



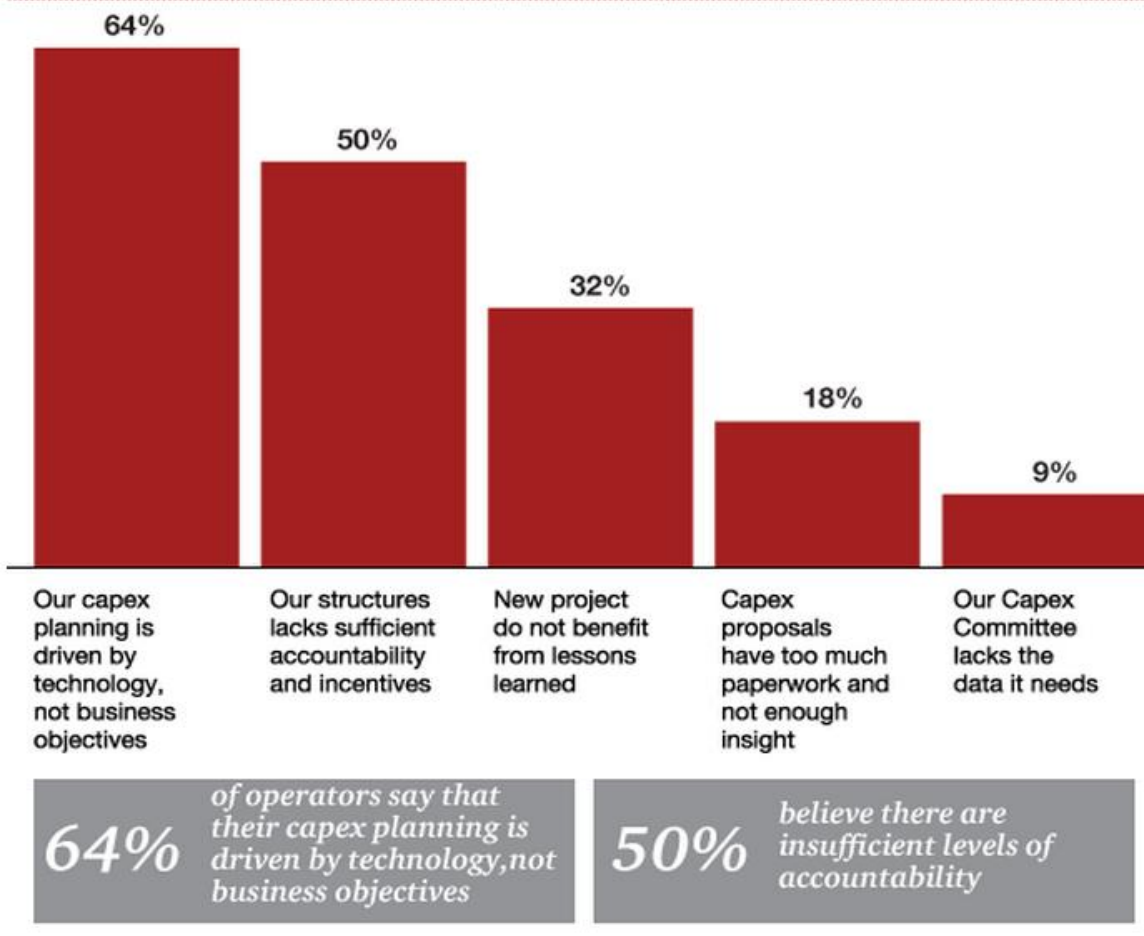
Operation of 5G NPNs: Industry Sector Considerations for Deployment and Sustainability

