

**PORT**  
TECHNOLOGY



EDITION 127 - 2022

**THE E-JOURNAL**  
OF PORTS AND TERMINALS

An aerial, high-angle photograph of a vast stack of white shipping containers. The containers are arranged in a grid-like pattern, creating a strong sense of perspective and depth. The lighting is bright, casting soft shadows that emphasize the three-dimensional nature of the stacks.

**DIGITAL  
SUPPLY CHAIN**



**GREENTECH**  
FOR PORTS AND TERMINALS

**THE ROAD TO NET ZERO**

POWERED BY

**PORT**  
TECHNOLOGY  
INTERNATIONAL



**EARLY BIRD  
TICKETS NOW  
AVAILABLE!**

Join the GreenTech 2023 conference for a range of networking opportunities and expert-led discussions on Future Fuels, Sustainable AI, Green Shipping Corridors, Regulations, Electrifying Ports and Digitalisation and Decarbonisation.

**22 FEB  
2023**

**HAMBURG,  
GERMANY**

**150+**

**ATTENDEES**

**20+**

**SPEAKERS**

**50+**

**PORTS &  
TERMINALS**

**6+**

**SESSIONS**

**REGISTER FOR JUST €799**

**GREENTECH.PTIEVENTS.COM ←**

Gold Sponsors



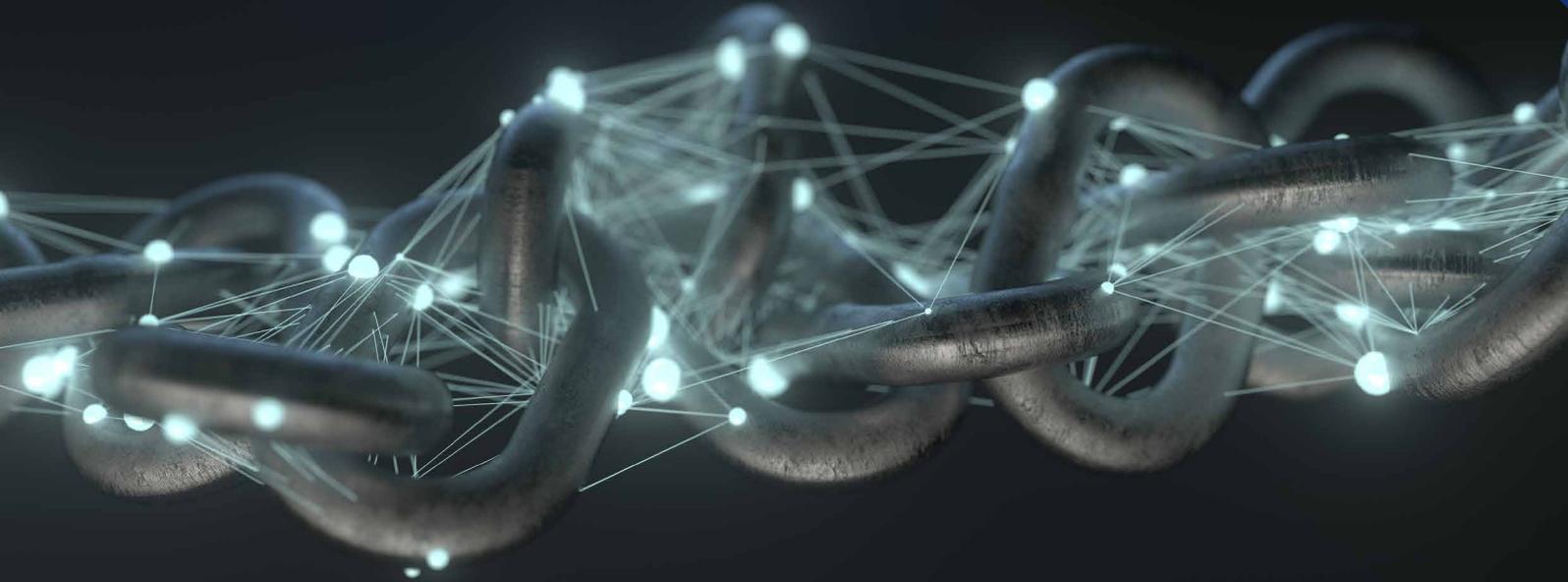
Silver Sponsors



Bronze Sponsors



**Ports &  
Terminals can  
attend for  
FREE!**



**Jack Donnelly,**  
Editor

# FOREWORD

Welcome to the final edition of 2022 for PTI's E-Journal. This year has been one of continued turbulence for the sector: COVID-19 lockdowns have persisted, workforce disputes have shattered goods flows around the world, and high inflation is driving high costs for the supply chain community.

But there is hope for 2023 onwards, bringing us to this Digital Supply Chain edition! For some December reading, we have brought together some of the finest minds including ports, shipping, and inland transport stakeholders, as well as digitalisation and sustainability experts to walk through their thoughts on the global industry landscape.

This Holiday season please tuck your feet into the insights meeting some of the most challenging topics our industry faces. See you in 2023!

# CONTENTS

**3.**

**PORT COMMUNITY SYSTEMS: TIME FOR A LEAP FORWARD**

Jose Luis Cárcel, Digital Transformation Specialist, Fundación Valenciaport, Alexandre Sánchez, Port Community System Manager, Autoridad Portuaria de Valencia

**8.**

**CREATING VALUE THROUGH END-TO-END SUPPLY CHAINS**

Vikash Agarwal, Managing Director, Maersk South Asia

**12.**

**HOW PORT AND TERMINAL OPERATORS CAN LEVERAGE OCEAN FREIGHT VISIBILITY TO DRIVE RESILIENCE**

Dennis Perjet, Head of Strategic Accounts EMEA, Tive

**16.**

**MALAYSIA'S PREMIERE LOGISTICS HUB: PORT OF TANJUNG PELEPAS**

Jack Donnelly, Editor, Port Technology International, featuring interviews with Marco Neelsen, CEO, Joe Schofield, COO, and Nilesh Timbadia, Head of Information Technology Division, Port of Tanjung Pelepas

**22.**

**DATA-SHARING IN THE MARITIME SUPPLY CHAIN: EPIPHANY OR MYTH?**

Dr. Bogdan Iancu, Research Fellow, Åbo Akademi University, and Daria Gritsenko, Assistant Professor, University of Helsinki

**25.**

**THE WATERSHED MOMENT FOR ELECTRONIC BILLS OF LADING**

Bertrand Chen, CEO, Global Shipping Business Network (GSBN)

**28.**

**THE ENABLING ROLE OF SMART AND FAIR REGULATION AND HARMONISED ENFORCEMENT ON THE COMPETITIVE ENVIRONMENT WITHIN THE TRANSPORT AND LOGISTICS CHAIN**

Lamia Kerdjoudj, Secretary General, FEPORT

**32.**

**DIGITAL SUPPLY CHAIN**

Sven Daniels, Partner, HPC

**39.**

**E-BILLS OF LADING - THE SIMPLE TOOL WITH BIG POTENTIAL**

Mads Wacher Kjaergaard, Project Manager, Standards, Innovation & Research at BIMCO

**42.**

**PROTECT: THE WAY FORWARD**

Mees van der Wiel, General Manager, PROTECT Group, International Port Community Systems Association (IPCSA)

**46.**

**LEARN, UNDERSTAND, SIMPLIFY, IMPLEMENT AND OPTIMISE: FINDING THE TRUE VALUE IN DIGITALISATION**

Dr. Rafiq Swash, Founder and CEO, Aidrivers

@ info@porttechnology.org  
@PortTechnology  
www.porttechnology.org  
linkd.in/porttech

# PORT COMMUNITY SYSTEMS: TIME FOR A LEAP FORWARD

**“PCSs ARE HUGE DATA HUBS WHERE ITS POTENTIAL IS STILL UNEXPLOITED DUE TO THE USE OF OLD-FASHIONED ARCHITECTURES LACKING INTEROPERABILITY AND BUSINESS RELATION LAYERS.”**





**Jose Luis Cárcel,**  
Digital Transformation Specialist,  
Fundación Valenciaport,  
**Alexandre Sánchez,**  
Port Community System Manager,  
Autoridad Portuaria de Valencia

**INTRODUCTION**

Ports are heterogeneous transport nodes where multiple actors and processes continuously interact to carry out shipping and logistics operations. In such complex scenarios, the exchange of information has been a challenge, traditionally addressed through paper-based routines and recently through other non-secure channels such as e-mails, phone calls, or even WhatsApp messages. Nevertheless, as a consequence of the growing complexity and the continuous cargo volume increase within the shipping industry, Port Community Systems (PCSs) emerged more than 20 years ago as one of the cornerstones of digitalisation inside the port communities.

PCSs were not built from the scratch but as a result the adoption of different standards and by integrating multiple digital services; before implementing the first MVP (Minimum Viable Product) of ValenciaportPCS in 2005, the Port

of Valencia adopted EDI (Electronic Data Interchange) messages in 1990 and deployed the first prototype of the Community Information System (SIC) in 2001.

After its first implementations, PCSs have been continuously evolving through the integration of new value-added services and functionalities, contributing to digitalise 98 per cent to 99 per cent of port community procedures. Nonetheless, even with this milestone achieved, maritime ports and terminals still face big challenges related to infrastructure capacity restrictions that cannot be merely solved through traditional digitalisation strategies.

In fact, the rise of unprecedented events such as COVID-19 pandemic, Suez Canal or Ukrainian war has recently shown the importance of resilience, change adoption and process optimisation, suggesting the need for defining a leap forward towards PCS evolution.

The proposed way forward is defined by the combination of **six elements** that aim at exploiting

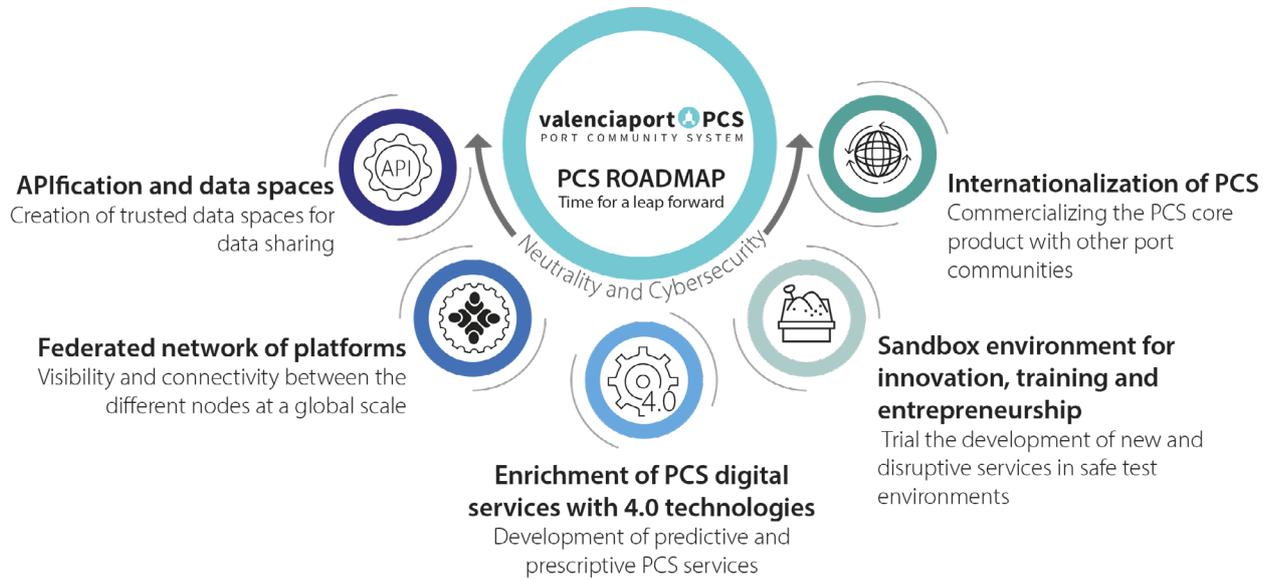
new data-driven strategies while reinforcing key PCS differential values: (i) neutrality as a value proposition, (ii) APIfication and data spaces, (iii) federated network of platforms, (iv) enrichment of PCS digital services with 4.0 technologies, (v) sandbox environment for innovation, training and entrepreneurship, and (vi) internationalisation of PCS.

**WAY FORWARD**

To implement a data-driven approach, the exploitation of large amounts of data from different sources must be considered as the first key step. PCSs are huge data hubs where its potential is still unexploited<sup>1</sup> due to the use of old-fashioned architectures lacking interoperability and business relation layers. This aspect limits drastically the capacity of data owners for sharing and monetising their data with other parties. To address this limitation, PCSs need to ensure digital sovereignty for data owners, enabling them to

**FIGURE 1.**  
Valenciaport PCS evolution





**FIGURE 2.**  
PCS Roadmap

exploit and monetise the value of their data by sharing it in a secure and neutral marketplace where consumers can create new software products and innovative business processes. The creation of trusted data spaces for data sharing will request the use of specific elements such as identity servers, multi-factor authentication, API managers, usage policies and other components that ensure trust and reliability of the transactions.

The adoption of these features will not only open the door to data exchanges inside the port community but will also pave the way towards federation and interconnection with other port communities through other trusted networks. Through the application of the platform federation concept to logistics, it will be possible to envision different PCSs connecting shipping and logistics providers

with a common language through digitalisation, simplification, and collaboration, adding visibility and optimising connectivity between the different nodes at a global scale.

Data-driven approaches will not only build bridges at shipping and logistics industry but will also enrich PCS services. Novel technologies such as the Internet of Things will upgrade PCS services thanks to the translation of physical events to the digital domain. Furthermore, through massive data storage, PCSs will be able to unlock the potential of Artificial Intelligence towards the development of predictive and prescriptive services that will help users to forecast multiple stages of their shipments' processes.

When strengthening innovation, the creation of a PCS sandbox is also considered an interesting practice to trial the development

of new and disruptive services in safe test environments. Sandbox environments can benefit startups and entrepreneurial ecosystems and also may be useful for training and educating newcomers to the industry, allowing port training centers the issue of brand-new PCS Certifications as other tech-companies do with their digital assets (for example Azure, Amazon Web Services, etc.).

Finally, as PCSs operate in a global context, new business perspectives may also come into view through the possibility of commercialising the PCS core product with other port communities around the world.

**VALENCIAPORT LEAP FORWARD**

In line with the proposed strategies, the Port of Valencia<sup>2</sup> is carrying out several initiatives to leap forward:

**“PCSs WILL BE ABLE TO UNLOCK THE POTENTIAL OF ARTIFICIAL INTELLIGENCE TOWARDS THE DEVELOPMENT OF PREDICTIVE AND PRESCRIPTIVE SERVICES.”**

# “THE NEW VALENCIAPORTPCS WILL BE ORIENTED TO FEDERATIVE SCHEMES, RESPONDING TO THE REQUIREMENTS OF CONSUMERS AND LOGISTICS COMPANIES.”

To set neutrality as a differential value proposition, the Port Authority of Valencia, as a public entity, guarantees the custody of data, its immutability and security through rigorous compliance with the National Security Scheme and other cybersecurity measures. Compliance is achieved through the transition towards nominative users, multi-factor authentication, and through data sharing agreements that clearly establish the use and access that each type and profile of user can make according to their role and needs. Likewise, all transactions are audited and encrypted, and all production services are previously defined and agreed with all the stakeholders involved.

