PORT TECHNOLOGY EBOOK

RECONCEPTUALIZING THE PORT

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HVCC

Smart Ports & Supply Chain Technologies Conference e-Book

NEW EVENT

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FROM THE

EDITOR

This e-book marks the third instalment in preparation for our upcoming Smart Ports & Supply Chain Technologies event and I hope this e-book aids you in getting some key insight into the conceptual framework for the conference which takes place on the 2-3 October in Rotterdam.

Our contributors to this e-book have taken on the task of reconceptualising the port in a smart, interconnected global network. I think you'll agree that each author has made a fine effort. With each paper we produce in this mould, I feel we haul ourselves forward into a new paradigm of supply chain operations.

This e-book marks part one of our 'smart ports' offering, and will be followed by an e-book offering specific insights from some of the biggest smart ports in the world such as Singapore, Rotterdam, Hamburg and Algeciras.

With that in mind, this e-book is intended to be a more conceptual offering that compliments the port e-book to follow.

Our Smart Ports & Supply Chain Technologies Conference is shaping up to really stir up the industry and create some new ground, collaborative opportunities, and insight.

We have several top speakers confirmed coming in from major name ports in Europe (Rotterdam, Hamburg), big international trade organizations (World Economic Forum, Netherlands Customs) and many top level intra-industry consultants and solution providers.

Do check the PTI website for a definitive list and to pick up your delegate pass while there is still time.

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TRUST IN SMART PORTS

A VITAL COMPONENT IN THE DIGITAL MIX

Hans Rook, Chairman, and Richard Morton,
Secretary General, IPCSA, UK

Transparency, simplification, harmonization and standardization – these are the four pillars of trade facilitation. It would seem obvious that shipping and ports must work together to achieve these essentials and yet, in the maelstrom of the technological revolution, that simple fact can be forgotten.

There is huge pressure on us all to keep up with the rapid advances in AI, API, big data, blockchain and IoT. The exchange of electronic information is critical to the future of ports and to millions of swift, slick and efficient supply chains, of course innovation can bring improvements, but one factor remains constant throughout: Trust.

TRUST IN PARTNERS

However strong your technologies, however advanced your systems, however much data you gather and analyse, however clever your teams, trust remains key. You need to trust your partners before you allow them access to your systems – and vice versa. Even in our increasingly digital world, it still gets personal.

We need to share data in the maritime industry in order to improve processes and the whole efficiency of the supply chain. That requires all players to be aware of what data is, and to understand the possibilities, using legacy, current and new technologies, to share that data.

But what does sharing actually mean? It requires a focus on technological solutions that are neutral in essence, so that they can adapt and be futureproof as the world of information moves forward. It means ensuring the physical capability to share data via smart IT solutions. It's human nature to get excited about new innovations but the danger of that excitement is that we can lose sight of the need for clear standards and definitions. Lego is nice to use as the ultimate example for this.

Growing up we all used to play with Lego. You can buy Lego today and it still fits the Lego you bought four decades ago. That is real standardisation. New technologies tend to focus on proprietary standards and don't use neutral, common standards. That route delivers complication, not simplification. Any strategy must consider what data is being shared, what technology can be used, and whether that technology is neutral enough to be adaptable to future developments. Sharing means sharing.

PORT COMMUNITY SYSTEMS

Providing neutral, trusted platforms, Port Community Systems have played a critical role in the exchange of electronic data for decades. In our increasingly digital world, it is those same Port Community Systems that are perfectly placed to develop and coordinate the necessary connections. That is the biggest value of a Community

System, whether it is operating within a sea port, airport or inland port or at a border crossing.

Currently ports and shipping lines use UN Edifact standards, while Customs organisations favour the WCO data models and XML. While different formats, the critical factor is that the data elements used are the same (UN TDED – Trade data element directory). If the entire community is willing to share data, they need a trusted third party, a Community System, and we can't see that changing in the future. A Community System acts as a trusted third party guardian of data, ensuring that it is never shared with those not authorised to see it."

That factor also provides added confidence in an industry concerned with cybersecurity and the threat of cyberattack.