For EuCNC Workshop6 5G Private Networks on 2021.06.06

Simon Fletcher CTO

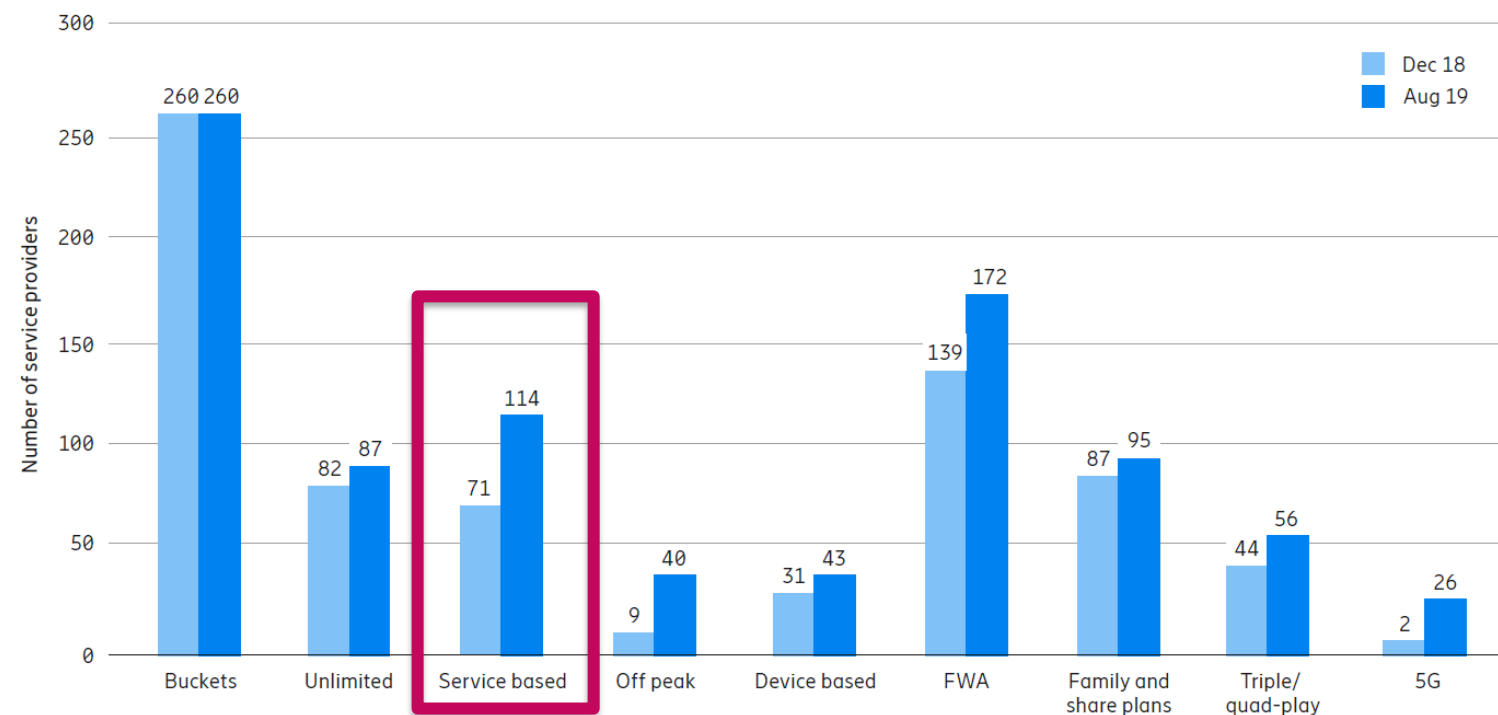
The Telecoms Sector

Root causes of telecom capital inefficiency



[PWC, 2015]

Service providers typically offer various combinations of these components of service packages



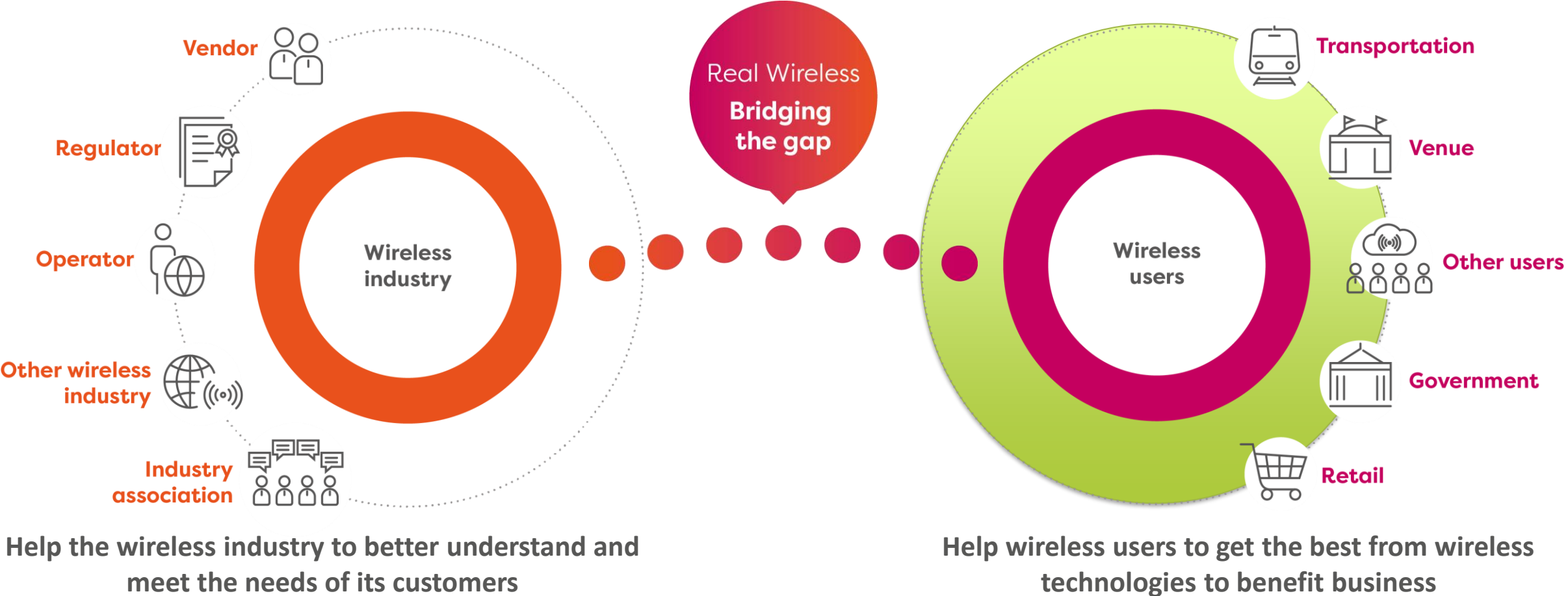
¹Ericsson ConsumerLab, 5G consumer potential (May 2019)

²"Mobile service packaging towards 5G": www.ericsson.com/en/networks/trending/insights-and-reports/mobile-service-packaging-towards-5g

