



**UK
5G**

**Innovation
Network**

UK5G Vertical Roundtable Report

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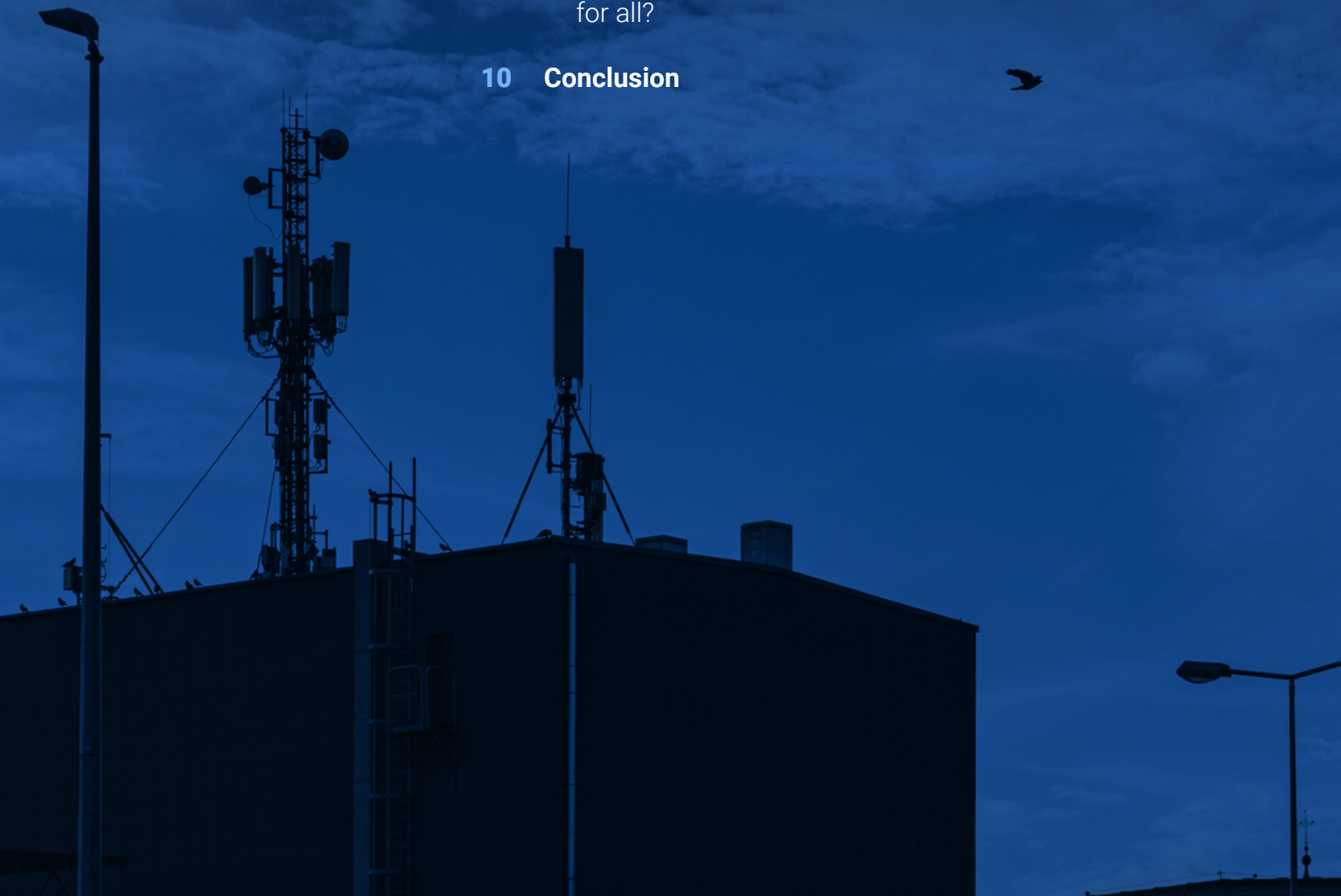
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Introduction

Exploring three cross-sector parallels shaping the future of 5G

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This sentiment was the basis of UK5G's Barrier Busting Roundtable Event. Leaders from across the manufacturing, transport & logistics, health & social care, and creative industries, came together to share their experiences surrounding the deployment of 5G in the UK.

