



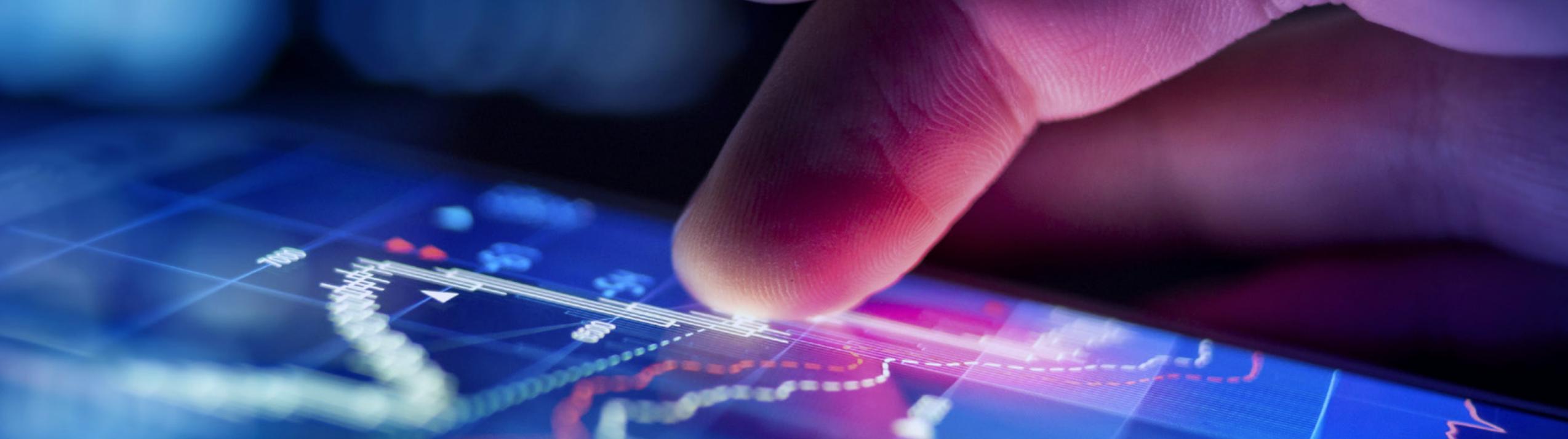
O₂
business

Superfast 5G allows new technologies to transform and redefine business

Northumbrian Water trials
harness the power of O₂'s
next-generation 5G network.

NORTHUMBRIAN
WATER *living water*





5G technology is reinventing connectivity

Groundbreaking innovations are being made possible by the new capabilities of O₂'s high-speed 5G network.

“ Innovation is key to how we can be more efficient and improve our services. The opportunity to be part of 5G trials with O₂ and deliver new capabilities for the benefit of our customers was too big an opportunity to pass. ”

Martin Jackson, Head of Strategy and Architecture, Northumbrian Water Group



Capability

- O₂ 5G network



Results

- High-capacity connectivity for collaboration and business operations
- Ultra-low latency to potentially enable real-time communication between IoT devices
- Enabling immersive and enhanced customer experiences
- 5G enables 10-20 times faster download speeds than 4G, so high-bandwidth activities are quicker and more efficient
- 5G will allow businesses to capture and share data from a large number of connected devices in real time on a massive scale, giving valuable insights to make quick decisions and take proactive action



Northumbrian Water is a forward-thinking utility company looking to disrupt the market with innovative new ideas and technologies. They worked with us to find ways our 5G network could enable four key pillars of innovation for trial.

Employee safeguarding

Staff health and wellbeing analysis: AI-enabled cameras in regional control centres were employed to study shift patterns and understand trends in behaviour to monitor stress, fatigue and ergonomics. This system is in no way intended to spy on workers, but instead offers generalised insights to optimise shift working, minimise stress and improve health and wellbeing. This might include identifying the need to bend when a screen should be at eye level, for instance, as well as placement of equipment and specific triggers for stress and fatigue.