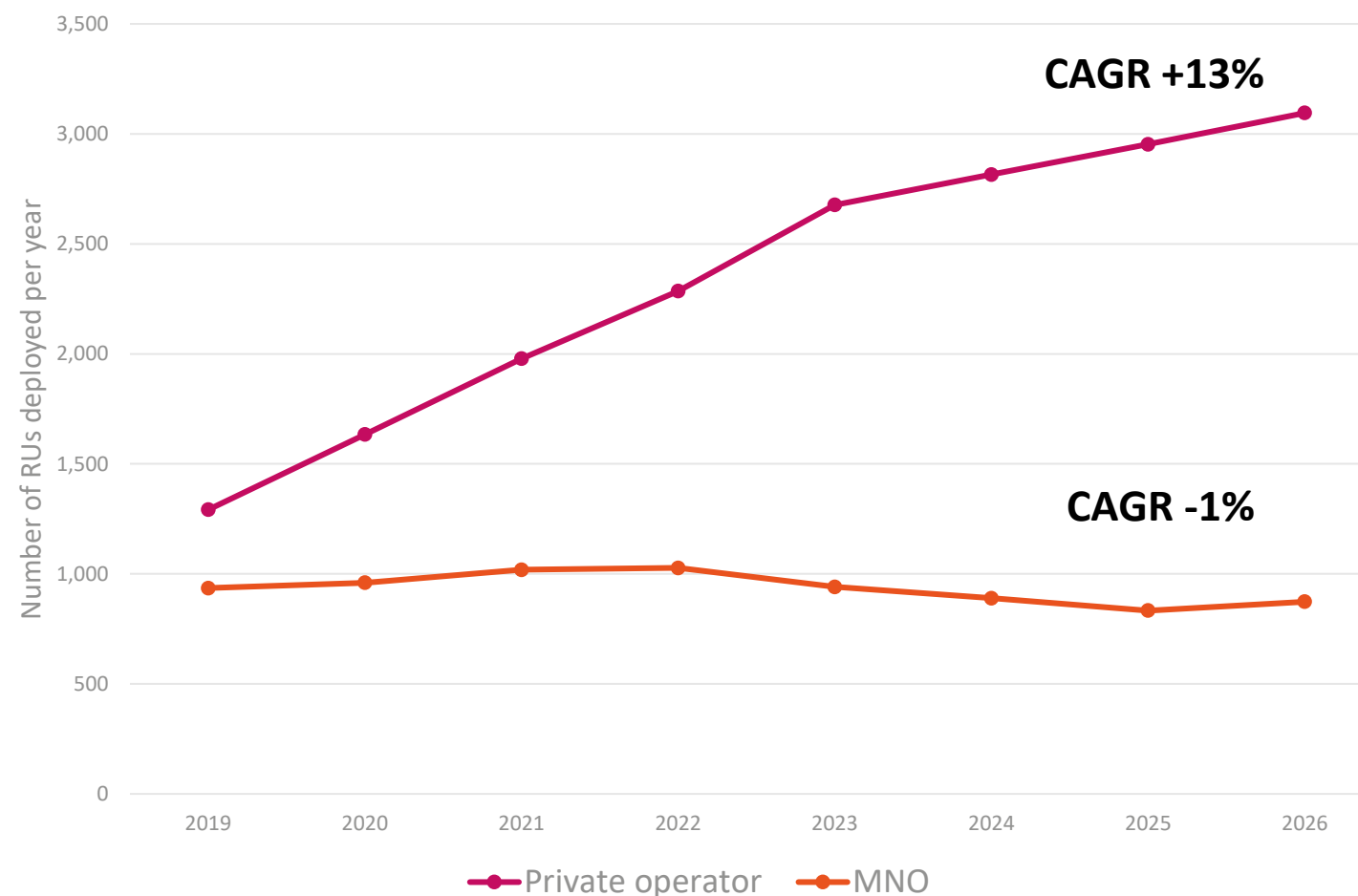
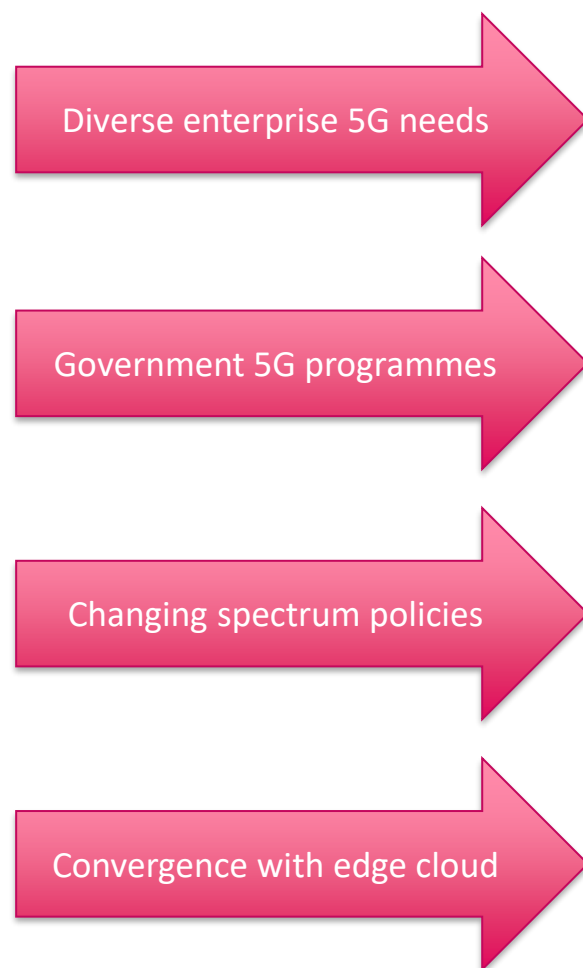
[Ericsson, 2019]

Is this the growth vector?

