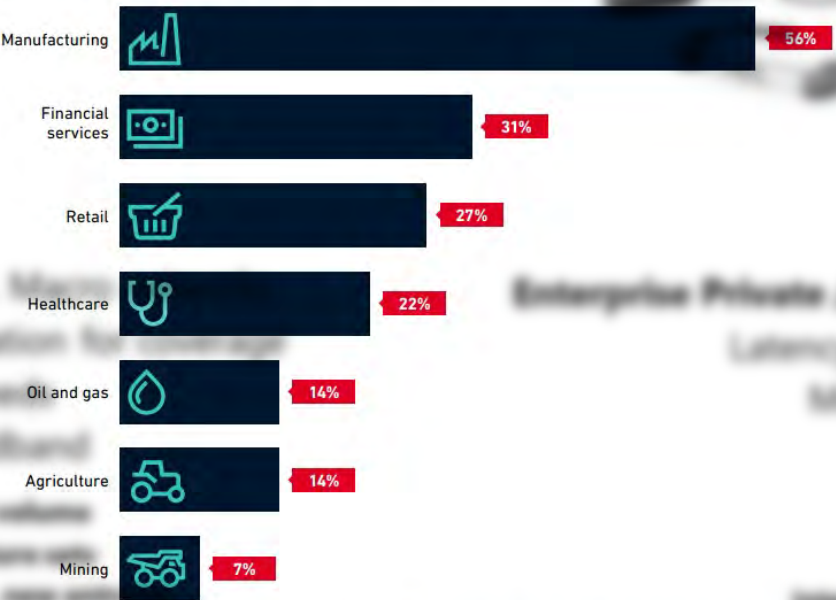
**Innovation**  
Interaction with things...

**Latency and Precision**

# High Level trends on mobile use cases

## MNOs vs Private networks

Which sectors do telecoms operators see as the largest revenue drivers for services beyond connectivity over the next five years?



Scores reflect where a given sector was ranked 1st or 2nd in revenue potential by operators (n=100).

Source GSMA Intelligence Operators in Focus Survey

Private 5G needs specialist vendors, openness, ability to work with multiple vendors and integration support



# Market Opportunity

Growing revenues through Private 5G



43,000+ UK business have  
50+ employees

59,000+ UK business operate  
from more than one site.

45Mn Sqft of commercial property  
is built every year in the UK (GovUK.2017)

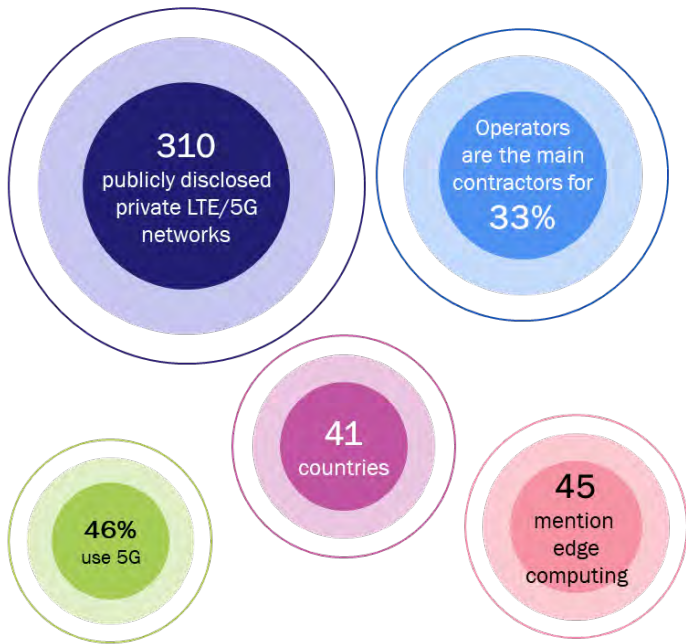
**80%+ Internal space = Private 5G opportunity**



