



# Private 5G Adoption: Why Not WiFi 6?

BubbleRAN  
5G Victori Workshop  
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# Many Vertical Use-case (5G-Victori Project)

Transform current closed, purposely developed and dedicated **Wireless Communication** infrastructures into open environments where resources, functions, and elements are exposed to the telecom and the vertical industries through **an Open Emergent Ecosystem**

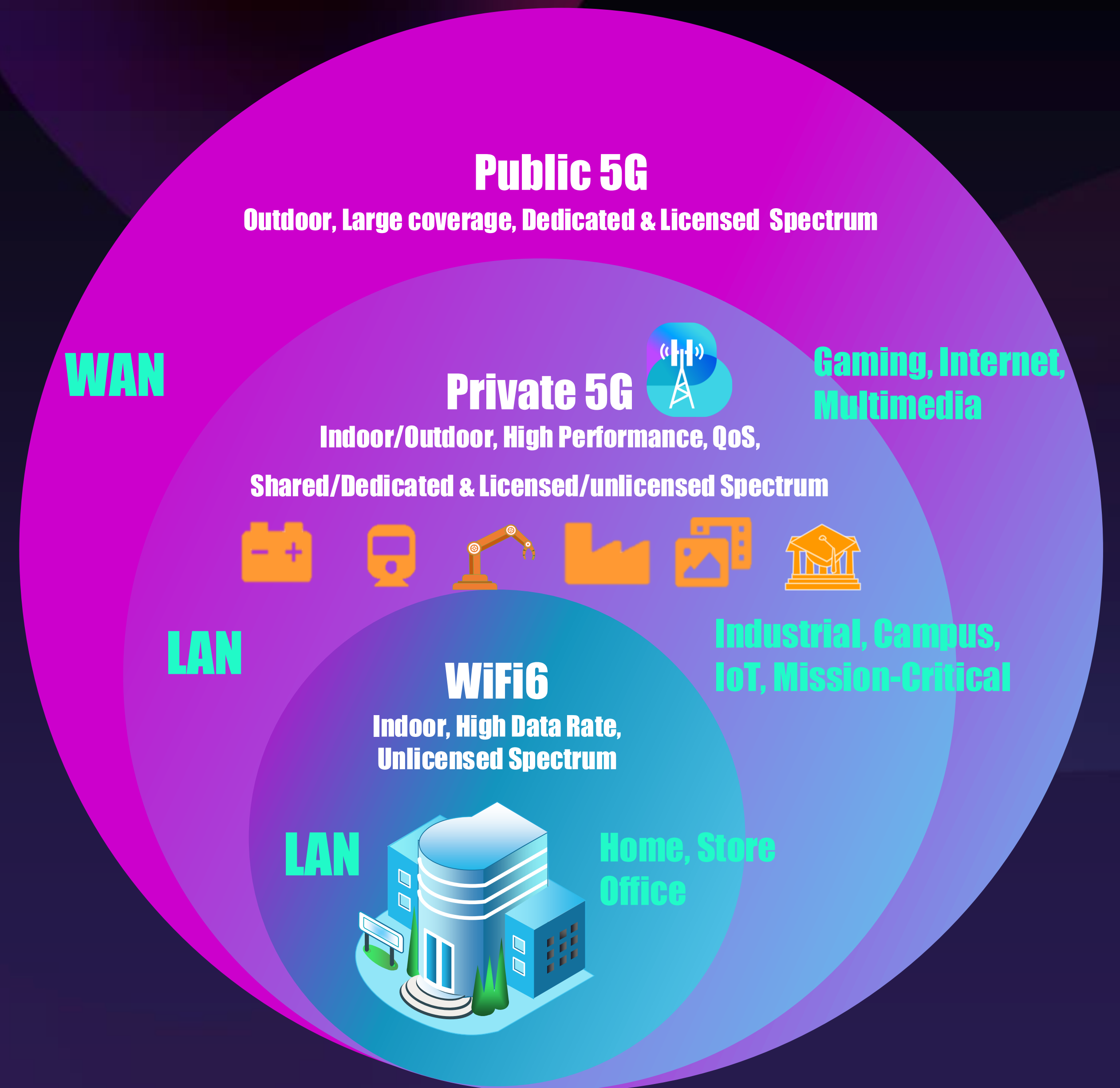




# Private 5G and WiFi6

Friends or Foe?