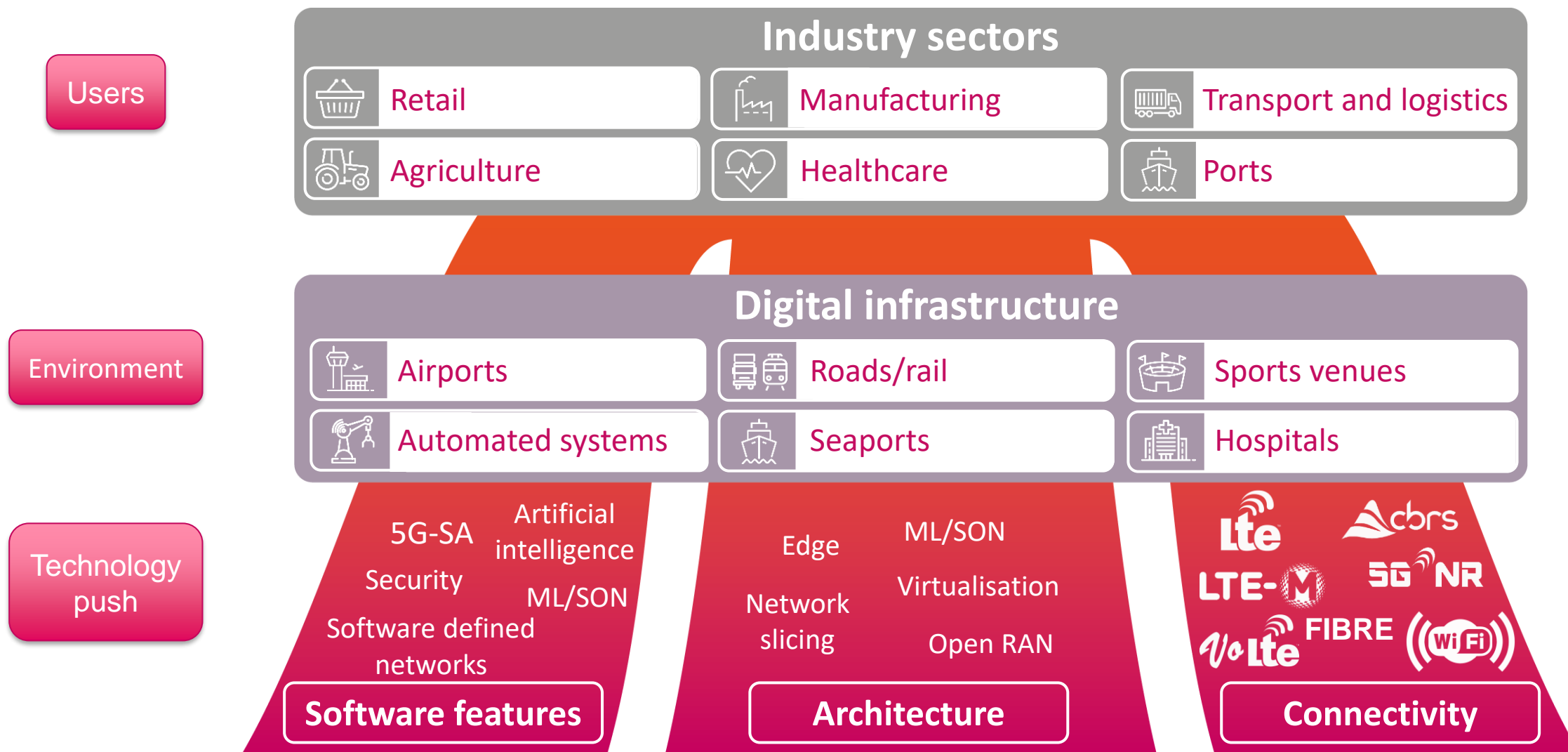
RW perspective on private networks



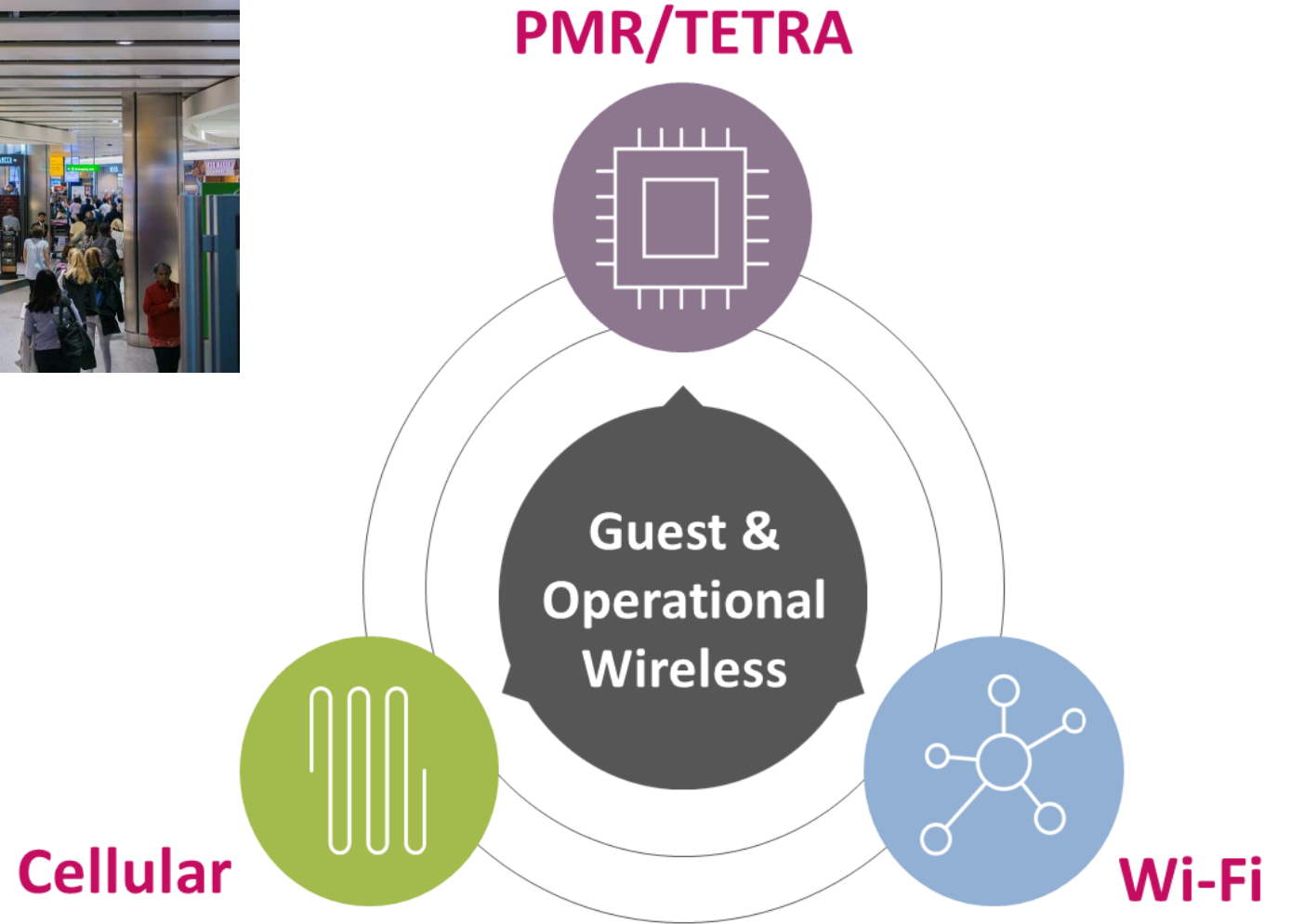
The convergence of several drivers and enablers