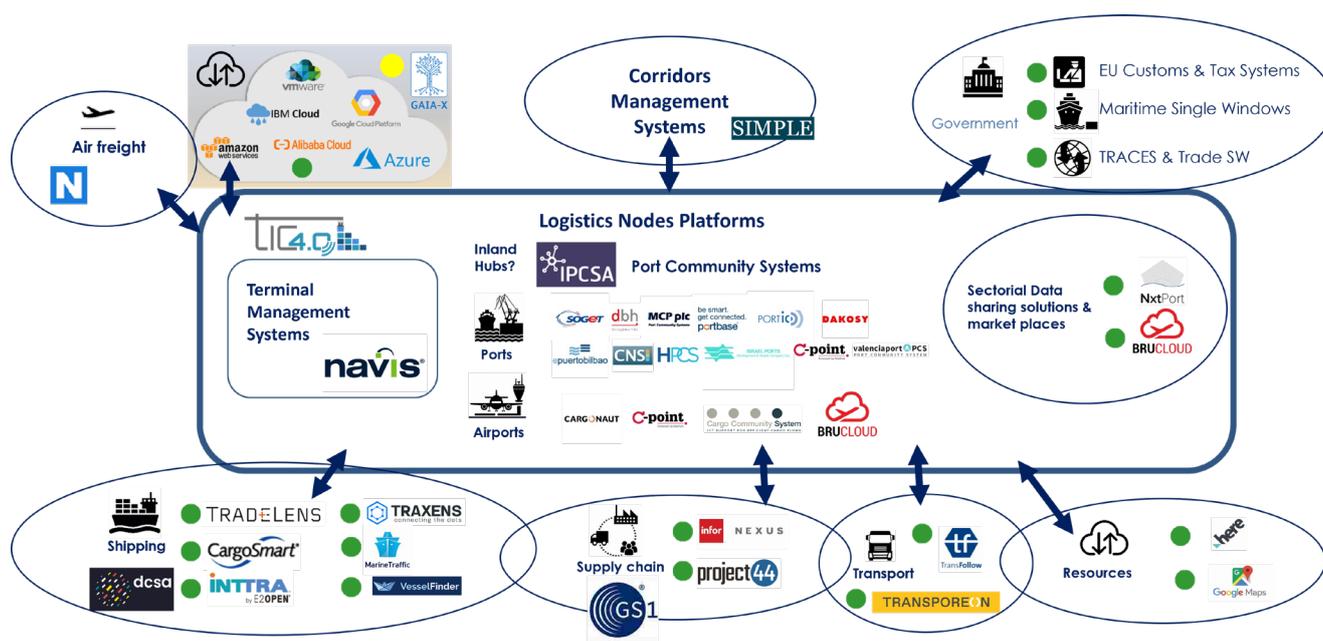
In terms of data accessibility, the Port of Valencia, as data owner, offers a set of public APIs for enabling the exchange of data related to vessel departures and arrivals, cargo movement as well as other interfaces that give access to other operational and environmental information in real-time. To reinforce this strategy, the new ValenciaportPCS architecture will incorporate an API Manager, an IdentityServer and other capabilities for building an open data space.

The new ValenciaportPCS will be oriented to federative schemes, responding to the requirements of consumers and logistics companies for end-to-end information on their systems. In this

regard, Valenciaport has always been pioneer in integrating its PCS with aggregators such as Intra or GT Nexus, and it was one of the earliest adopters of TradeLens. At the same time, the Port of Valencia fervently supports new digital platforms such as SIMPLE, which is called to add great value to the multimodal supply chains that converge at the Port of Valencia.

Regarding the integration of technology 4.0 within PCS business services, Valencia was one of the first ports in the world to implement an automatic gate system (AGS) thanks to the interconnection between the cyber-physical IoT devices installed in the gates (sensors, cameras, barriers) and the PCS for the

**FIGURE 3.** Shipping and Logistics Platform Framework



automated and unattended exit of goods from the port.

In line with this commitment to new emerging technologies, and, within the framework of the Opentop<sup>3</sup> initiative, the Port Authority of Valencia, besides participating as a Gold Corporate partner in the acceleration and incubation programmes, offers the entrepreneurial ecosystem preferential access to its physical facilities to carry out proofs of concept of its MVPs. Additionally, entrepreneurs will have, in the very near future, controlled access to anonymised data, through a sandbox where they will be able to develop software and experiment with new technologies, architectures or frameworks in a secure, open and controlled environment.

Finally, advanced PCSs such as Valencia have an interesting duality, since they provide value to both local ecosystems and international port communities. In this sense, the Port of Valencia has technically assisted multiple ports in their PCS implementation projects and participates in

International Port Community System Association (IPCSA) and other international associations that develop standards for the industry. Nonetheless, there are still great untapped opportunities in the internationalisation ambitions of Port Authorities where PCSs can provide strategic value in the future.

In conclusion, PCSs have brought enormous value to the heterogeneous environments where ports are located for more than 20 years. However, the current challenges ports are facing are no longer solved by simply eliminating paper documents but require much more advanced value propositions. The evolution of PCS and its contribution in today's ecosystems requires the intensive exploitation of the six elements defined above.

It is time for reflection, time for a leap forward.

#### FOOTNOTES

1. Valenciaport PCS manages more than 85 million of transactions per year.
2. First Port of Spain and fourth in Europe in container traffic volume in 2021.
3. <https://opentop.es/>

#### ABOUT THE AUTHORS:

Jose Luis Cárcel works as Digital Transformation Specialist at Fundación Valenciaport, the R&D innovation center of the Port of Valencia. At Fundación, José Luis is involved in multiple projects related to the study and development of disruptive technologies like 5G, the Internet of Things or Artificial Intelligence, focusing on its application to the maritime and logistics ecosystem.

Alexandre Sánchez works as Port Community System Manager at Autoridad Portuaria de Valencia, the public body managing the port of Valencia in Spain. At Autoridad Portuaria de Valencia, Alexandre is leading an enthusiastic team with the aim of offering digital services to the +1,000 companies that make up the port community.

#### ABOUT THE ORGANISATIONS:

Fundación Valenciaport is an Applied Research, Innovation & Training centre providing services to the port and logistics cluster. This initiative of the Port Authority of Valencia has enjoyed the collaboration of notable businesses, universities and institutions from the port community.

The Port Authority of Valencia (PAV), which trades under the name of VALENCIAPORT, is the public body responsible for running and managing three state-owned ports along an 80-kilometre stretch of the Mediterranean coast in Eastern Spain: Valencia, Sagunto and Gandía.



**“THE PORT AUTHORITY OF VALENCIA, AS A PUBLIC ENTITY, GUARANTEES THE CUSTODY OF DATA, ITS IMMUTABILITY AND SECURITY.”**

# CREATING VALUE THROUGH END-TO-END SUPPLY CHAINS

**"IT GOES BEYOND OFFERING SOLUTIONS TO TRANSPORT  
CARGO AT EVERY STEP OF ITS JOURNEY AND MAKING  
INTEGRATED LOGISTICS MORE MEANINGFUL FOR OUR  
CUSTOMERS AND THEIR CUSTOMERS TOO."**





**Vikash Agarwal,**  
Managing Director,  
Maersk South Asia

Integrated and end-to-end logistics have become the buzzwords over the last two and half years since the pandemic first struck. But what do these terminologies really mean, what are they worth in the real world, and how do they create value for shippers' supply chains? Vikash Agarwal, Managing Director, Maersk South Asia pens what end-to-end logistics means to Maersk and the top priorities for integrated logistics as far as customers are concerned.

In the early months of 2020, world trade started coming under tremendous stress as the COVID-19 pandemic forced global economies to go into lockdowns. Manufacturing halted, borders closed, and retail patterns changed, all leading to an unforeseen shock to the demand and supply equation in global trade. Regardless of the staggered lockdowns and varying restrictions, complex supply chains did not have an option to stop, especially as the essential goods that were required the most during the pandemic had to move around the world without being affected by any disruptions.

While this situation brought the spotlight on the global supply chains and logistics services providers who became overnight heroes of the pandemic, it was not until a few months later that the resilient ones started standing out and shining more than the others. It was an absolute challenging time for all of us, but we believe that, at Maersk, it was our strategy to integrate supply chains and provide end-to-end logistics that helped us sail through the toughest times, stronger than the others.



**ABOVE**  
Farrukhnagar  
Warehouse

To put it simply, integrated logistics means providing a solution to our customers for every logistical requirement they would have, from origin to destination, through a single window. But then, it is far more complex than what can be described in a single sentence. Integrated logistics, or end-to-end supply chains, means creating a network of networks that overcomes the fragmentation in the market, seamlessly links supply to demand, provides visibility, is technologically enabled and is sustainable in the long run. It is also essential to understand that end-to-end, integrated logistics is not just about covering the entire logistics process and being informed about any changes, but it is also about being able to make real-time supply chain management decisions in any part of the chain, for any logistics functions and at any location. Most importantly, the entire process has to be tailored considering each

company's goals and needs. The bottom line is that end-to-end logistics should ultimately benefit the customer in two aspects — cost and time. At Maersk, we have defined five key points that define the transformation of supply chains to this effect, which are key indicators that bring value to our customers when it comes to end-to-end logistics. These are:

**1. A SINGLE PLATFORM TO INTEGRATE THE INFORMATION**

Having unified input and output information allows immediacy without having to contact different actors in a supply chain, such as the shipping company, the landside transporter, a warehousing company, or a customs agent. This eliminates inefficiencies of communication and response delays to ultimately enable quicker decision-making and actions. At every stage of the supply chain, information about



the movement of the cargo can be updated and passed on to the next stage on the same platform creating a seamless flow of data with a single source of truth.

**2. FLEXIBILITY AS A COMPETITIVE ADVANTAGE**

During the pandemic, the demand patterns changed. Lifestyle retail products moved more towards eCommerce platforms, and food, medical and PPE demand shot through the roof through every possible channel. This meant that the supply chains for certain goods had to be slowed down with increased demand for storage options, while others had to be sped up with sharp inventory management. With end-to-end logistics, the integrated logistics providers were in a better-suited position to offer this service as

they had better control over the movement of goods throughout their journey. They had access to various solutions and answers to almost every problem. This, along with visibility and transparency, meant that we could manage inventories more precisely. Naturally, better inventory management led to an ideal situation where there were neither excesses nor shortages, thus providing a competitive edge for the customers in terms of quick reaction to market demand without putting any pressure on the costs.

**3. AGILITY TO PREDICT AND ADAPT**

An important result of building end-to-end logistics is adjusting supply chains quicker and more precisely. As an integrated logistics provider, we focus a lot on talking with our customers and understanding the

developments in the market. This helps us understand the changing patterns and, to a certain extent, predict how consumer behaviour will tilt. With this knowledge and control of the movement of goods throughout their journey, we can provide a more differentiated experience to our customers.

**4. END-TO-END TRACEABILITY**

An important element of end-to-end logistics is not only about us, as the logistics provider, having complete visibility of the cargo's journey but also being able to provide it to our customers. With the availability of traceability, the customer sees the value in trusting us on the one hand and can take more informed decisions on the other hand. Traceability also means that we can provide a single platform to all stakeholders beyond the customer.

**“WITH THE AVAILABILITY OF TRACEABILITY, THE CUSTOMER SEES THE VALUE IN TRUSTING US ON THE ONE HAND AND CAN TAKE MORE INFORMED DECISIONS ON THE OTHER HAND.”**

## 5. SUSTAINABILITY

Last but not least important is the aspect of sustainability. The idea of driving efficiencies through integrated logistics goes beyond cost and time and impacts elements such as carbon footprint. Sustainability can also be achieved by wisely using the right modes of transport. For example, Maersk has transferred a certain amount of cargo from being transported on the road to being transported on the rail, reducing the carbon footprint. We can take such decisions when we have control over the movement of the cargo. Our customers also demand a lower carbon footprint, and when we have the power to decide how the cargo moves through the journey, we can achieve what our customers want; and in a way that is also right for the environment.

These five enablers and key indicators help us unfold the right layers of end-to-end logistics and how we create value for our customers. It goes beyond offering solutions to transport cargo at every step of its journey and making integrated logistics more meaningful for our customers and their customers too. Eventually, with our end-to-end solutions, we want to stay true to our purpose of improving life for all by integrating the world.

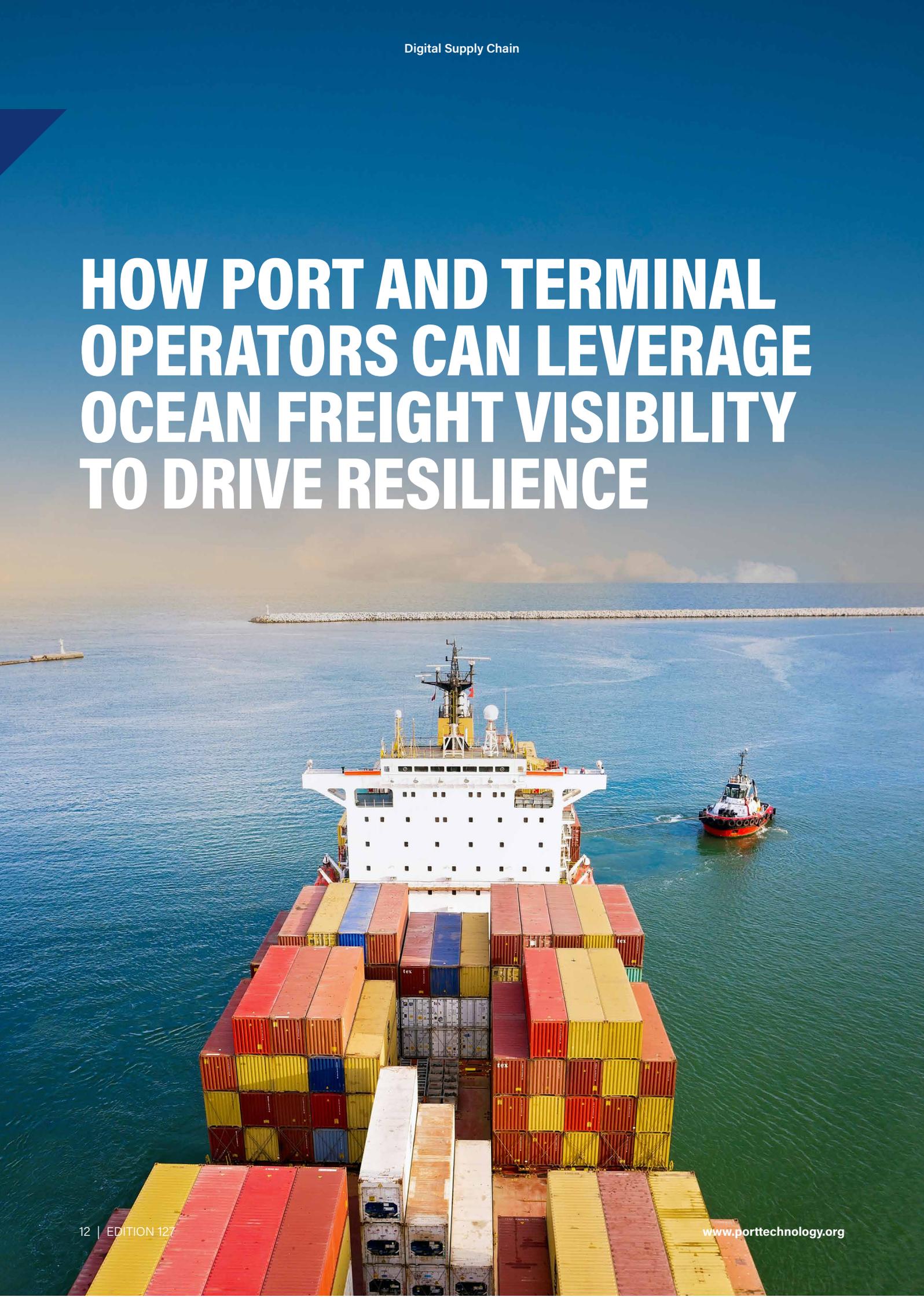
### ABOUT THE AUTHOR:

Vikash joined Maersk South Asia as the Managing Director on 1 March 2021. Prior to Maersk, Vikash worked with CEVA Logistics, where he was their MD for the Indian subcontinent. Vikash is an accomplished business leader and has a successful track record of leading country-level operations with wide-ranging regional roles in the logistics industry. In a career spanning 20 years, he has held responsibilities for managing finance, business advisory, procurement, and general management, leading large teams in the Asia Pacific region, Middle East and Africa, including holding operational responsibility for the Indian subcontinent and Malaysia. Vikash is a Chartered Accountant by qualification. Born in Vrindavan in the Northern part of India, 51-year-old Vikash grew up studying in different boarding schools across the country.

