

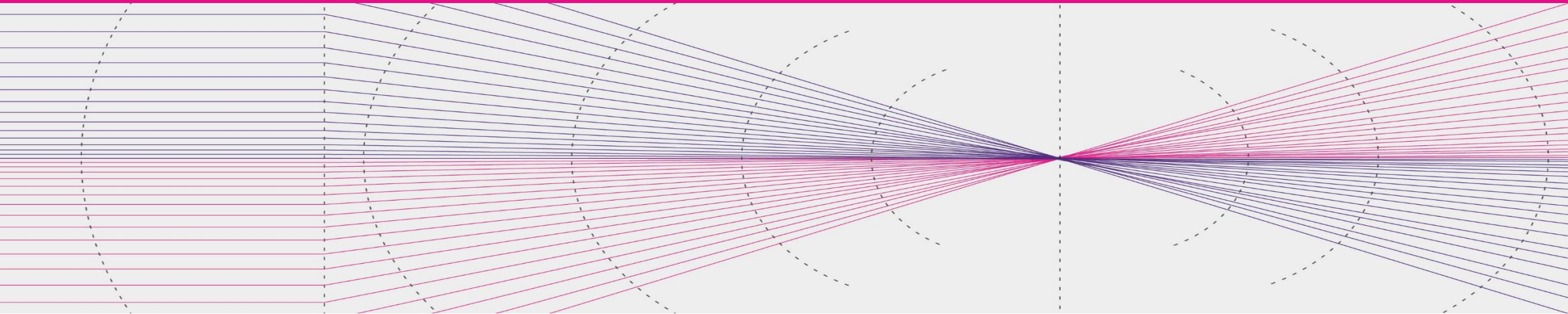


Ibec – Private 5G networks enabling smart manufacturing

Radio spectrum for Private 5G

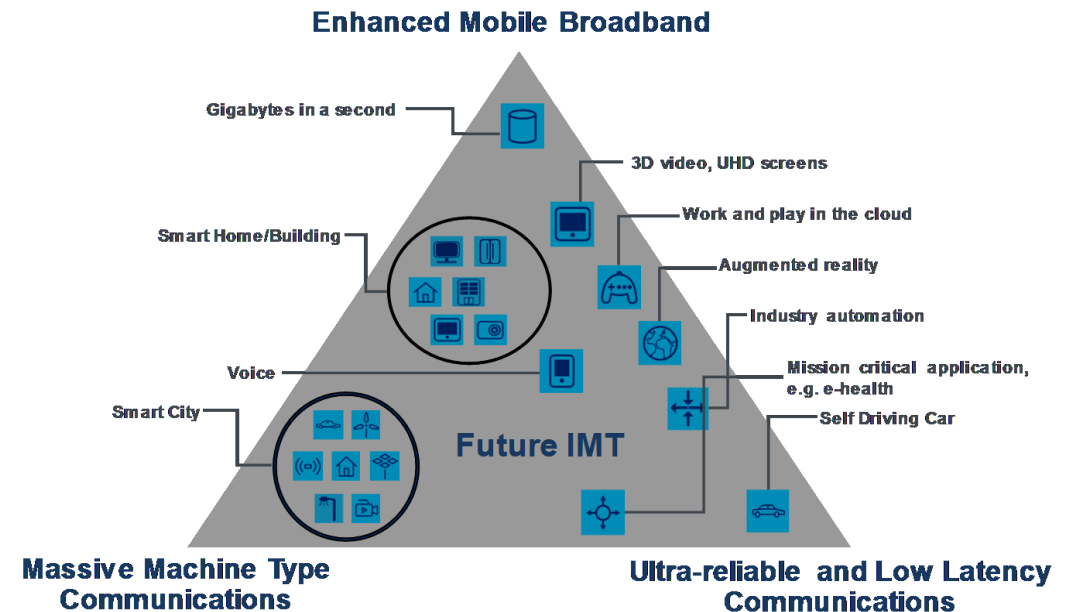
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Tony Lavender



Private 5G networks

- Private 5G networks – concepts moving to reality as standards, ecosystem, and access to spectrum are being addressed – tests and trials in multiple countries
- 5G private networks are a key part of the digital transformation story for many including:
 - 4th industrial revolution (Industry 4.0) – factories, sea/airports, utilities
 - Smart cities
 - Transport
 - Healthcare
 - Agriculture
- Realisation can happen in several ways ranging from supply from an MNO through to a major standalone private build



Source: ITU

Determining spectrum requirements and access to spectrum

Drivers of spectrum demand

Indoor/outdoor/both

Urban/suburban/rural environment

Quality of service

Coverage

Bandwidth requirements

Transmission symmetry

Security and resilience

Spectrum characteristics (e.g. range and capacity – low-band, mid-band, high-band/mmWave), interference environment

