SMART CITIES

North East England has a long history of innovation, from Joseph Swan's arc lighting on Mosley Street Newcastle upon Tyne, in 1880 to the 'smartest' street in the UK in 2018. Our two major cities – Newcastle and Sunderland – are leading the way in smart city technology, meaning the North East is well placed to offer unique investment opportunities.

North East England is embracing technology, data and new ways of working to deliver better services and improve people's lives – across public services, through world leading academic research and a vibrant tech sector.

The region's thriving tech sector is a key reason why North East England is leading the way in Smart City advancements. FTSE 100 company Sage PLC, gaming giant tombola, Ubisoft's largest UK Games Studio and the new BBC Tech Hub are all located here.

Our region is forward-thinking, and we embrace new technologies and digital transformation that will improve the lives of our residents and make businesses more productive.

Businesses locating here create opportunities to collaborate with innovative companies across many sectors, link with world-leading academia and test the latest smart technologies.

invest | north east england

Why North East England?

Innovative companies with technology solutions that support smart city integration will thrive in North East England.

Digital and technology, green energy, manufacturing, health and life sciences companies who locate to the region can all take advantage of smart city technology. They can:

- **Connect with an existing supply chain and consortia for smart city solutions**
- **Tap into the region's talent and skills network** – with a wealth of talented people with digital expertise and the next generation being primed in future skills through education and career programmes
- **Collaborate with academia and education expertise** – for example, Newcastle University's Centre for Doctoral Training Centre has researchers who are tackling some of society's biggest challenges. They offer PhD programmes in cloud computing for big data, digital civics, and renewable energy
- **Access to academic expertise and national innovation centres** – existing research programmes led by national innovation centres and R&D assets means North East England is a test bed for smart city technology
- **Opportunities in capital and infrastructure projects** – collaborating with businesses, academia and institutions in North East England means companies can take advantage of new capital and infrastructure projects
- **The UK Green Revolution** – North East England is leading the way in electrification, net zero research and manufacturing. Technology advancements underpin this sector and companies located in the region can benefit from the vast amount of new and emerging opportunities.
- **Connect to new public and private opportunities** – through NUCLEUS and the Sunderland Accelerator Programme, find your latest North East project through our innovative online platforms and programmes
- **Soft landing opportunities** – the region has a number of soft landing options for companies looking to locate here.

Newcastle upon Tyne

Newcastle upon Tyne has a proud history of exporting ideas and inventions that have shaped the future of cities. Today, Newcastle is a test bed for new technologies and smart services. The city is trying and testing new smart solutions, which are being shared to solve problems around the world.

A collaborative approach to sharing ideas and inventions across the globe is supporting healthier and smarter populations.

NCLEUS is a product of Newcastle City Council's pioneering Innovation Partnership with Urban Foresight. NCLEUS connects investors to the projects, people and businesses that are leading Newcastle's transformation.

Key Assets

Newcastle Helix is a flagship innovation quarter that brings together academia, the public sector, communities and business. Its vibrant ecosystem is helping people to live better lives, bringing together a community of industry leaders, businesses and top researchers into an internationally renowned innovation cluster.

The site is being transformed into an exemplar of urban sustainability, a testbed for innovative technologies and solutions that will tackle some of the most pressing challenges facing cities around the world.

Newcastle is also home to four National Innovation Centres on Data, Ageing, Rural Enterprise and Energy Systems Integration. These National Innovation Centres all work with businesses, academia and the public sector to help improve the lives of the world's population and global businesses.

Newcastle University's Urban Observatory maintains the largest set of open source real time urban data in the UK, with more than 700 million data points recorded. It is helping to shape the city, and businesses are using this data to develop new ideas and make evidence-based decisions.

A global exemplar for healthy ageing, the Campus for Ageing and Vitality is a multi-million-pound development that will incorporate Newcastle University's world-renowned research capabilities in ageing research to create a a whole system testbed, from cell to community, enabling people to live longer, healthier lives. Working in partnership with Newcastle upon Tyne Hospitals NHS Foundation Trust and Newcastle City Council, it wil establish a site for residential and commercial facilities for the development of new devices, products and medications in a real world setting.

