

IN CONVERSATION WITH OUR HOST PARTNER FOR SDP NORTH AMERICA 2023: THE PORT OF HALIFAX





Margherita Bruno, Editor, Port Technology International, interviewing **Mike Davie**, VP Operations & Technology, Halifax Port Authority

In the dynamic realm of port development, the Port of Halifax emerges as a beacon of innovation and efficiency. Following the success of Port Technology International's Smart Digital Ports of the Future (SDP) Conference in North America last year, this Q&A with Mike Davie, Vice President of Operations & Technology at the Halifax Port Authority, unveils the port's transformative initiatives. From pioneering Canada's first sector-focused living lab, The PIER, to leveraging smart technologies for safety and sustainability, the Port of Halifax navigates the digital landscape adeptly.

Can you share some of the recent innovative initiatives that the Port of Halifax has undertaken to enhance its operations and efficiency?

At the Port of Halifax, we're really focused on taking advantage of the tremendous opportunities for transformation that come with increased digitalisation, availability of data and connectivity. Any new initiatives we take on need to be done responsibly, enhancing security, efficiency and sustainability components, and so those are always at the foundation as we look

to innovate. There are a few exciting projects that come to mind.

In 2021, we established Canada's first sector-focused living lab for the transportation and supply chain industry called The PIER, which stands for Port Innovation, Engagement and Research. The PIER is a physical space that brings together an ecosystem of organisations looking to solve complex problems related to port logistics, supply chain and transportation. As well, we aim to focus on regulatory change requirements to enable innovation while always looking for ways to begin to decarbonise port-related activities through innovative solutions.

We've also set up several programmes over the past few years that are focused on operations and efficiency. PortControl is one example, a digital operating system we launched in 2021 for our partners, where they can both receive and submit information to help manage operations, including live access to harbour schedules and vessel information. We've also established a Port Operations Centre, where our Operations Coordinators work 24/7 to oversee all operations taking place within the harbour and at the facilities

we manage. On top of that, we set up a Joint Operations Centre with our supply chain partners PSA Halifax, our container terminals operator and CN, our railway provider, where we coordinate, deconflict and plan those critical links between vessels, terminals and rail through a collaborative data sharing system to streamline decision making. Finally, we have adopted an international system to promote ships to use cleaner engines, fuels and technology with preferential treatment offered either through discounts on port dues, tariff incentives or other benefits commensurate with the level of sustainability.

How is the Port of Halifax integrating smart technologies to improve the overall functionality and intelligence of the port?

As I mentioned, there are many opportunities as we become an increasingly digital industry and society. At the Port of Halifax, we value working with partners to do things differently. We don't need to always do things the same way they've been done. In fact, we need to change and evolve. Leveraging the Internet of Things and smart technologies is part of that shift.

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We've been working with Protex AI and Telus, and even participated in a panel with them at the PTI conference in December, about technology we are using to help monitor activity in industrial zones to enhance safety. We have invested in this technology that augments our existing CCTV system and is trained through object recognition to identify when something could be amiss. It uses AI to augment the human and equipment activities around monitoring for safety, by constantly scanning and alerting management or operations if there is activity that might overlap where it shouldn't and needs attention.

Similarly, we have Environsuite, a noise monitoring system set up to monitor and record noise levels and send alerts if readings are over acceptable levels. The Port of Halifax mainly operates in and around the centre of the city, so we always want to make sure we are striving to be good neighbours. This system allows us to monitor and investigate if we get concerns from the community. It's important that we use technology where and when we can to increase transparency and visibility to operations.

While it may seem simple, a lot of this technology would not have been in place even five years ago. We believe it's important to work with partners to find solutions for the challenges of today and tomorrow, and the best way to do that is to collaborate. That's where The PIER has been key, helping to facilitate partnerships and find opportunities. We can write a challenge statement and through The PIER, share it with industry and innovation players, like small businesses, start-ups, and universities, that may be able to help us solve the problem. PIER members

can then take that solution to market in Halifax and internationally, which strengthens the industry.