- Q1: WHAT IS THE PROBLEM IN THE FIRST PLACE?
- Q2: HOW DO PRIVATE 5G AND WIFI 6 COMPARE TO A PUBLIC 5G?
- Q3: WHEN and WEHRE 5G AND/OR WiFi6?



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# Private 5G or WiFi6?

## Few Observations

- Both becoming a **utility/Commodity** and can be mixed-and-matched to tailor **(seamless) wireless connectivity** to a particular use-case
- Both offers similar high data rate and low latency with the exception that **5G provides Slicing/QoS guarantee while WiFi6 is best effort**
- **Both provides a local area network (LAN)**
  - Private 5G : indoor/outdoor deployment and Licensed/unlicensed Spectrum
  - WiFi6: indoor deployment and unlicensed Spectrum

# Private 5G Networking Options

1. Required level of isolation, sharing and control to customize the network service
2. Trade-off between capital and operational expenditure
3. Capability of a vertical industry to operate and control a private network
4. Compatibility and integration with the already existing infrastructure

Public Network  
→ OTT

Public Network  
→ OTT with SLA

Public Network with Slicing  
→ OTT Service Provider

Public Network  
→ OTT Infra Owner

Private Network via  
Operator Spectrum  
→ Network Infra Owner

Public Network with Slicing  
→ OTT Network Operator

<https://bubbleran.com/media/blog-post.3/>

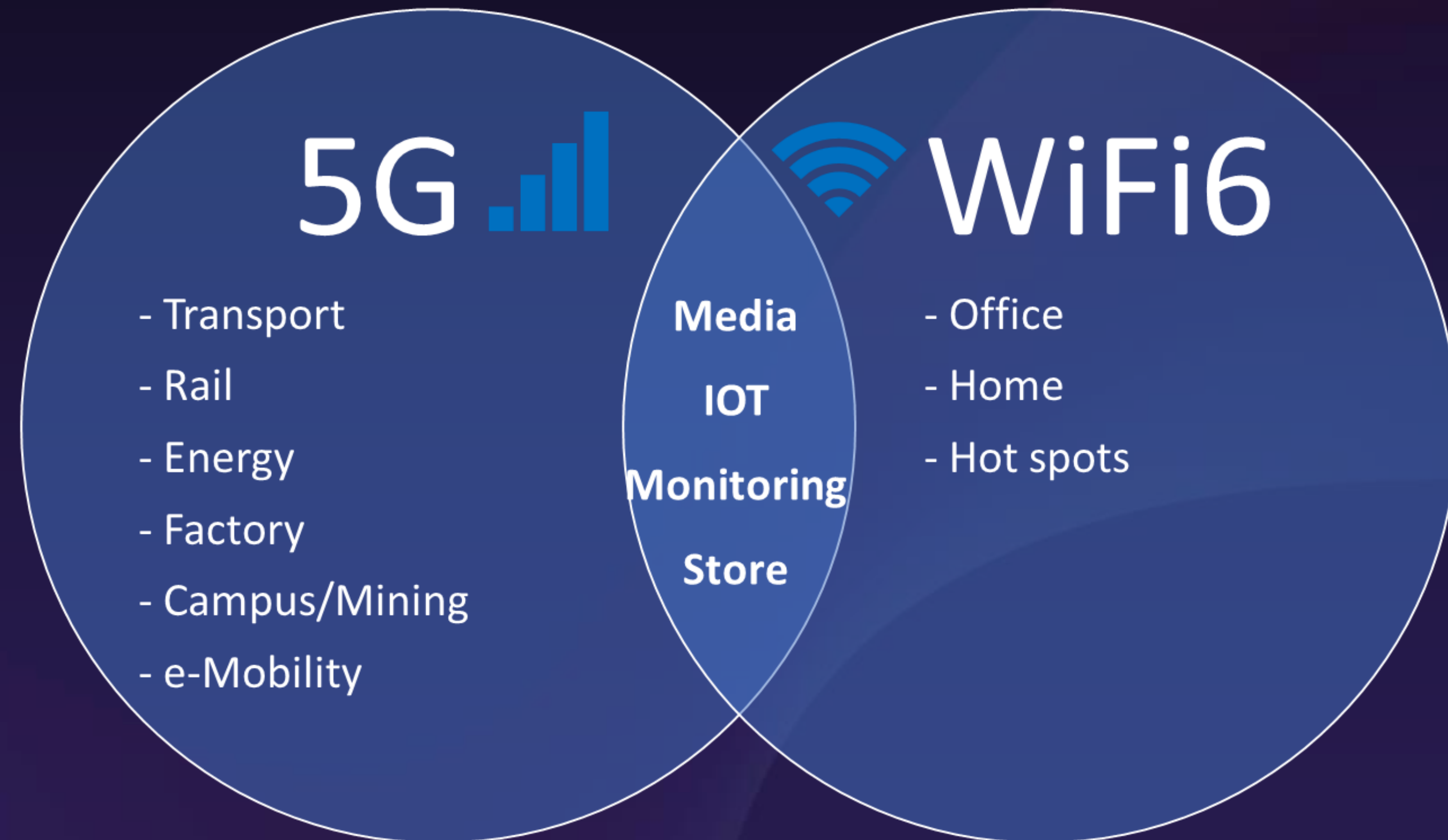


# Private 5G and WiFi6 Comparison

KPI	5G	WiFi 6/6E	Comments
Frequency Range	Sub-6GHz (FR1) and above (FR2)	2.4 GHz,5 GHz,6 GHz	