Well Connected

CityFibre's £50 million full-fibre installation project has placed Newcastle in the top tier of the UK cities for connectivity.

Newcastle is the chosen UK location for a secure high capacity fibre network routeing to mainland Europe and the USA. The North Atlantic Loop involves transatlantic cable routes from the USA to Northern Europe through the UK, via the Stellium DataCenter. Located at Cobalt Park, North Tyneside the 25 mile high capacity fibre network will give the region the UK's best connections to businesses in America and Europe.

Building a new future

Northumbria University is a pioneer in intelligent building. Their BIM Academy is internationally recognised centre of excellence in BIM, providing consultancy, research, software development, training and education.

Also located at Northumbria University is The International Centre for Connected Construction (IC3). IC3 is a centre of excellence driven by a vibrant cluster of innovative North East organisations to create positive transformation in the global construction sector through innovation. IC3 works with academia and industry to leverage digital and connected construction. Working collaboratively, IC3's network is delivering practical solutions to real challenges and accelerating their route to market to create effective, sustainable, safe buildings and infrastructure.

NBS is an integrated global platform for everyone involved in the design, supply and construction of the built environment. The UK Headquarters of NBS, located in Newcastle, employs a wealth of skilled workers with digital construction expertise.

The NBS National BIM Library is the fastest-growing building information modelling (BIM) library in the UK and the only BIM object library which links directly to NBS specification software and to the NBS BIM Toolkit. The information is free-to-use and offers an extensive collection of both generic and manufacturer BIM objects ranging from building fabric systems to mechanical and electrical objects.

Sunderland city

Sunderland is a city where residents, business leaders and organisations feel proud, passionate and inspired – Sunderland's smart city vision is one of an engaged collective of people, places and opportunities.

Sunderland aims to be a leading UK smart city and a global centre of excellence, shaping a smarter future and building a 'network of networks' to facilitate a range of technologies that will serve the broadest possible set of social and economic needs.

Sunderland's smart City Plan provides the insight and blueprint to effect change over the next ten years and beyond. It is built around three interdependent themes:

- a dynamic smart city
- a healthy smart city
- a vibrant smart city

Aligned to these three core elements, the city will support access to education, employment and economic prosperity for Sunderland and residents.

CityFibre - Sunderland will benefit from next generation full fibre broadband as part of CityFibre's national fibre-to-the-premises (FTTP) roll-out. The project will see a private investment from CityFibre, bringing transformational gigabit-speed internet connectivity within reach of nearly every home and business in the city.

A unique partnership

A unique public-private partnership – between Sunderland City Council and BAI Communications – is combining public assets with private sector engineering and digital solution development expertise. The partnership was set up to provide the investment to build networks at scale, to create a more enhanced smart city infrastructure. Where other cities have focused on one or two verticals, Sunderland has widened the scope with future needs and challenges in mind to create a holistic, all-encompassing smart city for greater benefit, now and in the future.

This has allowed the city the breadth of reach to maximise benefits to communities across Sunderland, leveraging data-driven insights and transforming all aspects of education, health and social care, as well as manufacturing capabilities and business competitiveness.

IoT and 5G Accelerator Programme

In 2022, Sunderland launched a IoT and 5G Accelerator Programme, which saw the first cohort of 10 business start-ups complete a six week programme (delivered by Sunderland City Council's in partnership with BAI Communications and Sunderland Software City). In total the start-ups have been awarded up to £100k and several are in the process of locating in Sunderland to take advantage of further opportunities.

The start-ups benefited from the expertise of Sunderland's world leading tech partners, innovative product development support, invaluable peer-to-peer support, and up to £10K each in grant funding.

