

A Competitive Approach to Digitizing Industry

Mansoor Hanif, CTO

CWIC

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Our 2019 Priorities for Communications Infrastructure

1. **Better broadband and mobile** – wherever you are: helping to encourage investment and improve broadband and mobile coverage across the country, so everyone benefits from the services they deliver.
2. **Fairness for customers:** ensuring that broadband, phone and TV customers, particularly vulnerable people, are treated fairly.
3. **Encouraging Innovation** as a bridge between Universality and Fairness – increasing role as facilitator and convenor
4. **Strong, secure networks:** working with communications companies to help ensure their networks are strong, secure and protected against outages or cyberattacks
5. **Supporting consumers and industry** through Brexit: looking after the interests of UK consumers and the communications sector as we exit the EU.

Creating a growth-oriented regulatory environment

Urban & Suburban areas

- Ensuring spectrum availability
- Universal duct and pole access including fibre for backhaul
- Roundtables to support 5G-compatible Full Fibre architectures
- Barrier-busting & ECC advice
- **Supporting MNO investment**



Industrial / Commercial areas

- Low-cost access to local spectrum
- “Verticals” discussion paper
- Series of industry sector workshops
- Net Neutrality clarifications
- **Encouraging new entrants**



Rural areas

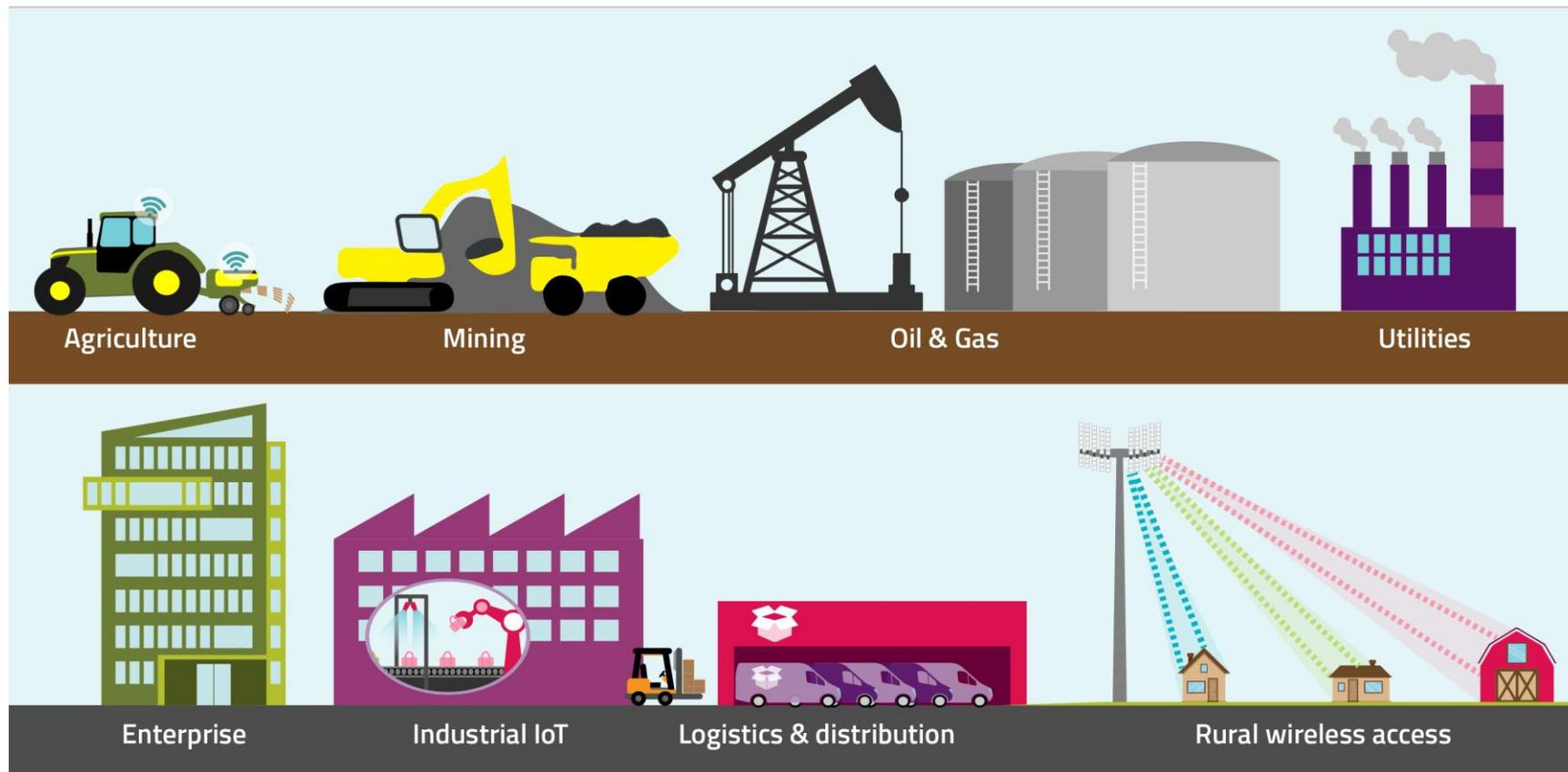
- License coverage obligations
- Facilitating access to unused/shared spectrum
- Technical advice to DCMS Rural 5G trials
- Technical advice to DFT/NRT for Road/Rail coverage
- Community network engagement
- **Supporting Rural communities**