Spectrum Type	Licensed and Unlicensed	Unlicensed	
Coverage	Indoor and outdoor (wide range)	Indoor mainly	Depends on the frequency range.
Data Rate (nominal)	10Gbps (up to 20Gbps)	10Gbps	Depends on many factors.
Latency /Jitter	1-15ms / low	10-2000ms / high	5G has much lower variability,
Reliability	99.9999%	Low	WiFi6 is reliable for small area.
Device Density	1000000 per m2	100-1000 per m2	
Security	SIM/eSIM	WPA3	5G provides a better identification.
Mobility	High mobility (700 km/h)	within 1 AP	Depends on the frequency range. 5G also support seamless handover.
Slicing / QoS	Yes	No	5G provides QoS Guarantee.
Simplicity	Vendor-specific	Yes	Private 5G is becoming plug-and-play.
Compatibility	Medium (Region)	High	WiFi provides compatibility with any devices.
Cost	High-Medium	Medium-Low	The higher is the network coverage, the lower is the 5G cost compared to WiFi 6.

# Private 5G and WiFi6 Usecase

- Private 5G : **QoS & Coverage**
  - Critical Communications
  - Industrial use-cases
  - Campus (phone calls)
- WiFi 6: **Hotspots & Compatibility**
  - Small-medium businesses
  - Non-critical communications
  - Non legacy voice communications





# e-Mobility UC (Future Transport)

## Open Private 5G Network

- Description and Services
  - Connected charging station and customize services for electric-vehicles
    - Reduce OPEX
  - Edge Services for better customer experience
  - Energy Efficiency
    - Dynamic energy cost
- Objective
  - Optimize Energy Utilization with lower Opex
  - Personalized recommendation