National Innovation Centres

Four national innovation centres are located in North East England. The region beat off strong competition from other areas in their bid to secure these national assets. The North East's strong skills base, collaborative eco-system and existing digital base are key reasons why these centres are housed here.

Working with national innovation centres brings a wealth of opportunity to businesses. These include collaborating with global companies, gaining experience from world-leading academic researchers and accessing new customer bases.

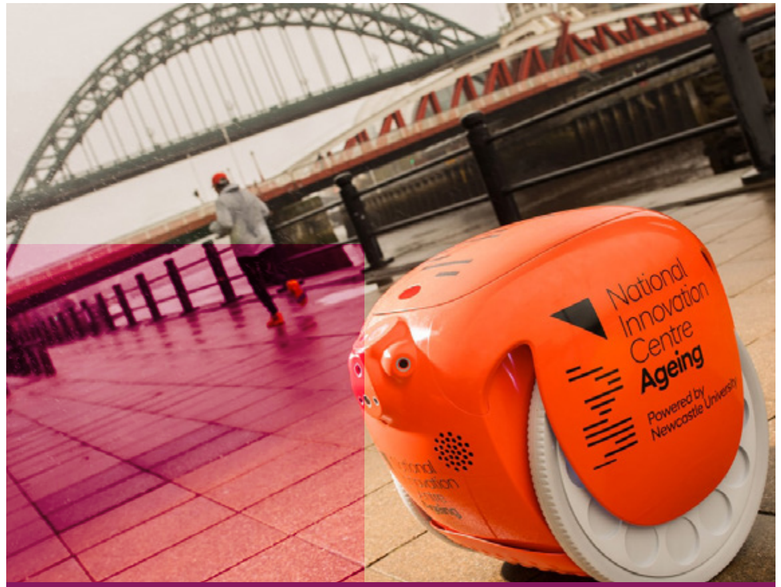
The National Innovation Centre for Data (NICD)

NICD helps businesses learn new data skills to become more productive. Its experienced team can help businesses gain insight from , enabling growth and productivity by using innovation data.

National Innovation for Ageing (NICA)

The NICA works with businesses to harness the opportunities related to the longevity economy through human experience, ethics, data, collaboration and emerging technologies. NICA helps organisations to tackle longevity economy opportunities though evidence synthesis, deep market and trend analysis, horizon scanning, and consumer insights.

Newcastle Helix



National Innovation for Ageing (NICA) – cargo-carrying robot

National Innovation Centre for Rural Enterprise (NICRE)

The NICRE works with businesses and academia to unlock the potential of rural businesses and communities. By collaborating with NICRE businesses and communities, organisations can develop practical solutions and develop new approaches to rural innovation that can be scaled up to solve problems and realise new opportunities.

The National Centre for Energy Systems Integration (CESI)

The centre investigates the challenges of energy supply, sustainability and affordability. CESI brings together energy experts from around the world to help unravel the energy network and understand future supply and demand and draws upon the expertise of leading academics from the universities of: Newcastle, Durham Heriot-Watt, Sussex, Edinburgh and Bristol.

Current programmes in North East England

Solar-powered digital bus information

Go North East, working in partnership with Newcastle City Council and UK supplier McKenna Brothers, has installed the first of three state of the art 'e ink' and live talking bus stop information displays in the city. The solar-powered screens provide both full timetable and live time information on a giant Kindle type screen that is GPS linked to the operator's central computer system.

IoT showcase creates "Britain's smartest street"

Mosley Street in Newcastle city centre – which was the first place in the UK to pioneer electric lighting – was connected with a range of digital sensors to collect relevant data. It aimed to bring together data from a range of sources to help the city solve parking problems, ease congestion, identify and reduce sources of pollution and eliminate unnecessary street lighting. The showcase provided valuable insights on different applications of IoT sensors and how data improve day-to-day living for the people of Newcastle. It also showed how AI and the work of data scientists can help predict and take action before any damage or incidents happen.

