CAN WE FIX TRADE WITH THE CLICK OF A BUTTON?

"WHAT IS MAKING THE SMART PORTS [IN ASIA] SO SUCCESSFUL IS THE IMPLEMENTATION OF INDUSTRY 4.0: A REVOLUTION OF THE ENTIRE TERMINAL ECOSYSTEM."

MAIN
Sunset view of Port of Vancouver

Tiemen Meester,
Group COO, Ports and Terminals,
DP World

Supply chain delays continue to plague the headlines – and while there are many contributing factors, the overarching issue is capacity.

Ports worldwide are struggling to keep up with skyrocketing demand for greater volumes of cargo — with the added expectations that deliveries are faster and greener wherever possible. Staff numbers, outdated equipment, and square-footage are failing to meet this demand at a time when people need reliable trade most. This infrastructural inability to deal with changing trade patterns is having a direct impact on capacity at sea too, leading to unsustainable costs for customers and consumers.

Expanding port capacity to save our supply chains and bring costs down is a pressing need, but this is no small feat. At DP World Vancouver in Canada, for example, renovating the infrastructure of this container terminal has been a decade-long project. On a global scale, we simply cannot afford 10 more years of supply chain flux to implement this change.

However, what we have at our disposal in the meantime is the ability to leverage existing technology. While Terminal Operating Systems (TOS) are not the panacea that will overhaul global supply chains for good, they are a vital tool that can help us build smarter, more agile solutions for our ports and terminals as trade continues to boom.

Fully utilising TOS and port automation can offer us the real-time data we need to plan better, negate delays, and automate processes for the faster and greater transition of cargo through our port environments. Importantly, as we are seeing in the East, the data gleaned from this resource can also help us strategically envision long-term management of larger cargo volumes in a faster, efficient way that minimises our industry's impact on the environment.

EMBRACING INDUSTRY 4.0

Post-pandemic, in a world driving towards a net-zero agenda while demanding greater, faster volumes of cargo, TOS is being reviewed as a resource that will reimagine existing port models. Because when this smart solution is properly implemented, it can cut carbon emissions and costs for every party along a supply chain – and spark exponential economic growth by increasing capacity.

By 2026, for example, the global smart ports market is projected to reach $5.1 billion from $1.7 billion in 2021 – and the area leading this transition is the Asia-Pacific region.

Over half of the world's smart ports are found in Asia (equating to over $850 million in value), and this is due to the region's central role in global manufacturing and supply chains.

Asia's ports have the ability to deal with enormous volumes of cargo, which they have achieved, in part, by adopting more efficient terminal operations.

Specifically, what is making the smart ports here so successful is the implementation of Industry 4.0: a revolution of the entire terminal ecosystem. This makes automation, AI, real-time data, and connectivity to the Internet of Things (IoT) the foundation of their everyday workings – and it is paying off.

To understand how this translates into greater capacity and improved performance, let us look at ATI Batangas Container Terminal in the Philippines – a good example of Industry 4.0 in action.

