

# Regional Showcase

Liverpool 5G

Ann Williams

Programme Director



# Liverpool 5G Create – Developing a Private Network for Public Services

UKTIN Clusters Group Jan 2024

Ann Williams, Liverpool 5G Programme Director



# Why are we doing this?

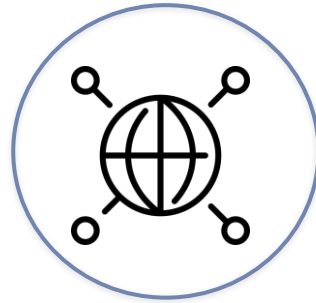
Driven by the need in Adult Social Care:



Many existing  
Telecare solutions  
depend on  
analogue systems,  
due to be switched  
off in 2025



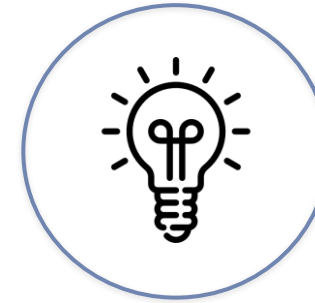
Many households  
have no access to  
affordable, reliable  
connectivity.  
Impact on isolation,  
education, health  
and social care



The digital divide  
has increased  
exponentially  
during COVID-19.  
Impact of Digital  
Poverty is widely  
recognised



The Liverpool City  
Region faces vast,  
complex health  
challenges,  
increasing health  
inequalities



Service Level  
Agreements to  
support tech  
solutions in the  
community are  
not available or  
cost prohibitive



Increasing  
amount of NHS  
and LA budget  
spent on  
connectivity





# What have we done?

In Kensington, Liverpool, one of the most deprived areas in the UK, we have built the largest 5G Stand Alone street level network in Europe:



