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Spotlight On …

5GIR – North-East Innovation Region

North East Combined Authority

SUNDERLAND oursmartcity

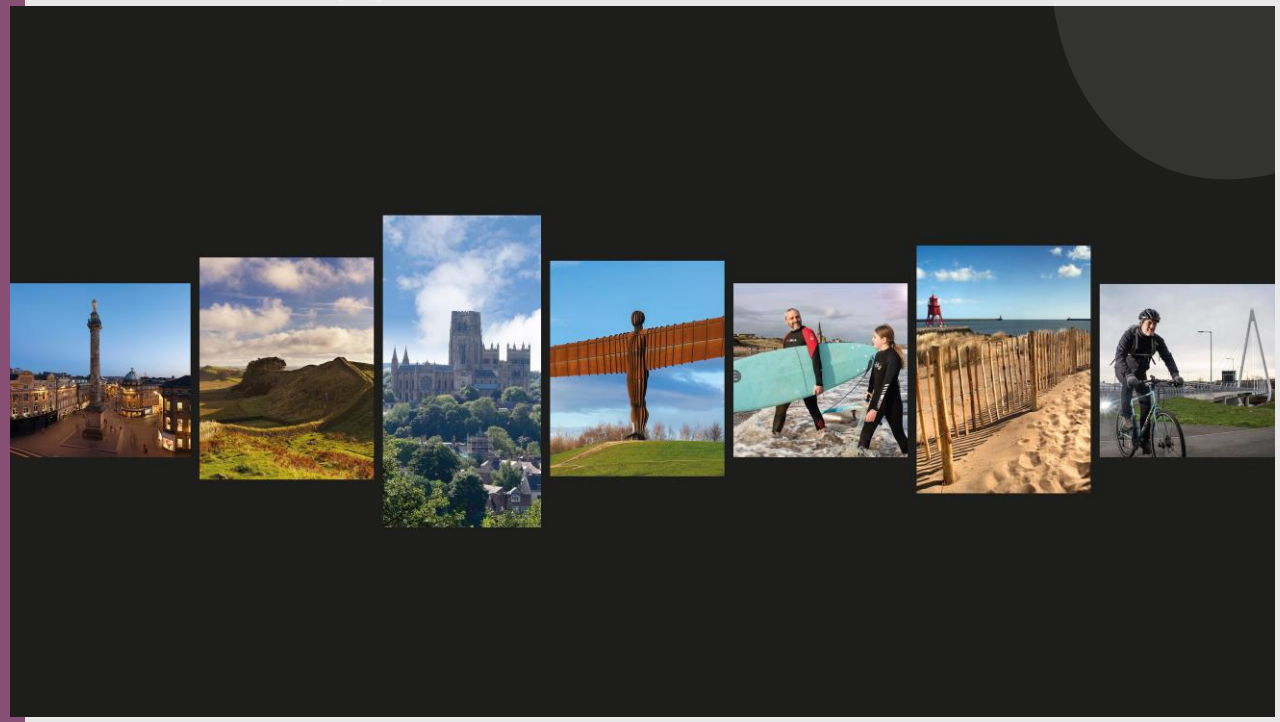
North East Combined Authority 5G Innovation Regions

North East Combined Authority

Overview

Sunderland's 5GIR bid was born out of a New North East combined Authority.

Seven North East local authorities (LA7) came together to form a Mayoral Combined Authority (North East Combined Authority in 2024 who are supporting 5G and advanced wireless connectivity as a key component of the regional digital strategy to build on the key strengths of the region.



Our 4 Regional 5G Projects

Smart Port : 5G-enabled port operations to improve port competitiveness and safety and reduce environmental impact.

Connected Intelligent Transport Systems: to improve road transport efficiency in our cities and between strategically important industrial locations (such as Nissan and the Port of Tyne)

AgriTech : Advanced wireless sensor technology on farms to drive automation, increase efficiency, and improve environmental sustainability of farming using real data collected from on-farm crop, soil, livestock and environmental sensors

Creative Industries : 5G-Enabled event production and 360º live broadcasting to keep our flourishing creative sector at the forefront of innovations, and as an attractor of tourism and inward investment.