While the title of the event was about 'busting barriers', the focus of conversation steered very much on what is required to make 5G work for the country in the future.

And while there are no perfect solutions to these challenges, the discussion highlighted the benefits of different sectors sharing ideas and working together.

With many industries having primarily focused on developing their own 5G use cases until now, the event created an opportunity to understand the similarities in challenges across industries – how an idea in one sector could help solve a problem in another.

With that in mind, we've identified the three lessons from these 5G cross-sector parallels. We hope this will provide the inspiration and evidence you need to accelerate your own 5G journey.

Lesson one

Uplink is a priority for all sectors, not just creative

“Demand for greater upload speeds is felt in multiple sectors, particularly when dealing with high data volumes that require some form of real-time interaction or analysis.”

Our panel identified healthcare and broadcast as having the greatest uplink requirements, something born out by the standards work in this space.

For healthcare, these high upload speeds are needed for a range of use cases, many of which could directly impact patient outcome, such as transmitting and receiving complex imagery for sudden incidents.

However, the sector also requires ubiquity of coverage, mainly widespread deployment will rely on public 5G networks. For mobile network operators (MNOs), their spectrum licences, as dictated by Ofcom, must deliver a 3:1 download to upload ratio. Around the table it posed questions as to whether this needs to be reviewed in future, or if MNOs should be given greater latitude.

Despite the associated challenges, there is an opportunity to learn from other sectors. For instance, lessons learned in live sports

broadcasting by BT Sport and the BBC could be replicated. The use of test spectrum by engineers in Birmingham for the recent Commonwealth Games balanced out uplink and downlink metrics, allowing for live broadcast at much higher quality than has previously been achieved.

Could these early tests help lay the groundwork for faster 5G adoption? In healthcare, higher uplink supports the introduction of new technologies and solutions, such as connected ambulances, where remote diagnostics can help paramedics and clinicians diagnose and treat patients faster.

In manufacturing, when high-precision machinery is connected to 5G, huge volumes of real-time data are created and need to be rapidly analysed. Large uplink is needed to ensure the factory floor stays online and free of faults.



But the need for a consistent connection and uplink restrictions on public networks create a point of inflection across different sectors. It forces the question, is the time now to invest in a private 5G network? They can give organisations a greater sense of reliability, but may only be a realistic option for sectors backed by funding or investment.

Positively, there was much discussion about the increasing affordability of private network solutions, so the tide could be turning.

In the meantime, for those delivering 5G experiences directly to the public, such as autonomous vehicles in transport, it leaves a gap in coverage and the sense of needing to catch-up.



Lesson two

'Kitemark'-style security certification for 5G could calm cyber nervousness

“Our panel discussed the issue of 5G security, which goes beyond more than just protecting the network.”

There are considerations around application security, training end users, and physical security. Any point could be the weakest link in the chain, which could be exposed and exploited for nefarious means.

For instance, when there is 5G radio equipment in a physical cabinet, or as part of street furniture, the attack vector increases with the number of people who have access to the equipment.

And there is notable tension between security and the value of improved connectivity, particularly in the delivery of public services. In the UK in particular, the Government has raised concerns surrounding the security of smart cities, particularly those that collect data about citizens' behaviour, public services, or critical infrastructure.

As the number of devices and 'things' connected to the internet increases, so does the risk to this sensitive data. This increasing threat surface manifests differently across sectors,

ranging from monitoring critical infrastructure in transport or other public service provision, to the tracking of high value assets through supply chains.

However, the end concern remains the same, these connected 'things' become potential targets for a cyberattack. A nation state could use the information to track down the whereabouts of journalists, yet it is valuable for the media organisation to know where they are from a safety perspective.

Cataloguing public assets can significantly support the deployment of 5G infrastructure, yet could give hackers access to the precise location of critical national infrastructure.

And despite applying the 3GPP standards for security in 5G networks, the many ways in which 5G can be deployed has the potential to create further issues and considerations. Security must extend beyond the network perimeter.

The ability to wrap extra layers of access and security over a private standalone 5G network does however have its appeal. For sectors including aerospace and high value manufacturing which have strict security requirements this is where the strongest use cases currently exist – with both areas backed by private investment.

Concerns around security still exist however. Our panel raised the idea of a new security certification for 5G taking inspiration from a “kitemark” style accreditation – giving users a guarantee around quality, safety, and trust.