Cargo carrying robots to promote a healthy lifestyle

The UK's National Innovation Centre for Ageing (NICA) is the first in the world to evaluate "gita robots", a cargo-carrying robot which follows people around. Researchers are hoping to assess the impact of the robot helpers on the mobility of older adults. The gita robot pairs with a person, freeing their hands and following them as they walk throughout their day. The robot can carry up to 18 kg of cargo, moving up to six miles per hour for up to four hours of continuous use. It communicates with the user through sound, light and touch, and with 360 vision, gita safely follows with sensors that see its user and its environment.

Smart sensors manage public bins and waste collection

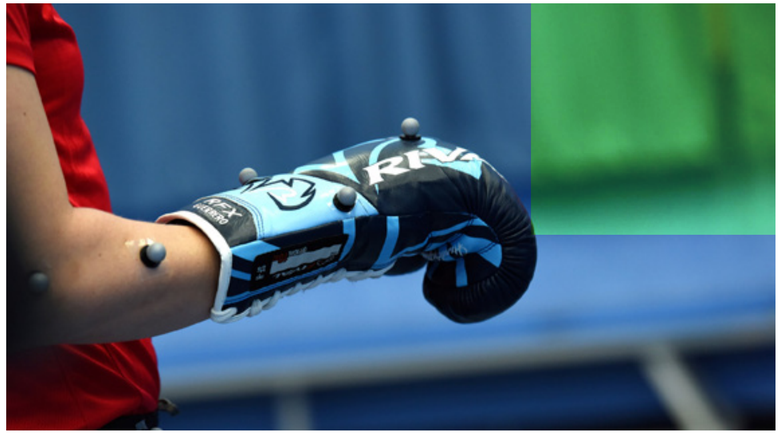
Traditional waste practices dictated that the city collect every bin, regardless of fill levels. This system was inefficient, not based on need and relied heavily on the use of large bin lorries driving around the city. In partnership with Newcastle City Council (NCC), Cisco, Newcastle University, Connexin, Mayflower and Quantela, Enevo installed 1,200 of its patented sensors to monitor fill levels and collections of public bins in Newcastle. Advanced analytics software evaluated the sensors' data and predicted waste behaviour to create custom collection schedules. In Sunderland, solar-powered 'smart compactor bins' were successfully piloted in 2022. The smart technology utilises small sensors and cellular transmission to communicate usage and other useful data. These devices can also be retrofitted into a whole range of equipment to upgrade existing commercial or public bins across the city.

Strengthening data analyst skills to optimise battery systems

Based on Newcastle Helix, Connected Energy's second-life battery energy storage specialists have systems across both the UK and Europe. They repurpose second-life EV batteries to applications such as energy storage. Working with National Innovation Centre for Data, Connected Energy embedded new data science skills into their organisation, helping to deliver more efficient battery storage for their customers.

Ultrafast free public WiFi

Sunderland is already rolling out a huge expansion of public WiFi to tackle digital inclusion – giving residents without broadband safe spaces to access the internet for free, whilst enabling transformational experiences for visitors, supporting provision for businesses and boosting the local economy.



Provision of LoRaWAN/IOT connectivit

Sunderland is facilitating the transmission of data across the Sunderland networked sensor landscape to measure and improve city performance, support assistive living technologies, inform traffic/flood management, measure air quality, underpin city centre and building energy management, facilitate smart waste management and more.

A private 5G small cell network

Sunderland has created a private 5G network in the city that can help businesses to test and adapt new services and tools using 5G connectivity. This enables a cost-effective way for a broad range of organisations to adopt cutting-edge 5G connectivity to boost productivity and improve services.

Integrated Smart City Platform

Sunderland has launched a new Integrated Smart City Platform (ISCP), provided by Connexin. Based on the ConnexinOS platform, it will bring together data sets from Adult Social Care, Council Tax, Anti-Social Behaviour, Environment Incidents & Health and Child Services from the council and will include third party data. This information can be aggregated and analysed to inform a coordinated multi-agency responses at the 'earliest point.'

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