Remote infrastructure monitoring: A drone was used to monitor a reservoir to inspect air pipes under the water and the colour of the water itself. Used to aerate the water, potential damage to the essential pipes can't be seen from the shoreline, and previously workers were required to use a boat to check on them. Similarly, algae blooms, shown as a discolouration of water, were difficult to detect from the shore.

The drone saves time and reduces risk. AI technology can be trained to look out for specific conditions or anomalies and take appropriate action, such as triggering a physical inspection, further reducing the need for human intervention.

Operational improvement

In-home water monitoring: IoT (Internet of Things) sensors such as the 'Barnacle' track water quality in customers' homes, giving Northumbrian Water valuable insights to make decisions fast and take proactive action. The device sits in the toilet cistern and currently requires wifi connection in the home. 5G will allow data to be collected from a large number of devices, securely and in real-time over a massive scale – and without the customer needing to connect to wifi.

Transferring high data volumes for GIS management: Northumbrian Water's GIS (Geographic Information System) database is a hefty 24GB in size – impossible to transmit over a standard 4G network. Field workers rely on this information for a large majority of work which they access via Tough Pad tablets. Updates used to be done manually at head office every 2-3 months, leading to delays in the latest information. With 5G, updates can be made and accessed direct from technicians over the air, saving them the trip to the nearest office.

Empowering employees

AR mapping: Augmented reality headsets allow technicians to 'see' the network of pipes, cables and critical valves beneath their feet when they're in the field. Collaboration between water, gas, TV, telecoms and electric companies has helped create a single map of underground infrastructures. Technicians can visualise the infrastructure accurately using AR, via a headset or mobile device. This removes the need for guesswork and trial and error using paper maps. The high-definition maps are stored and delivered seamlessly in real time, which wouldn't be possible using 4G, so technicians always see the most up-to-date information.

AR remote expert: A high-speed audio-visual link with a dedicated eyepiece and headphones connects technicians in the field to experts who can assist with the details of specific jobs. So highly skilled operatives can optimise their time by advising remotely, using augmented reality for greater accuracy in description and real-time demonstration using graphics and annotation, rather than having to physically go to each job where their expertise is required. This allows teams to resolve faults quicker and more effectively.

VR training: Using a VR headset and VR training software, engineers can simulate working environments to deliver immersive, realistic training for complex, high-risk situations such as locking off electrical valves. By immersing users into a virtual world they get a full 360-degree view of the environment they'd be working in and can interact with the equipment around them. This type of practical training helps users to better retain information and ensures they have the right skills to work independently and safely in the field.

Improvement in customer experience

All our 5G innovations lead to improvements in customer service, from improved water quality to faster resolution of issues and ultimately reducing the need to pass maintenance expenses to customers via their water bills.

“ 5G technology is reinventing connectivity and this innovation is key to how we can differentiate ourselves and improve our services to customers. I think it will be one of the most disruptive factors in technology over the next decade. ”

Martin Jackson, Head of Strategy and Architecture, Northumbrian Water Group



Reduced costs

Easy access to more accurate, up-to-date information reduces the possibility of errors and allows staff to work more efficiently, reducing workloads and lowering costs.

Improved use of resources

Expert staff can assist field technicians more efficiently using high-definition point-of-view cameras with AR maps and illustrations. They can also use drones for real-time inspection purposes.

Read more customer stories at:
www.o2.co.uk/enterprise/insights

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“ 5G offers a number of benefits, including improved operational efficiency, safeguarding and empowerment of staff and the ability to offer more personalised experiences – overall, delivering a better customer experience. **”**

Elizabeth Ponsford, Senior Product Innovation Manager, O₂

Better services to customers

Improved working conditions and smarter tools mean that Northumbrian Water can solve problems faster and ultimately deliver better services to its customers.

New technologies made possible

5G enables real-time access to Northumbrian Water's large GIS database with high-definition augmented reality information available wherever and whenever it's needed. AI and machine learning help to automate processes and increase efficiencies.