Health Tech in Liverpool

Joe Spencer

Health and Social Care Tech in Liverpool

Liverpool

Liverpool City Region

Liverpool
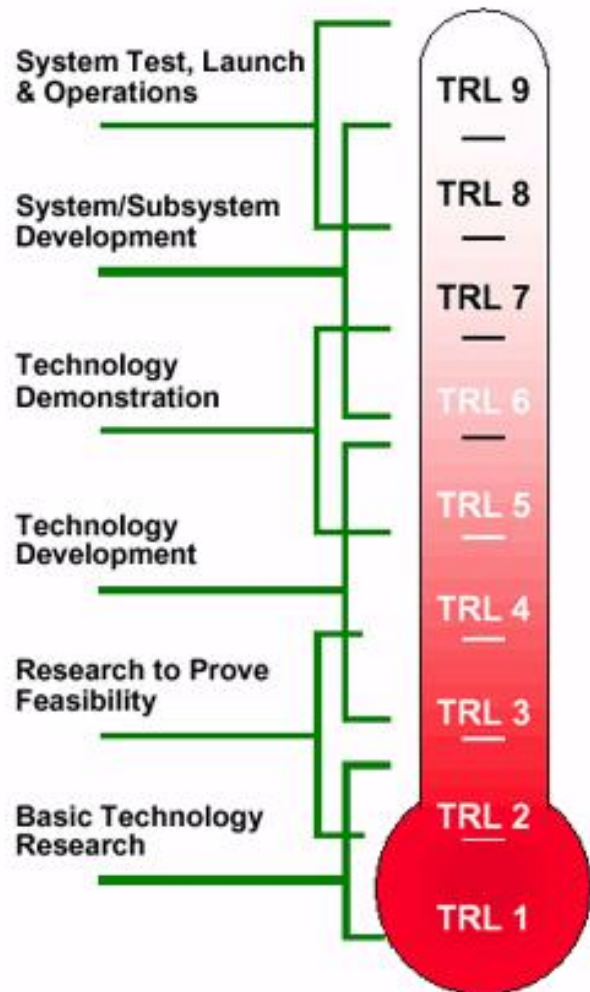**Gateway to the UK and the rest of the world**

- Two vehicle manufacturing sites
- Deep water port and international airport
- UNESCO world heritage site
- Recognised Hi Tech research facilities
- A culture of support for SMEs and entrepreneurs
- Innovation facilities and incubators to generate the next generation of Hi Tech companies (e.g. for manufacturing, for Health, for the environment, for renewable energy generation)
- A large and growing arts and culture activity.
- Excellent football teams

The digital investment

- Liverpool is developing a fibre network to underpin the digital environment, lessen the digital divide and poverty.

- Investment in facilities supporting digital technologies (the Digital Innovation Factory).

- 5G test bed in health and social care

- Investment in people.

- Business support.

212km
HIGH-SPEED
FULL FIBRE
network

LIVERPOOL CITY REGION

SEFTON
KNOWSLEY
LIVERPOOL
ST. HELENS
WIRRAL
HALTON
SCHOOL

In health and social care there is a well connected and integrated community driven by need.

- Uses of health and social care technology and deployment at scale (eg Pharmaceutical companies, SMEs, NHS, Local Authorities etc)

- Integrators of technology bringing end users, entrepreneurs, developers and researchers together to apply tech for need and application (e.g. eHealth Cluster, Sensor City, Science Park, Daresbury (Sci-Tech), Hartree (HPC, AI)Alder Hey etc)

- Underpinning Knowledge (Two Universities, Centre for Intelligent Monitoring Systems, Hartree (high performance computing, AI), Daresbury (Accelerator Science), Virtual Engineering Centre (3D virtual reality).

A collaborative approach – eHealth Cluster

- Technology, SMEs and Individuals within the Liverpool City Region.
- Public bodies and professionals
- Academic and Research
- Health and Social Care Providers (working in the Liverpool City Region)
- Support Functions
- Other (including any outside Liverpool City Region Liverpool is not inward looking but has always collaborated around the world – its in the DNA)

Liverpool 5G Create: Connecting Health and Social Care

The Project

Building on the previous successful Liverpool 5G Testbed

Developing a private, independent 5G network for delivering public services

Focus on Health, Social Care and Education

Addressing the impact of digital poverty on health equalities

Focus on Issues

Addressing Needs

Poor access to affordable, reliable connectivity
- key barrier to technology adoption in health, social care and education services

Reliance on analogue telephone services
- will be switched off in 2025, affecting 1.7 million in UK

Health Inequalities
- remote services in pandemic highlight impact of digital poverty - equal access for different communities an issue

Prohibitive costs of connectivity
- current charges too much for many; not all have data or broadband

Stretched services
- (e.g. NHS) remote services reduce costs and save clinician time

Network designed to provide the Service Level needed for H&SC applications.