# Deployment tracker – Early days, but wheels are moving

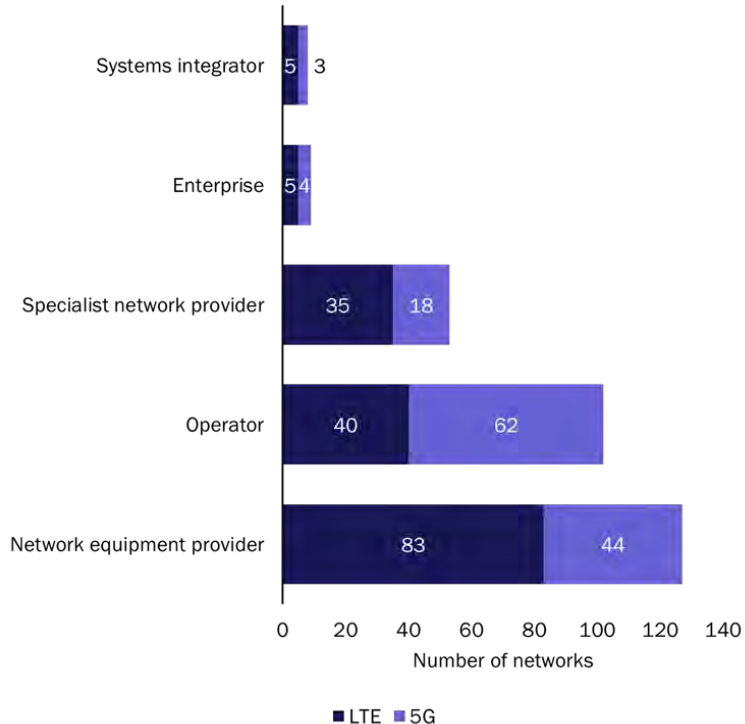
## Private LTE/5G network deployments: trends and analysis

Figure 1: Summary of publicly disclosed private LTE/5G networks, 2Q 2022



Source: Analysys Mason

Figure 2: Private LTE/5G networks in the public domain, by main contractor type, worldwide, 2Q 2022





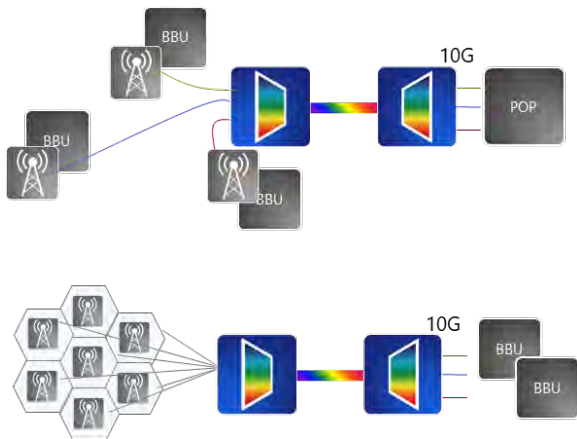
# Private 5G, O-RAN and ADVA



# C-RAN / O-RAN refresher

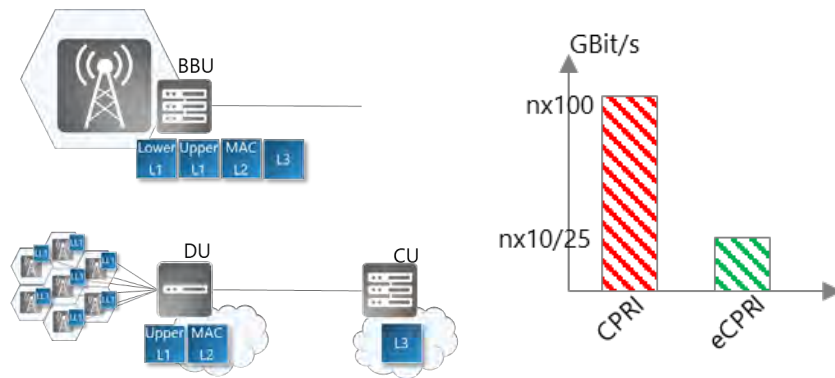
## C-RAN

- Smaller/simpler/lower power edge for RAN densification
- Improved coordination
- BBU pooling gain



