TRIALLING THE TANTALISING POTENTIAL OF 5G

Trevor Anderson, Director of Infrastructure and Business Transformation, Belfast Harbour

While historically ports may not have been renowned for their early adoption of technology, today the opposite is true. Even a cursory look at any modern port's strategic plan will quickly reveal terms such as Smart Port and digital transformation – Belfast Harbour is no exception.

Belfast Harbour's long-term strategy, 'A Vision to 2035: A Port for Everyone', is to be the region's gateway for trade and tradeable services. We also want to develop an iconic waterfront for Belfast that will be a stand-out international destination. To achieve this we've identified five themes, including the creation of Smart Port, to guide our development.

Technology, particularly the opportunities which 5G provides, is especially important to Belfast Harbour because of the sheer scale of our geographic area, the diversity of our customers' businesses and our importance as an economic enabler for the wider Northern Ireland economy.

We are responsible for managing 2,000 acres of land and 1,000 acres of sea accounting for 20% of Belfast's physical footprint. The port is Northern Ireland's principal gateway to the outside world, handling 70% of the region's seaborne trade (24 million tonnes) and 1.6 million ferry and cruise passengers annually. For port operations alone, 5G represents a tantalising opportunity to achieve a step change in our efficiency and the range of services we offer customers.

Like many ports we also manage a significant real estate business. In our case, that includes 760 tenants with 27,000 employees in a diverse range of sectors from heavy engineering to ICT and film production. We're home to large mixed-use regeneration projects and major tourist attractions with five million visitors annually. There's also a science park, a further education college, residential apartments and an airport. Making the most of technology, therefore, is a core business function.

INFORMATION INTEGRATOR

Traditionally, improvements in response to external challenges have usually focused on process improvements within the company or perhaps B2B commerce between the port and individual customers. New digital technologies, however, are creating the opportunity for much wider sharing of data across the entire port community.

From a marine perspective, our community includes multiple service providers - cargo owners, hauliers, stevedores, shipping agents, freight forwarders and shipping lines. We interact with each other to ensure the smooth flow of cargo, but we also dovetail operations alongside Government and its agencies in areas such as customs, immigration and port health.

The key to improving interconnected activity is information exchange and in our role as Port Authority and landlord we can be the 'information integrator' which provides the necessary infrastructure.

Last year we started the process of fully realising the benefits of 5G and other digital technologies such as the Internet of Things (IoT) with the roll-out of BT's 5G network, one of only six areas in the UK. We are now trialling the combination of virtual elements with a cloud infrastruc-

ture to form the basis of a fully connected, secure and flexible system. With 5G's low latency and high speeds, this enables the use of innovations like Virtual Reality (VR) and Augmented Reality (AR) to fuel greater efficiency.

5G TRIALS

One trial is exploring the use of VR and AR to improve health and safety training by introducing immersive safety experiences that enhance the existing practical programmes our team go through.

The access to wearable tech which integrates AR into visual aids like glasses is another area of interest. Engineers can now remotely see what a technician sees and they can annotate advice on his glasses. This is a real game-changer and we are working closely with BT to make it a reality.

5G and AR are also enabling field workers to follow step-by-step instructions from two-way high-definition video while they perform inspections and repairs. If they need to speak directly to an expert, they can use voice activation to get real-time assistance. This has huge potential for helping us to reduce downtime and move towards a new way of working.

All of these plans fit into Belfast Harbour's broader ambition of creating a digital twin, which we hope to develop soon. This will provide engineers, health and safety, maintenance and operations staff access to layers of virtual building and infrastructure information via mobile devices when they are on the move.

BT is also helping us adapt IoT technology to monitor our sewage pumping stations. These are checked monthly, but potentially costly problems can develop between checks. Using IoT in the form of relatively simple monitors our technicians can be warned in advance of any issues.

Other projects involve working closely with smart ports such as Rotterdam to develop innovations, including greater automation and a new unified system to coordinate cargo and shipping communications. This will create a more connected port community system, using technology to make information more accessible while increasing efficiency and productivity.

TRANSFORMATIVE TECH

In truth we are only beginning to scratch the surface of the potential applications of this new technology – and that's just for port operations. Our expectations of what can be delivered to the wider Belfast Harbour Estate and those who live, work and visit here, are just as high.

One of our ambitions is to develop an iconic waterfront for Belfast which accelerates the ongoing rejuvenation of the area. We're already home to real estate developments such at Titanic Quarter and City Quays, and tourist attractions such as the internationally acclaimed Titanic Belfast. The port also welcomes 300,000 cruise ship visitors annually and is one of the most popular destinations in the British Isles. For the switched-on generation which visits, 5G tech will quickly become expected as a 'must have' for any modern city.

The applications are myriad across all aspects of our business, be that autonomous vehicles, driving the decarbonisation agenda, providing remote pilotage assistance or even digitally enhancing personal experiences in our public realm spaces. Nobody is quite sure yet where the technology will lead, but it has the potential to transform utterly everything that we do.

ABOUT THE AUTHOR

Trevor Anderson is Belfast Harbour's Director of Infrastructure and Business Transformation with responsibility for project management, Belfast harbour Police and the delivery of BHC's 2035 strategy. Previously he was the Port's Director of Operations for 13 years and prior to that he spent 22 years with Bombardier in a number of roles including Head of Enterprise Systems for Bombardier Aerospace Worldwide based in Montreal, Canada.

ABOUT THE ORGANIZATION

Belfast Harbour is Northern Ireland's leading gateway and economic hub, handling 70%-plus of the region's seaborne trade and 1.6 million ferry/cruise ship passengers annually.

Its 2,000-acre Harbour Estate accommodates 760 businesses in multiple sectors including marine logistics, heavy engineering, commercial/residential real estate, ICT, tourism, media and creative industries.