will create fertile ground for the rise of private cellular networks



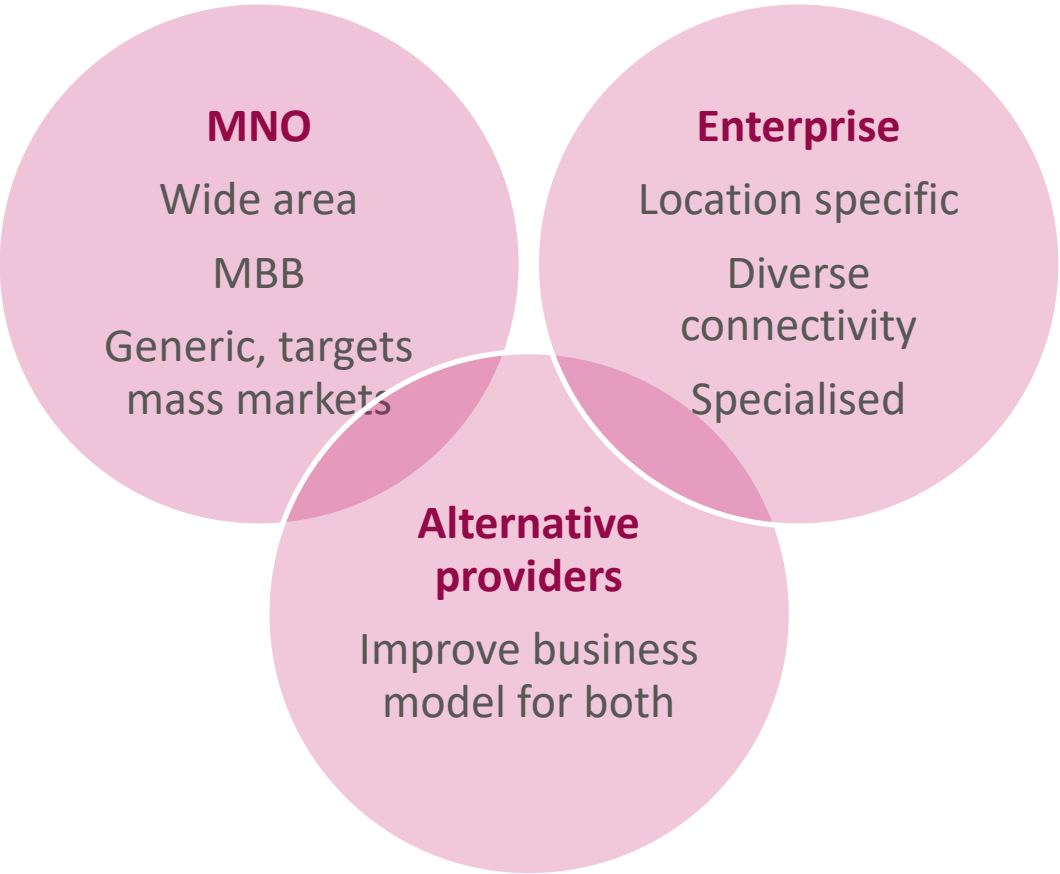
Enterprises face complex technology options