## O-RAN

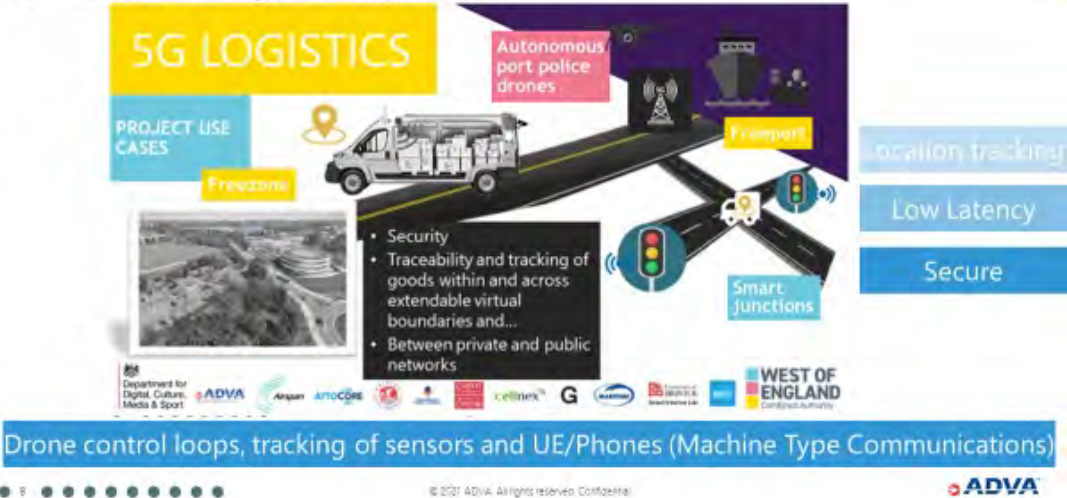
- Delivers C-RAN benefits +
  - Vendor diversity – best of breed functions
  - Operational gains – virtualization
  - Relaxes fronthaul bit rates