Could you provide insights into any development projects at the Port of Halifax that are aimed at enhancing infrastructure or capacity?

The Port of Halifax is the only eastern Canadian port that can handle the giant ultra-class cargo vessels increasingly being deployed by the shipping lines to Halifax and other deepwater ports in North America. In November, our container terminal operator PSA Halifax unloaded two new mega Ship-to-Shore (STS) cranes at the Atlantic Hub terminal located at the south end of the port. These ultra-large cranes add more capacity, along with our existing five super-post-Panamax cranes at the terminal which allow PSA Halifax to handle the largest container vessels on the water today. The new cranes will also support our plan to expand PSA Halifax's capacity from 1.1 to 1.4 million TEU through optimising existing infrastructure.

PSA Halifax is also purchasing eight new electric Rubber-Tired Gantry cranes (E-RTGs) for its Atlantic Hub terminal, which will not only increase the terminal's handling capacity by 25 per cent but are part of PSA's plan to electrify their terminal equipment, which will help the Port meet sustainability and decarbonisation goals.

One goal we have at the Port of Halifax is to grow the Atlantic Gateway through new and improved rail infrastructure, which will enable the Port to handle the projected increases in container volumes in the next 10 or more

years. We are currently delivering a Rail Solution project under the National Trade Corridor Fund, which will make use of existing infrastructure to create a more efficient and sustainable way of moving and handling cargo, aiming to reduce container traffic through the downtown core.

Those are just a few developments from recent months at the Port of Halifax. We also have a 50-year plan for growth that brings us out to 2070.

Reflecting on last month's "Smart Digital Ports of the Future 2023" conference, how is the Port of Halifax collaborating with other global ports to share best practices and foster innovation?

That is a great question. In October of last year, The PIER at the Port of Halifax along with homePORT at the Port of Hamburg and Opentop at the Port of Valencia announced they are working together to design and establish the first-ever network of global port innovation hubs.

The goal of this collaboration, the Port Innovators Network (PIN), is to enable a global alliance of port innovators, which will provide members access to a broader pool of companies to work with. The connection of the three living labs will bring additional international perspective, and help create a greater understanding of cultures, ideas and solutions to complex problems. It will also expand existing capabilities for testing and demonstrating new technologies. We're enthusiastic about this partnership and the upcoming new additions to the network, and should be sharing more in the coming months.

How is the Port of Halifax incorporating environmentally sustainable practices and technologies into its operations, and what are the key focus areas in this regard?

Sustainability is a top priority for our whole team at the port. It is a core value in our 50-year plan and a factor in every decision we make. I've mentioned a few projects that support our sustainability efforts and goals already, but another initiative worth mentioning is our work with carriers. We have seen continuous positive trends in vessel emission reduction at the port since implementing our Harbour Dues Incentive programme in April 2022. The initiative offers annual rebates to vessels that voluntarily register and meet the Environmental Ship Index (ESI) requirements for reducing greenhouse gas emissions.

ESI-qualifying vessel calls were up from 83 in Q2 2022 to 128 in Q2 2023 – an increase of more than 50 per cent. We're just compiling

our numbers for the first full year of measurement and have seen excellent participation including multiple carriers with 100 per cent of vessels registered, and many vessels reaching the 2050 IMO CO2e targets already.

ESI incentivises responsible shipping and gives us an idea of where the vessels coming into the Port are with respect to emissions, so we can benchmark and measure progress moving forward.

In the context of digitalisation, what steps has the port taken to streamline processes and improve communication within the port community?

In 2023, the Port of Halifax and project partners were recognised at the International Association of Ports and Harbours (IAPH) Sustainability Awards in the "Digitalization" category. By integrating data from cargo handling and transport, operations, and other factors in an accurate and interoperable system, the Data Enhancement Framework 2

(DEF2) project builds an assessment of CO2e intensity associated with operations, showing per container and per metric ton amounts of carbon.