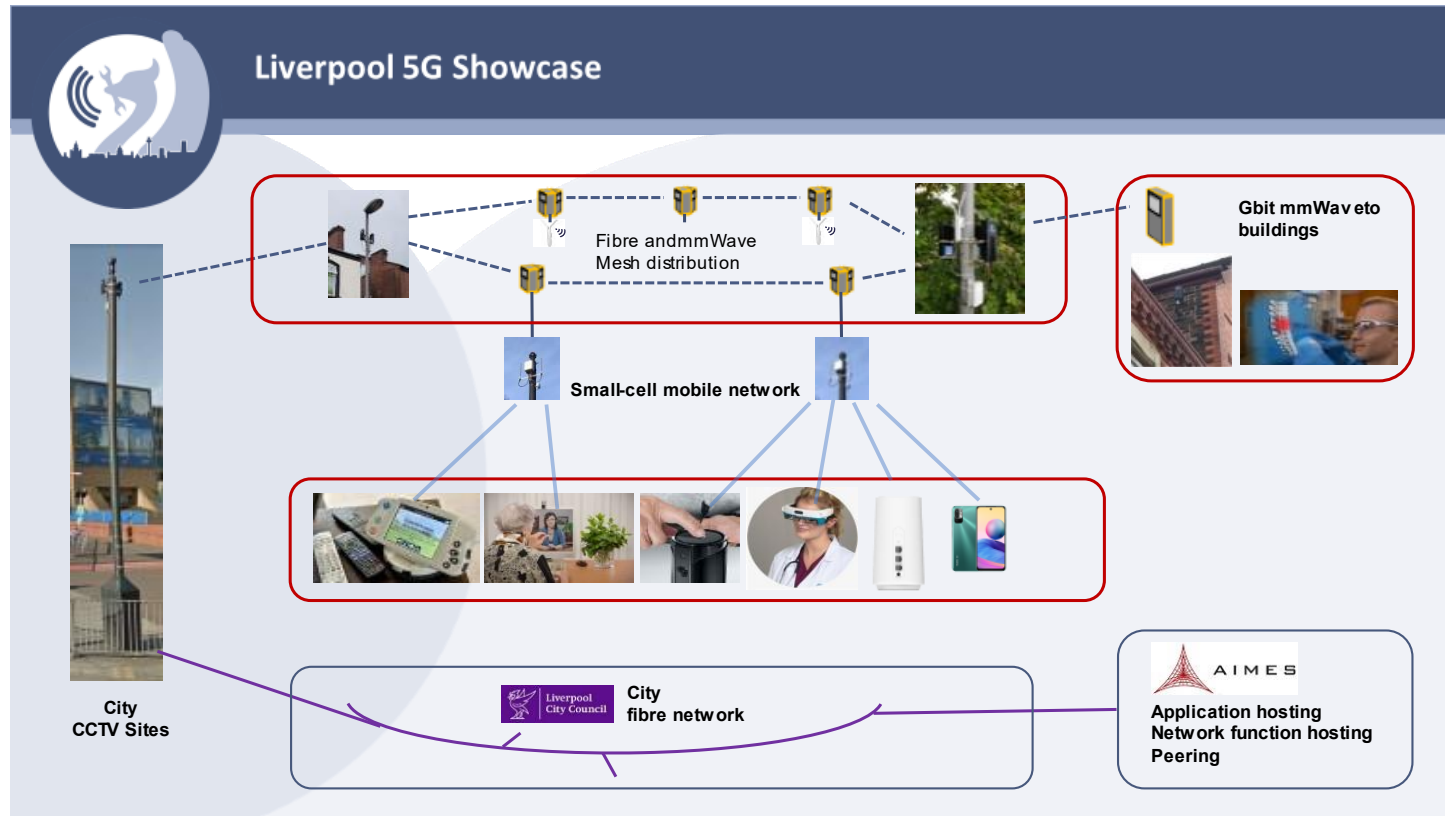


# Motivations for publicly-controlled mobile wireless

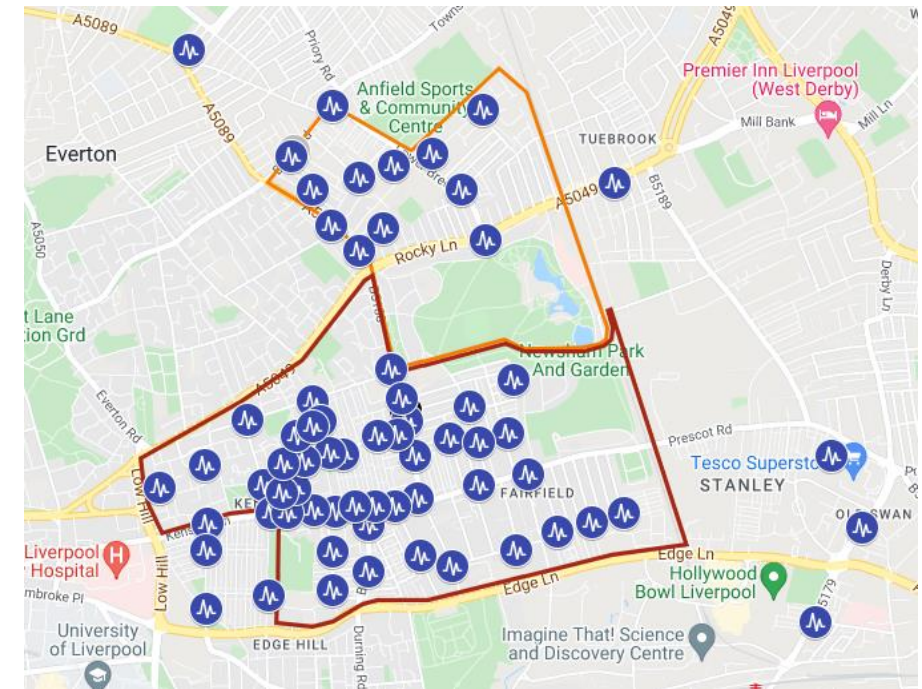
- **agility:** service can be delivered to anyone, anywhere within the coverage area, immediately
- **cost:** the Local Authority retain control of revenue model to promote innovation (e.g. no per user or per Gigabyte charges for health and care applications)
- **service:** monitoring, response, resilience integrated with the applications
- **assets:** efficient use of physical assets and contractors
- **openness:** support for the broadest range of use-cases in the public interest



# What have we done?



## The existing network deployment:



The map above shows the small cell distribution. This places as many cells as possible in the denser residential streets and where this is impractical along the nearest more major roads making use of taller street lamps.