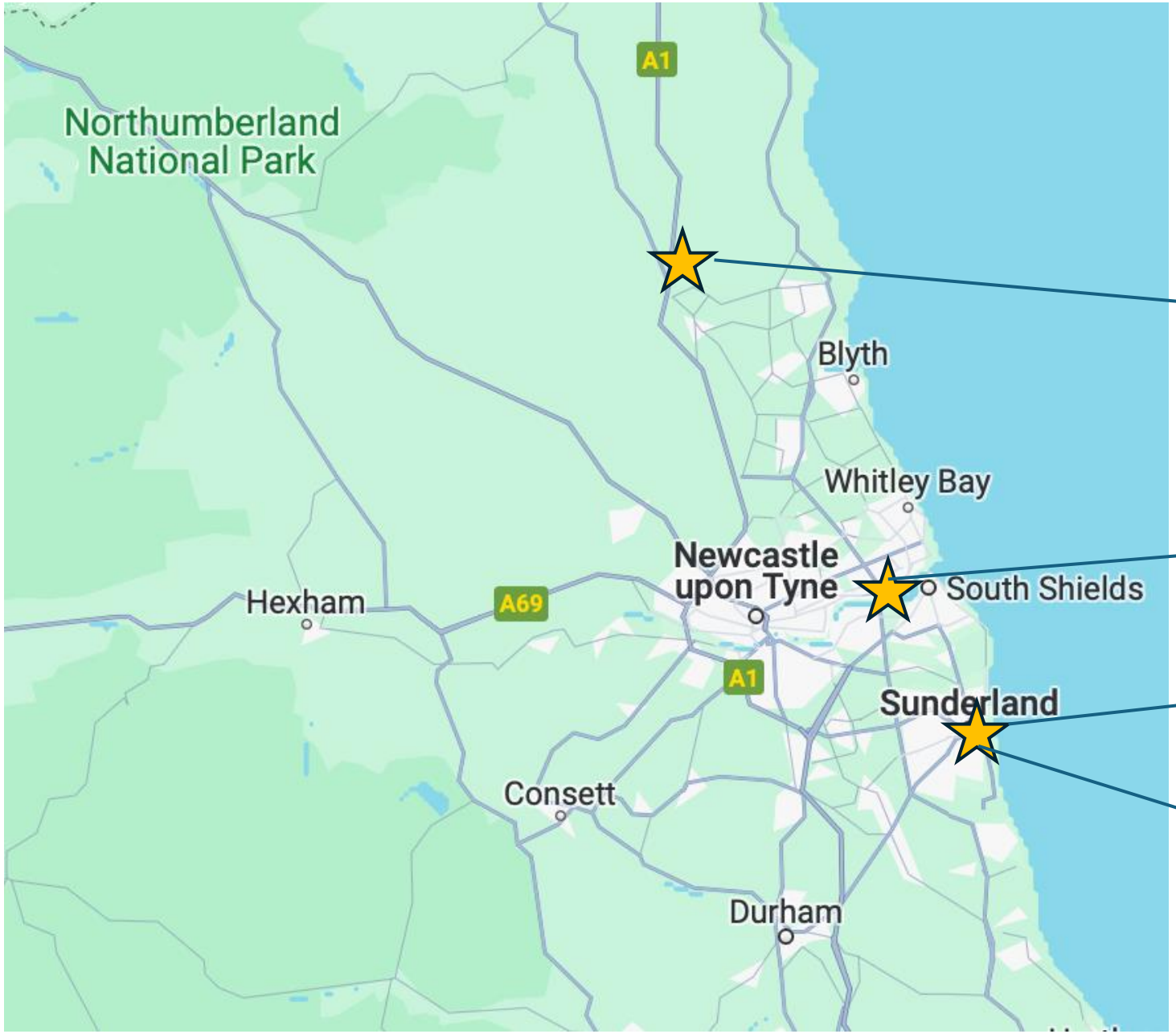
Our Rationale

- Contribute to establishing the North East as a national region of excellence for terrestrial and non-terrestrial 5G use-case development and adoption.

- Accelerate the economic, social and wellbeing impact of advanced digital connectivity

- Facilitate rapid adoption and scale-up across key sectors

Locations



AgriTech
Nafferton and
Cockle Farm

Smart Port
Port of Tyne

Creative Industries
Keel Square

C-ITS
A183

Cooperative Intelligent Transport System

Sunderland Council, UTMC (NC council) and Newcastle university

Key Objectives

Feasibility of Green light prioritisation on

- A183 transport corridor
- logistical route from Nissan to the Port of Tyne.