STANDARDIZATION

Standardization is an issue that actually goes beyond data. For example, with regard to the definition of 'port of arrival', does this mean when the ship arrives in port territory (generally the ship agent's definition) or when the ship is actually at the quayside (the customs definition)? By following the former definition, the port territory could be three hours' steaming from the quay, and also what might be understood as the ETA in London might be a completely different interpretation in Rotterdam. It's easy to see how messages get mixed. While we surge ahead with technology, we are often missing the operational harmonization to match it. That 'sharing' word comes to mind once again.

The International Port Community Systems Association and its members constantly focus on innovation in order to move forward and provide customers with the advanced solutions they need in the demanding world of shipping and trade. But we never lose sight of the real, practical applications of these solutions. As an association, we are forging ahead with some unique developments, always bearing in mind that these developments must deliver significant benefits to the users – not merely switch existing paper-based processes to a screen. Below are some examples of our current initiatives:

THE IPCSA BLOCKCHAIN WORKING GROUP

Led by Gadi Benmoshe, CIO of the Israel Ports Company, this group is developing a functioning and workable blockchain solution for bills of lading. This is being trialled by a number of members. As trusted third parties, PCSs are uniquely placed to integrate blockchain bills of lading into their existing network systems.

THE 'NETWORK OF TRUSTED NETWORKS'

IPCSA has also developed a unique programme here within which Port Community Systems are able to connect and share information via a special created common shared global standard, based on API (Application Program Interface). The project is being led by Javier Gallardo, director at Portic, Spain, and vice-chairman of IPCSA. For decades, Port Community Systems have been acting as trusted third parties for their customers, enabling communication among port companies and stakeholders through a hub-and-spoke model. PCSs have long been offering authentication services, directory and delivery services, message transformation, and applications to their customers in their port communities. IPCSA's Network of Trusted Networks goes further, connecting and sharing information among PCS communities.

CONCLUSION

Of one thing we can be sure: Global data sharing will become the norm rather than the exception. There is added complexity when operators must trust others from other countries or regions, with different cultures and data environments. When strategies are considered in the future, we have to recognize that we are now global, and that we need to standardize with a global mindset.

ABOUT THE AUTHOR

Hans Rook has worked in the transport and logistics sea trade sector for 48 years. He started his career at a shipping agency and, having gaining experience in all facets of import and export services, he was appointed to set up the ICT function within the company. He is one of the gurus on EDI standardization – he joined UN working groups to establish UN/CEFACT EDIFACT messages for the global sea trade industry.

Richard Morton has been Secretary General of the International Port Community Systems Association (IPCSA) since it was first founded in 2011 as the European Port Community Systems Association (EPCSA). In his role as Secretary General, Richard supports international organisations including the United Nations, World Customs Organization, European Commission, International Maritime Organization and many others, providing experience, expertise and knowledge in the electronic exchange of information for practical trade facilitation.

ABOUT THE ORGANIZATION

The International Port Community Systems Association (IPCSA) was originally founded in 2011 as the European Port Community Systems Association, by six European-based PCS operators. It was relaunched in 2014 as an international association, reflecting its growing membership outside Europe. Membership includes Sea and Air Port Community System Operators, Sea and Air Port Authorities and Single Window Operators.Today, IPCSA's members operate across the world, exchanging electronic information at more than 150 sea and air ports, rail and inland waterways, and border crossing points. This equates to more than 500 million TEU and 7 billion tonnes of world trade a year, a reach of over 1 million users, and the exchange of more than 30 million messages per day in support of efficient Sea and Air Ports.

ENQUIRIES

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THE LIBERATION OF PORTS

FROM PAPER TO DIGITAL

Simon Streat, VP Product Strategy,
Bolero International, London, UK

The era of the smart port will arrive very soon. Sensor technology, big data analytics and cloud-based applications are already transforming operations in port areas around the world. From Rotterdam to Shanghai to San Diego, a new kind of port is being created that employs all the technologies of the Internet of Things, obtaining the significant boosts in efficiency, asset-management and security that only radical digitisation can deliver.

Yet while smart port authorities such as Hamburg or Singapore use digitization to eradicate inefficiency and speed up port operations, the insecure and wholly inefficient use of paper trade documents by carriers, corporates and banks threatens to remain a drag on progress.

THE SMART PORT VOYAGE

The voyage to the smart port is certainly underway. Rotterdam is looking for major efficiency gains from its collaboration with IBM to crunch data on weather, water and berthing operations. Singapore, Tallinn and Hamburg are using digital technology to slash waiting times for container-carrying trucks, and Hamburg's ambitions extend to a doubling of its capacity by 2025 without physical expansion.