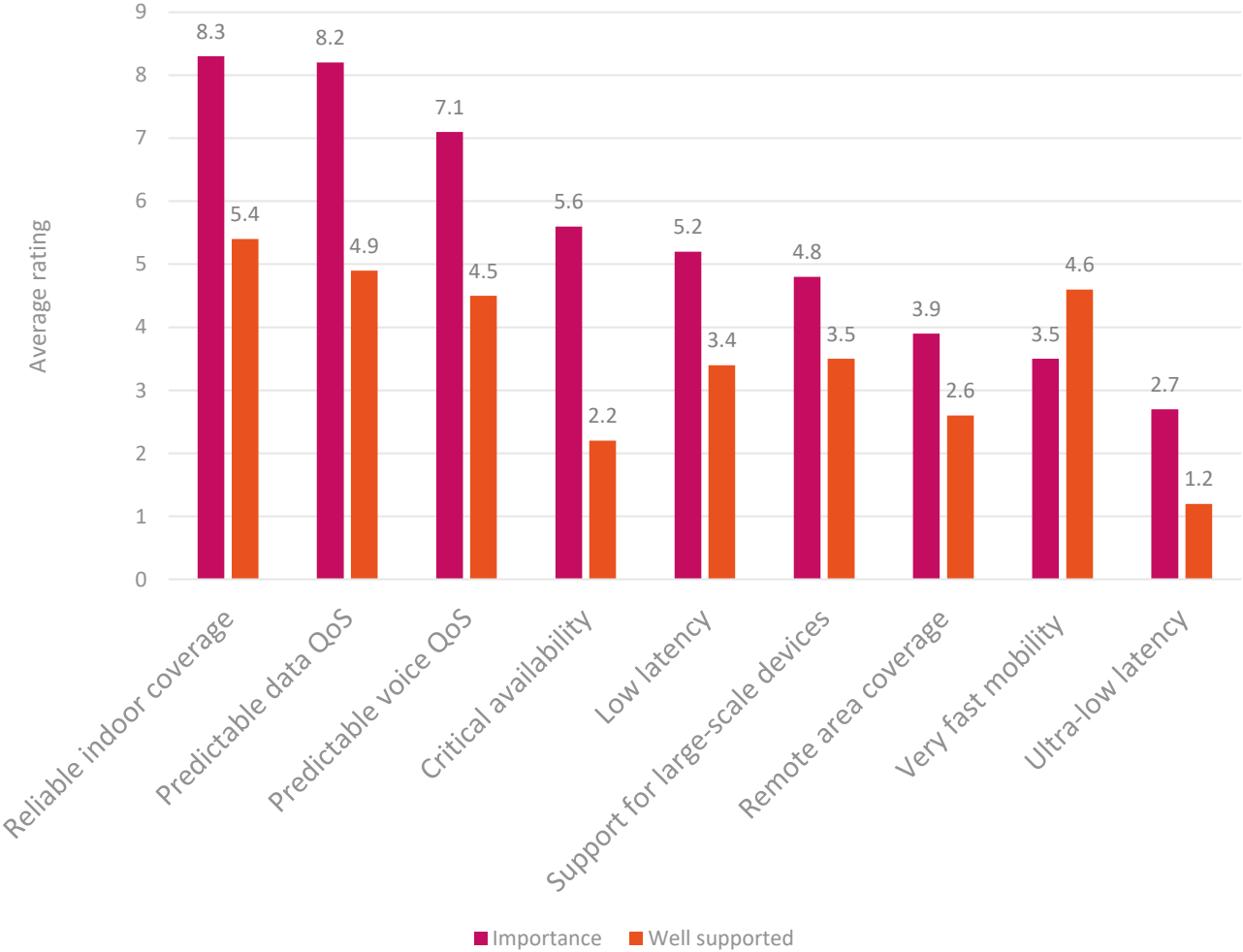
Mission critical private networks: Tottenham | Heathrow | Wembley



New enterprise 5G requirements drive the need for service provider diversification



Enterprise levels of satisfaction with current cellular networks are low (Source: Rethink enterprise survey)



Stadium requirements

STADIUM EXPERIENCE TECHNOLOGY

Single, fast IT network

Audio visual

Video and production facilities

IPV, digital signage

Large LED displays

LED façade

Conference and events facilities

Video on demand

High definition audio

Real-time promotions

Second screen mobile app

Infrastructure and operations

Extensive, flexible cabling

Resilient, scalable telephony

Ubiquitous WiFi

Ubiquitous mobile coverage

CCTV, access control, accreditation

Building control/management

Radio comms, ops/police

Electronic turnstiles – paper, phone, card entry

Queue-busting apps/platforms

What private cellular networks might support

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Future opportunities with network slicing



- 5G non-standalone networks already deployed
- But major architectural changes coming with standalone 5G networks
- Transition to virtualised and service-based architectures promising:
 - More flexibility
 - More customisation via network slicing

