BT'S 'CONNECTIVITY CAKE': CHARTING A SUSTAINABLE FUTURE FOR PORTS

Margherita Bruno, Editor, Port Technology International, interviewing **Alexandra Foster**, Director – Division X, BT

On 16-17 May 2023, Port Technology International (PTI) hosted the Smart Digital Ports of the Future Conference in Rotterdam to showcase the cutting-edge smart technologies that are revolutionising the port industry.

During the event, we had the opportunity to interview Alexandra Foster, Director for Division X at BT, who presented the company's innovative solutions designed to empower businesses and pave the way for a sustainable future.

Can you first provide an overview of the solutions offered by BT for port operations?

In a port environment, we offer a range of solutions. Firstly, we provide various types of connectivity. One of the popular ones is 5G, which can be public, private, or sliced. We also support other types of connectivity like 4G, Wi-Fi, and fibre. All these options are available in the port environment. We combine these connectivity solutions with Internet of Things (IoT) technology. This includes IoT in all of its guises, from basic IoT to national roaming, Narrowband IoT (NB-IoT), Long Range Wide Area Network (LoRaWAN), and Long Term Evolution (LTE). We cover all the

layers of a "connectivity cake" that you would expect.

However, it's not just about the connectivity itself. Connectivity needs to be an enabler, whether we use our own solutions or collaborate with partners to create a comprehensive ecosystem, as you heard during SDP 2023. By utilising the different connectivity options and IoT technology, we gather information and data to develop solutions specifically tailored for ports. These can range from digital vision applications that utilise visual feeds from cameras, whether it's on a crane, truck, or container, and we can capture video feeds from various sources in the port environment. These feeds

are then processed using artificial intelligence (AI) to gain valuable insights. AI helps sift through the data and make informed decisions, sometimes working in conjunction with human operators.

This technology enables us to offer solutions like digital vision, immersive spaces, and 3D environments for training and safety purposes. With the support of 5G connectivity, we ensure a consistent and uninterrupted flow of data, which is crucial for tasks such as data collection and safety monitoring. Unlike Wi-Fi, 5G provides low latency, high throughput, and greater reliability, making it ideal for port environments with constant movement.

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"COLLABORATION BETWEEN HUMANS AND AI CAN LEAD TO ENTIRELY NEW DIRECTIONS AND INNOVATIVE PROBLEM-SOLVING APPROACHES IN FIELDS LIKE ENGINEERING AND SOLUTION DEVELOPMENT, WHILE MINIMISING THE OVERALL ECOLOGICAL FOOTPRINT."

One of the advantages of 5G is that it requires fewer nodes and devices compared to Wi-Fi, resulting in a reduced footprint and improved sustainability. In the UK, BT has been recognised as having the best 5G network, according to RootMetrics. However, there are instances where having our own dedicated network infrastructure is beneficial. We explore options such as dedicated slicing, partnering with other companies, and utilising private networks. This gives us a diverse range of connectivity choices within the 5G ecosystem.

What initiatives and tools does BT offer to promote sustainability?

During SDP 2023, the topic of sustainability was discussed extensively. One impactful moment was when Saskia Mureau, Director Customer Digital at the Port of Rotterdam, presented a slide showing the visual representation of one tonne of carbon, which left us all astonished. This highlights the importance of measurement and the need for change.

At BT, we collaborate with numerous port operators and offer a carbon calculator based on their technology usage. Additionally, we provide a carbon dashboard that offers valuable insights on how organisations can optimise their technology to become more carbon-efficient. We also offer a benchmarking feature that allows operators to compare their sustainability performance with similar organisations.

One key aspect emphasised during the conference was the significance of partnering with companies that prioritise green practices. As I sit here wearing green today, it reminds me of Saskia's call to remember the word "green" as we reflect on the conference. At BT, sustainability is deeply ingrained in our core values. We have set ambitious targets, aiming for net-zero emissions by March 2031 and for suppliers and customers by the end of March 2041. We ensure that our partners and suppliers align with our sustainability requirements. When working with us, they can be confident that we have a green agenda and enforce

green key performance indicators (KPIs). Furthermore, we source 100 per cent of our electricity from renewable energy sources.

Do you consider the goal of achieving net-zero emissions by 2031 to be overly ambitious?

Our net-zero targets have been established and are a crucial part of our overall manifesto. These targets encompass both net-zero goals and diversity and inclusion (DNI) targets. Implementing these targets presents certain challenges, particularly in the area of fleet and fleet management. Port operators, being large fleet operators themselves, are well aware of this challenge. One aspect we are focusing on is the infrastructure for electric vehicles (EVs), including EV charging stations.