As larger ships take to the sea, stocked with ever more powerful digital technology, the pressure on ports to speed up their operations is rising. Ports that fail to deploy internet of things technologies and data analytics are unlikely to cope with the new emphasis on achieving efficiency through digitization rather than increasing physical scale. Digitization can deliver big gains in capacity-planning and service-delivery by addressing specific challenges in asset management and introducing much higher levels of integration between the multiple stakeholders. The arrival of 5G connectivity will be another catalyst for the digitisation of everything related to a port.

ELECTRONIC TRADE DOCUMENTS

Given all the investment in smart port operations, more widespread use of electronic trade documents seems essential. The throughput of containers can be increased if importers or exporters, for example, are already using electronic bills of lading (eBLs) and digital versions of all the other documents related to trade transactions. The data that smart port or customs authorities require to establish excise payments, charges and to fulfil other legal requirements such as compliance with sanctions or safety legislation is already to hand in a digitized format in electronic trade documents, and this does not require laborious, error-prone transcription.

THE END OF PAPER-BASED TRADE

As smart ports take shape in the Far East and Europe, and the Gulf and North African states follow their example, it makes little sense for bills of lading and all the other documents relating to shipments to be in paper format, physically couriered around the globe.

The physical transfer of trade documentation in paper form can take in excess of a month, while a secure cloud-based platform will support the completion of the exchange within a day. Automation reduces overheads and man-hours, with document transmission constrained only by the speed of the internet, rather than a courier's expensive logistics.

Digitization of trade documents also removes the age-old problems in relation to fraud, accuracy, and the tendency of paper documents to get lost. The electronic version of the bill of lading (eBL) is substantially more secure since it enjoys protection from a digital signature and encryption technology similar to that used in banking for the transfer of electronic funds.

ADOPTION IN THE MIDDLE EAST

Electronic presentation of trade documents is already gaining acceptance among major exporters and banks in different areas of the world. It has been adopted as far afield as South America, India and Asia, with organisations as prominent as BHP and Rio Tinto using the technology to accelerate secure and trusted execution of transactions in the Far East.

In the MENA (Middle East and North Africa) region, hopes are also bright for its adoption, as many governments recognise that digitization is a key element in plans to reduce economic reliance on oil and gas or commodity exports.

This means that their investment in new port and maritime facilities is seen as a part of a wider digital project. This includes Egypt's investment in a new maritime hub and industrial park at East Port Said, port upgrades in Algeria and Morocco and the giant maritime complex being constructed at Ras Al-Khair in Saudi Arabia.

DIGITIZATION

In Saudi Arabia and Qatar, digitization is driven by Vision 2030 masterplans, while the UAE has Vision 2021. Egypt and Jordan too have their digital strategies. It may be true that these countries' digital economies remain proportionately very small when set against the G7 nations, but the Gulf states are not hampered by inadequate broadband connectivity or lack of ICT talent. They also have some forward-looking regulators in the trade and finance sector and are backed up by a robust legal system and a willingness to enforce rules.

Many of the region's decision-makers in international trade have indeed already started to adopt digital platforms. SABB (Saudi British Bank), for example, is now bringing electronic trade document solutions to corporate clients, slashing transaction times and delivering major efficiency gains to all parties. In fact, many of the banks in the MENA area are increasingly open to the digitisation of trade finance. SABB's adoption of a digital platform in 2017 was a first for trade digitization in the kingdom and a real trail-blazer.

CARRIERS NEED TO COME ON BOARD TOO

In the MENA, as elsewhere, there is a role now for carriers to fly the flag of trade document digitization, following the example of a major container carrier in the Far East which has integrated a secure, third-party digital platform into its portal to achieve paperless exchanges of documents between all the parties concerned in shipments. The documents include bills of lading, packing lists, commercial invoices, certificates of origin and other customs-related credentials, licences and inspection reports.

THE DIGITAL PLATFORM

Of course, carriers alone will not convert port and customs authorities, nor conservative banks and corporates to the obvious advantages of digital trade platforms. Yet as we are propelled into the era of the smart port, it would be utterly bizarre for paper trade documents to remain as a severe bottleneck, choking off many of the dramatic gains in speed, efficiency and cost-effectiveness that everyone in world trade is seeking.