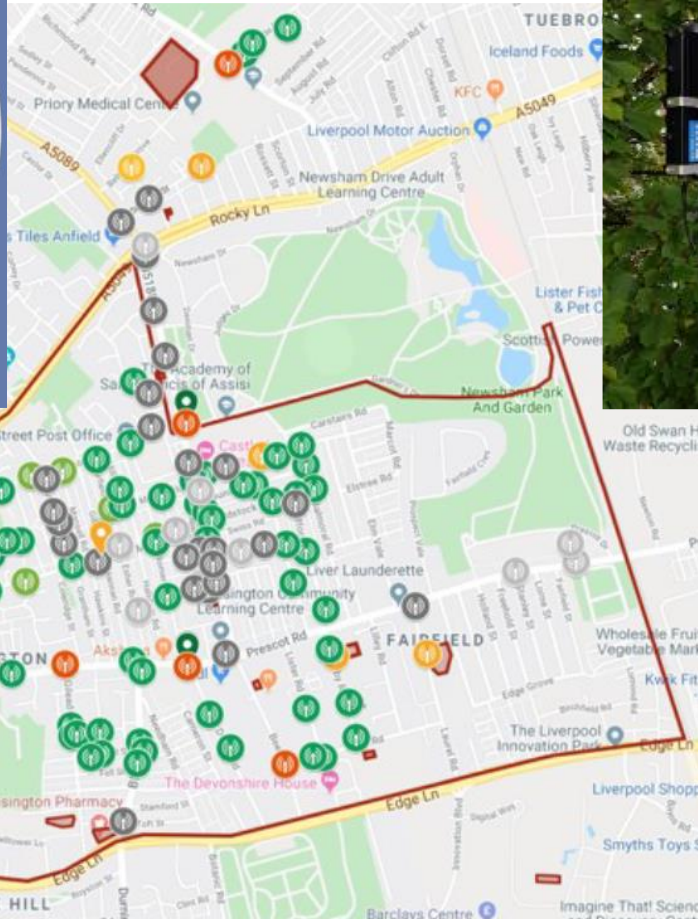
Case study: 5G-MoNArch testbed at Port of Hamburg

- Award winning testbed from EC's 5GPPP projects
- Hamburg Port Authority provided the location and use cases – **AR to support construction teams; Highly reliable traffic light control; Mobile sensors on barges**
- All required wide area coverage across the port, so reuse of existing public network made sense
- DT and Nokia demonstrated end to end network slicing, with new services delivered in minutes.



Health sector

Business case for public sector PCN in Liverpool

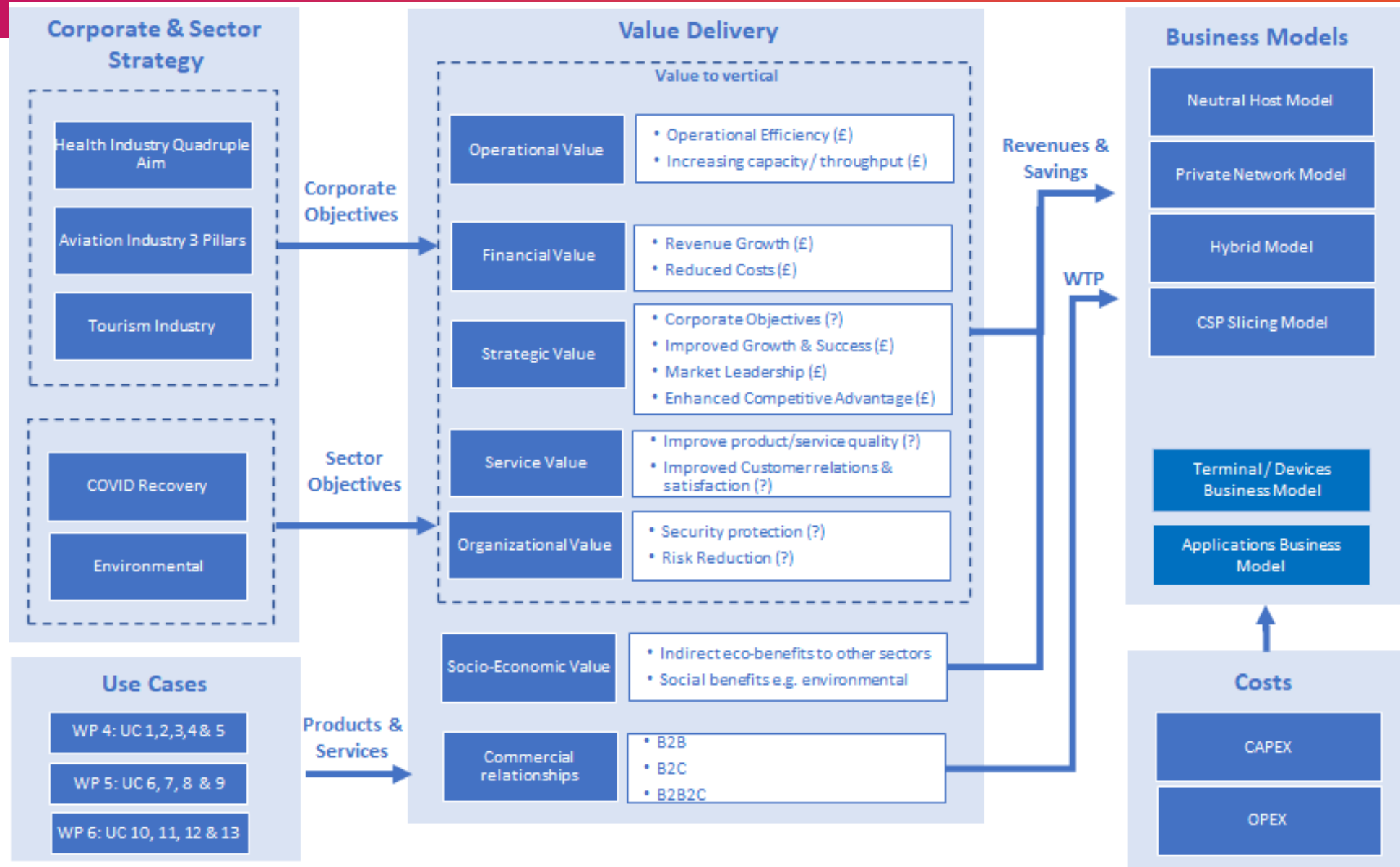


- Public sector building a private network
- Health and social services use cases
- Outdoor to indoor reach
- mmWave Mesh, WiFi, small cells