### ABOUT THE ORGANISATION:

A.P. Moller - Maersk is an integrated logistics company working to connect and simplify its customers' supply chains. As a global leader in shipping services, the company operates in more than 130 countries and employs over 100,000 people worldwide. Maersk is aiming to reach net zero emissions by 2040 across the entire business with new technologies, new vessels, and green fuels.

# HOW PORT AND TERMINAL OPERATORS CAN LEVERAGE OCEAN FREIGHT VISIBILITY TO DRIVE RESILIENCE





**Dennis Perjet,**  
Head of Strategic Accounts  
EMEA, Tive

It's no secret that technology is the key to resilience in today's global supply chain. With nearly 90 per cent of the world's freight moving by ship — and maritime freight volumes expected to triple by 2050 — ocean freight visibility is now more critical than ever.

Everyone from shippers, beneficial cargo owners (BCOs), ocean carriers, non-vessel operating common carriers (NVOCCs), and their customers and consumers rely on ocean freight visibility to know where their shipments are — and when they will arrive. Another often-overlooked group of stakeholders who desperately needs real-time information regarding ocean shipments: port and terminal operators. Knowing what is coming their way in advance helps them allocate equipment and labor resources accordingly.

Of course, the lynchpin for that activity is access to reliable data. Port and terminal operators must know the following:

**“KNOWING WHAT IS COMING THEIR WAY IN ADVANCE HELPS [PORT AND TERMINAL OPERATORS] ALLOCATE EQUIPMENT AND LABOUR RESOURCES ACCORDINGLY.”**

- When a ship leaves its port of origin
- When a vessel arrives at the destination port
- Any shipment-specific docking orders
- When a container gets discharged from a boat
- When that container crosses a terminal gate via train or truck

That data is used by port and terminal operators to schedule resources to meet and service ships and load/unload cargo. Shippers, freight forwarders, and

other stakeholders rely on that information to arrange drayage and other downstream supply chain activities — to ensure shipments stay on track for on-time, in-full deliveries.

The ongoing digital transformation of modern supply chains makes it possible to share ocean freight visibility with all relevant stakeholders in real time. Trackers collect location and conditions data — such as temperature, light, shock, or humidity — at the item or container level; real-time alerts inform





## “OCEAN FREIGHT VISIBILITY AND REAL-TIME DATA SHARING GO HAND IN HAND WITH DRIVING TODAY’S INCREASINGLY DIGITAL SUPPLY CHAINS TOWARD GREATER RESILIENCE.”

stakeholders and make it possible to mitigate potential delays or other disruptions that threaten shipments.

Despite the best-laid plans, things can (and will) go wrong in any global supply chain, starting at the port or while at sea. Ocean freight visibility enables port and terminal operators to manage by exception to avoid or mitigate disruptions, adjust schedules, and communicate as needed — the very fabric of supply chain resilience.

### **VISIBILITY CHALLENGES OFTEN START BEFORE SETTING SAIL**

Port and terminal operators do not operate in a vacuum. With so many factors beyond their control, they must have visibility and data from up and down the supply chain, communicate in real-time, and be flexible to overcome challenges. Here are a few ways ocean freight visibility can help.

### **LESS LIKELY TO MISS THE BOAT**

Road shipping overseas — whether in Asia, Europe, South America,

or North America — can throw a wrench in ocean shipping plans. For example, it can be challenging for a big box retailer waiting on a shipment of aged cheese from the Netherlands to get any visibility from halfway around the world. Any number of things could happen to a truck — road construction, traffic congestion, mechanical breakdowns, and so on — that can cause a delay that leads to a shipment not getting on its scheduled vessel at the Port of Rotterdam.

### **ELIMINATE TRANS-SHIPPING SURPRISES**

But what if the container of cheese arrives in Rotterdam, but the vessel is full and already at sea? Rather than leave the container unattended, ocean carriers will put that freight on another ship. The cheese will eventually make it to the US, but only after it goes through the Port of Shanghai. That literal slow boat to China could add two months — or more — to the delivery schedule. Without real-time ocean visibility, you won't know

your container is on a completely different vessel until it's too late.

### **ROLL WITH THE PUNCHES**

The opposite is also possible when a rollover occurs due to insufficient volume. In this situation, the ocean carrier decides there aren't enough containers on the vessel to depart — so the ship stays in the port to wait for more containers. Typically, shippers and port operators discover these scenarios through maritime solutions and vessel tracking using satellite data that confirms a vessel hasn't left the port. Some satellite data providers — such as Spire, Transvoyant, Project44, and FourKites — also sell this data to other visibility solutions. However, it still depends on you knowing that your container is on the intended vessel. You might also rely on word-of-mouth communication from the freight forwarder or ocean carrier, which will give you only a generic update that the ship is “in transit” — only it is not.

All of the above can lead to backloads from drayage and detention and, eventually, potential congestion fees.

### **TROUBLE LOOMS AT THE DESTINATION PORT, TOO**

Upon arrival, dockworkers must unload containers and freight from the ship and onto the dock. Without adequate ocean freight visibility, you are in the dark regarding where you are within those free days before incurring detention and demurrage fees. By knowing your freight's location (in a truck, sitting at a port or warehouse, etc.), you can take steps to reduce or eliminate those fees.

Ocean freight visibility is difficult in this space because you're no longer tracking the vessel; the vessel has already arrived at the port, but freight has not yet started the next leg of its journey. When it does get on a truck, it might be with a random small drayage carrier that might not be plugged into an electronic logging device (ELD) or other



means of tracking. Therefore, this in-between drayage period becomes a glaring blind spot — and source of risk. On its best days, the drayage space operates on estimated ETAs and best-guessed assumptions regarding freight location.

That approach is not good enough in today's global supply chains. You can't afford to incur massive extra fees or lose valuable cargo; the financial ramifications are too great. You must know where freight is at all times, underscoring the tremendous value of ocean freight visibility and real-time visibility solutions from Tive.

### **BRINGING OCEAN FREIGHT VISIBILITY TO A WHOLE NEW LEVEL**

As a leading provider of ocean freight visibility solutions, Tive is at the forefront of driving the push for digital supply chains and real-time data sharing. Tive cannot solve port congestion issues, but it can give port and terminal operators access to the same data and insights shippers and other stakeholders

receive when following a shipment through the supply chain.

When you know a shipment's real-time location and conditions (temperature, light, shock, or humidity), you can make risk-mitigating decisions at any moment. For example, if your vessel hasn't left yet, but your Solo 5G tracker has been removed from the cargo, that phone call to your forwarder or ocean carrier becomes a much more focused conversation. The ensuing collaboration and subsequent resolution is resilience in action.

Technology + Visibility + Partnerships = Resilience

Ocean freight visibility and real-time data sharing go hand in hand with driving today's increasingly digital supply chains toward greater resilience. It's a collaborative effort by visibility solutions providers — such as Tive and the Open Visibility Network — to ensure that port and terminal operators have the same valuable data and insights as shippers and other supply chain stakeholders. Having everyone on the same page

will help calm the often-turbulent waters of maritime shipping, saving time and money — and driving increased customer satisfaction.

### **ABOUT THE AUTHOR:**

Dennis Perjet is Head of Strategic Accounts EMEA at Tive. Since joining Tive in 2019, Dennis has been a key figure in supporting sales, marketing & partner activities globally. Prior to this, he has worked in sales and business development roles at various tech companies and completed an MBA in International Marketing at the European School of Business in Reutlingen, Germany.

### **ABOUT THE ORGANISATION:**

Tive is the leading provider of in-transit shipment visibility solutions. Hundreds of global brands use Tive every day to actively optimise shipments, improve the customer experience, and unlock actionable supply chain insights. Our portfolio of industry-leading solutions empower logistics professionals to actively manage shipments — via road, air, ocean, and rail.

# MALAYSIA'S PREMIERE LOGISTICS HUB: PORT OF TANJUNG PELEPAS

**"TO RESECURE EFFICIENT, SUSTAINABLE OPERATIONS AND BUSINESS COMPETITIVENESS, PTP WILL CONTINUE TO PROACTIVELY INVEST IN ITS ASSETS AND INFRASTRUCTURE ALIGNED WITH PTP ESG AGENDA AND DIGITAL STRATEGY ROADMAP."**





**Jack Donnelly**, Editor, Port Technology International, featuring interviews with **Marco Neelsen**, CEO, **Joe Schofield**, COO, and **Nilesh Timbadia**, Head of Information Technology Division, Port of Tanjung Pelepas



The Port of Tanjung Pelepas (PTP) is the pride of Malaysia's maritime supply chain.

A transshipment hub with a capacity of 12.5 million TEU, located in Iskandar Puteri, Johor Bahru District, Johor, PTP boasts the nation's most advanced container terminal.

PTP celebrated a key milestone in January this year, becoming the first container terminal in Malaysia to surpass 11 million TEU, a 14 per cent growth on its yearly volume reaching 11.2 million TEU.

Joint owners APM Terminals (APMT) and MMC Group have invested some \$178 million in its facility for 2022. Targeting the 15 million TEU mark in the coming years, PTP prioritised a swathe of digital expansion projects.

### CONNECTING THE TERMINAL

In June, PTP entered an agreement to deploy Innovez One's AI-powered Port Management Information System (PMIS) to optimise its scheduling processes. Innovez One's MarineM solution integration is now fully underway at the port, utilising AI to instantly reallocate resources if a vessel's ETA changes, making the port resilient in the face of a volatile shipping landscape.

In September, PTP successfully implemented Navis RTG Optimization to improve utilisation of its rubber-tyred gantry fleet and reduce handling costs per container.

PTP operates facilities that include 172 rubber-tyred gantry cranes to manage container stacking on-site,

putting precision in container movements at a premium.

A continued sticking point in the sector is choosing digital solutions to invest in. Such an investment on digital applications can be a tough decision for a port operator to make when comparing software costs to investment in a new quay crane, for example.

Joe Schofield, Chief Operations Officer of PTP, told PTI: "PTP has always been investing into the latest technology to optimise operations and provide the best service. As technology adapts, so do we.

"We use our size of scale to collaborate with our vendors and they're very keen to develop new technologies in that space. I think in the past it was always easy to seek approval for a new piece

**“NEARLY 5,000 PEOPLE HAVE LIVE INCENTIVES THEY CAN SEE ON EACH SHIFT AND HOW THE COMPANY IS RUNNING. AS AN ORGANISATION, EVERY SINGLE PERSON DOWN TO THE OPERATOR ON THE GROUND FLOOR KNOWS EXACTLY WHAT WE’RE TRYING TO ACHIEVE.”**



of equipment. It was all about hardware than bringing in software.

“We have found through our digital journey that shareholders are seeing the benefit of software versus infrastructure and capital works. When we connect everything via an Internet of Things ecosystem, we are getting much more benefit out of our current fleets without buying any more steel.”

Internally, for example, one of the biggest successes the port has had is engaging its workforce on digital technologies.

“We have mobile applications with our workforce so they can track each shift, feeling part of each success,” Schofield said.

“Nearly 5,000 people have live incentives they can see on each shift and how the company is running. As an organisation, every single person down to the operator on the ground floor knows exactly what we’re trying to achieve.”

Nilesh Timbadia, Head of Information Technology Division at PTP, added: “We want our operators to be able to interact with

technology better and be more efficient. The technology we use [places] the control back into the equipment operator’s hand rather than managing tasks from a control room, so that operators are able to make quicker, faster decisions.”

#### GLOBAL IMPACT

Like many other ports, PTP has a multi-year roadmap which is reviewed every six months to take into account global changes to the flow of containers. The global supply chain has been impacted throughout the year through a mix of COVID-19 lockdowns continuing in China; strike action from port and inland transport workers; and increased costs due to the Russia – Ukraine conflict.

Consequently, the term resiliency has been on the minds of many in the industry.

It is therefore imperative for PTP to efficiently respond to the disruption of global supply chains and be dynamic as well as robust with competition, especially

when other neighbouring ports are coming online with a lot of capacity and the ongoing China’s zero-COVID 19 measures will continue to impact the market.

When looking at the current disruption, the biggest impact is clearly towards the vessel schedule – creating the biggest challenge of berth and yard capacity and congestion.

However, PTP has been very fortunate to be able to work closely with its customers and did not see many issues during COVID-19 since.

As a transshipment hub, PTP did not see as much of the congestion as the other gateway hubs due to its resilience and flexibility.

While other hubs had a 30 to 40 day wait for vessels, PTP’s longest wait time was of two days.

Timbadia added that in smoothening out the Malaysian supply chain against the disruption, PTP works in a major free trade zone, which is being expanded by 81 acres of Free Zone land currently under development.

“The Free Zone encourages the supply chain to smoothen trade processes between the Free Zone, and inland,” he said.





The “basics” on digitalisation, as Timbadia puts it, PTP has gotten right so far: the port is using a robust Navis TOS system, and its ERP system is now up and rolling.

### 2023 OUTLOOK

Moving into 2023, Timbadia outlines the port’s digital priorities. The port is heading deeper into data lakes and analytics, using data from various systems in the port to improve visualisation and intelligence for customer experience improvement.

The port will make a move to consider implementation of a 5G wireless network at its terminal, moving on from its current system of 4G LTE.

“We will move to 5G due to the amount of data we will be collecting, and the speed it will need to be collected,” Timbadia said. Taking into account external geopolitical tensions currently, Timbadia said a continued collective focus will rest on cybersecurity. “We have to ensure that the port is protected in terms of cybersecurity, and our cybersecurity resilience and investments has just increased over the last two years as well,” he said.

The port has begun its own social engineering exercises on email phishing, as well as phone phishing trials with staff members. “The biggest cybersecurity weakness is people. With our trials, we can increase our training so

people can spot phishing emails. We have also implemented a second layer of phishing blocking software with Cisco tools, building on the current Microsoft 365 tools we have available.”

On the nuts and bolts side of 2022, in the third quarter of the year PTP built a new empty stacking yard complete with 12 new empty handlers, to support the growing empty container volume market for PTP. In Q4, PTP has taken the delivery of seven quay cranes and 11 RTGs, purchased from 2021. The port has also recently signed a contract for three additional cranes due to be delivered in Q3 2023.