ABOUT THE AUTHOR

Simon Streat joined Bolero International as VP Product Strategy in March, 2015. With over 25 years of experience in general management, sales, marketing and product leadership positions in a range of organizations including BT Group Plc, Experian and Alcatel. Prior to Bolero, Simon was Director of Global Channel Sales at Truphone and before that he was Managing Director of Experian's UK & I SME business. Simon has direct experience of leading technology focused businesses in delivering profitable business growth. Notable accolades include successfully launching Experian's SME business globally, launching and managing BT Openzone and two fully functional mobile operators in Spain and Italy. Simon holds a BSc from the University of Manchester in Electrical and Electronic Engineering.

ABOUT THE ORGANIZATION

Established in 1998 by SWIFT and the global logistics and insurance industry, Bolero International has built a strong reputation and market leadership position in driving the digitisation of global trade. Bolero delivers secure, end-to-end, cloud-based services across the entire global supply chain. By digitising trade processes and transactions, providing greater visibility, transparency and control, Bolero is making trade safer, smarter and faster.

ENQUIRIES

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PORTS AND TECH STARTUPS

A NEW MODEL OF VENTURE CAPITALIST

Kris Kosmala, VP Asia Pacific,
Quintiq, Singapore

When we think about the traditional mandate of a port, we rarely associate it with funding information technology startups. While ports are oriented towards ensuring the safety of operations and minimizing risks, the world of technology startups is precisely the opposite. It features a higher than average failure rate and capital burn rates that are not for a fainthearted investor. The earlier the stage of funding, the higher the risk of not collecting any rewards.

Ports intending to create their own incubators can build on the experiences gained so far from the operations of Unboxed (PSA), PorTechLA (Ports of Los Angeles and Long Beach), PortXL/Smart Port 2.0 (Port of Rotterdam), or CroNoMar (ports of Croatia). While each was started with a slightly different innovation area, their collective experience provides a reliable blueprint for other ports to follow.

SMART PORT DYNAMISM

Organizationally, a port keen on incubating relevant businesses needs to provide work facilities and commit to helping the startups by providing realistic technology test beds and feedback from technologists within the port. Financial support may vary, but real dollars and cents need to be budgeted and available for disbursements over the 6-12 month period of incubation. Linking a port's incubator with nearby universities and research organizations is of importance as well. Making this linkage successful requires the incubator operation to get over any institutional constraints to involving academic staff in commercial, for-profit programs.

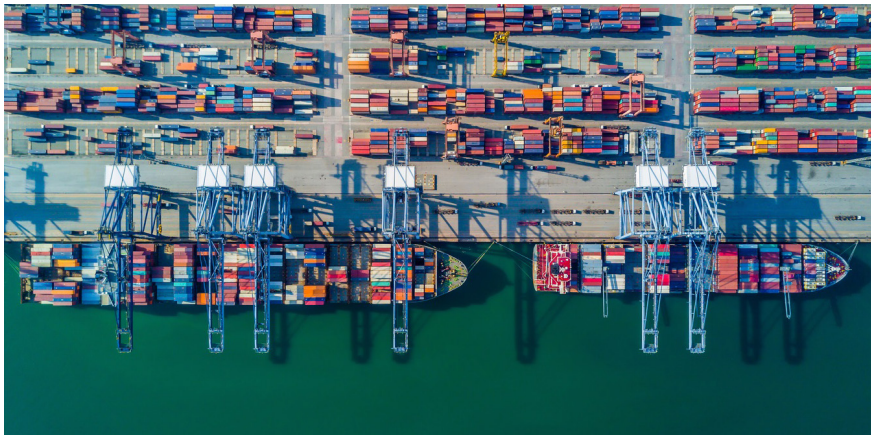
Taking such risk does not come without possible benefits. By working in this manner, ports can actively direct startups to solve very specific problems related to operational efficiency, equipment utilization, energy consumption or workforce utilization. Solutions hatched in the incubator can be commercialized and offered to other ports. Ports inviting companies into an incubator are assured of equity ownership (ranging from 5% to 20%) and a revenue cut from the sales made by the startup to ports' partners or other ports.