Priorities

- Need to assess requirements and current delivery mechanisms/ processes to establish a positive connectivity business case
- Need to develop a blueprint and pathway to public sector procurement

TOURS mapping out choices



Mission critical requirements in the Health sector

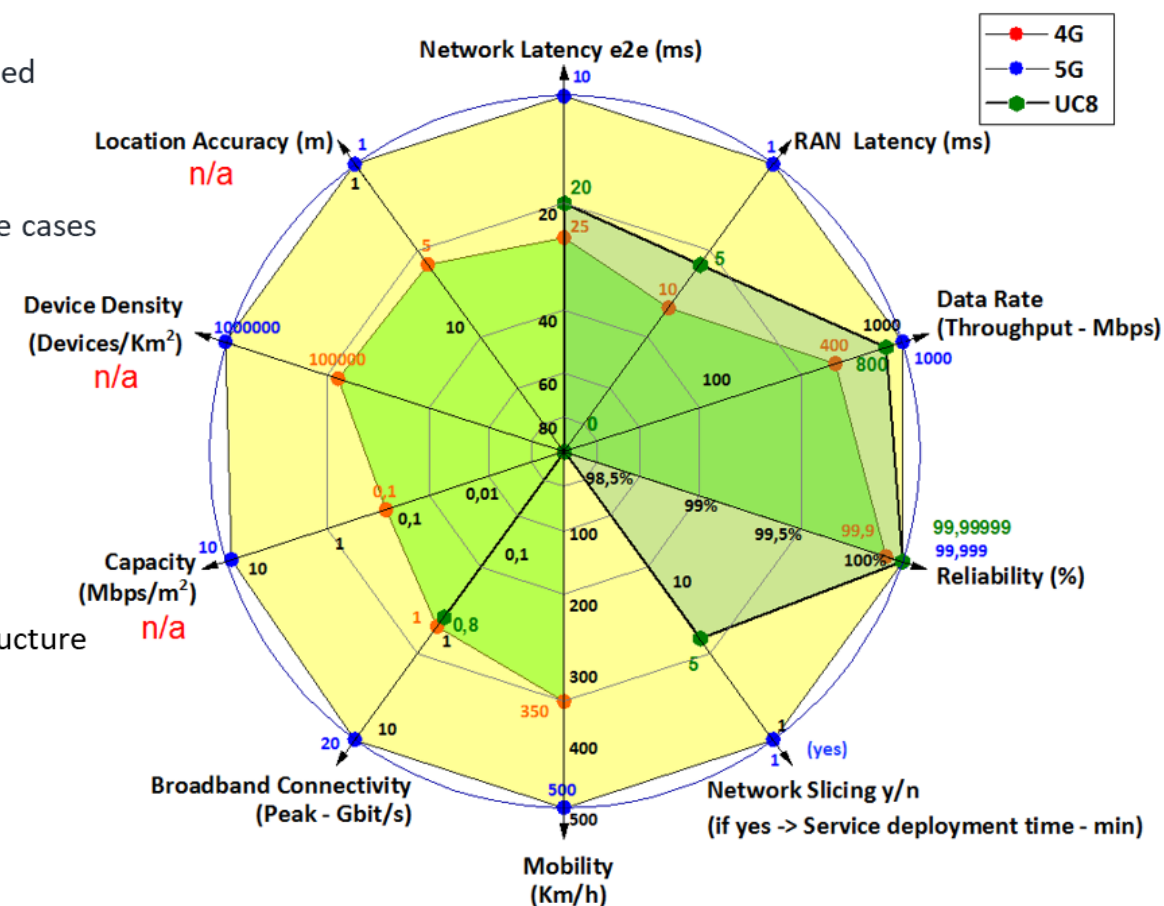


Evaluation Case 3 - Hospitals



Wireless operating theatre

- Rennes University Hospital
- Baseline network infrastructure assumed already in place
 - Public eMBB
- Marginal cost to support additional use cases
 - High bandwidth
 - Low-Latency
 - Ultra-high reliability
- Business Model
 - Own / Operate v Neutral Host
- Solution Architecture:
 - Private 5G Networks
 - Delivered over common infrastructure where possible (DAS or SCN)
- Scaled to regional level



In Conclusion a process....

- Start from the existing systems – as in the Telco sector there is plenty of legacy
- Map out the mission, vertical and end users expectations – use case migration
- Focus on TCO to prove out the investment scenarios
- How does the sector value innovations?
- Avoid using standard MNO network economics models, IT/enterprise are the mould
- Ensure understanding of mission critical is correct – all the way to the Core, not just RAN
- Think very carefully about whether a public mobile operator is really going to have the appetite to take on the burden and business risk – there may still be too much optimism bias in the supply chain on this point