ASSOCIATED BRITISH PORTS BUILDS THE PORT OF THE FUTURE WITH PRIVATE 5G NETWORK

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VERIZON'S WORK WITH ABP SETS FOUNDATIONS FOR PORTS ACROSS NETHERLANDS AND GLOBALLY

The pressure on ports—and all links in the supply chain—is possibly higher than it's ever been. As a mixed-use port handling a huge volume of commercial, industrial and passenger traffic, the UK's Port of Southampton faced these challenges. Port operator Associated British Ports (ABP) knew its current ways of working and its use of public 4G connectivity wouldn't help it overcome future challenges. ABP needed to streamline processes, get a consistent view of operations, and enable new technology. In short, it was looking to move toward the faster, smarter decision-making we call Enterprise Intelligence. And it started with a private 5G solution.

OVERCOMING CONNECTIVITY CHALLENGES

The Port of Southampton covers hundreds of acres, including berths for cargo ships and a terminal for cruise ships. Across this vast area, there was only a little off-and-on public 4G coverage. This meant loss of data. One of Southampton's large uses is the import of automobiles. Stevedores drive new imports off the ships and into large parking decks for temporary storage. Ideally, staff used handheld devices to scan each car and track its arrival and parking location. But without consistent connectivity, staff had to log key pieces of information manually. That led to big inefficiencies, including valuable port real estate not being used optimally. ABP was facing another challenge as well. Ports around the world have been under increasing pressure to evolve their services and to overcome the issues facing the rest of the supply chain by becoming more efficient. Putting new technology to work would be the only way to become as agile and innovative as ABP knew it needed to be. It just needed a foundation to do that.

RIGHT
Port of Southampton

LEVERAGING A PRIVATE 5G NETWORK FOR STRATEGIC GOALS

Southampton plays a critical role in the UK economy, contributing £40 billion (approximately $50 billion) in British exports every year. This made it the ideal location to start the 5G journey. ABP saw the deployment of a Private 5G Network as a strategic opportunity that could provide operational improvements and the potential to offer new services to its customers.

With near real-time data collection capabilities, ABP wanted to share information from drones, cameras, sensors, and other devices. Near real-time data collection could also help power innovative predictive analysis technologies such as artificial

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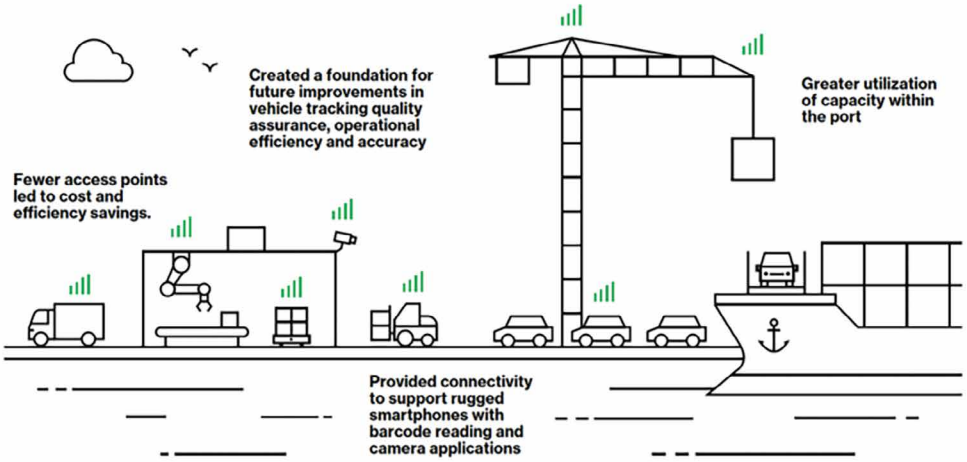


intelligence and machine learning that could pinpoint where goods were offloaded or delivered and enhance customer services.

ABP reached out to Verizon because of a longstanding strategic approach to connectivity and deep knowledge and experience with 5G networks. The right solution for ABP turned out to be Verizon's Private 5G Network. We added eight access points covering between 200 and 230 acres at the port.