The infrastructure investments are all part of PTP’s 2019 Ipsum Magna programme (Latin for

**“THE BIGGEST CYBERSECURITY WEAKNESS IS PEOPLE. WITH OUR TRIALS, WE CAN INCREASE OUR TRAINING SO PEOPLE CAN SPOT PHISHING EMAILS.”**

'great optimisation') to increase its terminal footprint capacity. Schofield explained: "These larger cranes allow us to scale up under the Ipsum Magna programme which covers quay cranes, RTG fleets, and yard. We will soon issue a contract for a further RTGs for 2024, improving flexibility for our customers and increasing capacity.

"The Ipsum Magna project is also working on a massive refurbishment of our yard. We have one of the largest single fleets [of equipment] in the world. We have a dedicated team that looks at our holistic picture and the equipment investments that we need."

With a focus toward 2023, the Ipsum Magna five-year plan continues. In 2023, work will begin on a 455-metre berth, bringing PTP up to nearly 5.5 kilometres of quay line in total. The berth will be operational by 2026, complete with quay cranes, RTGs, and potentially autonomous and electrical Prime Movers as part of PTP's sustainability efforts.

Schofield said: "I think it's an exciting time for ports, and the logistics business at a whole. There are so many new shifts in the market and so many options about how you leverage them to get the best out of your business. I think it's an exciting time to work in the port space."

Marco Neelsen, Chief Executive Officer of Port of Tanjung Pelepas reiterated that the future looks exciting for PTP as the company moves forward with its digital strategy roadmap. "The transition of digitalisation and automation is speeding up in the entire maritime industry. To resecure efficient, sustainable operations and business competitiveness, PTP will continue to proactively invest in its assets and infrastructure aligned with PTP ESG agenda and digital strategy roadmap."

"PTP is committed to continue with the journey and further create sustainable value for our customers, shareholders and other stakeholders," added Neelsen.



## **"PTP IS COMMITTED TO CONTINUE WITH THE JOURNEY AND FURTHER CREATE SUSTAINABLE VALUE FOR OUR CUSTOMERS, SHAREHOLDERS AND OTHER STAKEHOLDERS."**

### **ABOUT THE AUTHORS:**

Marco Neelsen joined PTP as Chief Executive Officer on 7 November 2016. A certified and trained navigational officer, Marco holds a bachelor's degree in Maritime Transport and a Master Mariner License from Germany. Prior to joining PTP, Marco Neelsen was the CEO of Buss Port Logistics GmbH & Co. KG in Hamburg, Germany where he was responsible in leading a portfolio of 12 multipurpose and offshore terminals in Germany, Netherlands and Turkey. His wide-ranging experience also covers various port operations and top-level management position within APM Terminals, having spent more than 10 years in various ports in Middle East like Salalah (Oman), Aqaba (Jordan), Saudi-Arabia and Bahrain as well as a stint in Lagos (Nigeria). With more than 20 years experience in the Maritime Industry, predominantly in Ports within Europe and Asia and more than 12 years in Business Leadership roles, Marco Neelsen is set to bring PTP forward.

Joe Schofield joined PTP as Chief Operations Officer (COO) on 1 November 2017. Prior to

joining PTP, Joe was the Chief of Operation Officer at Port of Salalah, Oman. He was also previously the General Manager of Operation for APM Terminal based in Dubai, UAE. Joe has 25 years of industry experience covering multiple modes of operation, countries, and diverse cultures.

Nilesh Timbadia joined PTP as Head of Information Technology Division on 4 May 2020. Prior to joining PTP, he was with ICDAT Consulting based in Kuala Lumpur as Change & Project Delivery Director. Nilesh has more than 30 years of experience in IT, serving various industries ranging from energy, manufacturing, supply chain and government sectors.

### **ABOUT THE ORGANISATION:**

The Port of Tanjung Pelepas (PTP) is Malaysia's largest container terminal. PTP is located strategically at the confluence of one of the world's busiest straits, the Melaka Straits and is very close to the international shipping routes. PTP is currently ranked 15th among the world top container ports.

**SDP**

**SMART DIGITAL PORTS  
OF THE FUTURE**

**SMART, EFFICIENT &  
CONNECTED**

**16 - 17 MAY  
2023**

**ROTTERDAM,  
THE NETHERLANDS**

## **REGISTER YOUR INTEREST**

Join the Smart Digital Ports of the Future conference for a range of networking opportunities and expert-led discussions on standardisation and data sharing, technical case studies from the most advanced ports, emerging AI technologies, Digital Twin, IoT applications and many more.

**300+**

**ATTENDEES**

**40+**

**SPEAKERS**

**85+**

**PORTS &  
TERMINALS**

**12+**

**SESSIONS**

**REGISTER TODAY AT**

**SDP.PTIEVENTS.COM ←**

If you would like to promote your business to a captive audience then becoming a sponsor at SDP 2023 could be the perfect partnership for you.

For more information on sponsorship please email [events@porttechnology.org](mailto:events@porttechnology.org)

# DATA-SHARING IN THE MARITIME SUPPLY CHAIN: EPIPHANY OR MYTH?

**"AMONG MANY HINDRANCES IN DATA-SHARING IN LARGE LOGISTIC INFRASTRUCTURES ARE DATA QUALITY, AVAILABILITY, PROVENANCE, AND TRUSTWORTHINESS."**



**Dr. Bogdan Iancu**, Research Fellow, Åbo Akademi University, and **Daria Gritsenko**, Assistant Professor, University of Helsinki

The maritime supply chain is an integral part of global economy. In the past couple of years, the maritime sector has been heavily disrupted, facing unprecedented challenges affecting society far and wide. Escalating geopolitical turmoil, ever more extreme weather conditions and enduring effects of the COVID-19 pandemic revealed manifold deficiencies in the maritime supply chain. The overlapping crises highlight an acute need to improve resilience of the maritime sector. What kind of strategies would enable necessary transformations of the maritime supply chains? Arguably, digitalisation is a key to ensuring strategic resilience of the maritime sector. Yet, things are not as simple.

**WHAT IMPEDES MARITIME DIGITALISATION?**

Digitalisation has been long acclaimed as a crucial factor in advancing developments of the maritime sector. Digital innovation is expected to bring about more robust, more secure and greener supply chains. Yet, for digital innovation to thrive, there is a need for a change of mindset. Maritime players need to ensure that supply chains function as an ever-changing ecosystem that can smoothly adjust to uncertain circumstances and withstand the test of time by employing agile

development.

Even though tremendous progress has been made in the past years, the maritime sector offers a rather restricted perspective of the ecosystem as a whole. This limited transparency of supply chains is arguably the greatest vulnerability of logistic ecosystems.

The maritime sector demonstrates a deep-rooted reluctance to sharing data. Reasons are multiple. Various segments of the supply chain resort to non-automatic operations (emails, phone, faxes etc.) which are prone to introducing human errors, thus hindering agile development. Many maritime actors aim to achieve or maintain their competitive advantage through data. Others are confronted with legal conundrums regarding data privacy and compliance. Data-sharing with governmental bodies, which is extensively intertwined in maritime operations, is often regarded with a certain wariness by private companies. In sum, data is rarely shared across the maritime supply chain, impeding the digital transformation.

**DATA - THE NOT-SO-NEW CURRENCY**

Data is still a predominantly untapped resource in the maritime sector at large. For instance, in an attempt to enhance port

operations, the International Maritime Organization (IMO) demands its members to exchange crucial data on cargo, crew, and passengers electronically. Yet, only a small number of ports actually comply with these requirements. One reason is the lack of data-sharing platforms and policies to encourage this change towards digital data-sharing.

Even when data is indeed shared among various players across the supply chain, challenges to full-scale maritime digitalisation remain. Among many hindrances in data-sharing in large logistic infrastructures are data quality, availability, provenance, and trustworthiness. Another crucial aspect is interoperability, given that many of these actors use different platforms and digital solutions to exploit data. The lack of standardised data-sharing platforms is among the major barriers to smooth data-sharing in the maritime supply chain.

To promote data-sharing and data analytics at a large scale, it is crucial that all actors of the maritime sector, in particular those of the maritime supply chain, share a common standard. Both the adoption and implementation of data-intensive maritime operations require a change in attitudes towards data collection and usage. Finally, advancing new standardised data-exchange

**“DIGITAL INNOVATION IS EXPECTED TO BRING ABOUT MORE ROBUST, MORE SECURE AND GREENER SUPPLY CHAINS.”**

avenues calls for industry-wide protocols. Standardised data-exchange not only makes for a more efficient and resilient supply chain, but also for a greener one, which in today's context is of utmost importance.

### **TO SHARE OR NOT TO SHARE? THAT IS THE QUESTION.**

Digital transformation is without doubt taking by storm the supply chain, data-sharing playing an essential part in it. This new data wave will dramatically change the maritime landscape and will help ship owners and operators to comply with upcoming decarbonisation and energy efficiency regulations.

The maritime sector produces a great amount of data daily. Data quality, availability, provenance, and trustworthiness are crucial both for ship owners and operators, as it can provide a holistic view of maritime operations along the supply chain. As regulations and priorities change rapidly, data emerges as the key element to help ship owners and operators to take critical decisions in a fast-paced environment.

Extracting relevant insights from data implies not only predicting various trends to choose the appropriate action at a given time, but also evaluating past actions to

be able to come up with improved decision-making strategies in the future. Being able to trace data along the supply chain makes for more sustainable and efficient logistics ecosystems and brings competitive advantage in the long term.

### **WHERE NEXT?**

To be able to make use of data to the fullest and contribute to a sustainable supply chain, it is crucial that all actors involved can make well-informed decisions in reasonable time. There are several initiatives to promote data-sharing within the supply chain: FLOW in the US, Gaia-X in Europe, International Data Spaces, and some others. Marinspace-X, for instance, designs a data ecosystem for oceans, ensuring the security and visibility that are essential for efficient data exchange both at sea and underwater. These federated platforms ensure that all actors are speaking the same 'data language', allowing for data-exchange within a secure and transparent setting. They are defining the future of the supply chain.

The sooner new data-sharing solutions are adopted by the key players and supported by governmental policies, the closer we get to a greener, more efficient, and sustainable maritime supply chain.

**“THE SOONER NEW DATA-SHARING SOLUTIONS ARE ADOPTED BY THE KEY PLAYERS AND SUPPORTED BY GOVERNMENTAL POLICIES, THE CLOSER WE GET TO A GREENER, MORE EFFICIENT, AND SUSTAINABLE MARITIME SUPPLY CHAIN.”**

### **ABOUT THE AUTHORS:**

Dr. Bogdan Iancu is a computer scientist who completed his undergraduate studies in Bucharest and his PhD in Turku. He worked both in the academic and industrial sectors and is currently a research fellow at Åbo Akademi University. His research focuses on data ecosystems, data-centric AI, and maritime informatics.

Daria Gritsenko is Assistant Professor at the University of Helsinki, where she is affiliated with the Aleksanteri Institute and the Helsinki Institute of Sustainability Science (HELSUS). Her work focuses on transformation of political governance in response to the changing natural and technological environments.

### **ABOUT THE ORGANISATIONS:**

Faculty of Science and Engineering at Åbo Akademi University develops solutions and processes that slow down climate change, promotes a cleaner environment and healthier sea, and finds methods for detecting, treating, and preventing diseases. The faculty's ultimate goal is for people to prosper in a sustainable society.

The University of Helsinki is Finland's largest and oldest academic institution. Today, this multidisciplinary academic community solves problems that concern all of us, also on the global scale. A community of 40,000 students and employees is diversely open, comprehensively quality conscious and joyfully serious.

# THE WATERSHED MOMENT FOR ELECTRONIC BILLS OF LADING

**“DURING THE PANDEMIC, THE SHIPPING  
INDUSTRY FACED NEW CHALLENGES  
SUCH AS RISING COURIER COSTS AND  
STAFF WORKING FROM HOME.”**



**Bertrand Chen,**  
CEO, Global Shipping Business  
Network (GSBN)

## “THE BILL OF LADING HAS STUBBORNLY RESISTED THE TRANSITION TO THE DIGITAL AGE.”

The first commercial attempt of creating an electronic bill of lading (eBL) was in 1999. Yet over the past two decades, the industry has seen little to no uptake in eBL. In fact, every year 28.5 billion paper trade documents continue to be printed and couriered around the world.

The bill of lading has stubbornly resisted the transition to the digital age. There are good reasons for this. Paper documents have been used for centuries, simple physical possession is indicative of ownership and they are universally recognised globally. What's more, the use of physical trade documents is enshrined in maritime and trade laws around the world.

However, the game is changing. Three megatrends are pushing eBLs towards mass adoption.

### BETTER LEGAL CLARITY

The first megatrend is more legal certainty in favour of eBLs and other electronic trade documents.

In 1996, the US enacted Section 230 of the Communications Decency Act, which provided immunity for internet platforms with respect to third-party content, so that such websites would not be held accountable as a publisher. This paved the way for Facebook, Google and Twitter to become household names.

Today given the lack of legislation governing electronic trade documents, eBL solutions must rely on rulebooks that must be approved by protection and indemnity insurers' club to be eligible for insurance coverage. All participants must sign into the

same rulebook. Just one missing partner in the transaction prevents the usage of an eBL solution. This is a classic cold start problem hindering mass adoption.

However, countries are beginning to update their laws to support paperless trade. The International Chamber of Commerce (ICC) has been promoting the UNCITRAL Model Law on Electronic Records (MLETR) to encourage countries to adopt new legislation to make digital trade documents as legally valid as their paper-based equivalents. Which is why government proposals in the United Kingdom to pass a bill to adopt MLETR, is significant. The UK has traditionally had an influence on international law, particularly those in common law countries.

This will make the adoption of eBL much easier as rulebooks will matter less, while legal interoperability between solutions accelerates adoption.

### PAPERLESS IS HERE TO STAY

The second megatrend is the irreversible COVID-19 induced behaviour change towards paperless trade.

In 2013, when digital payment applications such as WeChat Pay and Alipay came on the scene in China, cashless quickly became king. Today the country leads globally by a large margin in mobile payments and there is little need for people to carry physical cash.

Similarly, during the pandemic, the shipping industry faced new challenges such as rising courier

costs and staff working from home. Consequently, the industry as a whole is embracing a move away from paper documents, which can be error prone, costly to handle and couriering them leaves a substantial carbon footprint.

According to McKinsey, digitising the bill of lading, which accounts for up to 30 per cent of trade documentation costs, could lead to cost savings for all stakeholders amounting to \$6.5 billion a year, as well as unlock \$50 billion in value for the ocean trade ecosystem. It predicts that the industry can adopt digital trade documentation in three to four years, reaching 100 per cent adoption by 2030.

Paper documents also pose significant risks for banks. Recently, Standard Chartered and OCBC Bank received a blow in their attempt to recoup losses from the collapse of commodity trader Hin Leong amid fraud allegations. The mis-delivery claims pursued by the banks arose after the paper bills of lading were not available at the time of discharge and letters of indemnity were used instead. Such a scenario, and the need for a letter of indemnity altogether, would be eliminated as banks adopt eBLs.

### THE RIGHT TECHNOLOGY

The last megatrend is technology. In 1996, Webvan was founded to revolutionise the grocery industry by leveraging the then nascent internet to deliver a digital shopping experience. Five years later it went bankrupt. In 2012, Instacart was founded with the same vision and subsequently thrived. The difference in outcomes

can be largely attributed to the mass adoption of a new computing paradigm – the smartphone.