We are actively collaborating with countries to ensure that our fleets have the necessary infrastructure for transitioning to electric vehicles. Currently, about 10 per cent of our fleet is electric, and we have staged targets for increasing this percentage between now and

2030. Successfully achieving this transition is both a significant opportunity and a challenge for us.

How do you approach stakeholder management when assisting an organisation in its transformation and digitalisation efforts?

When assisting an organisation in its digitalisation journey, there are various stakeholders involved. Firstly, there are those who own and manage the facilities. It's important to consider how any changes will affect them. Additionally, the commercial team needs to be impacted positively by the technological advancements. From the perspective of the technology officer, it is crucial to ensure that all technology functions properly and consistently, enabling new opportunities, employee safety, and valuable insights. It's not a one-time achievement but an ongoing process that operates continuously, 24/7, 365 days a year.

Effective stakeholder management is essential, involving various key figures such as the Chief Marketing Officer, responsible for promoting innovation and the brand's reputation, and the Commercial Director, who sees the creation of new opportunities for the organisation. Conversations and collaboration with a diverse group of stakeholders, including the Chief Technology Officer, Chief Digital Officer, Chief Data Officer, and others, are necessary. Each stakeholder has their own motivations. Our responsibility is to ensure that technology serves as an enabler for the smart digital ports of the future, benefiting the entire industry.

It's crucial for all players in the industry, including ourselves and competitors, to succeed and embrace digitisation. The phrase, "a rising tide lifts all boats," is fitting in the context of ports. We want everyone to progress together, and this journey involves addressing challenges and bringing stakeholders along, resulting in collective growth.

What are some of the key challenges or pain points that smart technology aims to address in the port industry? And what are the key factors you consider when initiating conversations with customers to understand their challenges?

I firmly believe that technology should never be implemented just for the sake of it. At BT, we prioritise working closely with our customers to understand their pain points and identify the specific challenges we aim to solve. This user-centric approach allows us to develop tailored solutions that address their unique needs.

While we strive to avoid creating entirely new, customised solutions, as it can hinder industry-wide standardisation, we value commonality, standards, governance, and repeatability. Every organisation is unique in its own way, but there is a shared desire for solutions that can seamlessly work together.

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To achieve this, we have established a partner board at BT, collaborating with various businesses to create a comprehensive ecosystem of integrated solutions. This end-to-end approach ensures that the solutions we offer are not only functional but also prioritises security and sustainability, as I mentioned earlier.

So, regarding your question about what needs to be done beforehand, it's like a prequel. We initiate conversations, understand the challenges at hand, identify user cases, and then proceed to create solutions using connectivity and a range of available options. We want to ensure that what we implement, especially new technologies, serves a purpose and is actively utilised.

At BT, our purpose is to connect for good, and this also guides our discussions with customers. We need to be certain that our solutions connect them, their people, their customers, and their environment while also supporting their business growth and delivering a return on investment. Ultimately, there is a strong business element to our approach.

Looking to the future, what trends or advancements do you foresee in the field of smart and sustainable technology implementation at ports?

When we consider the impact of enabling technologies, Digital Twins have been a prominent topic at SDP. The core concept of Digital Twins lies in their ability to create a visual representation of a replicated state through data feeds. This replica state not only aids decision-making and training but also presents an opportunity to incorporate sustainability considerations.

Looking ahead, we anticipate a future where we transition from immersive Digital Twins to the metaverse, which encompasses multiple interconnected virtual environments, and the potential for sustainability becomes even more pronounced. In the context of smart ports, this shift will lead to enhanced data visualisation and the utilisation of AI to generate actionable insights.

However, it's important to note that this is not just about AI alone. Human intelligence plays a crucial role and, when combined, they create a synergy of smart port intelligence. It's fascinating to observe how skilled workers can be augmented by AI, resulting in the emergence of "super workers" and the valuable insights they produce.

I recently had a conversation with someone who shared their realisation that this collaboration between humans and AI can lead to entirely new directions and innovative problem-solving approaches in fields like engineering and solution development, while minimising the overall ecological footprint. This level of creativity extends beyond what one might typically associate with ports, technology, or other related areas.

ABOUT THE AUTHOR:
Alexandra Foster, Director of BT's Division X, has over a decade of experience in leveraging emerging technologies like 5G Private Networks, IoT, and Edge Computing to enhance business outcomes. A former investment banker and passionate advocate for women in tech, she utilises technology to maximise business potential.

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