In practice, this could mean guaranteeing any branded 5G network was “secure by design”. An industry accreditation could be applied across all sectors, giving directors and senior decision makers a system they can trust, while encouraging investment and calming security concerns.

Whichever approach the telecoms industry chooses to take, the balance between openness and security may determine the speed of 5G adoption and innovation in the future.





Lesson three

In the drive for ubiquitous 5G coverage, could a common public 5G network improve access for all?

“From the discussion it became clear there is demand from sectors for greater coverage of 5G public networks, helping to deliver the wider benefits associated with 5G.”

However, for MNOs, the immaturity of use cases in sectors such as transport, and health and social care, make investment in standalone 5G networks difficult to justify today – though the government’s diversification of the supply chain agenda should positively impact affordability.

Looking to the future, technologies such as driverless cars will be underpinned by pervasive connectivity; perhaps not to enable the autonomous driving but certainly to realise the full potential of the technology where vehicles can intelligently interact with assets around them, in real-time. To realise the true potential of Vehicle to Everything (V2X) communication, the UK’s road network will need universal high bandwidth, low latency connectivity.

And in health and social care, a sector which could deliver high levels of public benefit from 5G, there are currently only isolated pockets of 5G experimentation happening.

In the interim, sectors where there is funding and budget available, private 5G networks are being used effectively, demonstrating the real potential for broader deployment.

For instance, a DCMS-supported trial in the West Midlands explored using 5G for real-time remote monitoring and care, described by our panel as the “future of the NHS”, if rolled out more widely. However, investment in private networks is difficult to justify using the Green Book business case.

Therefore, how do you reconcile the rate of public 5G deployment against the immediate impact that sectors – particularly those delivering public services - could harness from pervasive 5G coverage?

There was much discussion about the need of the public sector to “step up”. The panel felt that perhaps it was being held back by the old model of waiting for the market to provide the required connectivity.

One bold suggestion was to explore a ‘Network Rail-style model’ for 5G. It would involve creating a body owned by the UK government, which is responsible for the nation’s network infrastructure. This could provide ubiquity of coverage throughout the UK, or at the very least, aligned to the country’s road network.

It could mean a central government body can help make the case for upgrading networks where there’s a clear public need or benefit, as well as attracting private investment where needed.

The panel explained that currently much of the public sector still operates in individual siloes. A central body would help unify 5G across different areas and authorities such as roads, local councils, and healthcare.

With a central body driving the strategy, could this eventually lead to one common public 5G network available across the country?

With a remit and focus on delivering benefit to the public, it is perhaps when the full realisation of 5G benefits will come to fruition.

It was recognised by the panel this would be a significant policy decision. But irrespective of the realities of such an endeavour, there was a strong sense from all that a massive step up by the public sector will be required to enable the UK to fully collect on the promise and potential of 5G.



Conclusion

A photograph of a man and a woman sitting at a table in a meeting. The man is on the left, looking towards the camera, and the woman is on the right, looking down at a laptop. They are surrounded by papers, a laptop, and a cup. The image has a blue tint.

“After the discussion, what emerged was the clear benefit in bringing together different sectors to share knowledge, insights, and learnings from what has been developed with 5G so far.”

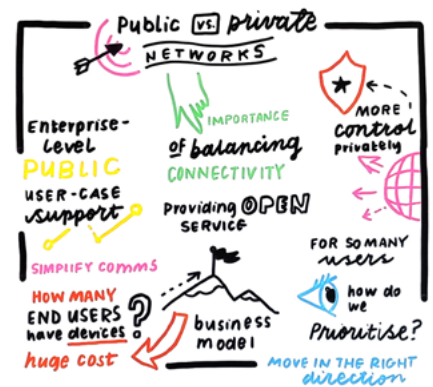
There are pockets of innovation happening across the UK, yet many sectors have been operating in isolation.

With a laser focus on developing use cases for their own industries, we've seen that by highlighting the 5G cross-sector parallels, there is an opportunity to shape and drive forward a unified strategy, along with a fresh push for improving standards surrounding security.

Tackling the issues of today will surely set-up a bright future for 5G in the UK. We welcome the continued spirit of openness and collaboration, as each sector looks to learn and develop from each other.

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OPPORTUNITIES IN THE ecosystem





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