NAVIGATING SEAS OF DATA

"THE MODERN CHALLENGE FOR STAKEHOLDERS IN CONTAINER SHIPPING IS TO NAVIGATE HUGE AMOUNTS OF INFORMATION FROM DIFFERENT SOURCES SHARED IN MANY DIFFERENT FORMATS FROM EMAILS, PHONE CALLS, SPREADSHEETS, DOCUMENTS, AND LEGACY DATA SYSTEMS."

PORTCHAIN

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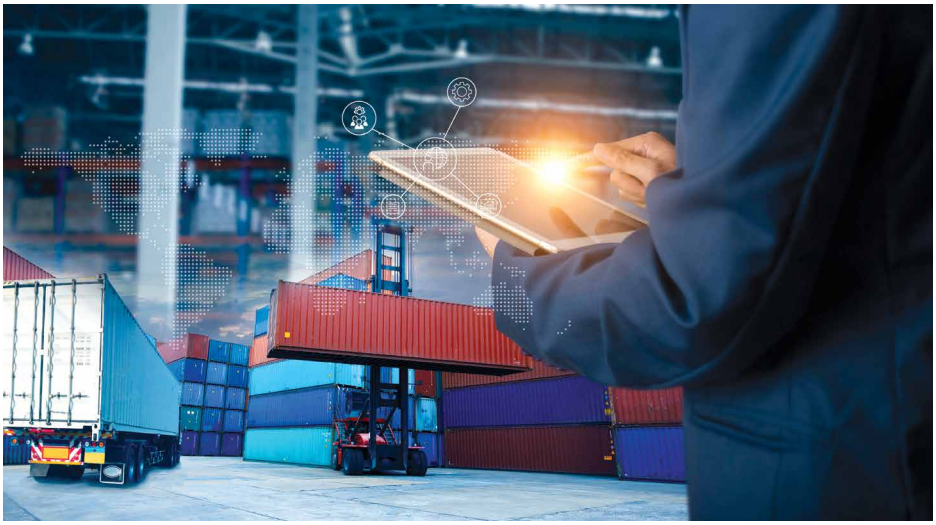
In today's fast-evolving container shipping industry, the challenge is not a lack of available data but the huge amount of unstructured data sources. In the past, the container shipping industry might have faced challenges due to low digitization and limited data availability. However, in today's modern supply chain, each stakeholder is both dependent on multiple data sources and generating crucial information for others in the ecosystem. A container terminal, for instance, must piece together various sources of information to accurately plan upcoming port calls, e.g., schedule information from carriers, AIS data (vessel position) to assess potential delays, (estimated) time of completion at the previous port, cargo bookings, etc. Similarly, that same container terminal provides crucial time stamps and updates to carriers and others in the ecosystem on (estimated) time of departure, time window to deliver export cargo, potential congestion, and waiting times. In other words, "ports are developing into digital nodes as vital parts of an increasingly digital supply chain ecosystem." [1] (Lind & Lehmacher , 2023).

The modern challenge for stakeholders in container shipping is to navigate huge amounts of information from different sources shared in many different formats from emails, phone calls, spreadsheets, documents, and legacy data systems. For instance, vessel's arrival time, duration of the port stay, and time of departure are crucial data for all stakeholders to manage schedule reliability, ensure Just-In-Time arrival, minimize congestion, and avoid waiting times. This paper argues that there are two important factors to drive operational efficiencies in container shipping:



1. Transparency and willingness to share data.
2. Collaboration and alignment to create a 'single source of truth.'

Furthermore, we show that data platforms, such as Portchain, can facilitate alignment across the supply chain to enable operational efficiencies. Industry platforms can serve as an effective method to bring together and validate multiple data sources to create a single source of truth. Based on this aligned data, container terminals, carriers, and other stakeholders can optimize their own processes and collaborate to optimize across the supply chain.

THE QUEST FOR A SINGLE SOURCE OF TRUTH

First, transparency and a willingness to share data is an important step to improve efficiency. In container shipping the arrival time of a vessel, duration of the port stay, number of load and discharge moves, and the departure time are essential pieces of information to plan a port call. For terminals, it is essential to plan the most efficient lineup of vessels and for carriers, it is important to plan the most efficient sailing speed to save fuel and avoid waiting times at the terminal. However, the multiplicity of data – where multiple sources provide conflicting narratives – presents a formidable challenge. Digitization has improved over recent years, but "approximately 80 per cent of ports still rely on manual, legacy solutions." [2] (Heikkilä, Saarni & Saurama, 2022). Even within one organization there might be

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conflicting views on the potential arrival time of a vessel. For example, a carrier might issue a coastal schedule with estimated times of arrival from their central planning office that differs from estimates made by the local planning team that takes into account specific local conditions.

Essential scheduling information might be available in multiple internal legacy systems or silos of data. Synthesizing data sources and sharing it with all stakeholders is important to create data transparency as "timely information about potential delayed arrivals and departures is critical for planning and preparation which requires that everyone in the supply chain network keeps others constantly informed." [1] (Lind & Lehmacher, 2023).