System and spectrum requirements



Spectrum supply

Unrestricted access

Licence exempt spectrum

Licensed access

Use spectrum assigned to MNO

Use spectrum shared with MNO

Spectrum accessed via trading or leasing

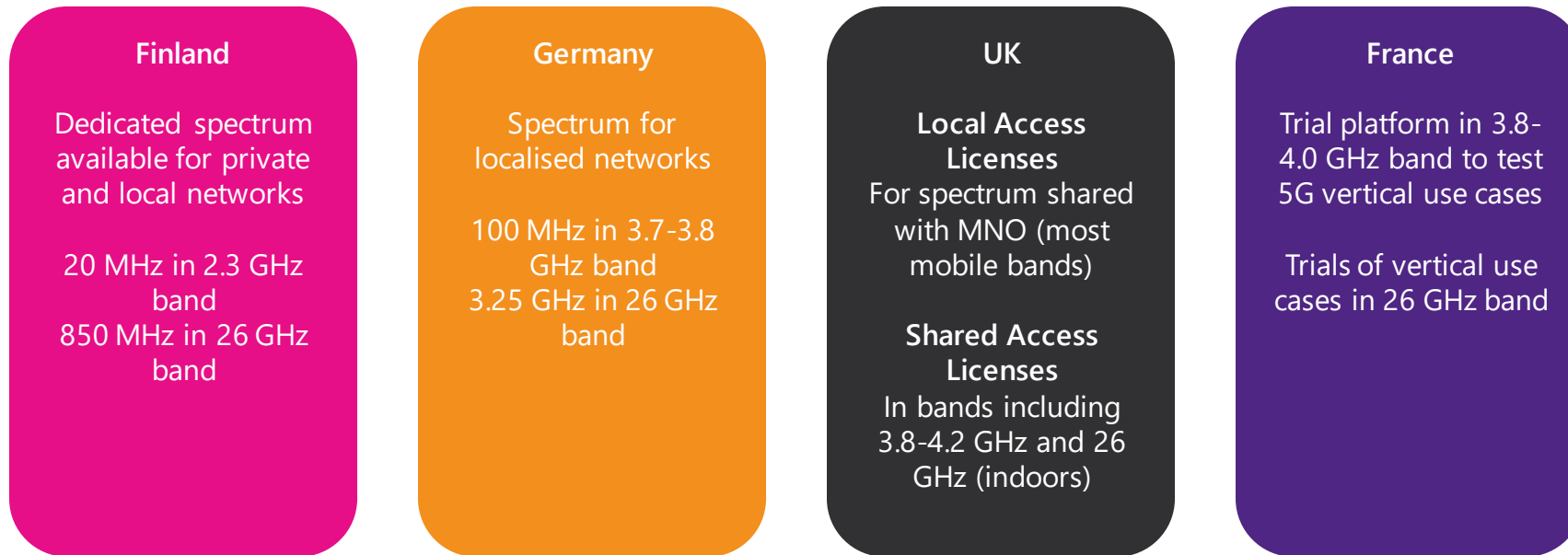
Spectrum assigned on localised basis

Quality of service is a key factor. Networks provided using licensed spectrum with an individual authorisation are more likely to deliver a predictable quality of service.

Develop spectrum solutions a step at a time based on demand and supply

Spectrum supply

- Delivering spectrum for private 5G is an evolving picture
- Examples of innovation in addition to MNO provided private networks include:



- In December 2021, the European Commission issued a mandate to CEPT to study the feasibility of using the 3.8-4.2 GHz frequency band for promoting the development of the industrial 5G ecosystem (2 year timeframe)

Spectrum situation in Ireland

- ComReg's Strategy for managing radio spectrum 2022-2024 sets out a roadmap for Ireland
 - The next multi-band spectrum auction covers several useful bands
 - 700 MHz, 2.1 GHz, 2.3 GHz and 2.6 GHz
 - Brings 470 MHz of spectrum to market
 - 3.4-3.8 GHz was already auctioned in 2017
 - 1.4 GHz and 26 GHz yet to be determined
- Leasing of mobile spectrum is possible in Ireland but spectrum sharing (e.g. as in the Ofcom Local and Shared Access Licenses is not)
- Action on future EU Harmonising Decisions



Strategy for Managing the Radio Spectrum 2022 to 2024

Response to consultation on ComReg's draft Radio Spectrum Management Strategy Statement for 2022 to 2024

Reference: [Response to Consultation](#)
ComReg 21/136a
Date: 17/12/2021

Some practical learning

Hong Kong International Airport – private enterprise 5G network and infrastructure for MNOs to provide public 5G services – many use cases including move to autonomous operations and providing an enhanced travel experience

- A key part of a digital transformation
 - Quality of service very important for airport applications
 - Strong resilience and security requirements
- Coverage and capacity planning indoors and outdoors a key part of specification and design
- Uses both mid-band and mmWave spectrum with different authorisation processes
 - Mid-band (3.4-3.8 GHz) use of spectrum assigned to an MNO
 - mmWave (28 GHz) assigned on a localised basis to the Airport Authority



Tony Lavender
tony.lavender@plumconsulting.co.uk
+44 (0) 7775 940356