Ecole

Foret avec acces aux publique

routeur Wifi 4G

borne 23

borne 8 abs Charging Station

borne 9

borne 10

borne 11

borne 12

Loc GMB TST Focal

50.00 m

100.00 m

118.34 m

borne 1

borne 2

borne 3

borne 4

borne 5

borne 6A et 6B

borne 7

borne 16

emplacement de borne

borne 18

borne 19

borne 20

borne 21

borne 22

D98

D98

Av. Maurice Donat

Two Deployment Scenarios are possible





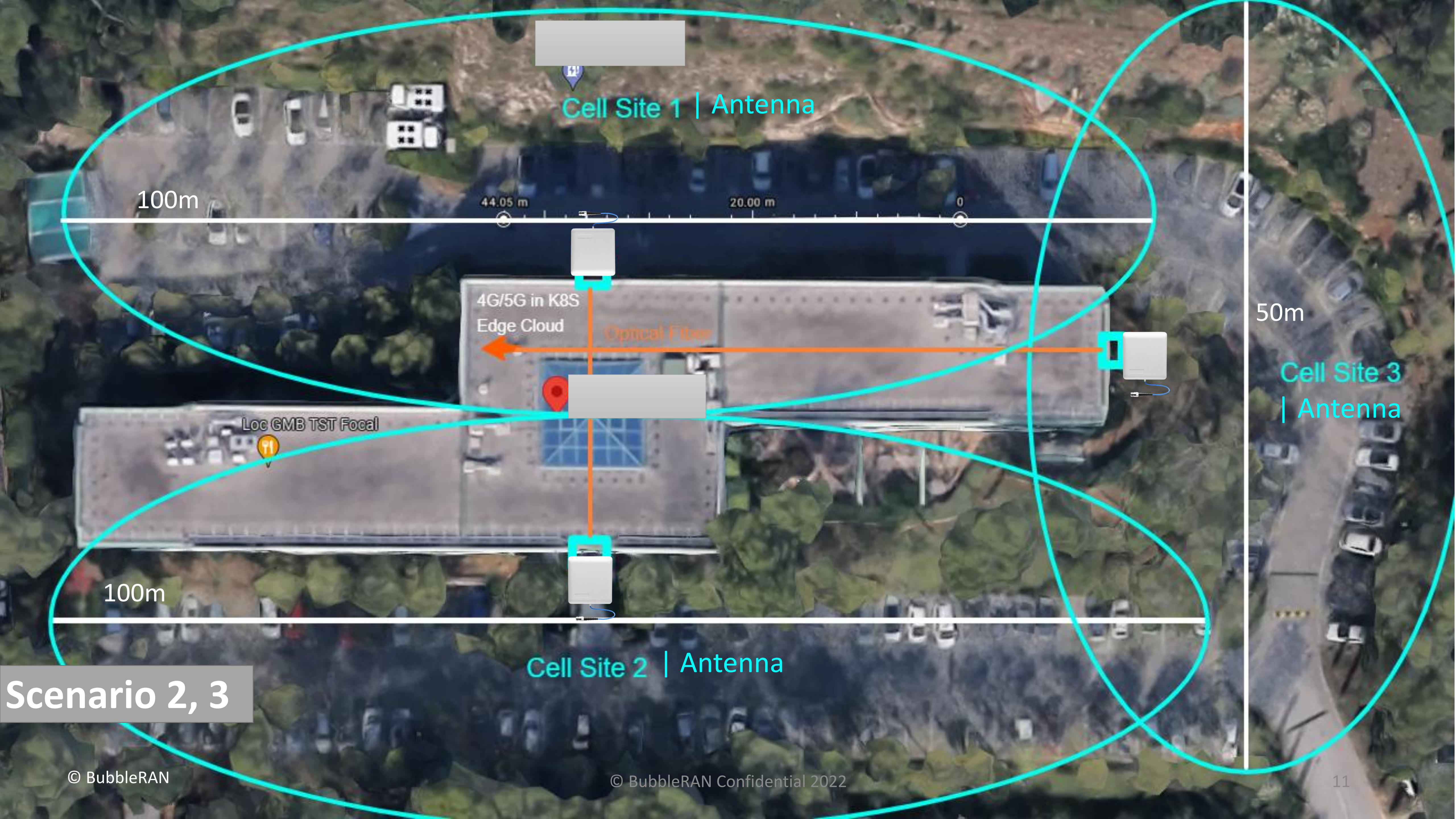
4G/5G in K8s  
Local Cloud (server Room)

Cell site 1

Loc GMB TST Focal  
Optical Fiber

# Scenario 1





Cell Site 1 | Antenna

100m

44.05 m

20.00 m

0

4G/5G in K8S  
Edge Cloud

Optical Fiber

Loc GMB TST Focal

50m

Cell Site 3  
| Antenna

100m

Cell Site 2 | Antenna

Scenario 2, 3



# Private 5G and WiFi6

Friends or Foe?

- Seamless wireless connectivity
- Indoor and outdoor
- Plug-and-Play (simple)
- Full observability and Control
- QoS guarantee
- Reliability and Security





# bubble ran



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## Our Technology, Your Network



Open 5GS



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