I mentioned our Port Operations Centre already, which is a significant project for us, as well as the Joint Operations Centre (JOC), which will be grounded around data collaboration with our core supply chain partners. The JOC has allowed us to transition our legacy data platform into the cloud using the most modern data tools available. We're essentially setting up seamless data sharing so we all have one central database and one source of truth about core operational activities that will allow for better planning and visibility for decision making. Halifax is unique because we have the key components of larger ports, but the nimbleness to move quickly and innovate. Over the next few years, building out the data platform for systems and data innovation for collaboration across the port will be a major focus.

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With the increasing reliance on digital technologies, what measures has the Port of Halifax implemented to ensure the security and integrity of its digital infrastructure?

All of these projects I've mentioned, have cybersecurity wrapped around their plans. You can put the best new innovations in place, but without ensuring the physical and cyber security aspects, it doesn't work. We're putting in a cyber resilience programme with a number of components, awareness at all levels, and IT security tools, leveraging advanced capabilities with partners like Microsoft. We've also put in place a strong incident response programme, so we are ready to respond. These are important foundational components of all modern programmes. You have to have them in place to sustain your business these days.

Looking ahead, can you provide a glimpse into the Port of Halifax's vision for the future and any upcoming projects or technological advancements that stakeholders and the industry can anticipate?

The Port of Halifax is future-focused and guided by our 50-Year Plan, which looks at port planning to 2070. Our Plan is a roadmap for sustainable development and identifies measurable benchmarks that need to be met before infrastructure expansion is necessary.

As we move forward with our

50-year plan, our goal is to build smart, in a way that is financially and environmentally sustainable, and that complements our surrounding community. We are working to become One Port City and want to see more people sharing in the benefits that come from cargo and cruise operations at the Port of Halifax. Sustainability, environment, and inclusion are all factors included in our ongoing planning decisions. Since the plan was released, we have signed an MOU with the Port of Hamburg to explore decarbonising the shipping corridor between our two ports. The MOU has the potential to introduce new technology to our port that could result in hydrogen-powered yard equipment or hydrogen, or its derivatives, refuelling for ocean vessels when the technology advances.

We've talked a lot about technology, but I wanted to highlight the importance of our people and our culture as well. There's no doubt that technology has and will continue to change the world, but without a dedicated and motivated workforce to guide and enable these advancements, no port will advance. A big part of our story and our future focuses on staff development. We have worked to implement learning paths and growth opportunities for our team. We're becoming more data literate and providing opportunities to change the digital culture, and it's necessary to leverage technology, but I do believe the differentiator for Halifax is our culture, the ability to embrace change and the flexibility to learn and grow.

ABOUT THE AUTHOR:

Capt(N) (Ret'd) Mike Davie joined the Halifax Port Authority (HPA) in 2018 initially in the role of Vice President Operations & Planning. Mike led efforts to modernise operations management and built a Planning team to complete a comprehensive Port 50-Year Plan and manage HPA's larger infrastructure projects in the future. As VP Operations & Technology, Mike continues to ensure secure, safe, efficient, and environmentally sustainable conduct of marine and landside operational activities. He also oversees the port's ability to respond to emergencies through a comprehensive Emergency Management System and provides oversight for Information and Technology Services transformation and innovation through the Port's living lab, The PIER (Port Innovation, Engagement and Research).

ABOUT THE PORT:

As Canada's Ultra Atlantic Gateway, the Port of Halifax is essential for Canada's global trade security. Offering a natural, deep harbour and big ship infrastructure, Halifax can accommodate large volumes of containerised cargo, breakbulk cargo, and project cargo. By collaborating with strong operating partners, labour and other interested parties, fluid, reliable, and efficient cargo capabilities at the Port of Halifax help deliver excellence to containerised cargo trading partners around the world.

The Port of Halifax is a full service, diversified port and is receiving the largest containerised cargo ships of any Canadian port. Ultra large 16,000+ TEU vessels approaching 400 metres arrive regularly and contribute to steady and sustainable growth.