THE BUSINESS CASE

Broadly speaking, being involved in technology financing is good for ports facing a stagnating mature market, where increased efficiency and protection of market share are central to business strategy. Gaining efficiency and smartening operations beyond merely automating means that a port can achieve more without necessarily expanding its physical size. That's all good, but any business strategy needs a strong underpinning in rational assumptions about the business model.

The business assumption behind a port becoming a technology investor is harder to define. Typical technology investors look to get a return on investment, but they also contribute their business and technical expertise, help with introductions into different platforms, and generally open doors for the startup.

In general, ventures are expected to lose money meaning write-offs on the balance sheet. Not a pretty sight for a public company. Justifications for bleeding cash on a non-core business may wear thin with port investors, even if a port is owned by local government and the cost of running the incubator can be shared.



THE TECHNOLOGICAL CASE

The technological assumption behind funding startups, rather than developing and testing solutions themselves, relates to the explosive progress in technologies applicable to port operations. These include a world of intelligent interconnected sensors (also known as the Internet of Things), autonomous vehicles, geo-location services, multiple areas of artificial intelligence, digital simulations (digital twins), and advanced robotics.

Solutions are expected to process ship traffic more efficiently, reduce harmful emissions from port equipment and ships, improve shipping documentation, or gather environmental data from the sea and air. The list goes on and on.

Learning about these technologies and testing their applicability would easily consume budgets and the time of port IT and operations departments, not to mention lead to a subconscious injection of unnecessary bias into the creative technology application process. In the incubator scenario, startups run separately from the internal organization, but controlled by the port, they can help bring some of their leftfield thinking into the creation process, as well as make a real difference faster than port could make doing it all by themselves.

THE DIGITAL CASE

Capturing opportunities resulting specifically from digital integration benefits ports by allowing them to turn into a different type of service provider. Not a purveyor of physical services like towage or crane operations, but a data service provider. Digitalization of port activities where new services either replace or augment traditional port services provides opportunities to rethink a port's traditional business model.

The current port experience is largely geared to transporters getting their cargo to and from the vessel as efficiently as possible. In the digital-driven future, entire supply chains flowing through the port will be propelled by technology, starting before the arrival of cargo to the port, online during the journey to/from the airport, and upon arriving at the next destination.

CONCLUSION

The strategic goal of implementing an incubator should go beyond mere efficiency improvements and focus on a holistic, long term 'smart port' within an 'intelligent supply chain' strategy, where insights are distilled from data and smart applications, enabling ports to transition from traditional business models to newer, bespoke models. The much larger opportunity arising out of sharing incubator-generated insights and digital innovation between port communities and even competing ports has not yet been fully unexplored to establish a repeatable template for all ports to follow. The nature of the business poses some challenge, as true segment-wide collaboration requires integration between the supply and demand side actors in the transport and logistics sector, and assimilation of data not only from logistics firms and suppliers and distributors, but also their clients.

Having an open lab accessible to all port collaborators as a part of the incubator could personalize collaborators' experiences and provide real-time data to facilitate continuous improvement. Perhaps the most important role of the lab is to test the viability of systems for implementation within the infrastructure existing within an organization for each collaborator. It provides proof-of-concept prior to scaling to other parts of the collaboration network.

In summary, ports acting as early tech investors represent a fresh initiative to navigate a changing world. Early experiences show that ports must lead the evolution and application of new technologies within and outside of the port, as their unique place in the complex supply chain gives them the best position to influence how supply chains are executed and how they perform.

ABOUT THE AUTHOR

Kris Kosmala brings many years of extensive global experience as a business operations executive in the services and technology industries. He is a senior member of management team at Quintiq, a software company specializing in development and provision of advanced mathematical optimization software used in all aspects of planning and scheduling.

ABOUT THE ORGANIZATION

Too often in large organizations, planners and managers are disconnected in their planning decisions. Many organizations are overwhelmed by the number of spreadsheets they're using to make sense of it all. Quintiq brings it all together. It's one planning system to cover every aspect of planning, from long-term strategic plans to short-term schedules and disruption management. Every department and every user can customize the interface and the information visible to suit preferences and requirements. Plans are updated in real-time for company-wide transparency and collaboration.