Similarly, there have been eBL solutions as early as 1999 with the launch of Bolero, soon to be joined by Essdocs. While they have seen slow adoption so far, this is changing. With the emergence of blockchain technology, solutions can now be built that guarantee security, privacy, and uniqueness of the title ownership. The most tangible use case for NFTs is digitising the exchange and transfer of title of trade documents.

Of course, technology is never enough by itself. eBLs solutions must be designed with consideration of standards for the data and have inherent interoperability from the get-go. Therefore, the eBL standards from the Digital Container Shipping Association (DSCA) for container shipping, as well as from the Baltic and International Maritime Council (BIMCO) for bulk are crucial for the long-term adoption of eBL. To further accelerate adoption, DSCA has also partnered with eBL solutions to conduct technical interoperability pilots with customers, shipping lines and banks.

There is also another important consideration. DSCA and BIMCO's standards covers most of the types of eBL that can be issued. For mass adoption to happen, eBL solutions must address the holistic needs of maritime transportation in all its forms – container, bulk, and special cargo. Corporates and banks want comprehensive solutions and will not tolerate digitised solutions that only cover part of their businesses. This is the strategy for GSBN, an independent technology consortium for the shipping industry. It is already working with DCSA,

BIMCO and other standardisation bodies to make sure its blockchain infrastructure can support all types of eBL solution.

### **HARNESSING EBLs FOR A COMPETITIVE ADVANTAGE**

It is one thing to recognise the emergence of a new paradigm like eBLs, but it's another one to capitalise on the shift to gain a decisive competitive advantage.

In the same way the arrival of the iPhone paved way for the App Store, eBLs will exist within an ecosystem of new digital solutions. Blockchain infrastructure with platforms like GSBN not only support eBL solutions but will also serve a variety of other solutions, some of which will be interconnected natively. For instance, last year GSBN launched a Cargo Release solution, which can be composed with eBL solutions through its platform.

This creates an opportunity for all parties to discover what additional value they can create together for their customers and gain a competitive edge at a time when margins are compressing. For shipping lines this could be around offering the best digital user experience for their customers. For financial institutions offering trade finance, it could be having the widest connectivity to complete supply chain data and title ownership for a full digital experience for both letter of credit and open account.

We will also see a variety of third-party application builders developing front-end applications on top of the blockchain infrastructure. Banks, for example, only want to deal with a single user interface adapted to their processes, which connects

to different solutions through platforms such as GSBN.

### **IGNORE EBLs AT YOUR OWN PERIL**

With those three megatrends, we will see the industry quickly hit the tipping point for mass adoption of eBL. Best positioned to facilitate this are not-for-profit consortiums such as GSBN with the right business model for fostering collaboration. Over the next few years, we will see an explosion of new solutions and competition between unlikely partners.

Early adopters will be first to benefit from the cost savings, innovate and create new value for their business. No one wants to be a Blockbuster when a Netflix is taking over the screens. As with other technology paradigm shifts, those that are slow to adapt often find themselves irremediably trailing behind more clear-eyed competitors. Ignore eBLs at your own peril.

### **ABOUT BERTRAND CHEN**

Bertrand Chen is the CEO of GSBN. Bertrand oversees the consortium's overall strategy, with a mandate to serve the best interests of the shipping industry at large. Previously he served as the Group Data Scientist for a global MNC. He started his career as a trader on Wall Street.

### **ABOUT GSBN**

Global Shipping Business Network (GSBN) is an independent, not-for-profit technology consortium building a blockchain-enabled operating system to redefine global trade. The consortium was first founded by 8 global leaders in the global shipping industry accounting for one in every three containers handled in the world.

**“BLOCKCHAIN INFRASTRUCTURE WITH PLATFORMS LIKE GSBN NOT ONLY SUPPORT EBL SOLUTIONS BUT WILL ALSO SERVE A VARIETY OF OTHER SOLUTIONS, SOME OF WHICH WILL BE INTERCONNECTED NATIVELY.”**

# **THE ENABLING ROLE OF SMART AND FAIR REGULATION AND HARMONISED ENFORCEMENT ON THE COMPETITIVE ENVIRONMENT WITHIN THE TRANSPORT AND LOGISTICS CHAIN**





**Lamia Kerdjoudj,**  
Secretary General,  
FEPORT

Last April 2022, FEPORT sounded the alarm on the problematic cascading effects of the lockdown in Shanghai<sup>1</sup>. The COVID-19 related crisis already put a lot of pressure on the maritime logistics chain but it has also revealed that while the causes of congestion for instance often relate to bottlenecks located upstream or downstream terminals, ports are often the locations where all inefficiencies of the maritime logistics chain appear.

The issue of 'global supply chain disturbances' is a very complex one. It's a 'multi-headed monster' that has been growing long before COVID 19, the Ever Given incident, the Ukraine war, or the Shanghai lockdown. However, with inflation and the energy crisis acting as a magnifying mirror of all costly inefficiencies, it is crucial to find solutions.

Problems within the maritime logistics chain have gradually evolved over decades into what they are now and untangling them will therefore take considerable time unless new business models and new organisations are supported by smart and fair regulations and harmonised implementation.

The European continent and its 10 million square kilometres represent a wonderful testing ground for different ways to transport goods. Compared to transport by road, multimodal services including a maritime leg still face specific challenges with the required additional transshipment and last mile connections compared to door-to-door road transport.

Shippers are the key decision-makers in transport. They strive

#### OPPOSITE

Hutchison Ports BEST  
- Barcelona

## **“MORE TRUCKS, TRAINS, BARGES AND INTERMODAL SOLUTIONS COMBINING THEM ARE NEEDED FOR THE HINTERLAND TRANSPORTS.”**

for a balance between the supply chain cost and the customer satisfaction in terms of reliability, punctuality, and flexibility. Shippers are also more and more aware of the increasingly congested and fuel-intensive road transport while the less energy-glu-ttonous railways and inland waterways are still very much underused alternatives for massified volumes of cargo.

Therefore, modes and nodes like ports need to be increasingly connected to all modes of transport so that friction costs associated with changing between different modes of transport are as low as possible. This is now urgent and should be a priority in the EU.

The emphasis on measuring and reducing transport emissions is positioning railways and inland navigation as real alternatives that can both improve environmental performance and reduce the overall transport costs.

All actors of the maritime logistics chain are aware that customs authorities every day, juggle with the extremely difficult balance of running checks and not hampering circulation of people and goods. Smart enforcement might be part of the solution to not stop goods in their tracks.

Next to the advances in the field of Customs, digitalisation efforts in the transport and logistics sector, for example, the introduction of the eFTI Regulation, obliging authorities to accept transport information in electronic format are promising. In addition to digital B2A (Business to Administration) exchanges, this shall also incentivise more digital B2B (Business to Business) exchange.

However, smart enforcement should be supported by more efficient customs clearance of goods based on risk management methodologies and simplified revenue collection processes. This as a response to the sharp increase in the volumes of customs declarations, caused by recent changes in the EU VAT regime under the new VAT e-commerce package, which creates additional operational burdens for customs administrations.

All these supply chain difficulties (and solutions) have been around for a while but the latest global events such as COVID-19 or the Russian invasion of Ukraine have also emphasized them because part of the storage capacity in some ports has been dedicated to Russian cargo or to cargo checks performed by Customs authorities.



The availability of waiting areas for emergency situations as currently experienced are crucial because if trucks can still arrive at ports and get entangled in a bottleneck situation and face long waiting times. Emergency buffer zones can help to alleviate this type of situations. Many ports, some in cooperation with governments, provided such solutions around the Brexit switchover.

With respect to modal complementarity, ocean vessels are bigger but the standard truck combination is still at 16.5 metres (articulated vehicle) or 18.75 metres (road train) while freight trains are in many cases still limited to lengths well below the 740 metre TEN-T standard. So, more trucks, trains, barges and intermodal solutions combining them are needed for the hinterland transports. Also, where longer trains and high-capacity vehicles are used, turnover is improved. A cleverly designed combination of them in combined transport operations would further enhance turnover.

#### ABOVE

La Spezia Container Terminal - La Spezia

Reducing administrative procedures at the port by encouraging, for example, border authorities to carry out controls on goods in the hinterland or at destination would be a solution.

Seaport terminal operators are constantly investing and innovating. Some of them are offering multimodal solutions that makes it easier to build in redundancies in case of congestion, low or high water, incidents, and so on, while also allowing them to expand the geographical scope of their activities.

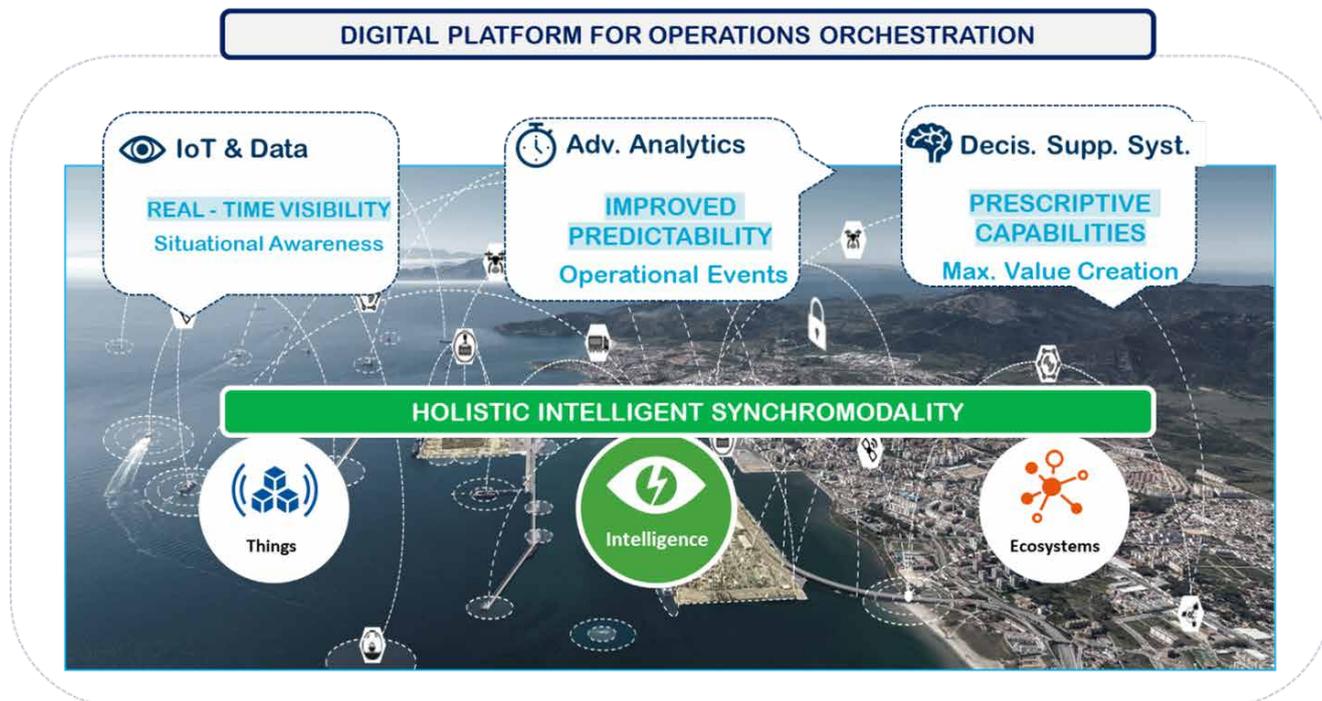
The vertical integration of logistics providers by port operators and terminals can be a driver of a positive change and an efficient means to solve intricacies and ensure smooth interconnected intermodal operations if

problems resulting from a lack of harmonisation of administrative procedures or standards in the internal market (Business to Government and Business to Administration) are solved. The current cartel exemption benefitting to liner shipping should also be reviewed<sup>2</sup> to restore a level playing field in the maritime logistics chain.

Port centric solutions are already a reality and can be further developed by seaport terminals under the condition that regulators do not interfere into market dynamics by facilitating, through a lenient<sup>3</sup> attitude, shipping driven vertical integration.

The denial of the impact of Big Data and Business Intelligence & Analytics systems on the competitive environment within the

**“PORTS ARE OFTEN THE LOCATIONS WHERE ALL INEFFICIENCIES OF THE MARITIME LOGISTICS CHAIN APPEAR.”**



maritime logistics chain during the previous review of the consortia BER has opened the door to a non-level playing field<sup>4</sup>.

The tools the European Commission currently possesses for measuring, evaluating and neutralizing anti-competitive conduct were formulated in an era when Big Data and BI&A systems were still a future vision. These tools are far from being sufficiently adequate and effective for dealing with antitrust concerns emanating from these evolutions. Time to adapt the tools has come. Otherwise, trust in the quality of the assessment of the CBER will be seriously and definitely compromised.

With the support of EU co-legislators adopting an enabling Fit for 55 and Trans European Network for Transport regulatory framework and an EU competition Regulator which guarantees a real level playing field, this moment in time represents an opportunity for businesses to reconsider the quality and connectivity of their operations, both for their own benefit and their customers' and

ultimately, to the advantage of the EU economy and employment.

**ABOUT THE AUTHOR:**

Lamia Kerdjoudj is the Secretary General of FEPORT, the Federation of European Private Port Companies and Terminals since March 2014. She holds an Executive MBA from ESSEC and Mannheim Business Schools as well as Master Degrees in Shipping, Transport and Logistics as well as in English Literature and Applied Psychology. She has a professional experience of more than 27 years during which she held different positions within the maritime and logistics sector.

**ABOUT THE ORGANISATION:**

Since 1993, FEPORT represents the interests of large variety of terminal operators and stevedoring companies performing cargo handling and logistics related activities in the seaports of the European Union. FEPORT speaks on behalf of more than 1225 companies which employ 390,000 port workers. The level of private investments of

FEPORT members over the last ten years equals €56 billion (\$57.5 billion).

FEPORT's aim is to promote the interests of its members, i.e., national associations and global multinational companies, and to maintain constant dialogue with all EU institutional and non-institutional stakeholders.

1. FEPORT Newsletter - April 2022

2. The joint CLECAT, FEPORT, ESC and ETA legal analysis[3] (procedural and substantive) that exposed the fundamental flaws in the methodology and in relation to the five criteria[4] used by the EU Commission to justify its decision to renew the CBER in 2020 are still valid from our point of view.

3. The developments in the area of Big Data and the ensuing business intelligence and analytics (BI&A) systems, which have fundamentally changed the conditions of competition, applicable in 2009 on the market of containerized liner shipping services have been totally ignored by the European Commission when it decided to renew the Consortia BER in 2020.

4. August Braakman - The Consortia BER: Resurrection by denial :: Lloyd's List (informa.com)

**ABOVE**  
Terminals' Digital  
Ambition

**“TIME TO ADAPT  
THE TOOLS HAS  
COME.”**

# DIGITAL SUPPLY CHAIN



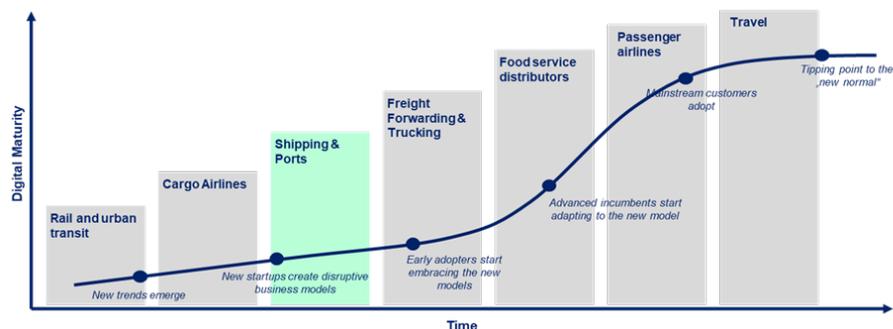
**Sven Daniels,**  
Partner,  
HPC

Digitalisation is one of the recurring subjects at every international conference, congress or symposium today, where buzzwords such as digital transformation, smart port, digital twin, IoT, 5G, AI or BI will be thrown into the air while, in contrast, the audience searches for orientation when discussions circle around the question of how much impact digitalisation will have on logistics processes, business models, the whole supply chain or national and global economies.