Connectivity provided via Wi-Fi or cellular with no charge to resident - meaning remote monitoring available to all, even where no broadband.
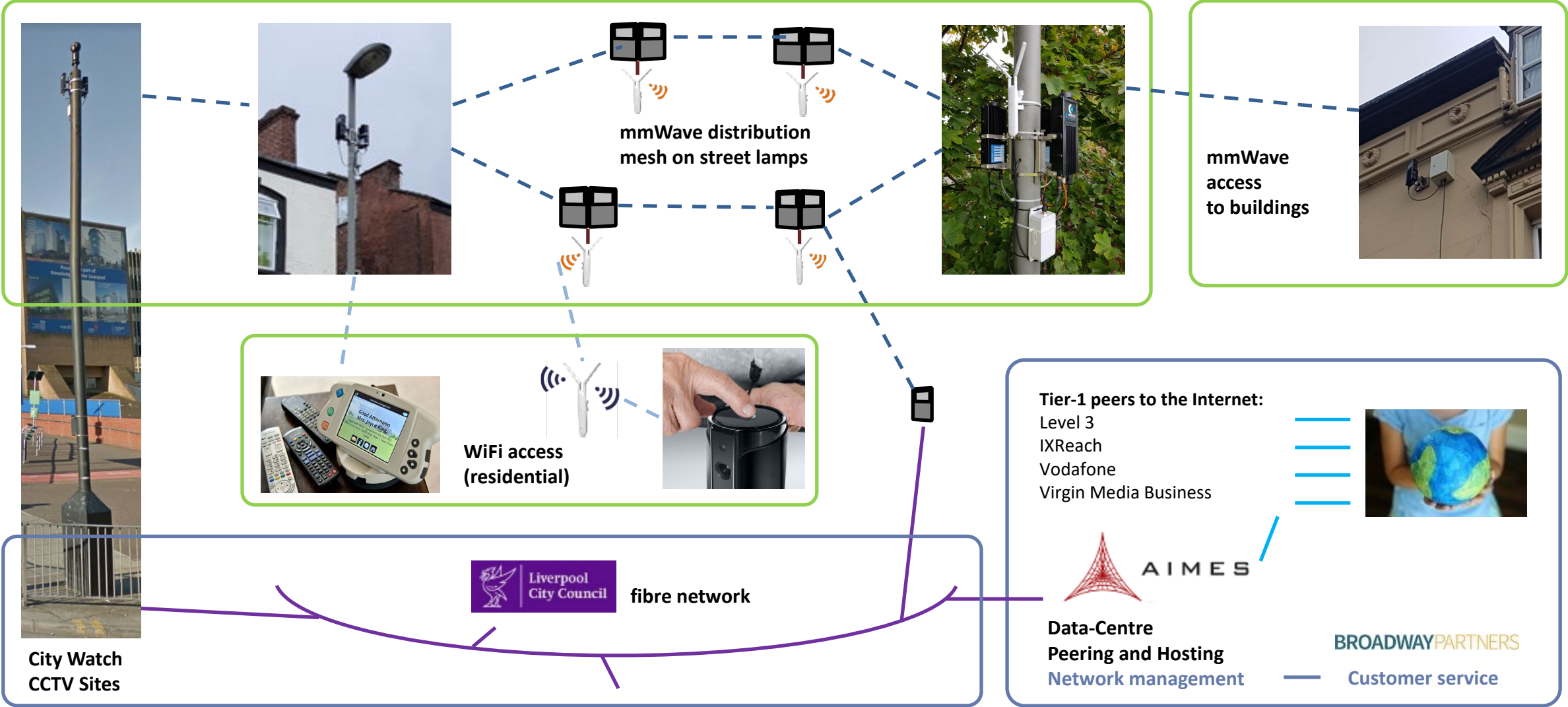
L5G bear the costs of deployment and maintenance - residents will **not** incur any usage costs.