UK-Wide

- Network Security & Resilience
- **Ensuring strong, secure networks**



Digitization is accelerating across all industries



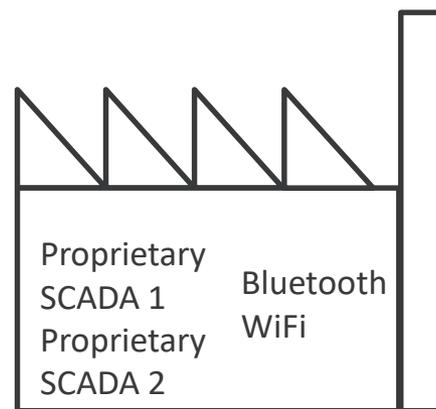
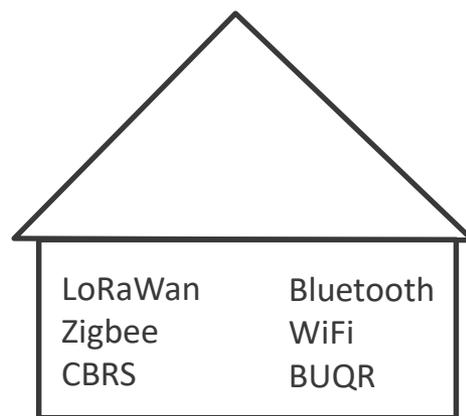
But the cost of running IT and campus networks is spiralling: more wireless devices, new devices, more demand, more security threats but less skilled resource

The dynamics of Wireless/Fixed converged connectivity for digitizing industry

- **Customer Dynamics**
 - Business and Verticals now leading the charge to new revenues through converged solutions
 - Improved connectivity for cloud services => increasing multi-device access
- **Hardware Dynamics:**
 - Push to Whitebox solutions and HW Commoditisation
 - Strong Industry momentum behind use of Generic HW across fixed / mobile / IoT
 - Gaming industry pushing the limits and costs of real-time processing power capability
- **Software Dynamics:**
 - Large-scale adoption of SDN principles, in particular separation of User and Control Data
 - 5G driving the push to cloud-native networks with super-malleable configuration
 - Embedded programmability across all network elements and user devices
 - Automation & ML algorithms overcoming remaining barriers
- **Infrastructure Dynamics:**
 - Infra dependence on connectivity => increased focus on convergence and coordination of Public and Private Infrastructure (eg ESN, Highways England, Network Rail/DFT, NIC, etc)
- **Service Dynamics:**
 - Service is eating the World: meeting stringent SLAs needs the best use of ALL network connectivity
 - Focus on Ultra-reliability => Tiered Layers of connectivity increasingly based on Network Convergence

Today: explosion of connected devices & fragmented standards and security ecosystem → attack surface rapidly expanding