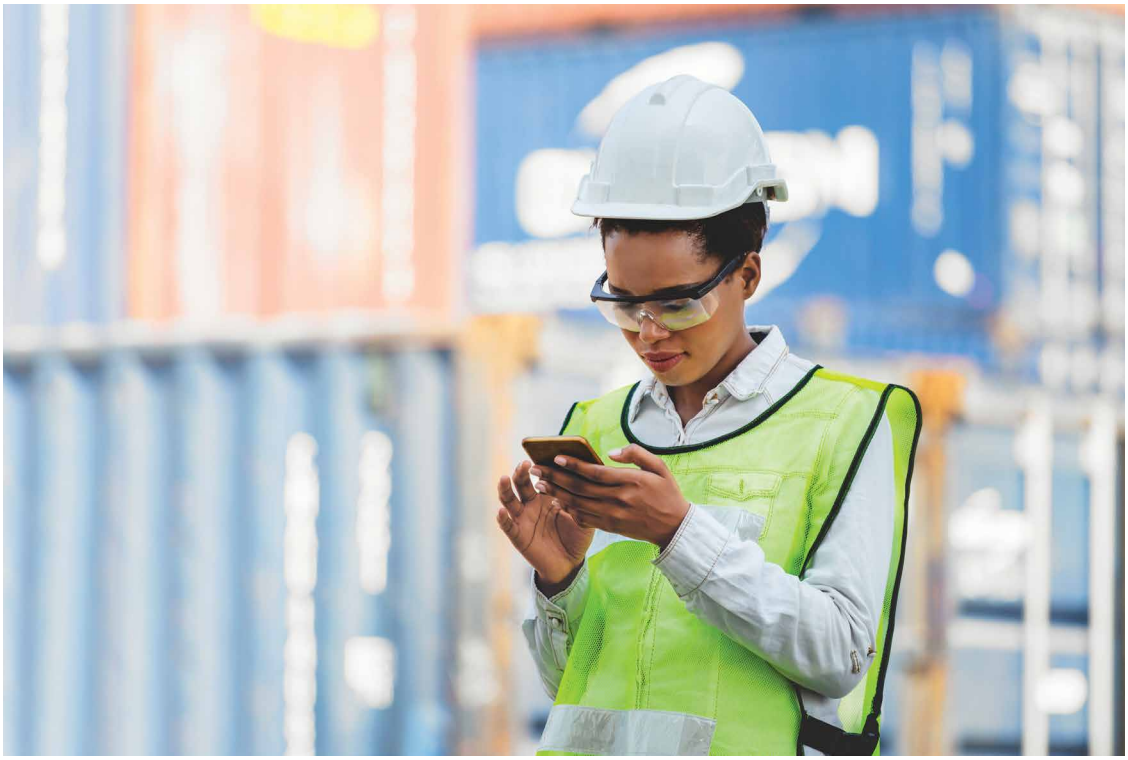
CONNECTIVITY WHERE IT'S NEEDED

The coverage provided by Verizon's Private 5G Network has allowed ABP to mitigate latency. The port authority has consolidated parts of its network and the way it gathers communications for employees and customers, which also enhances security.

The new network has enabled fast data exchange and near real-time analytics, allowing ABP to update customs with real-time information, whether it's loading or discharging a vehicle or releasing it to the end customer.

More efficient connectivity also has boosted morale—employees no longer fear drops in service that would force them to resort to writing operational notes on paper.

The benefit of the superior coverage provided by a Private 5G Network is that ABP can keep track of where every vehicle is, allowing the port authority to move cars



off ships, into parking and out to buyers far more efficiently.

Overall, the coverage provided by our Private 5G Network allows ABP:

- Greater utilisation of capacity within the port.
- Connectivity to support rugged smartphones with barcode reading and camera applications.
- To have a foundation for future improvements in vehicle tracking quality assurance, operational efficiency and accuracy.
- And fewer access points led to cost and efficiency savings.