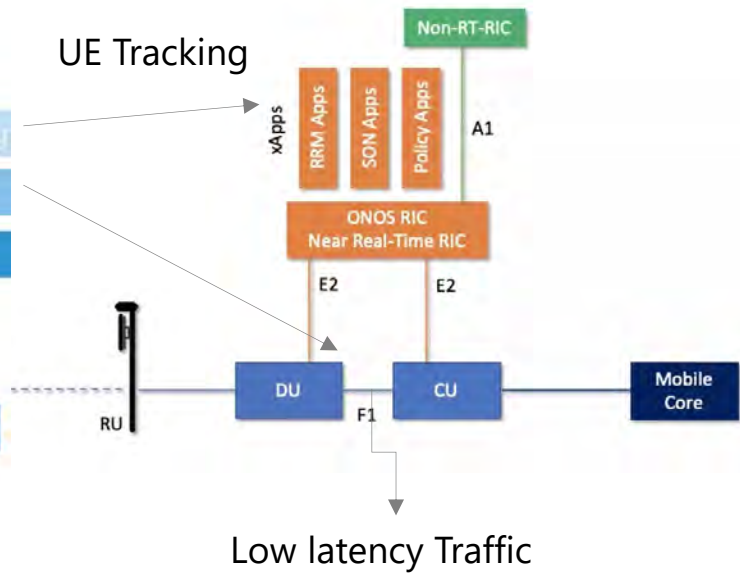
# Innovation areas wrt O-RAN

## Logistics tracking and ports

Drones and intelligent transportation



## Flexible Architecture RIC / xAPPS



## Example O-RAN platform

Colt confidential

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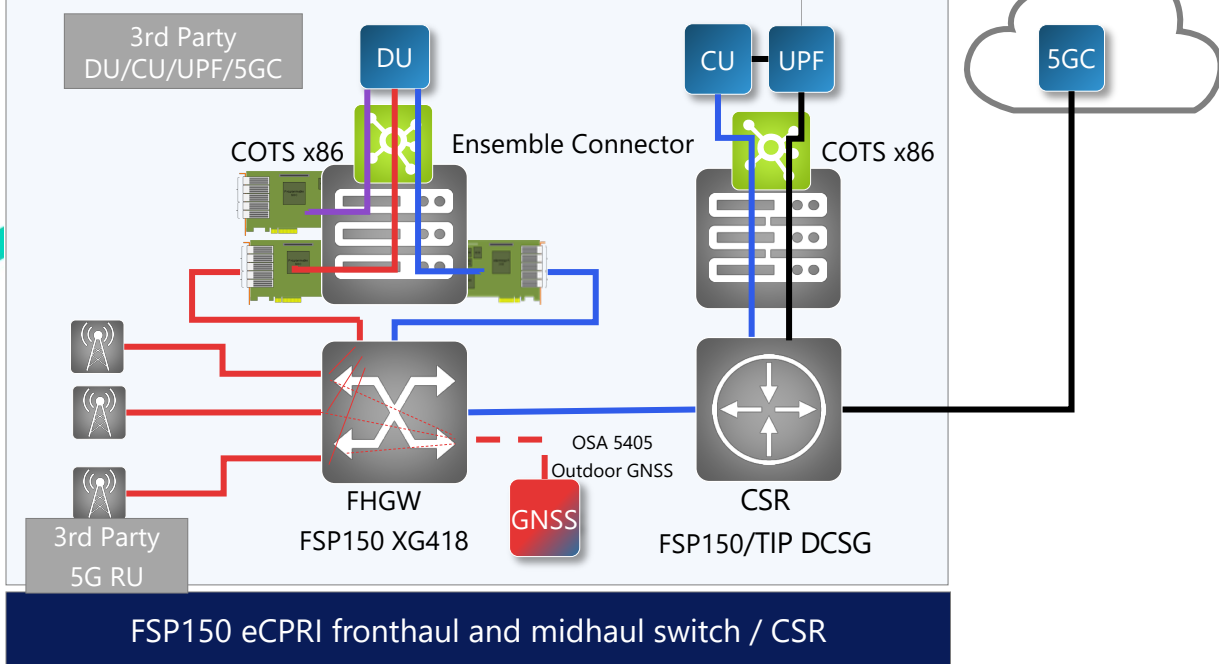


provide provide its Griffone 5G Stand Alone mobile core network

**colt**  
Coordinate the consortium /  
provide Internet/Ethernet &  
Optical with 5G Sync and  
Distributed Edge facilities

**ACCOMIAN** provide performance monitoring and analytics solutions to assure the digital experience of the 5G service.

provide on field 5G network  
operation & manage  
workplace uses cases



## Learning and proving ground - springboard to an exciting new O-RAN platform

# Solutions integration – private 5G with COLT

## Example O-RAN platform

### Example of co-innovation with ADVA: Pilot 5G in Paris La Défense

Colt confidential

- “The incubation project is one of the first to test end-to-end private 5G in real estate using disaggregated architecture.”