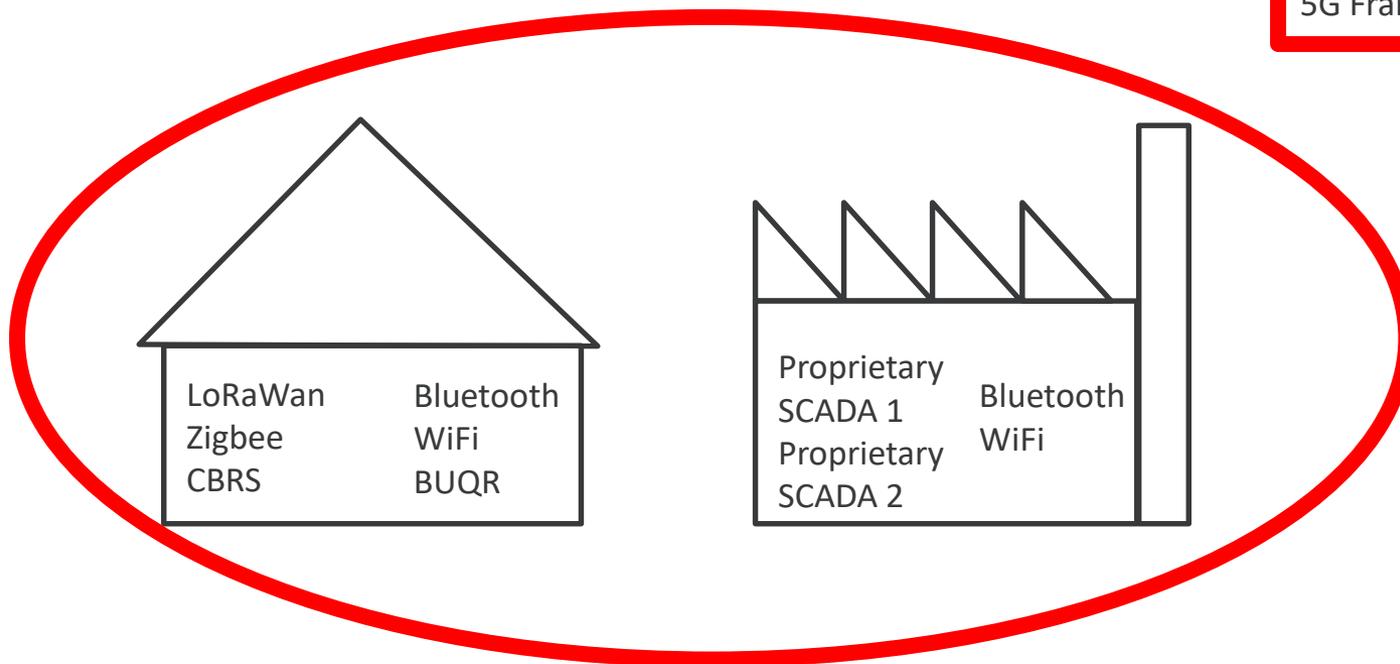
- Digitalisation of home and industry
- Fragmentation of technology and standards
- No common security wrap