Health services, care homes, supported living, and home care access for free (or less than current cost) freeing up spend for frontline services.
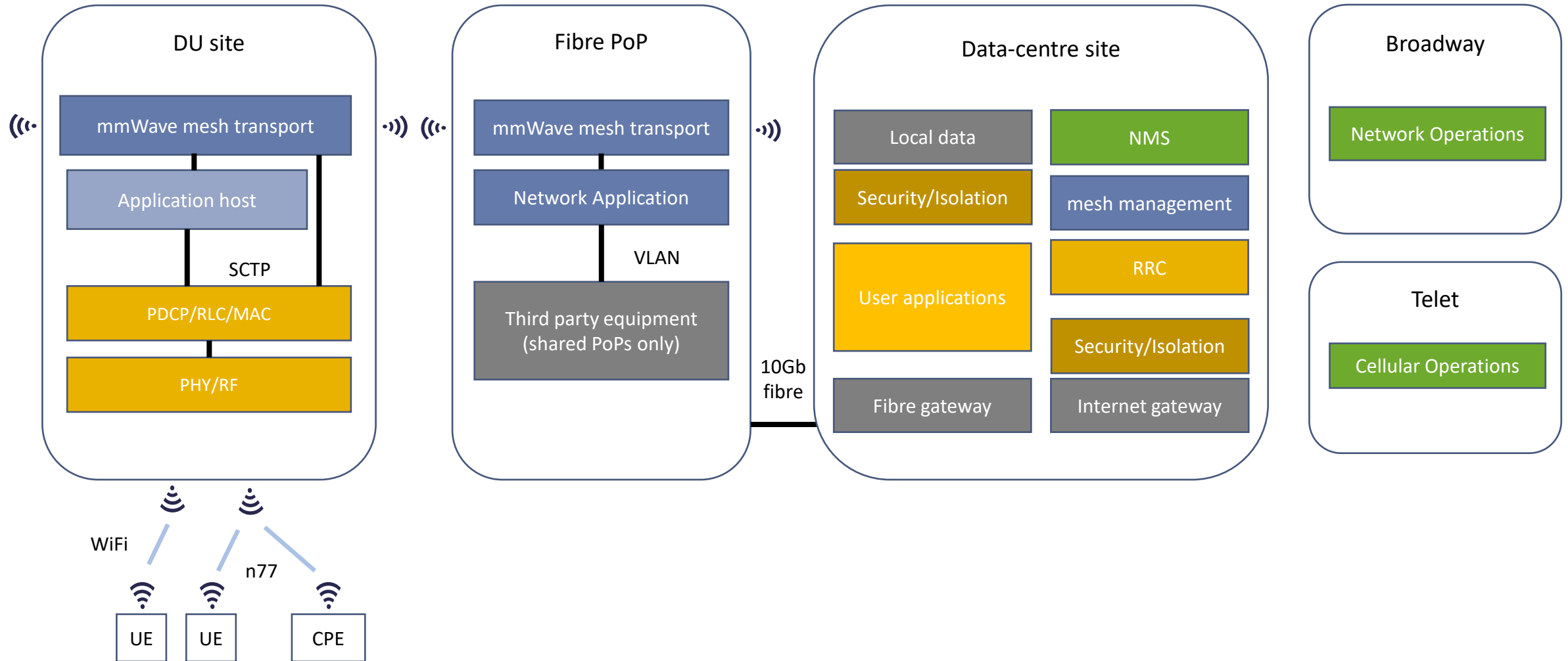
Network Deployment

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mmWave distribution mesh on street lamps

mmWave access to buildings

WiFi access (residential)

City Watch CCTV Sites

Liverpool City Council — fibre network

Tier-1 peers to the Internet:
Level 3
IXReach
Vodafone
Virgin Media Business

AIMES

Data-Centre Peering and Hosting
Network management — Customer service

BROADWAY PARTNERS

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Technical Solution

DU site

mmWave mesh transport

Application host

SCTP

PDCP/RLC/MAC

PHY/RF

WiFi

n77

UE

UE

CPE

Fibre PoP

mmWave mesh transport

Network Application

VLAN

Third party equipment
(shared PoPs only)

10Gb
fibre

Data-centre site

Local data

Security/Isolation

User applications

Fibre gateway

NMS

mesh management

RRC

Security/Isolation

Internet gateway

Broadway

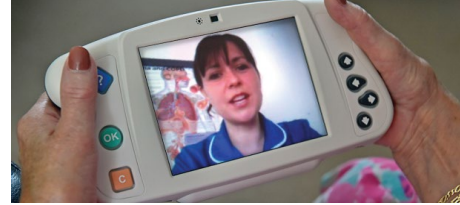Network Operations

Telet

Cellular Operations

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Use Cases

Video Consultations
Providing a free, high-speed, reliable network for video consultations. Enables users to access the network for services such as GB website advice, repeat prescription requests, remote triage and consultations
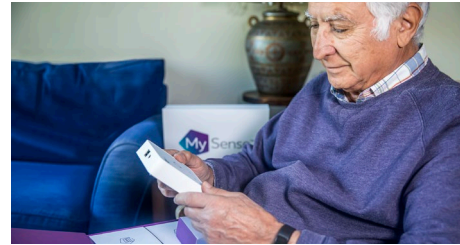
Pressure Ulcer Management System
Mobile technology which uses AI imaging techniques and emerging camera technologies to categorise pressure ulcers remotely and send high-quality images to practitioners for diagnosis.