After the world financial crisis in 2008, the supply chain industry significantly changed as shipping lines formed bigger and stronger consortiums and invested heavily in larger vessels. In their hunt to maintain or even extend their market position, ports and terminals worldwide were forced to react respectively by investing in appropriate infrastructure, giant cranes or extra yard capacity.

In September 2022, in the context of the COVID-19 pandemic and Russia's war in Ukraine, the Kiel Institute for the World Economy reported that around 11 per cent of all goods shipped globally were stuck at congested ports around the world. After three crises, the global supply chain showed such heavy signs of disruption that even end consumers began to witness constant shortages of some goods.

At the same time, the port and shipping industry did not show much interest in innovative projects, investments in digitalisation or 'smart' solutions were hardly noticeable.



An HPC survey performed in 2018 of cargo owners concerning their expectations on the service quality of transport operators revealed that reliable transport and transparency on plan deviations were the most important requirements.

In a nutshell, the industry's decision to invest in assets only did not meet customer expectations and was also (at least partly) responsible for the supply chain disruption.

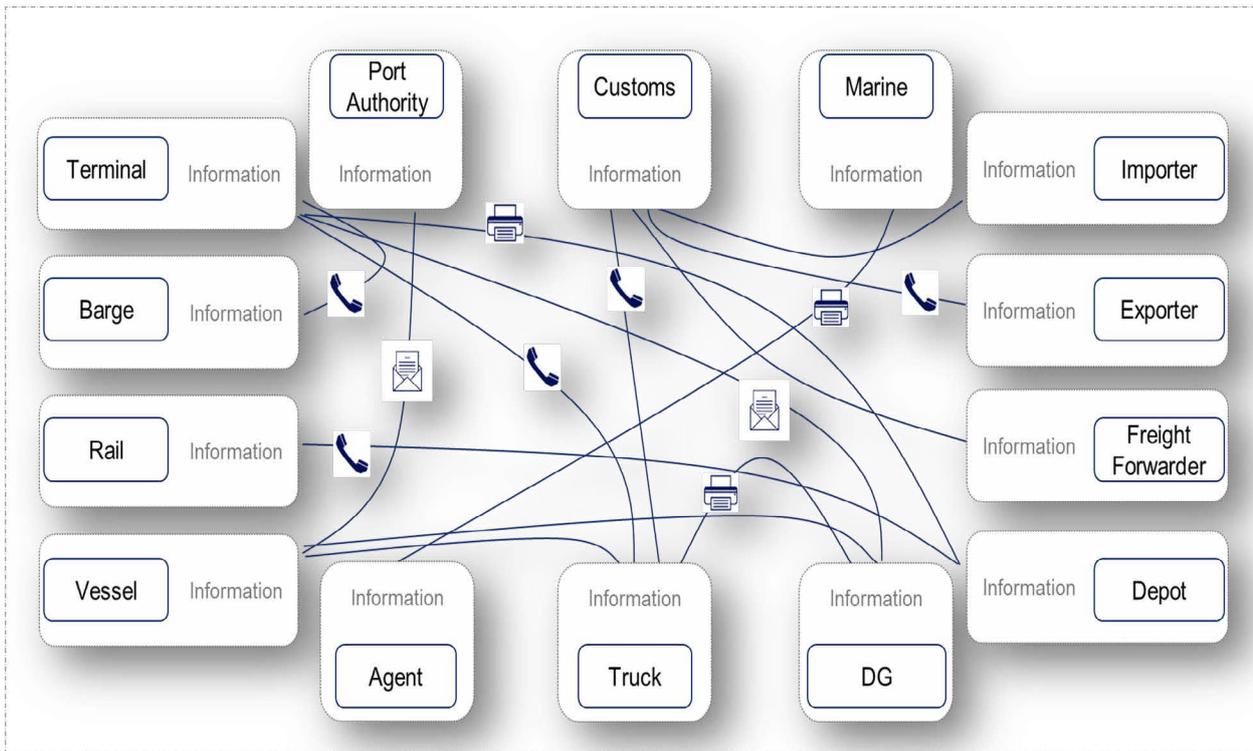
**CURRENT STATUS**

Benchmarking the shipping and port industry against other industries shows indeed a rather

disappointing picture. Even though the appeal of digitalising processes is clear, and the necessary funds and budgets are available, the industry is still far behind others where digital business models have already been adopted by mainstream stakeholders, moving concepts forward to a 'new normal'.

Is the port and shipping industry really digitalisation averse? Certainly, it is not technology averse. Some 20 years ago, Hamburg's Hamburger Hafen und Logistik AG (HHLA), opened the first fully automated container terminal, an engineering masterpiece. Container Terminal Altenwerder (CTA) is still the blueprint for most automated

**“SUCCESSFUL AUTOMATION IS ALWAYS A RESULT OF PERFECT COORDINATION OF AUTOMATED CARGO HANDLING EQUIPMENT, COMPREHENSIVE IT SYSTEMS AND A STRONG WORKFORCE.”**



terminals. Since then, CTA and all its siblings have improved to an optimum efficiency and productivity by continuously applying modern technology. Vessels are dispatched by magic, lorries and trains are checked in by smart camera systems, different automated handling equipment work hand-in-hand, and computer programs take millions of decisions without any human intervention. CTA becoming the first carbon-neutral container handling facility was one of the many outstanding results of that evolution.

Successful automation is always a result of perfect coordination of automated cargo handling equipment, comprehensive IT systems and a strong workforce. The industry is applying powerful software systems to optimally plan vessel routes, container loadings and discharges, terminal yards, or truck routes to minimise costs, increase revenues and reduce emissions.

#### INFORMATION SHARING TODAY

As it seems that such in-house optimisation has reached its limits, sharing information between companies is the most significant issue in advancing the use of technology platforms. Optimisation's potential today lies in the processing of external data. The other side that coin is a question about the value-add and risk of sharing data between competitors.

Modern decision-making IT systems applying sophisticated mathematical algorithms, artificial intelligence and business intelligence applications heavily depend on data as their raw material. Apparently, for the industry the data appetite is growing with the significance and importance of these systems.

Having a closer look at how commercial information is exchanged along the supply chain, HPC (as international

#### ABOVE

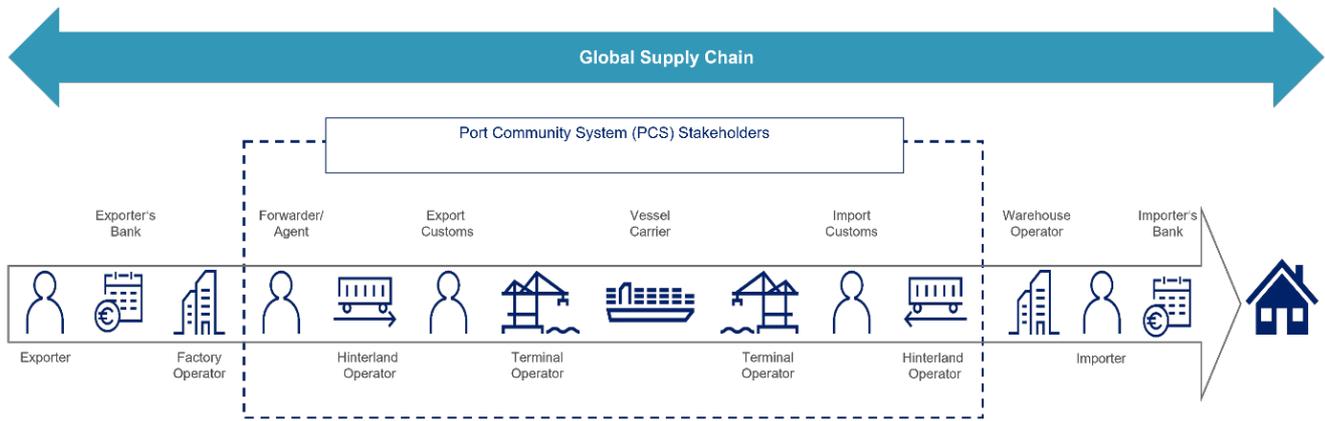
Typical communication structure

port consultants) sees a picture unchanged for more than 20 years. Telephone, facsimile, SMS and e-mail are still the most relevant means for information exchange.

Of course, bigger operators use standard Business to Business (B2B) communication to feed systems with data, but structured messages have continuously been suffering from deviations and dialects and data quality problems. To tackle these issues, teams of experts supervise the message, processing develop source code on Electronic Data Interchange (EDI) converters, and maintain code translation tables.

While other industries have already adopted digitalisation as their next-generation business model or have at least digitised significant parts of their business, the port and shipping industry is still struggling with data formats, transmission means or simple infrastructural shortcomings.

**“DATA MUST BE AVAILABLE, IT MUST BE PROVIDED TIMELY, AND IT MUST BE CORRECT.”**



To benefit as expected from external data improving internal IT systems and processes, the companies require three important characteristics. Data must be available, it must be provided timely, and it must be correct.

Recognising the whole logistics ecosystem, we can assume that relevant data generally is available, however, we also can assume that much of the data may be in someone else's possession, someone who might not be interested in providing it.

Decision-making systems require their data at the moment of processing, in other words, data is only of value when it is available in a timely fashion before the system computes its results.

As a matter of fact, correctness of data is crucial for good planning results. However, sometimes even estimated data is better than nothing and therefore of value.

Let's take the example of a trucking company that regularly picks-up containers from a container terminal. To optimally plan the next days' routes of their fleet, truck dispatchers require accurate and timely information about the discharge time of the containers. The required estimated time of discharge will be calculated once the terminal's ship planner has completed his vessel discharge plan, but the date is neither published to the trucking company nor the shipping line for various reasons.

1. It is obvious that data has significance for other stakeholders, hence, it has a value and a price. Even though the price is not known, companies hesitate to share data voluntarily without getting anything in return. Consequently, they just share the absolute minimum of what is contracted.
2. The terminal understands data such as the discharge plan (and the container's estimated time of discharge) as internal information, subject to updates. With its publication, the terminal fears that the shipping line could derive knowledge of internal terminal processes which might lead to performance comparisons with competitors and audits.
3. The provision of planning data would force the terminal to establish a complex and costly version management for published data.
4. Legally, the terminal cannot submit planning results to others as such data must be treated confidentially protected by respective NDA.
5. In some ports there is a lack of infrastructure and interfaces. Sharing information can be costly when data provision requires setting up bidirectional interfaces between stakeholders.

### SMART PORTS

The concept of a joint IT platform for the port community to simplify electronic data exchange is not new. Some 40 years ago, the first initiatives were launched in major European ports aiming to provide IT platforms to reduce paperwork and speed up time-consuming and error-prone manual processes. The so-called Port Community System (PCS) was born.

With reference to the misalignments describe above, PCS operators as a neutral element in the supply chain guaranteed the non-disclosure of 'protection-worth' data, an important fact for their user acceptance.

Four decades later, modern PCS platforms provide one-stop-shopping services to their clients such as full-service packages for electronic customs clearance or port wide truck appointment systems. In a nutshell, PCSs not only provide data exchange, they successfully close important gaps in the process landscape of a port.

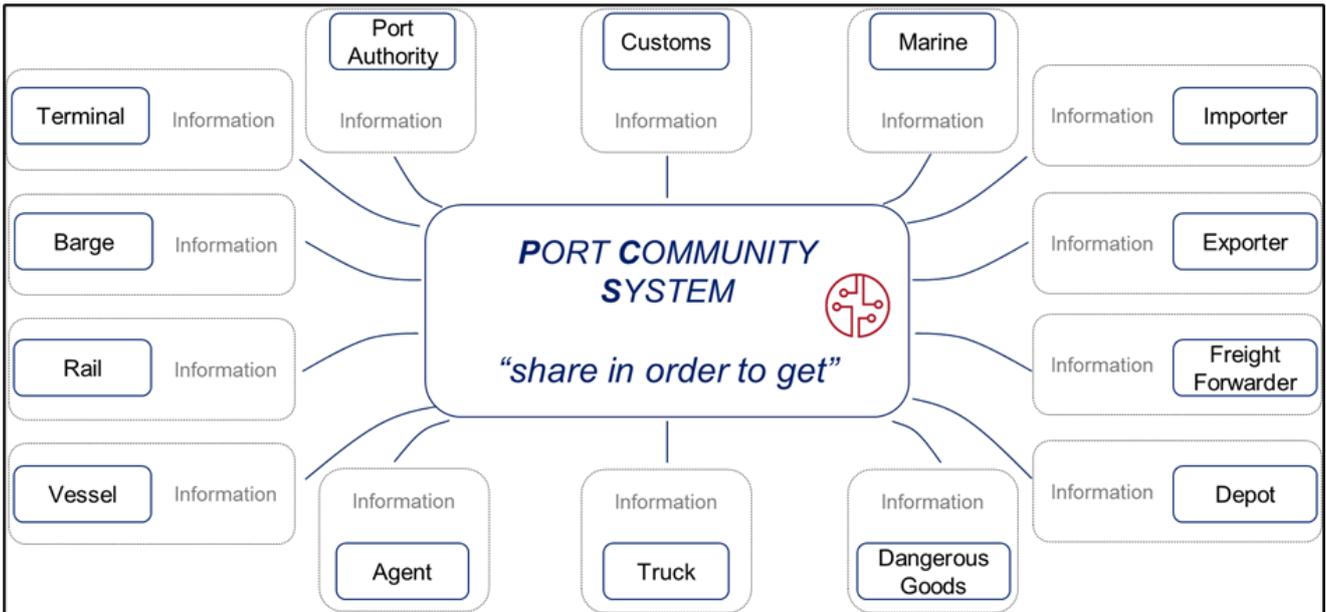
Admittedly, the PCS concept did not interest port and terminal operators everywhere in the world. There are still many ports without an established centralised IT infrastructure.

In times of ongoing digital transformation, we today see a growing number of ports that look for the provision of a

### ABOVE

Strengthening the global supply chain by digitalisation

**“INTERNATIONAL CARGO HANDLING COMPANIES TODAY EXPECT WELL-ESTABLISHED DIGITAL INFRASTRUCTURES IN PORTS.”**



centralised IT platform as they see it as key to becoming a 'smart port'. International cargo handling companies today expect well-established digital infrastructures in ports in the same way as they expect proper physical infrastructure like quay walls, cranes, deep water berths, rail connections or proper road capacity.

The Hamburg Vessel Coordination Centre (HVCC) is a service provider which coordinates the vessel traffic to and from the port of Hamburg in close

collaboration with the authorities. HVCC is the digital answer to concerns that partners might have regarding the limitations a river port has, particularly in the berth planning of incoming and outgoing vessels. One result of HVCC's activities is that it is a single source of truth for accurate vessel call information. Every stakeholder along the entire supply chain can register to retrieve digital ETA information via dashboards or via an electronic message directly.