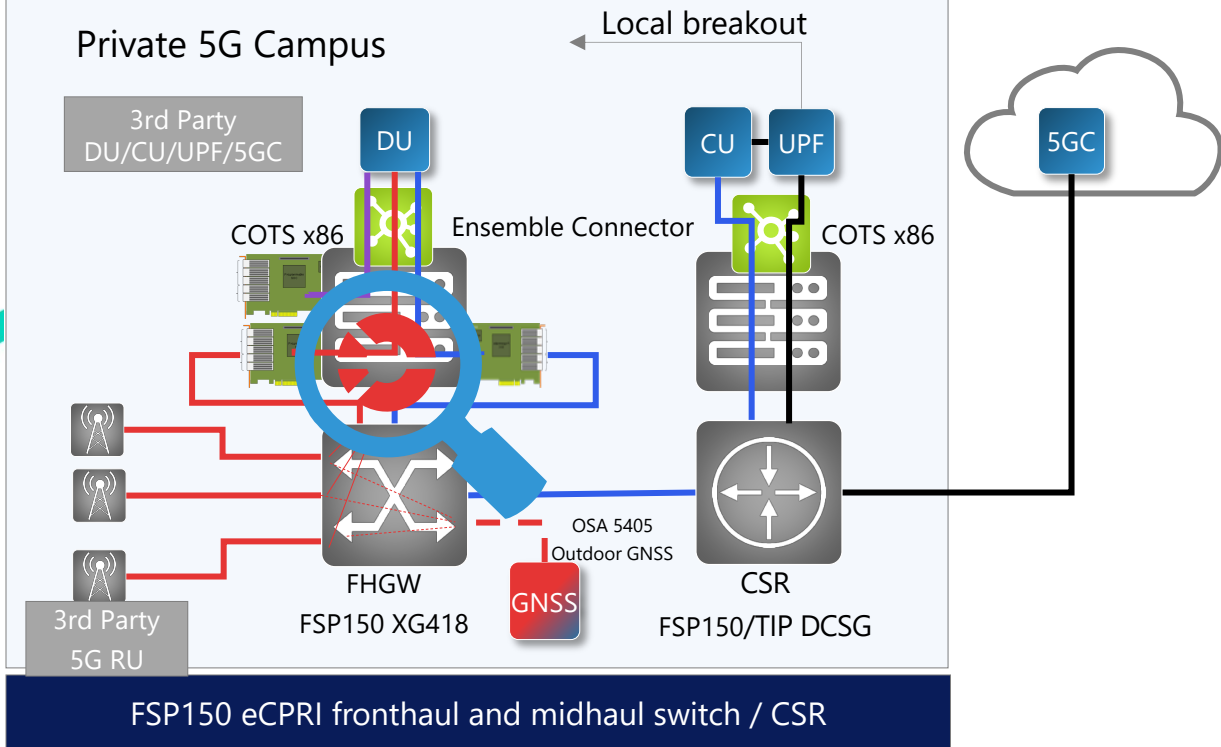


- Private 5G networks to the PB5 La Défense building in Paris, enabling the exploration of varied use cases for the co-working space environment managed by Imagin Office, an Icade subsidiary.
- This field lab ecosystem will test 5G use cases, including creating immersive experiences for the future workplace for a variety of industries.