ENQUIRIES

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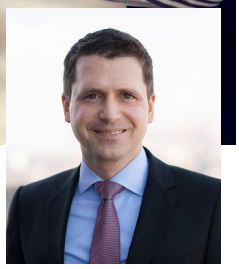


PORT PARTNERSHIPS IN PRACTICE

Gerald Hirt, Managing Director,
HVCC Hamburg Vessel Coordination Center, Hamburg, Germany

Two trends have defined container shipping in the past decade. To start with, bigger and bigger ships were built at an unprecedented pace and the result was systemic overcapacity, which triggered various consolidations among shipping companies. The second is that port authorities and terminal operators have been faced with major challenges owing to this development.

Upgrading an existing quay wall to accommodate new gantry crane models, for example, requires much more time for preparation and construction than the construction of an 18,000 TEU ship.

New requirements also came into effect on navigating estuaries, on turning circles and approach manoeuvres, lines arrangement and the condition of bollards. It became necessary to manage the heavy operational peak times in processing mega-ships and in the distribution of the cargo to feeder and inland ships, trains and trucks.

Meanwhile one important element faded into the background at several ports, even though it would offer additional scope for optimisation. Namely, closer collaboration among each other, and with all involved parties. This article explains how the challenges resulting from the changing size of ships were recognised early on in Hamburg and how they have been successfully mastered using a unique model, the Hamburg Vessel Coordination Center (HVCC).

THE HAMBURG WAY: PARTNERSHIP

A project entitled the Feeder Logistics Center (FLC) was launched by Hamburger Hafen und Logistik (HHLA) back in 2004. The motivation behind this project was reducing the number of calls to terminals that a feeder ship had to make. For commercial feeders, the average was four terminal calls per port visit, both at the neighbouring HHLA and Eurogate container terminals, as well as other terminals in the port area. As a result, HHLA's competitors, Eurogate Container Terminal Hamburg (CTH) and the commercial feeder operator Unifeeder, were also persuaded of the benefits of adopting a central feeder coordination strategy.

HHLA and Eurogate launched an independent company called Hamburger Feeder Logistik Zentrale (FLZ) or Feeder Logistics Center (FLC) in 2009. For the shipping companies and customers at the Port of Hamburg, the FLC represents a neutral platform with direct access to any of the relevant terminals' operating systems. The FLC assists shipping companies 24 hours a day with berth availability and stowage planning. It also ensures that pilots, tugs and boatmen are ordered on time. This allows the shipping companies to concentrate on their core business, and the partner terminals benefit from having the FLC on hand as a 24-hour contact

partner for feeder ship handling queries. The FLC checks work programmes and stowage plans on behalf of the terminals, thereby reducing waiting times for ships. Coordination of feeder ship calls by the FLC central interface thus ensures that the capacity utilisation of berths is optimised. Today, the FLC coordinates around 4,000 terminal calls per year as a department of the HVCC, including calls by inland vessels since 2016.

As a result of the growth of containerships, cruise ships, bulkers and ConRo ships, it seemed only logical to expand the coordination of the FLC. In order to better manage the arrivals and departures and regular calls by major ships at the port's 30 or so terminals, and to tailor them more closely to the nautical requirements of a tidal port, work began in 2012 on developing a concept for what is now known as the Nautical Terminal Coordination (NTC). Three years later, the FLC was renamed the Hamburg Vessel Coordination Center (HVCC). The HVCC is comprised of the FLC and the NTC departments.