As a great example of the power of a well-designed digitalisation

**ABOVE**  
 'Share to Get', PCS as a driver to becoming a smart port

**BELOW**  
 Data sharing and coordination process of Hamburg Vessel Coordination Centre, ©HVCC

project, we should have a closer look at the effect proper planning might have on the environment and resource planning of stakeholders involved. Based on their traffic coordination and related vessel ETAs, HVCC recommends for many years already a fuel-minimised speed for the transit from the port before Hamburg to arrive at the pilot boarding station. A Just-in-Time concept that recently also have been promoted for example by International Maritime Organization (IMO) or the Digital Container Shipping Association (DCSA).



**THE STARTING POINT**

From our consultancy projects, we experience two approaches to start establishing digital infrastructure in ports: top-down and bottom-up.

In some countries or economic areas, politics drives digital infrastructure forward. Mostly, transport ministries or port authorities are obliged to establish physical infrastructure and dedicated IT solutions for the port community. This top-down approach shows its strength in being fast and assertive, particularly when the political power and will to modernise and digitise the port is distinct and sustainable.

In contrast, we see a more practical approach where major stakeholders decide to implement a concept to digitise processes jointly. This bottom-up approach aims for the resolution of dedicated issues in the port. It requires private investments (of the initiators) while the community benefits from it at the same time. As it tackles actual problems directly, the advantage of the bottom-up approach is a wider user acceptance of the solution within the community.

**IMPLEMENTATION**

**Scope**

Although we mentioned PCSs and a port's digital transformation in a quite general form, it is important to determine which port processes

**“WHILE SOME PORTS SUFFER FROM LENGTHY CUSTOMS PROCEDURES, OTHER MIGHT PRIORITISE VESSEL CALL COORDINATION, WHILE OTHERS TACKLE TRUCK TRAFFIC PROBLEMS OR PAPERLESS OPERATION.”**

shall be digitalised first. This depends on the specific needs of the port's process landscape. While some ports suffer from lengthy customs procedures, other might prioritise vessel call coordination, while others tackle truck traffic problems or paperless operation.

Scope determination is an important step to be executed thoroughly via a feasibility study.

**Collaboration**

Digitalisation of processes within a port community is much more an organisational challenge than a software project. Knowing that the community of stakeholders in a port (and further on along the supply chain) are an extremely heterogeneous group of companies and people, the biggest challenge is communication and collaboration. Only an intense

community involvement, through expectation management, good project marketing and continuous exchanges about requirements and needs form the basis for successful and sustainable digitalisation.

Although there are undisputable (mostly legal) obstacles for data sharing to be always respected, the port community must give up some of its historic reservations; as a matter of fact, data sharing has the great potential to boost process efficiency entirely. The concept 'Share to Get' is a central message of the project's change management and collaboration efforts.

**Standardisation**

To avoid technical misalignments from the beginning, it is crucial for any digitalisation that systems, platforms, and people understand each other, both verbally and



**LEFT**  
Fuel savings through digitalised processes, ©HVCC

## “IT CANNOT BE SAID OFTEN ENOUGH THAT DIGITAL TRANSFORMATION GENERALLY EMBODIES THE RISK OF CYBERCRIME.”

technically. The definition and implementation of message and code standards play an important role for digital transformation. As standards are an agreement between project members, it requires a certain attitude to adopt standards and embrace them throughout the whole implementation.

### Data Security

It cannot be said often enough that digital transformation generally embodies the risk of Cybercrime. As such projects base most of their processes on digital infrastructure, we must make every effort to protect that infrastructure against criminal acts in the same way we protect our physical infrastructure.

Latest political events showed that processes along the global supply chain are sensitive to disturbances, therefore we need to provide maximum resilience and security.

### Start-ups and attractiveness to talent

Port digitalisation is not a project, it is journey. Therefore, it requires a workforce of motivated people moving the transformation forward. For this reason, as part of their digital transformation some ports provide open workplaces for start-ups in combination with access to domain knowledge. Moreover, ports seek cooperations with research institutes and universities.

Major differentiators of industries leading the digital transformation are their attractiveness to talent and the opportunity to develop innovative solutions to be marketed in start-ups.

### OUTLOOK

Taking a more global perspective, the digital transformation of the supply chain industry is in an early phase. Sharing data inside the port community and beyond will foster efforts to transport goods more efficiently and in an eco-friendlier manner.

Data as the raw material for digitalisation is sufficiently available, and today we understand the power it can develop and its value. Our task as an industry will be to find ways to make it available to others for the benefit of the whole supply chain. We need to understand that ‘Share to Get’ is more than a concept, it is an attitude to be adopted by all stakeholders. Technical and legal obstacles can then be solved easier.

We should not underestimate the importance of talent for our industry. Attractive employers will benefit from latest technological developments and innovation.

If we understand the supply chain industry as a community of partners instead as competitors, a well-designed interconnectivity of IT systems and platforms will help our industry in the future to cope much better with disruptive events and crises than ever before.

### ABOUT THE AUTHOR:

Looking back at more than 30 years as a professional port and IT consultant, Sven Daniels has gained broad experience as a specialist in managing complex IT projects for ports, terminals and the hinterland sector. Sven has successfully implemented IT systems in ports and terminals in numerous countries worldwide. He was responsible for the digitalisation and automation of Hamburg’s largest container terminal Burchardkai, where he and his team implemented digitalised processes under full operating conditions.

### ABOUT THE ORGANISATION:

HPC Hamburg Port Consulting operates as a logistics consulting company, specialising in strategy and transformation services for the ports, terminals, and rail sectors. Since its establishment in 1976, the Hamburg-based consulting company has delivered more than 1,700 projects across 130 countries spanning six continents, along the entire port project development cycle. HPC employs about 100 domain experts with a background as terminal operators, software engineers, logistics managers, transport economists and mathematicians. As a subsidiary of the Hamburg Port and Logistics Corporation (HHLA), HPC has its roots in port handling of container, breakbulk and multipurpose, as well as hinterland operations. [www.hamburgportconsulting.com](http://www.hamburgportconsulting.com)

## “WE NEED TO UNDERSTAND THAT ‘SHARE TO GET’ IS MORE THAN A CONCEPT, IT IS AN ATTITUDE TO BE ADOPTED BY ALL STAKEHOLDERS.”

# E-BILLS OF LADING - THE SIMPLE TOOL WITH BIG POTENTIAL



**Mads Wachter Kjaergaard,**  
Project Manager, Standards,  
Innovation & Research at BIMCO

Global trade still relies heavily on paper. The main risks of relying on paper are exposure to fraud, clerical errors and lengthy transfer and processing time. This is despite the fact that issuance of electronic bills of lading (eBLs) has been possible for more than 20 years on safe and well-established platforms approved by the International Group of P&I Clubs. It is also despite the fact that eBLs are safer, faster, and greener when compared to their paper bills of lading ancestor.

#### **LETTERS OF INDEMNITY - RISKY AND COSTLY**

One of the big risks that parties unnecessarily take is when ships turn up at the port of discharge before the paper bill of lading has completed its travel through the trading and banking system. To ensure operations run smoothly, and to avoid delays in discharging cargoes, the bulk shipping trade has over time adopted a commercially feasible, but unfortunate, practice where ships discharge without production of the original paper bill of lading. Instead, they use a letter of indemnity. eBLs, however, could eradicate the reliance on letters of indemnity simply by ensuring that the bill of lading will be there before discharge. Letter of

indemnity exposure can quickly add up to millions and even billions of dollars for all parties involved. In addition, eBLs are much safer in respect of fraud and will do away with risks such as double financing.

There is also a green incentive to be found in the adoption of eBLs. By avoiding having to courier physical bits of paper all over the world, a notable amount of CO2 emissions can be saved.

#### **THE INTEROPERABILITY HURDLE**

Use of electronic bills of lading saw a boost during the COVID-19 pandemic when people were suddenly stuck at home and reluctant to touch paper. To build on this momentum, BIMCO has joined forces with the Digital Container Shipping Association (DSCA), the International Chamber of Commerce (ICC), the International Federation of Freight Forwarders Associations (FIATA) and SWIFT to form the FIT (Future International Trade) Alliance.

In the summer of 2022, the alliance sent out a survey to its respective members. One of the obstacles to wider adoption of eBLs that has been identified is that it is currently not possible to transfer an eBL from one approved platform to another, i.e. a lack of

interoperability. A whopping 73 per cent of respondents pointed to 'Technology, platform or interoperability concerns' as a factor for not yet using eBLs.

The way the approved platforms operate is as 'walled gardens', or separate systems. To put it into perspective, it could be compared to the inconceivable situation that someone with an Apple phone was unable to call or send text messages to someone with an Android phone. Or that someone with a Gmail was unable to send emails to someone with a Yahoo email. This could be solved by ensuring that the platforms speak the same 'digital language' – through adoption of technical standards.

#### **THE BIMCO ELECTRONIC BILL OF LADING STANDARD**

BIMCO has been in the business of producing paper standards since the early 20th century with the first ever contract published in 1908. Since then, hundreds of charter parties and bills of lading have been published. In July 2022, BIMCO moved into the digital space with the publication of its first digital contractual standard: the BIMCO Electronic Bill of Lading Standard.

The BIMCO Standard is free to use for the industry and can be

**"LETTER OF INDEMNITY EXPOSURE CAN QUICKLY ADD UP TO MILLIONS AND EVEN BILLIONS OF DOLLARS FOR ALL PARTIES INVOLVED."**

found on the BIMCO website. It is available to use on any of the platforms that have been approved by the International Group of P&I Clubs. The standard is also aligned with the standards from BIMCO's FIT Alliance partners DCSA and FIATA as well as the UN/CEFACT Multimodal Transport Reference Data Model.

Although there is a push for adoption of a harmonised legal framework recognising the legal validity of electronic transferable records, this will take time. And while it will make things easier, there are already tried and tested platforms available that allow the industry to start now.

BIMCO is in close dialogue with players in the bulk shipping industry which are already well underway with their transition from paper to digital, moving as much as 80 per cent of their annual volume on electronic bills of lading.

As the industry works towards digitalisation and decarbonisation, tools such as electronic bills of lading are not only currently available, they also have the potential to reduce the administrative burden for all parties involved, reduce CO2 emissions and reduce risk significantly. Sometimes, simple solutions can make a big difference.

#### **ABOUT THE AUTHOR**

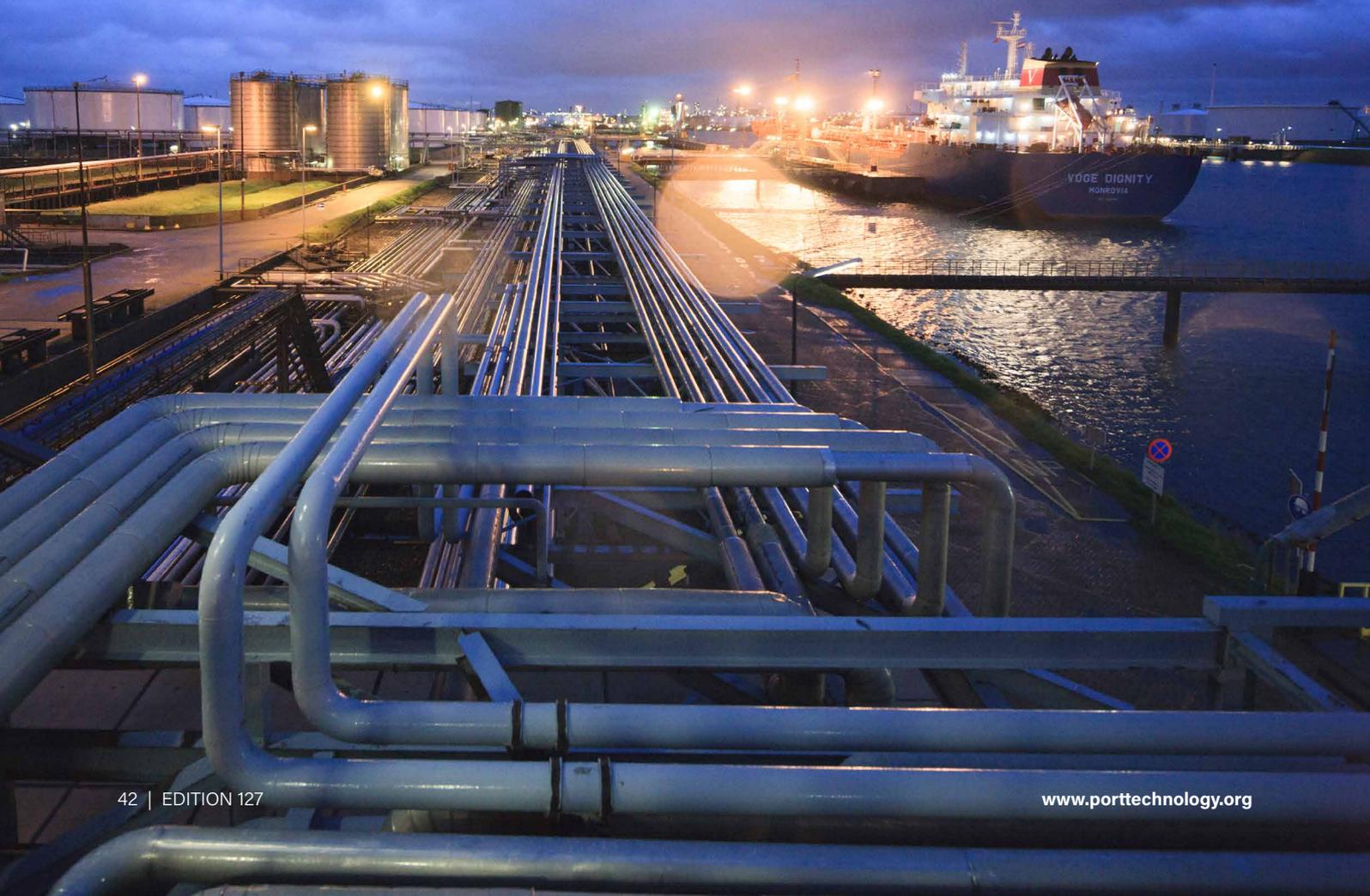
Mads is a Danish lawyer who has been involved in developing BIMCO's standard documents for four years before he recently began working with digitalisation of the shipping industry in BIMCO's newly established Standard, Innovation & Research department, with a particular focus on contractual aspects. Prior to joining BIMCO Mads worked at a Danish shipowner.

#### **ABOUT THE ORGANISATION**

BIMCO is the world's largest international shipping association, with around 2,000 members in more than 130 countries, representing over 60 per cent of the world's tonnage. Our global membership includes shipowners, operators, managers, brokers, and agents. BIMCO is a non-profit organisation.

**"ALTHOUGH THERE IS A PUSH FOR ADOPTION OF A HARMONISED LEGAL FRAMEWORK RECOGNISING THE LEGAL VALIDITY OF ELECTRONIC TRANSFERABLE RECORDS, THIS WILL TAKE TIME."**

# PROTECT: THE WAY FORWARD





**Mees van der Wiel,**  
 General Manager, PROTECT  
 Group, International Port  
 Community Systems Association  
 (IPCSA)

“We just use the old ways.” How many times have you heard that in connection with ports and shipping? Even today, many ports still don’t have a fully digitalised way for ships to report information; even today, ports and port users are being left behind when it comes to electronic reporting, making do with emails, Excel spreadsheets and web screens, and sending often less-than-clear information via ship agents.

There are certainly gaps in the processes – but on the other hand, many port authorities just do not realise that there are standards already in place for the electronic exchange of information.