### Connector – hosting/orchestration of vDU/CU containers

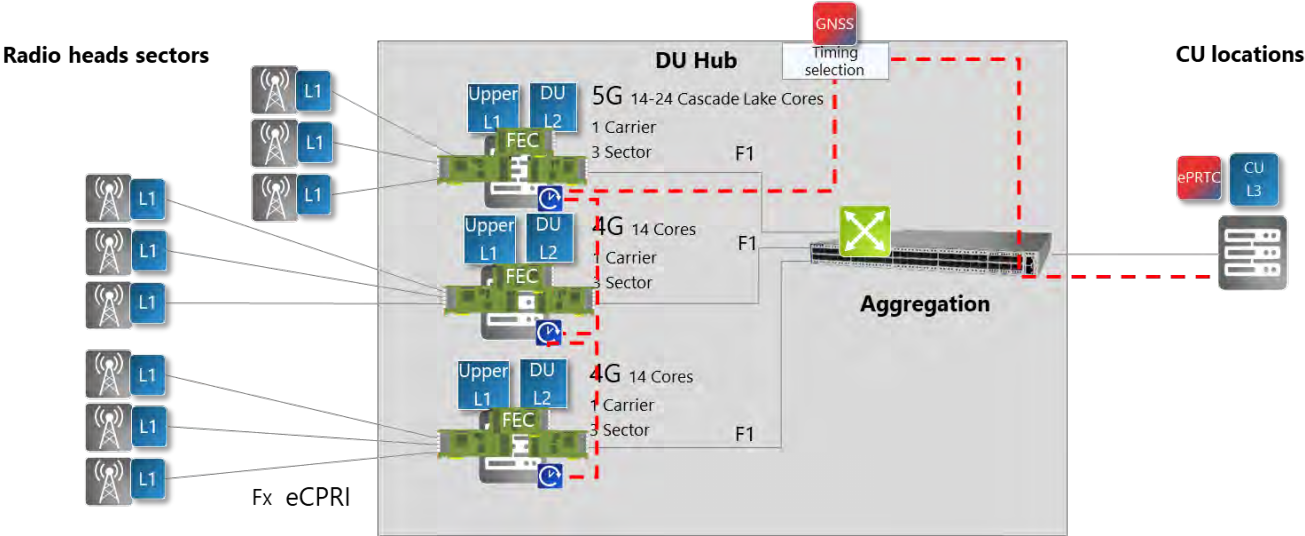
#### Private 5G Campus



Learning and proving ground - springboard to an exciting new O-RAN platform



# DU Hosting is a complex challenge



# DU Hosting is a complex challenge

## ***RU:DU ratio vs CPU Cores***

32 Cores of Icelake per server / 3RUs

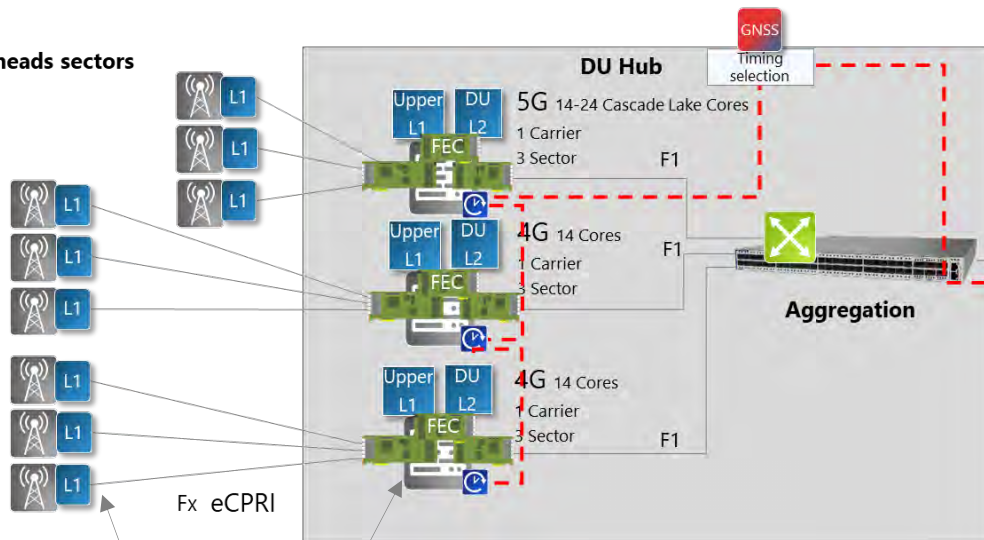
## ***Multiple compute resources***

3 servers per Macro

## ***Duplication of functions***

Sync/FEC/FH/MHS NICs per Server

Radio heads sectors



CU locations

***Inefficient cost structure***

## ***Resilience concerns***

Dedicated RU-DU relationships

## ***Operational challenges***

Maintenance of DU impacts RUs. C-RAN originally envisaged BBU Pooling - FHGW

## ***Form factor***

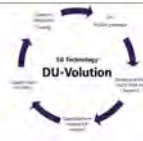
4-5 Rack Units of equipment  
PCIe card limits and front panel space

# UK 5G DU-volution

## High level project goals



Department for  
Digital, Culture,  
Media & Sport



### Creating UK solutions supporting supply chain diversity

- **UK 5G DU-Volution** partner investment is significant, benefiting UK Plc, **FRANC** and the wider UK 5G programme in return for a DCMS investment
- Creating highly skilled **recruitment** across the UK, South to North, reflecting UK Gov **Levelling-Up** agenda
- Establishing a **UK focussed** mobile solution delivering supply chain **diversity**
- **Multi-platform compute** delivering choice to the O-RAN market whilst **reducing** vendor lock-in
- Increase potential for UK vendors to join a **truly open O-RAN platform**.
- Demonstrating **innovation** from **UK located** companies.