- ✓ Providing Research into IT and GLP
- ✓ Proving a successful model
- ✓ Maximise efficiency
- ✓ Reduce environmental measures
- ✓ Improve service

Solution

Devices on public buses along ITS routes will collect data using 5G network

Data collection will study

- Stakeholder engagement
- Punctuality/Reliability
- Disruption to other category vehicles
- Service frequency
- Safety reliability
- Environment metrics
- Latency of 4G and 5G network usage

Creative Industries

Sunderland Council, Boldyn Networks and Proto (Gateshead)

Key Objectives

The installation of a 3-sided transparent LED surface in the city centre

- ✓ Showcase 360° live broadcasting technology to large audiences
- ✓ Generate tourism for the city
- ✓ Support city-wide plans
- ✓ 5G-controlled lighting extravaganza,
- ✓ linking communities
- ✓ public interaction
- ✓ Animated content

Solution

1. 5G Dual sim capability
2. Engage sectors to bring communities together
3. 5G broadcast solution for events ensuring a long-term legacy.

Smart Port

(Port of Tyne and South Tyneside Council)

Key Objectives

1. Road condition monitoring
2. Asset tracking and environmental monitoring
3. PPE detection over CCTV

Aim

- ✓ Reduce time
- ✓ Improve Reliability
- ✓ Improve Safety
- ✓ Improve road conditions
- ✓ Reduce environmental emissions

Solution

Road Condition Monitoring
5 Port of Tyne vehicles will have a 5G smart devices to enable continual scanning of the roads.

Asset tracking and environmental monitoring
The 5G network will enable the tracking of vehicles and the environment (NitricOxide, Nitrogen Dioxide, Carbon Monoxide).

Adjustments to vehicles and driver behaviour leading to improved worker safety and environmental benefits.

PPE detection over CCTV
5G network coverage used to identify appropriate usage of PPE across the port.
Monitoring to improve standards and aim to reduce the number of injuries sustained.

AgriTech

Newcastle University and NECA

Key Objectives

Installation of Soil Sensors and methane sensors on 2 farm sites aims to:

- ✓ Collect real crop, soil and livestock data
- ✓ Drive automation
- ✓ Boast efficiency
- ✓ Enhance environmental sustainability
- ✓ Improve decision making from predictive analysis of data
- ✓ Demonstrate evidence
- ✓ Improve profits through transformative farming solutions

Solution

Soil Sensors at Cockle Park

1. Soil probes used to measure soil health, nutrient use and availability
2. Assessment of soil amendments, inputs (including fertiliser and pesticides) on soil health
3. Create a localised soil heat map showing soil changes through the year/growing season, accessible via an App

Methane sensors at Nafferton

1. Three data collections into a single cloud-based system to enhance the dairy farm operations.
2. Monitor changes to outputs by tracking variables introduced in the management of livestock. E.g. alternative feeding regimes, on methane production and milk output.

Status

AgriTech • LoRoWAN Network in place at both sites • Baselining underway • Live collecting of data • Starting to showcase at events • Innovation workstream for mainstreaming with digital catapult and AgriTech Centre	**Creative** • Design complete and groundworks assessed • Hardware has arrived • Content production and technical integration underway
Smart Port • Design complete • Testing in progress • Network extension live in November	**CITS** • Hardware order placed • Baseline assessments underway • Installation due Oct • Live roll out on buses in December

Key Insights

Regional

a) Regional strengths through Involvement of Catapults: satellites, offshore renewable, helix, proto

b) Regional engagement of organisations through alignment to regional digital (programme) strategy

c) Regional collaboration: 5G sectoral links have enabled us reach across other projects within the region (e.g. SAMS & C-ITS; SONET & 5GIR Creative)

d) Economic reach: 7 collaborating local authorities provide strength in different sectors to maximise opportunities for inward investment and innovation potential; we are building on existing networks and reach of each authority into regional businesses in a way that would not be possible in just one area.

Sectoral

a) By reaching out to 5GIR sectoral counterparts in other regions, we have benefitted through exchange of information and sharing learning (eg Port of Tyne/Port of Belfast, sensors in hoppers)

b) AgriTech – testing network deployment and commercialisation of innovation for a mainstream agricultural environment; Agricultural sector involvement through events and dissemination planned for Autumn 2024 onwards

c) Educational engagement – Academics and students at Newcastle University able to study real-world AgriTech innovation and research "*as it happens*"

d) C-ITS green light prioritisation has potential to significantly improve regional/national public transport and import/export logistics between Nissan and Port of Tyne