Urine Monitoring Unit
Uses optical technique to detect infections in urine, and transmits ultra-resolution images to GP surgeries for analysis, performs at the same high level as current standard tests in NHS

Telehealth Monitoring via Docobo Devices
Care Portal device includes built-in ECG monitor, connects to Telehealth Hub staffed by nurses and HCAs.

Education
Providing connectivity for pupils at home in Kensington for home-schooling and remote learning

Chill Panda
A playful, interactive app which helps children manage their anxiety. The app uses a built in AI driven recommendation engine to create personalised reduction content for users.

5G WAN Pilot for NHS Sites
Providing 5G connectivity to NHS sites for public access and clinical use. Reduces costs of a fibre-delivered WAN network and provides low latency, high bandwidth, secure WAN network for ongoing increase in digital clinical services.

MySense
A new range of telecare equipment, which uses AI to monitor nutrition, hydration, independence, and activity via IoT (Internet of Things) sensors around the home, and alerts support networks to any changes in behaviour or deterioration

Vitalerter
Sensor for under a care home bed that monitors the vital signs of the resident. Using AI, it notifies staff when the resident is about to get out of bed, reducing the number of falls.
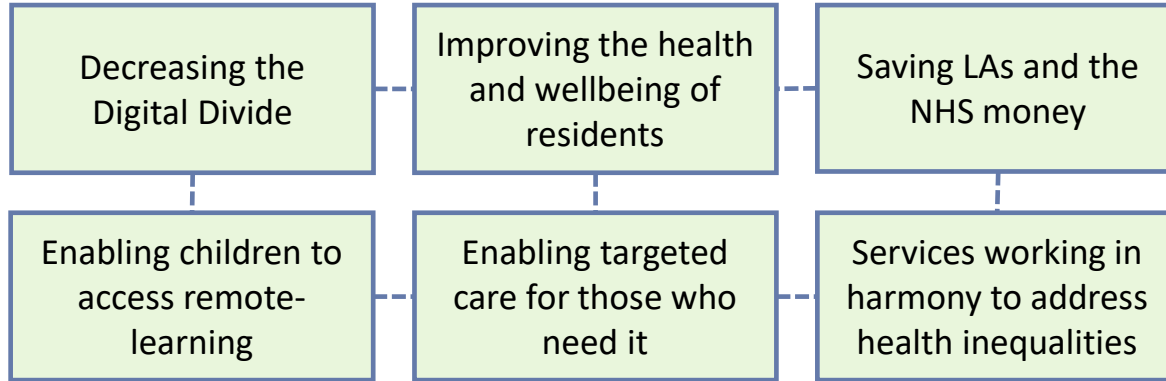
Haptic Hug
Haptic shirt to allow care home residents to receive remote hugs from family, reducing isolation and loneliness in care homes
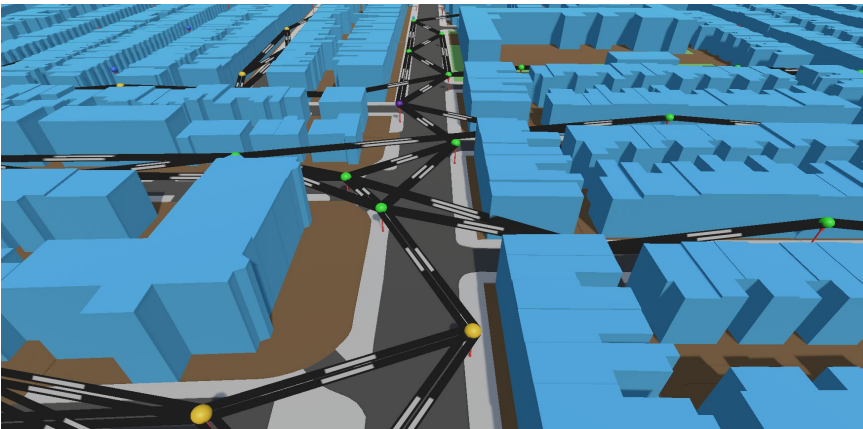
Liverpool 5G Create: Connecting Health and Social Care

Outcomes

Decreasing the Digital Divide	Improving the health and wellbeing of residents	Saving LAs and the NHS money
Enabling children to access remote-learning	Enabling targeted care for those who need it	Services working in harmony to address health inequalities

"This is a great opportunity to develop the British technology that can change people's lives by enabling affordable connectivity and reducing digital poverty"

Professor Joe Spencer
University of Liverpool & Project Lead

Benefits

"This is a significant and positive step towards the UK's ambition of becoming a global leader in 5G technology"

Henry Nurser
Chief Business Development Officer at Blu Wireless

Creation of blueprint other municipalities can use	A landmark project for British technology	Using world-leading 5G technology
Supporting deployment of private networks across the UK	Providing Neutral Host Services	Facilitating a Smart City, including smart housing

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