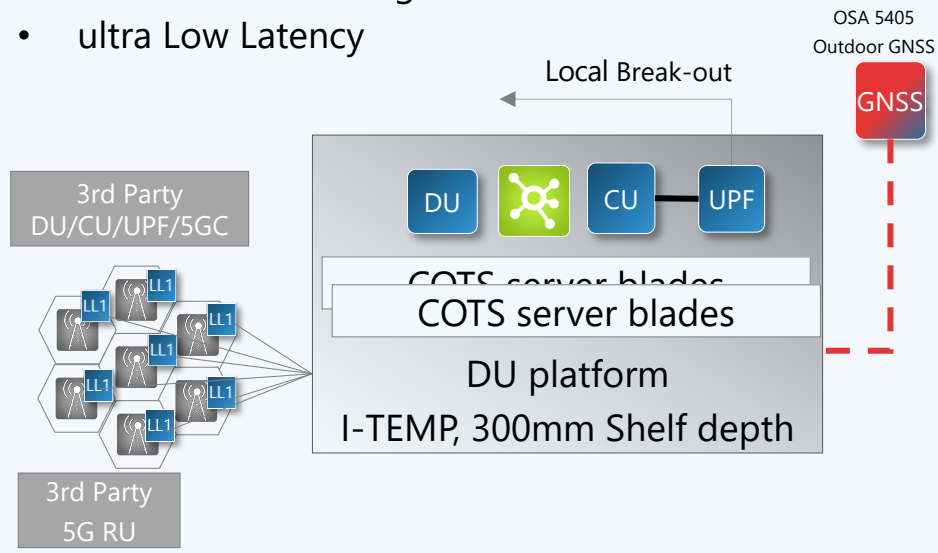


# ADVA vision for Private 5G

## Example O-RAN platform

### Private 5G campus in one single box

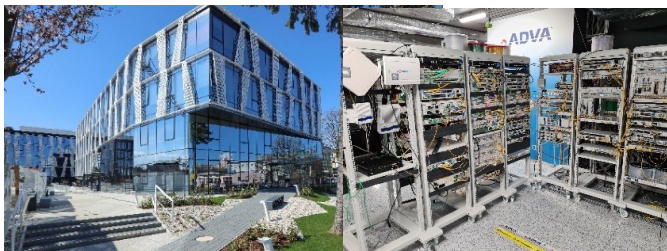
- TSN
- UE Location tracking
- ultra Low Latency



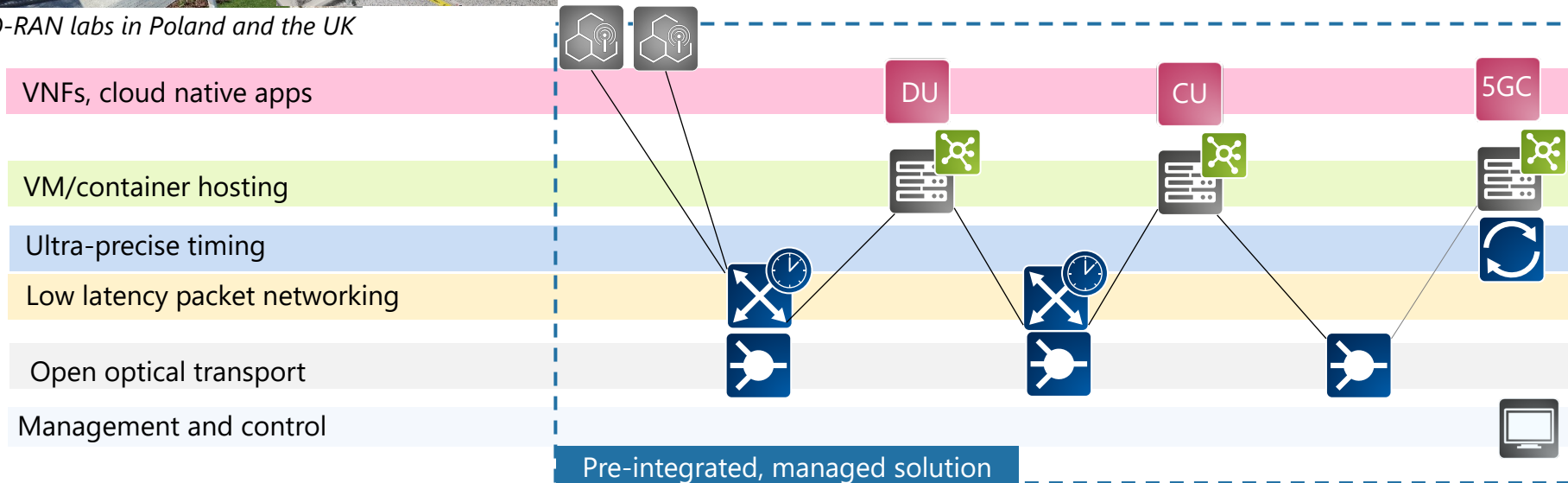
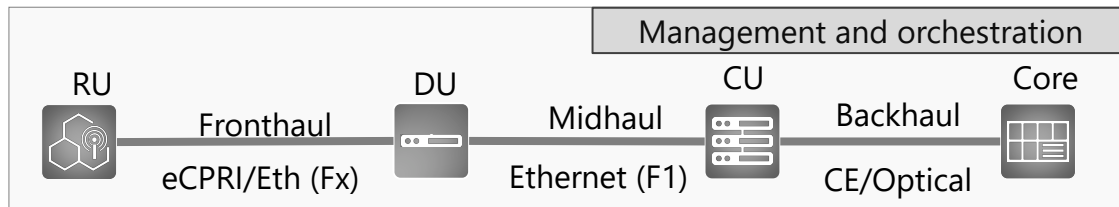
- Disaggregation of the RAN  
But Integration of the infrastructure
- Expansion of supply chain options  
But reduced complexity
- Improvement of power consumption, form factor  
and more control of the overall cost of ownership