Second, collaboration and alignment are essential to create one source of truth. It is not sufficient to synthesize information within one organization, but also to combine and align data between different stakeholders. Carriers and terminals each have important pieces of the information puzzle. Carriers will decide vessel rotation and sailing speed that directly impact the estimated time of arrival of the vessel in the port.

Terminals know their available capacity and have information from competing carriers and decide when the vessel can berth. Similarly, carriers will have better information on the number of discharge moves, whereas terminals might have more up-to-date information on the load moves close to arrival from cargo that has arrived at the yard.

Therefore, carriers and terminals must collaborate to improve the port call process and align scheduling data. "Ports are platforms (hubs) for activities that require stakeholder collaboration [...] These stakeholders create networks and ecosystems for data sharing. [...] In order to achieve maximum benefit from digitalization and data, the gathered data should be made available to all the relevant parties" [3] (Brunila Kunnaala-Hyrkki & Inkinen, 2021).

PORTCHAIN COLLABORATION ON THE US GULF AND EAST COAST

Data platforms offer an efficient approach for aggregating and validating multiple data sources to create a single source of truth.

"The data management and the synchronization could be organized on neutral global platforms (one or more that are ideally interconnected) to which all actors are connected. Providers would ensure data security and system integrity. The digital platforms would be connected to port and vessel systems." 4 (Lind & Lehmacher, 2022).

Platforms, such as Portchain, can facilitate alignment across the supply chain to enable operational efficiencies.

Leading container terminals such as **Port Houston** on the US Gulf Coast and **South Carolina Ports** on the US East Coast joined Portchain's cloud-based platform to improve the berth alignment process. Terminals and carriers share essential data and updates on upcoming port calls on a secure platform. The digital berth alignment process replaces the cumbersome, manual data exchange and streamlines the scheduling process improving quality and timeliness of data. Portchain has automated integrations with both carrier planning systems and the terminal berth planning or terminal operating system. These integrations on both sides ensure data is available in real time and updates are automatically and immediately shared with the other party.

The platform provides a single interface and a formal place to share scheduling data. Furthermore, it provides contextual information such as embedded AIS data (vessel position), a shared changelog, and an automated timestamp if a vessel departs from the preceding terminal.

"Automated data exchange and digital collaboration save time and effort and improve the berth

"AUTOMATED DATA EXCHANGE AND DIGITAL COLLABORATION SAVE TIME AND EFFORT AND IMPROVE THE BERTH SCHEDULING PROCESS."

scheduling process," said **Mike Shaffner**, Director Operations Planning and Technology, **Port Houston**.

A single platform also allows both parties to validate data to achieve higher data accuracy, e.g., comparing planned and predicted values or identifying misalignments or errors from both sides. South Carolina Ports has digitally connected more than 700 users from 36 companies to create transparency on their berth scheduling. Port captains use the information to check if the information regarding their vessel is correct, keep an eye on the vessel lineup in the coming days, monitor potential congestion, and assess if there are any risks of delays. This improves collaboration and allows each user to optimize their workflow.

"We aim to create transparency and efficiencies across the supply chain so that each stakeholder can optimize their own processes," said **Barbara Melvin**, CEO, **South Carolina Ports**.

CONCLUSION

The modern supply chain ecosystem is intricately interwoven with data from different stakeholders. Each stakeholder needs to triangulate and validate data from various sources for efficient operations and data-driven decisions. Transparency and sharing of data are essential to build trust, e.g., a delay in the preceding port might impact the vessel's arrival time in the next port. Platforms, like Portchain, can facilitate collaboration by bringing together scheduling data from both terminals and carriers. By integrating both the carrier's scheduling system and the terminal (berth) planning system, platforms improve data quality and timeliness of scheduling data. Data sharing platforms, like Portchain, enable terminals and carriers to embrace the best of both worlds - the richness of data diversity and unwavering confidence in a single source of truth - as they navigate the intricate waters of a digitized shipping industry.

ABOUT THE COMPANY:

Portchain is a software provider of berth alignment solutions for container terminals and carriers. Portchain works with leading container carriers and terminal operators to create sustainable win-win solutions to improve operational efficiency for container shipping.

Portchain Connect is a digital platform enabling terminals and carriers to share and receive trusted data and reduce delays in information transmission. Portchain Connect provides users with an easy-to-use overview of all their vessel calls and ensures they can securely transfer berthing information, remove the costs associated with manual non-digitized communication, and align on berthing windows to improve schedule reliability.

ABOUT THE AUTHOR:

Dr. Jasper Boessenkool is an accomplished leader in innovation, technology development, and strategic business development. He has over 20 years of experience in technology, strategy, and innovation and more than 10 years in the shipping industry. Currently, he is Senior Director Sales at Portchain focusing on terminal and carrier collaboration.

Throughout his career, Jasper worked in different strategic positions building interdisciplinary teams on innovation and strategy. He has a track record of translating technology developments into business opportunities to drive growth and transformation. Jasper has a background in physics and holds an MSc and PhD in Physics from Utrecht University in the Netherlands.

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