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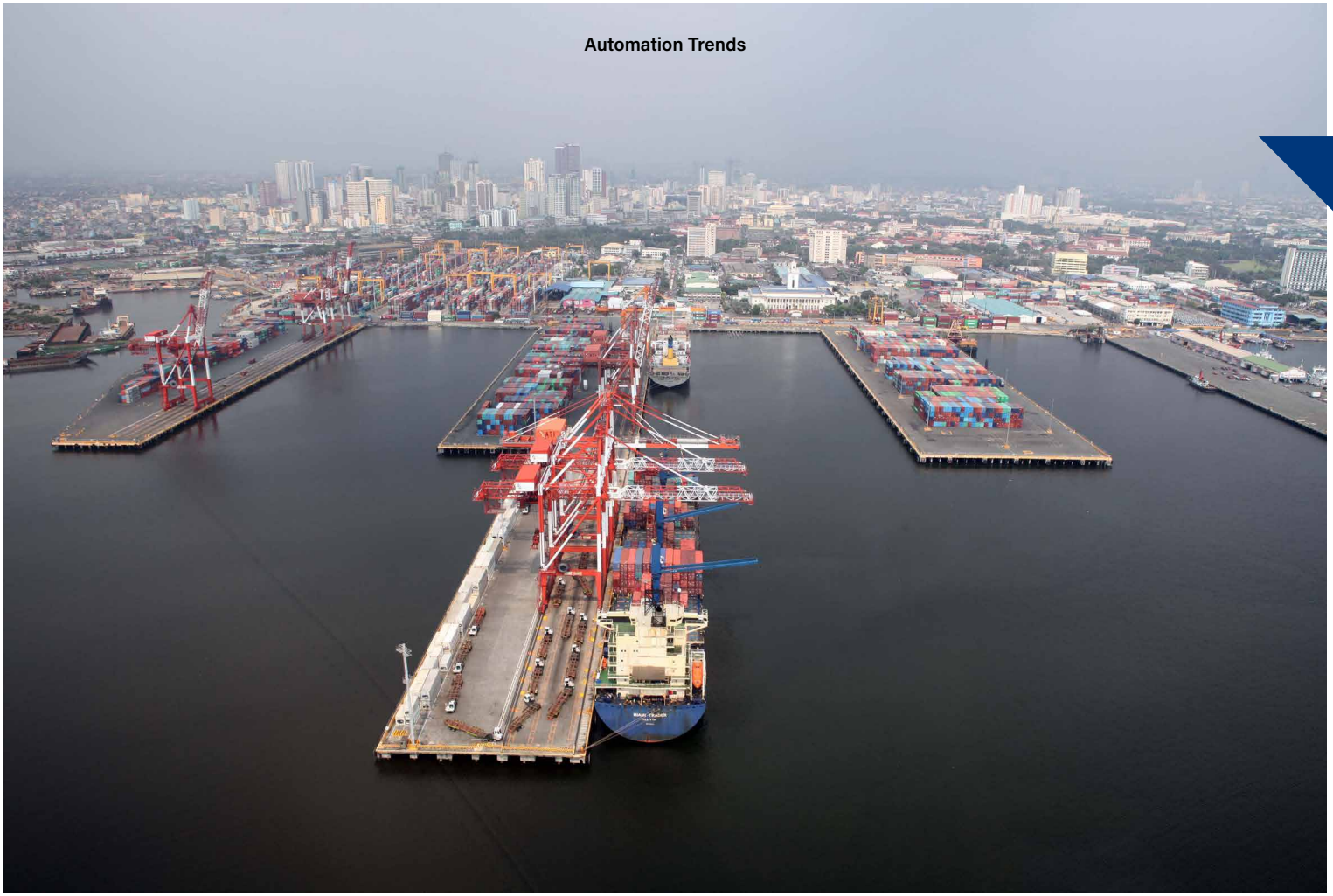


AUTOMATION IN ACTION: ATI BATANGAS

This year ATI Batangas implemented CARGOES solutions from DP World which connects TOS, automated gate systems, customs functions and more to the IoT, centralising every element of a terminal's operations.

CARGOES TOS+, along with other solutions, was easily integrated into existing platforms and did not require extensive training to use. Each programme also offers a secure option for vendor transactions and data sharing – a must for maintaining the seamless flow of goods.

These programmes work in tandem to automate all the moving parts of a terminal – from ship-to-shore-cranes to fleet management systems – creating a synchronised system that works faster and can process more cargo.

For Batangas, which handles 450,000 TEU annually, everything from gate entry to the cranes needed to move goods now operates from a centralised, cloud-based system. Using a 3D map of the terminal, Batangas staff use smart maintenance to enhance equipment uptime and prevent costly delays; the IoT enhances their productivity drive, aligning with shipping lines to improve schedules; and with real-time capacity monitoring, they predict future needs to improve customer service and value.

This granular detail can also be used to optimise yard utilisation, operation strategies and ETAs through simulation modelling, providing Batangas with data they can use to justify site improvements and hit KPIs. For example, within 23 days of adopting this new TOS system this year, ATI Batangas was seeing an average increase of 3.1 movements per hour amongst its quay cranes.

Customers stand to make huge gains from this kind of predictive software too. With ETA modeling, a port can predict when a piece of equipment is needed to move a container – and this information can be proliferated beyond the port's borders, such as to inland container depots. This connected supply chain also provides accurate live cargo tracking, meaning businesses at the end of the supply chain can make more informed decisions.

