



Case Study: Developing a 5G eco system

What does each partner contribute to the project? Our consortium brings expertise from academia, the NHS, social care, wireless, emerging technology and games development. We have more SMEs than most other 5G testbeds. Project partners, eHealth Cluster, created an Adoption Readiness Level (ARL) policy that ensures our tech is usable and responds to a need in health and social care.

What are the project's main aims and objectives? We're investigating how wireless 5G mesh networks can be delivered cost effectively, to digitally deprived communities that need affordable connectivity to enjoy health innovation.

What technology has been used to set up your 5G network? Our Blu Wireless technology uses existing fibre and 5G nodes on lamp posts and buildings. It's a system that provides good coverage in a dense urban setting. CGA Simulation's 5G Planning Tool uses a 'digital twin' simulation of Kensington, 3D mapping and new time-saving algorithms, to automate planning a 5G network and saving time/ money.

The project's 5G connection is free to project volunteers and runs at a scale not previously attempted. Our project benefitted from developing multi-hop link adaptation, network configuration, sharing and power management, academic analysis and research.

What makes your 5G eco-system unique? Our project uses the largest 5G mmWave mesh network in the UK and second largest network of its kind in Europe. Eight innovative technical products have been trialled over the Liverpool 5G mmWave mesh network, which means we've provided 179 products to over 150 people in need. Our fully connected care home demonstrates the technology's potential to improve people's health and wellbeing, whilst reducing the cost of services by creating extra capacity.

What challenges have you faced and how did you overcome them? Our project is complex, with multiple challenges both technically and socially. The project's use of technology can be described as a 'network of networks'. A hybrid of technologies that together provide the perfect environment for supporting 'Internet of Things' technologies. We've used WiFi repeaters and additional WiFi mesh installations to deliver coverage reactively – making the final link to users in residential settings.

People using our technologies have long-term health conditions so safeguarding, data protection, and issues around consent are crucial. We've incorporated relevant guidelines and legalities into information packs and use common sense and consideration with volunteers, care providers and family members.

How does the project contribute to an overall future vision for both 5G and advances in health care? The Liverpool project establishes a competitive model by delivering connectivity, meeting performance requirements for the applications and acknowledging economic, regulatory and UK market conditions. There will be opportunities to use the models we develop in several export markets.