Created in 1992 by six major ports in Europe, to harmonise and optimise electronic information exchange by means of standardised messages legally required in ports, the port message design group PROTECT supports the electronic reporting required by authorities from vessels entering or leaving a port or port area.

PROTECT has created a number of standard message definitions, such as the IFTDGN message for the notification of dangerous goods. We are also working together with the International Maritime Organization (IMO) and the European Maritime Safety Agency (EMSA) to ensure the use and harmonisation of standards on the message level.

Over the years, PROTECT has attracted many more participants, including port authorities and Port Community System (PCS) operators.

Since the beginning of 2021, PROTECT has been an integral part of the International Port

**RIGHT**

Vessel moored at a tank storage facility in the Botlek area in Rotterdam.

Credit: Freek van Arkel



Community Systems Association (IPCSA). Being part of IPCSA has given the PROTECT group more strength, thanks to IPCSA's international focus, its large number of members and its ability to gain a comprehensive view.

Now we are taking stock. We issued a questionnaire to all of IPCSA's members, and the information we have received will help to guide our future direction.

We have already expanded our vision of what PROTECT stands for. We intend to broaden our activities from being a message design body

for port authorities, to supporting standardisation in port processes as a whole. We want to be the body that knows what standards are out there and how they can be implemented, in order to help our members strengthen their own knowledge level.

That means looking carefully at developments in the maritime industry and responding accordingly. It means looking outside Europe to support ports on a global basis.

In short, we have been asking: what else is needed? What are the

**“WE WANT TO BE THE BODY THAT KNOWS WHAT STANDARDS ARE OUT THERE AND HOW THEY CAN BE IMPLEMENTED.”**

needs of our members and how can we help them?

The responses to our questionnaire have given us insight into what standards our members are currently using, what knowledge level on standards they have and where we should focus next. The worldwide responses we received showed a clear interest to achieving more standardisation and harmonisation in a global context.

According to the respondents, more standardisation or sometimes even digitalisation is needed, especially in ship-to-shore information exchange and port hinterland transport. Respondents

**BELOW**

Europoort area in Rotterdam in the Maasvlakte area  
Credit: Freek van Arkel

also clearly indicated a willingness to move from current message-based information exchange like EDIFACT and XML to a more integrated information exchange using APIs and JSON formatted information exchange. Now it is up to PROTECT, together with IPCSA, but also in cooperation with other standardisation bodies, to help members in their search for further digitalisation, standardisation and harmonisation in an ever-changing world.

We are not competing with other standardisation bodies – for example, the International Organization for Standardization (ISO), UN/CEFACT, SMDG (Ship

Message Design Group) or DCSA (Digital Container Shipping Association). If there are standards available, we want to work with those bodies; on the other hand, we hope they will recognise what we have already achieved, so that we can benefit from each other's efforts.

Our mission is to design and develop standards to support the continuous improvement of port performance and trade facilitation; our aim at all times is to support digital message standardisation and integration throughout the port community and supply chain.

The way forward is through cooperation and collaboration!

**“MORE STANDARDISATION OR SOMETIMES EVEN DIGITALISATION IS NEEDED, ESPECIALLY IN SHIP-TO-SHORE INFORMATION EXCHANGE AND PORT HINTERLAND TRANSPORT.”**



# “ALTHOUGH IT STARTED AS AN EU PROJECT, PROTECT IS NOW RECOGNISED GLOBALLY.”

## A NEW FOCUS

The full integration of PROTECT into IPCSA represented a pivotal development in the field of standardised and harmonised electronic information exchange.

The integration of PROTECT into IPCSA consolidated, within one organisation, an unrivalled level of knowledge and experience in standardised and harmonised electronic information exchange; this renewed strength and focus is helping to accelerate innovations and advances in the sector.

Although it started as an EU project, PROTECT is now recognised globally. Through IPCSA's delegation at the IMO, PROTECT is now supporting the IMO in its Correspondence Groups and Working Groups on matters of electronic messaging.

## PROTECT GROUP MISSION

PROTECT supports the continuous improvement of port performance and trade facilitation by providing the expertise and

### RIGHT

Liquid bulk cargo vessel being moored at a special location for Ship-to-Ship cargo operations in the Calandkanaal in the Europoort area in Rotterdam

Credit: Freek van Arkel



support necessary to maintain and develop globally recognised message standards. PROTECT will continually review standards to help ports and port authorities take advantage of current and future digital opportunities. Where necessary, PROTECT will publish guides on how to implement standards. Our aim at all times is to support digital message standardisation and integration throughout the port community and supply chain.

### ABOUT THE ORGANISATION:

The International Port Community Systems Association is an international association of sea and air port community system operators, sea and air port authorities and Single Window operators that is recognised across the globe for providing advice and guidance on the electronic exchange of information across borders and throughout the whole supply chain.

The association has members from across the globe who handle the exchange of information for Business to Business, Government

to Business and Government to Government processes and facilitate the smooth cross-border movement of goods. This equates to the electronic exchange of information relating to more than 500 million TEU movements and 10 billion tonnes of cargo for air, sea and land transport – estimated to be in excess of 50 billion exchanges every year.

IPCSA focuses on supporting and facilitating systems and innovations for Port Community System members and users, and promoting the use of international data standards in sea and air ports, at border crossings and via Single Window systems around the world. IPCSA is a recognised NGO with consultative status at UNECOSOC and IMO.

The PROTECT Group, an integral part of IPCSA, develops and supports the electronic reporting required by authorities for vessels entering or leaving a port or port area. It maintains and develops EDI through the PROTECT Guide, focusing on the harmonisation and standardisation of electronic messaging.

# **LEARN, UNDERSTAND, SIMPLIFY, IMPLEMENT AND OPTIMISE: FINDING THE TRUE VALUE IN DIGITALISATION**



**aidrivers.**  
Autonomous Mobility. Invented for sustainability.

**Dr. Rafiq Swash,**  
Founder and CEO,  
Aidrivers

## **“DIGITALISATION SHOULD NEVER BE PURSUED JUST FOR THE SAKE OF IT.”**

Here’s a question: What is the point of digitalisation? Too many people might reply: “Well, digitalisation!” Let’s put that right straight away, because such a misunderstanding often leads to digitalisation projects which bring little or no value to anyone, only adding complexity. In short – with no point at all!

Digitalisation is not just moving stuff out of a paper book and on to a computer system. Where is the value in that? Digitalisation should never be pursued just for the sake of it. It should and must deliver new dimensions and benefits. We need digitalisation that will ease and streamline processes, save time and cost, reduce repetitive tasks and eliminate errors – as well as, it is expected, cutting waste in the form of wasted energy, effort and unnecessary stress.

So what do we want in a digitalised supply chain? Affordability, trackability and traceability, which lead to self-aware operations and real-time information access with transparency and so on. But the first priority must be to understand what is happening now. Establish how things work, then identify the problem which needs to be solved and the expected outcome. It is important to have the holistic view of before, during and after your digitalisation exercise, so it

is all about defining what your ‘digitalisation success’ looks like.

Once you have established what processes are to be changed, consider the usefulness of your digital proposals. Make sure there is a tangible, true value associated with them. Consider affordability. If your digitalisation proposals are going to end up adding time and cost to the process – which could be due to various factors for example, your users may not have the necessary tools or knowledge or training for effective use of the system – then why are you pushing forward with them? Make sure you have a very good argument to support what you are going to pitch and push. You already have an excellent baseline – use your current system as a benchmark. If your system is already ‘good’, then the definition of ‘better’ is that you do not just trash what you have at the moment. If you make massive changes to your ongoing processes without sufficient thought, this could lead to a different major problem that could lead to even bigger problems.

It might have taken 10 or 20 years to build up to the supply chain system you have today. If you change something dramatically without thinking things through, you could end up with a huge challenge and no option but to

roll back to the old system. This is not an exaggeration – it has happened many times, with some extremely high-profile, highly trumpeted projects ending up being cancelled.

Bearing all this in mind, the top layer of the argument is this: your digital supply chain needs to have self-aware and connected feeling. You need to make sure that everything works together – with each other not against each other. The second layer is – how do we get there? The effective approach is to continue building on what you already have, to gain the experience to make your effective things efficient without disrupting your operations and/or risking any big loss. Work on a component at a time. There is no need to wipe out everything and deploy all of the replacements at once.

Aidrivers’ approach to autonomous mobility solutions in ports and logistics is applicable to your current operations, and yet delivers a true resilience and connected operations. For example, when transferring a truck or a crane from manual to autonomous, we equip the equipment with a cognitive intelligence and capability to provide the same capability as your current driver or operator without any change to your infrastructure or environment.

## **“THE TOP LAYER OF THE ARGUMENT IS THIS: YOUR DIGITAL SUPPLY CHAIN NEEDS TO HAVE SELF-AWARE AND CONNECTED FEELING.”**

## **“IF A PORT HAS 100 REGULAR DRIVERS AND AN AUTOMATED SYSTEM IS BASED RIGIDLY ON THE SAME PROFILE FOR ALL THE DRIVERS WITH A FIXED MODEL, THERE WILL BE PROBLEMS.”**

We work out how the crane currently operates and how it fits into the overall system; we then ensure it delivers the same performance as current operations and beyond, before moving on to the next stage, thereby safeguarding sustainable change.

True sustainability in this context is satisfying the operational requirements but not the technology definition; and such a small change leads to bigger and better efficiency of effective systems.

Often consultants who work on so many projects simultaneously have very deep knowledge and understanding of the technology solutions, but it can be difficult to pay detailed attention to your operations, which are bespoke and different to each operator.

The successful approach to any level of digitalisation is to 'walk through' the perfect system as it is already running and consider all angles from the perspective of the people who are going to run the new system.

One pitfall for the experts is imagining how they themselves would use the system and how they would meet any challenges – while failing to put themselves in the shoes of the actual users, likely to be people who don't have the same extent of knowledge or experience. We may be talking about digitalisation but we must also deal with reality! Digital projects and solutions are generally developed and implemented by people with high levels of knowledge and expertise who have the drive to make the most out of it – rarely by the people who will end up using them.

In the context of digital supply chains, the initial step should be

understanding what you need from the start and ensuring that is well defined. The big priority is awareness. You may as well forget about any digital supply chain proposals if they are not going to contribute affordability, traceability and trackability of what is going on in your operations. Look at the supply chain from every angle and seek a connected and self-aware operation.

Real-time information accessibility has become a core priority today. For instance, consumers doing their shopping online expect real-time updates and a connected feeling: when the order has been placed, accepted, packed and dispatched; when it is with the courier; when it is out for delivery and what the delivery window of time is. The same applies to your 'consumers' throughout the supply chain. Factories, assembly plants, distribution centres, fulfilment centres, logistics providers, shops – all want certainty as to where their items are and when they can expect delivery.

Next, think about being able to adapt your system according to what is going on in the world – as we all know, recent upheavals have included COVID-19, container port congestion and the ongoing conflicts around the world, each of these having a significant impact on thousands of supply chains.

When introducing any new system, it is essential to find ways to do this without stopping your service. When 'clever' new systems end up in failure, companies will ask: Why did it happen? Usually, it is because they did not think ahead, they did not do enough

planning or simulation, they did not model the system, they made assumptions, and (probably) they made things more complicated than they needed to be.

Taking autonomous mobility solutions as a parallel again, Aidrivers' autonomous automation solutions are benchmarking based on your current performance and ensuring there are no new surprises – instead delivering efficiency, resiliency and cost-reduction. You can test anything you can imagine – and you must also find an answer for each and every situation. Imagine you set up a crane based on a system that handles 20 or 30 jobs an hour. That may have been calculated from data and expert knowledge that the driver of the manual crane handles that many moves. But what happens if there is a delay, a vehicle does not arrive on time or is misaligned, the wind suddenly strengthens or something else happens in the real world? The system must be able to monitor and allow for such unexpected effects.

If a port has 100 regular drivers and an automated system is based rigidly on the same profile for all the drivers with a fixed model, there will be problems. It is not difficult to see how a very minor variation in driver behaviour or habits will throw out the calculations.

Sensors with real-time data availability can monitor and measure the whole operation – detecting when vehicles are taking longer and informing the system so that the number of trucks coming in through the port gates can be adjusted accordingly to avoid congestion.

We are all learning, all the time. We must find even better ways to

use technology for optimisation of the supply chain, based on experienced understanding of the system as well as evidence built on data, mathematics, AI and machine learning.

Aidrivers focuses heavily on autonomous simulation and cognitive-based systems to test and optimise the systems continuously – this reflects both digital and physical worlds, thus it can be achieved without any disruption to the current physical operations of the port. We tell the port operators we work with – you do not have to wait to find out how your system will behave if you have 100 autonomous trucks. We can tell you that now, because we already have a digital world of your environment.

We say port operators moving into autonomous automation with cognitive capability should never have bad surprises. At Aidrivers, we are clear that any new system must be able to be compared and evaluated to eliminate any

uncertainty. That does not mean we eliminate risk – after all, we would never get out of bed in the morning if we wanted to eliminate all risk! Risk is part of our lives and that makes us more excited to live every day. Risk is part of the adventure.

Aidrivers is confident that its system can contribute for better supply chain operations with effective planning and optimisation through an autonomous ecosystem. Future planning needs to consider dynamic behaviours, via AI and autonomous technologies.

Overall, the message is that we must know what to expect. The fundamental expectation in supply chains is a connected operation that delivers traceability and trackability; what is happening in real time, enabling you to have connected operations which provide insight into what is working or not working, and go ahead and improve it.

Be pragmatic in your approach so the change can be measured.

**ABOUT THE AUTHOR:**

Dr. Rafiq Swash is the founder and CEO of Aidrivers. He is a seasoned professional with a decade of experience in international technology-driven industries, academia and world-class research centres. Dr. Swash is an award-winning, visionary thought leader in maritime and the Top 100 Leaders in Education, with over 15 years of professional working capability in autonomous technologies, visual information search and retrieval, advanced 3D imaging systems and scalable computing.

**ABOUT THE ORGANISATION:**

Aidrivers is an AI-enabled autonomous technology company whose mission is accelerating autonomous technology to deliver the optimisation, resiliency and safety that industry needs for a sustainable future. Aidrivers develops AI-enabled autonomous mobility solutions tailored to meet the needs of industrial operations for a sustainable future, particularly in the ports sector.

**“WE SAY PORT OPERATORS MOVING INTO AUTONOMOUS AUTOMATION WITH COGNITIVE CAPABILITY SHOULD NEVER HAVE BAD SURPRISES.”**



CONTAINER TERMINAL  
AUTOMATION CONFERENCE

EUROPE'S TERMINAL  
TECHNOLOGY HUB

POWERED BY



14 - 15 MARCH  
2023

HAMBURG,  
GERMANY

# SUPER EARLY BIRD TICKETS NOW AVAILABLE!

The Container Terminal Automation Conference is a flagship Port Technology International event. Register your interest for the 8th instalment and look forward to a range of networking opportunities and expert-led discussions on Data Standardisation, Automation, Digitalisation, AI and Advanced Technology and much more.

300+

ATTENDEES

40+

SPEAKERS

85+

PORTS &  
TERMINALS

12+

SESSIONS

REGISTER FOR JUST €1,199

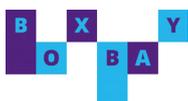
[CTAC.PTIEVENTS.COM](https://ctac.ptievents.com) ←

Ports &  
Terminals can  
attend for  
FREE!

Gold Sponsors



Silver Sponsors



Bronze Sponsors