# What impact have we demonstrated?

Through specific use cases trialled in the project:

**Phase 1** (mmWave and Wi-Fi) project demonstrated potential cost savings to services of **£248K per 100 users per year**. (Remote medication management, sensors in homes, measures to address loneliness)

**Phase 2** project (cellular connectivity) demonstrated potential costs savings:

- GP surgeries across Liverpool - **£174,236 per year in connectivity costs**
- Falls monitoring - **£7,737 per user per year**
- Provided connectivity to school children at home

Cost modelling of future telehealth, telecare and mobile working across Liverpool is predicting that over an 8 year period **£44 million** will be spent in mobile connectivity costs to support these services alone.



# Where are we now?

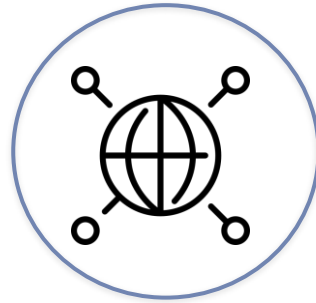
## Challenges going forward:



In the limited time available, we have demonstrated impact in health, social care and education. Now need to consider wider applications e.g. Housing, transport



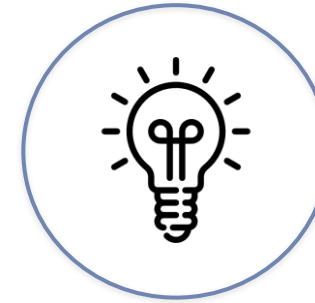
Innovative CAPEX costs are high. As products are brought to market costs will come down and performance will improve



We have shown a private network for public services will reduce revenue costs improve outcomes for citizens



The DCMS 5GTT programme has shown that stackable use cases are needed to justify building a private network



To implement stackable use cases we need stackable business cases and shared outcomes that cut across public services



The Green Book business case does not reflect the level of innovation and Social Value



## LCR ONE HDD PROJECT SCOPE

1. Novel system architecture that includes all key elements of a cloud-based 5G Network using OpenRAN and WiFi in the access and an enhanced 5G Core that feeds information from the RIC and integrates multiple RATs.
2. A cost-efficient deployment of the network re-using existing assets and leveraging cloud technologies for roll-out acceleration and optimised management using end-to-end orchestration.
3. A novel simulation framework that creates a sandbox for innovation in x,rApps, providing a highly realistic representation of the region and implements key components of the RAN

## PROJECT OBJECTIVES

*'Our ambition is to demonstrate to neutral hosts and national operators that OpenRAN can deliver value to them and that they can have confidence in adopting OpenRAN to modernise their procurement and deployment practices to be compatible with OpenRAN technology drawing on UK expertise and supply chains.'*

- Deliver an innovative approach to xApp and rApp development through simulation and Machine Learning
- Extend the RIC framework for multi-RAT aggregation, incorporating WiFi
- Demonstrate automated provisioning, monitoring, and deployment lifecycle management
- Assess how OpenRAN deployments can be secure by design with complex supply chains and changing configurations
- Validate these capabilities in five deployments as part of the LCRCA's existing digital programme
- Support the commitment of global partners Radisys and Qualcomm to accelerate investment in the UK
- Support ITS and Telet in promoting the adoption of high-performance 5G OpenRAN neutral host networks
- Enable the Hartree Centre to incorporate OpenRAN concepts in their UK AI/ML skills training programmes

Liverpool CR HDD project proposal, May 2023, paraphrased

## REAL WORLD IMPACT

- This new technology will be trialed in 5 venues across LCR including
- M&S Arena
- Lime Street Station
- Salt & Tar events space in Sefton
- St Helens Rugby League Totally Wicked stadium
- Goodison / Widnes Rugby league stadium

Liverpool CR HDD project proposal, May 2023, paraphrased



# Private Network Infrastructure

Delivered by “Liverpool City Region HDD” Project

- **Free to the venue/hub:** Significant investment by DSIT and Project Partners will deliver and operate a turn-key cellular Private network till 2Q25
- **Option to continue operation** of the network after completion of project by renewing licenses and extending support

# Value Proposition

- **Lasting infrastructure** for transport and switching for all future communication needs
- **Advanced Private Network** cellular connectivity for Operational Staff and Business Partners
- **Dedicated spectrum resources** for exclusive use by the arena
- **Reliable connectivity** unaffected by consumer footfall for the most critical use cases
- **Flexible connectivity** anywhere in the hub and on any device (directly or via fixed or mobile 5G GWs)

# Contact us

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