# Openness for Private 5G and ADVA integration labs

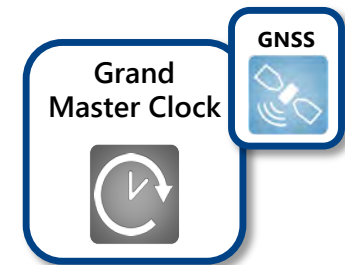
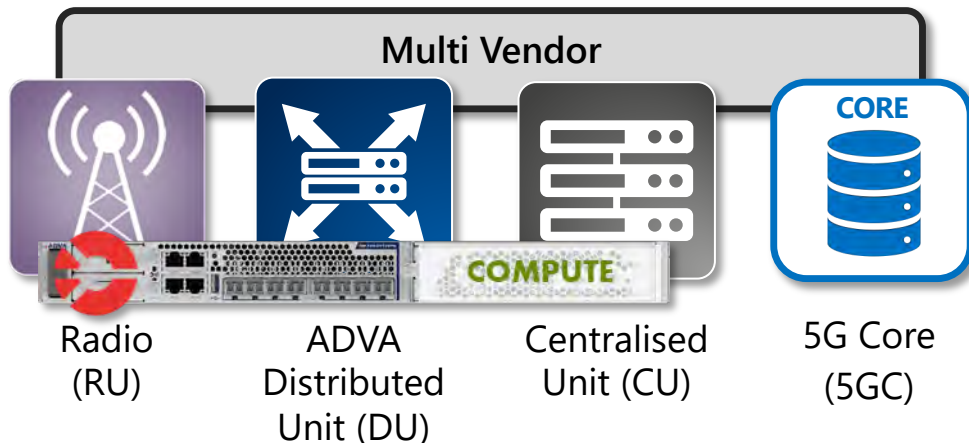


O-RAN labs in Poland and the UK

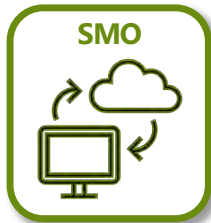


# ADVA Private 5G - Integrated Solution

## Multi-vendor O-RAN



ADVA Timing & Synchronisation



ADVA Orchestration & Management

### Pre-integrated Private 5G solution

- Multi-vendor (RU/CU/RIC/Core)
- Open by design - true O-RAN
- Underpinned by Carrier Class DU
- Size/Scale options in roadmap

### System integrator value add

- Network w/Timing
- Cloud/Hosting
- User devices
- Security
- Apps – Industry focus

Supported by: FRANC 5G DU-Volution



# Thank you

amagee@adva.com

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