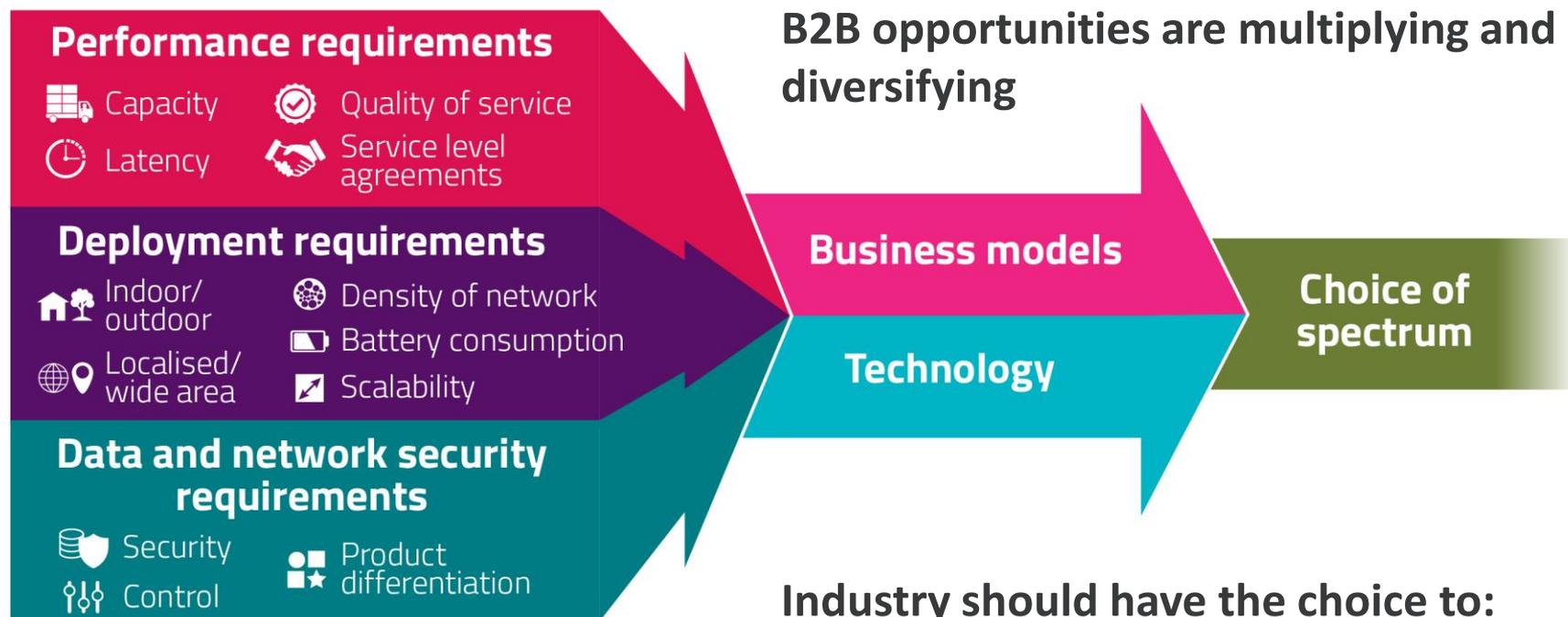
5G framework: Security by design offers opportunity to aggregate and secure attack surface

- 5G Framework could aggregate and manage multiple standards and devices
- Non-5G security frameworks also are feasible

5G Framework



We support a wider choice for industry



Industry should have the choice to:

- Self-Build
- Partner with 3rd Parties
- Buy service from MNOs

Innovative access to spectrum for local coverage

	Spectrum for shared access			
What it could be used for	1800 MHz (2x3.3 MHz) 2.39 GHz (10 MHz)	3.8-4.2 GHz (390 MHz)	24.25-26.5 Ghz – Indoor-only (2.25GHz)	Awarded mobile spectrum
Private 4G LTE/ 5G networks (industry use)	✓	✓	✓ In building	✓
Wireless broadband to premises (FWA)		✓		✓
Coverage improvement schemes • rural communities • in-building	✓	✓	✓ In building	✓

Network Security and Resilience (NSR) Programme

- Aims to ensure communication providers and operators of essential services (NIS directive) are managing security risks and appropriate levels of resilience.
- Monitoring service outages and investigating further where necessary
- Issuing updated guidance setting out our expectations of CPs.
- 5G brings a huge increase in complexity and new security and resilience challenges.
- Proactive and collaborative approach of working with industry and Government (NCSC, DCMS and Cabinet Office) as we have a shared responsibility.
- Security and Resilience Assurance scheme (SAS): an ongoing monitoring activity, to enable an understanding of the security and operational resilience of organisations, with the aim to drive improvements.
- A cyber security testing scheme (TBEST): simulates cyber-attacks that would be used by a sophisticated attacker in order to cause major disruption

Building on current Blockchain platform to support further collaboration on key digitization enablers

Why Blockchain and Distributed Ledgers?

Supports the transfer of assets between parties transferring ownership and information.

Blockchains, offer as pathways to building future trust models.

Creates long-term certainty and trust in a valuable personal digital piece of information.

We can share the trust within the asset to high-layer security and identity platforms.

The industry are curious, engaged and in general supportive.

Ofcom's Ambitions

A platform that supports the requirements, that is as close to productions as we can take it.

Business case, papers and reports on the technology and the process for a decision to deploy.

Provide to industry a platform that demonstrates the technology, to support their own innovations in this space.

Support and promote innovation and collaboration to overcome shared challenges

Next steps

We are already exploring spectrum sharing and coexistence agreements.

How we can deliver a platform for the myriad of rural communities and platforms to support their requirements

Supporting digital identity and customer led switching.

Consulting and supporting industry on use-cases and regulatory requirements.

Any questions?