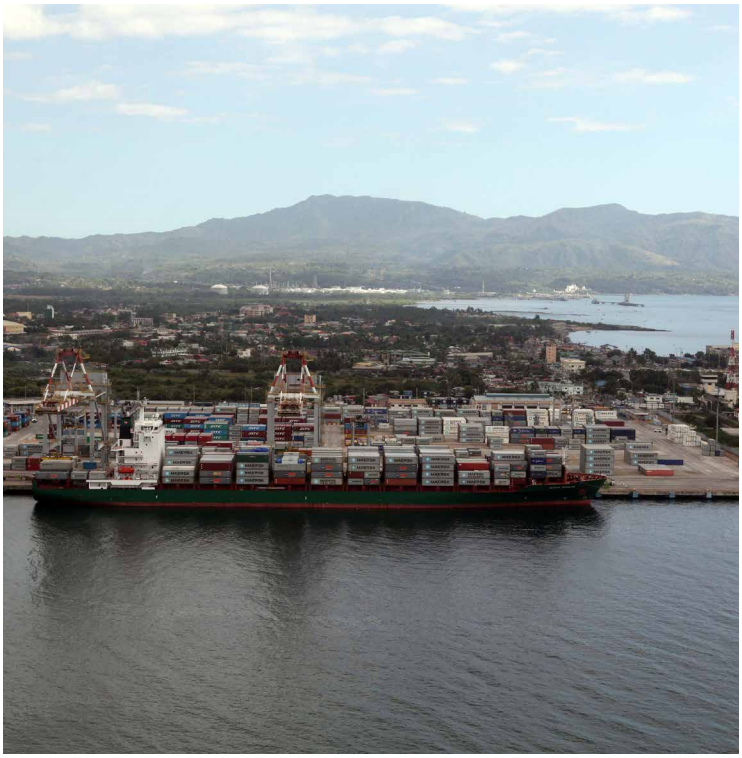
ABOVE
Aerial view of entire terminal at ATI Batangas port

Already, the benefits of smarter ports are showing. Efficiency is set to increase by as much as 35 per cent as a direct result of automation and the average expenses at automated ports like ATI Batangas have been reduced by as much as 35 per cent.

WORK SMARTER, WORK SUSTAINABLY

Using the IoT to drive TOS has ripple effects beyond smart ports and their capacity – which is relevant when it comes to the matter of sustainability.

Our industry is famously not eco-friendly, but automating ports is improving this. In terminals such as DP World Antwerp, for example, electric Internal Terminal Vehicles (ITVs) controlled by the site's TOS are contributing to



LEFT
Aerial view of customer vessel and yard at ATI Batangas port

their achievement in halving their carbon emissions since 2013 – a staggering feat for a terminal that handles over 2 million TEU every year. Having the facilities to predict problems and plan accordingly ahead of time creates options to maximise higher capacity multimodal transport as well, such as rail and barge instead of high pollution trucks.

Clearly, TOS automation carries enormous potential for the terminals and regions using them, as seen with Batangas. But it does raise questions around its limitations; how effective can the latest TOS automation really be if only some ports are adopting it?

If we cannot implement this level of hyperconnectivity across every port and terminal, regardless of size, then there will be limitations to how much we can improve capacity and efficiency throughout our supply chains.

However, COVID-19, instability in Europe and other factors are driving a rapid shift towards terminal automation – because it offers the reliability and resilience needed to keep goods moving and get supplies to where they are needed. Those who resist transforming into smart ports will see lower outputs and profits, because manual processes cannot compete with smart port capability or capacity.

Already, TOS software is streamlining aspects of our supply chains such as administration and over-reliance on manpower – factors which delayed world trade through errors and, as we saw during the pandemic, mass staff absences.

By shifting our focus to how TOS software can help boost capacity, we can begin to overcome the barriers facing our supply chains and the wider industry. With cargo volumes on the rise, sophisticated automation from such software will ease the impact of rising cargo demands and help us envision a more efficient, cost-effective future for trade.

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ABOUT THE AUTHOR

Tiemen is the Group Chief Operating Officer, Ports & Terminals at DP World. Tiemen has worked in the industry for 30 years, with experience covering the globe on large scale multi-port acquisitions, greenfield and brownfield port projects, and logistics responsibility over a large portfolio of ports and terminals.

ABOUT THE ORGANISATION

DP World is the leading provider of worldwide smart end-to-end supply chain logistics, enabling the flow of trade across the globe. DP World’s comprehensive range of products and services covers every link of the integrated supply chain – from maritime and inland terminals to marine services and technology-driven customer solutions.