A FOUNDATION FOR THE FUTURE

The advanced capabilities of a Private 5G Network, specifically its reliability, throughput, security and low latency, can help ports enable new technologies. One innovation ABP is potentially looking at in the future is using computer-vision cameras to capture raw video data and then use artificial intelligence applications to make recommendations. Computer vision could constantly view port storage areas and report on inventory that has been sitting too long, or let managers know where space is available.

Computer vision could also improve safety around the port. The port's service roads are not designed for pedestrians or cyclists, but that doesn't always stop people from using them. Computer vision could spot these instances and alert port staff, who could redirect pedestrians or cyclists away from dangerous freight traffic and heavy equipment.

A key aspect of testing computer vision using 5G is the ability to trial the cameras in different positions. This can be done more easily without reliance on a wired network.

TWO PORTS IN ONE

Consistent, port-wide connectivity can allow ABP to build a digital twin of the port in the future. This digital model could provide a virtual testing ground for new ideas—for example, developing autonomous shipping trials and enabling artificial intelligence and machine learning to help make decisions. That can remove much

"THE ADVANCED CAPABILITIES OF A PRIVATE 5G NETWORK, SPECIFICALLY ITS RELIABILITY, THROUGHPUT, SECURITY AND LOW LATENCY, CAN HELP PORTS ENABLE NEW TECHNOLOGIES."

“VERIZON’S PRIVATE 5G NETWORK GIVES ABP AND THE PORT OF SOUTHAMPTON MORE THAN JUST A PRIVATE 5G NETWORK. IT’S A FOUNDATION FOR FUTURE INNOVATION THAT CAN ENABLE BETTER INSIGHTS AND GREATER EFFICIENCY FAR INTO THE FUTURE.”

risk and allow for rapid testing of different configurations, making future improvements faster and less expensive.

Historically, it would have taken months or even years to deliver infrastructure to some of the further locations within the port, but now it can be done with new agility, accomplishing everything within a day.

MORE THAN A PRIVATE NETWORK

Verizon’s Private 5G Network gives ABP and the Port of Southampton more than just a private 5G network. It’s a foundation for future innovation that can enable better insights and greater efficiency far into the future. That is Enterprise Intelligence.

As a business, we plan to expand our services and improve our technology for container terminals through the process of helping Verizon customers to identify the appropriate 5G-enabled end devices or ways to integrate existing devices into the 5G network. Encouraging customers to invest in edge capabilities, for real-time or near real-time applications, and providing edge applications that will help container terminals to address critical issues at a pace that suits the needs of the industry, is also part of Verizon’s terminal and ports strategy of the future.

Terminals looking to implement our Verizon technology should develop a good understanding of all the possible use cases and how Private 5G Networks will help to enable other digitisation projects. The installation of a private campus network should not be done in isolation or be seen as merely a technology project, but instead, it requires a careful strategy and the right partner to help with the implementation. This is where Verizon offers a dependable service and can advise on infrastructure, use cases, expected business outcomes and keeping costs within budget.

LOOKING AHEAD: VERIZON INNOVATION PLANS

The right combination of investments in new capabilities, coupled with building the culture and spaces for continuous exchange with customers, partners, and other stakeholders has been a critical focus for Verizon over the past few years. This strategy continues to lay the groundwork for the future. Working within the ecosystem of ports and terminals, we have focused on building spaces and processes that enable and encourage the industry and its partners to come together and try out new things. For example, via Innovation Hubs across the US and in Europe. Focusing on collaboration and co-creation of new solutions are the best ways to ensure that innovations match the needs of customers and result in the required business outcomes.

ABOUT THE COMPANY:
Verizon Communications Inc. (NYSE, Nasdaq: VZ) is one of the world’s leading providers of technology and communications services. The company offers data, video and voice services and solutions on its award-winning networks and platforms, delivering on customers’ demand for mobility, reliable network connectivity, security, and control.

ABOUT THE AUTHOR:
Jürgen Brömmer works as Business Development Partner for Verizon. He deals with innovation and transformation of critical infrastructures and with the expected business outcomes, but also with the organisational and technical challenges that such projects entail. His experience in various senior roles in consulting and management, both in telecom and manufacturing industries, enables him to see through the usual separation between business, organisation and technology.