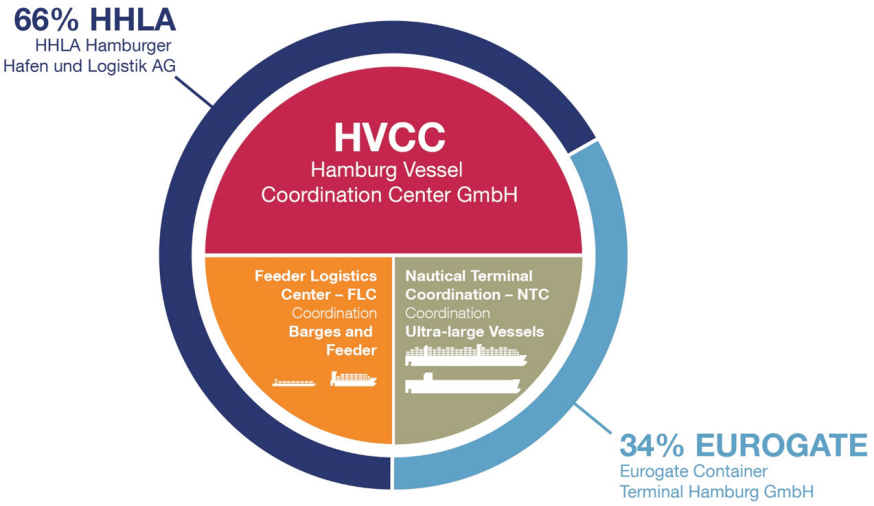


Figure 1: HVCC organisational structure

LEARNING FROM AVIATION

When developing the concept for the NTC, experiences from other industries aiming to respond to similar situations were analysed. It seemed natural to take a closer look at the world of aviation. The increase in traffic generally, but also the evolution of very large aircraft such as the Airbus A380 required that hub airports put major infrastructure in place and adapt operational processes. In some cases, it was possible to develop whole terminals or add additional runways to accommodate these innovations.

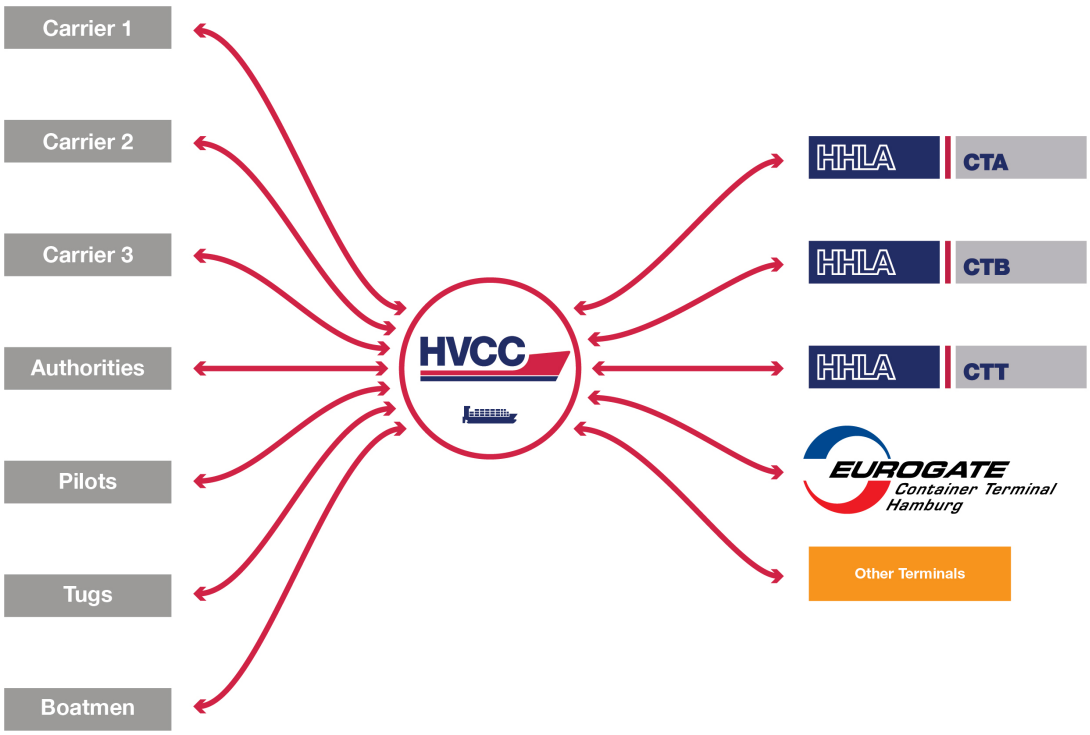
One trailblazer in Airport Collaborative Decision-Making (ACDM) is Zurich Airport, where all the stakeholders involved in airport operations work together in an airport steering room and share relevant data. Direct and open communication forms the basis for this concept. Disruptions in operations are solved within minutes at a central conference table.

Monthly stakeholder meetings provide an example of the open communication of defined KPIs, always with the aim of continually improving processes. Participation in the ACDM is voluntary and some stakeholders, including several high-profile airlines, were not involved from the start. The example of Zurich shows how optimising the total value added of limited infrastructure can be beneficial, instead of merely fulfilling the individual interests of a specific stakeholder in a specific situation.

INSPIRING PARTNERS TO PARTICIPATE

Today, the NTC's role is to act as the central operating contact partner for shipping companies and customers of the Port of

Figure 2: Feeder coordination by the FLC



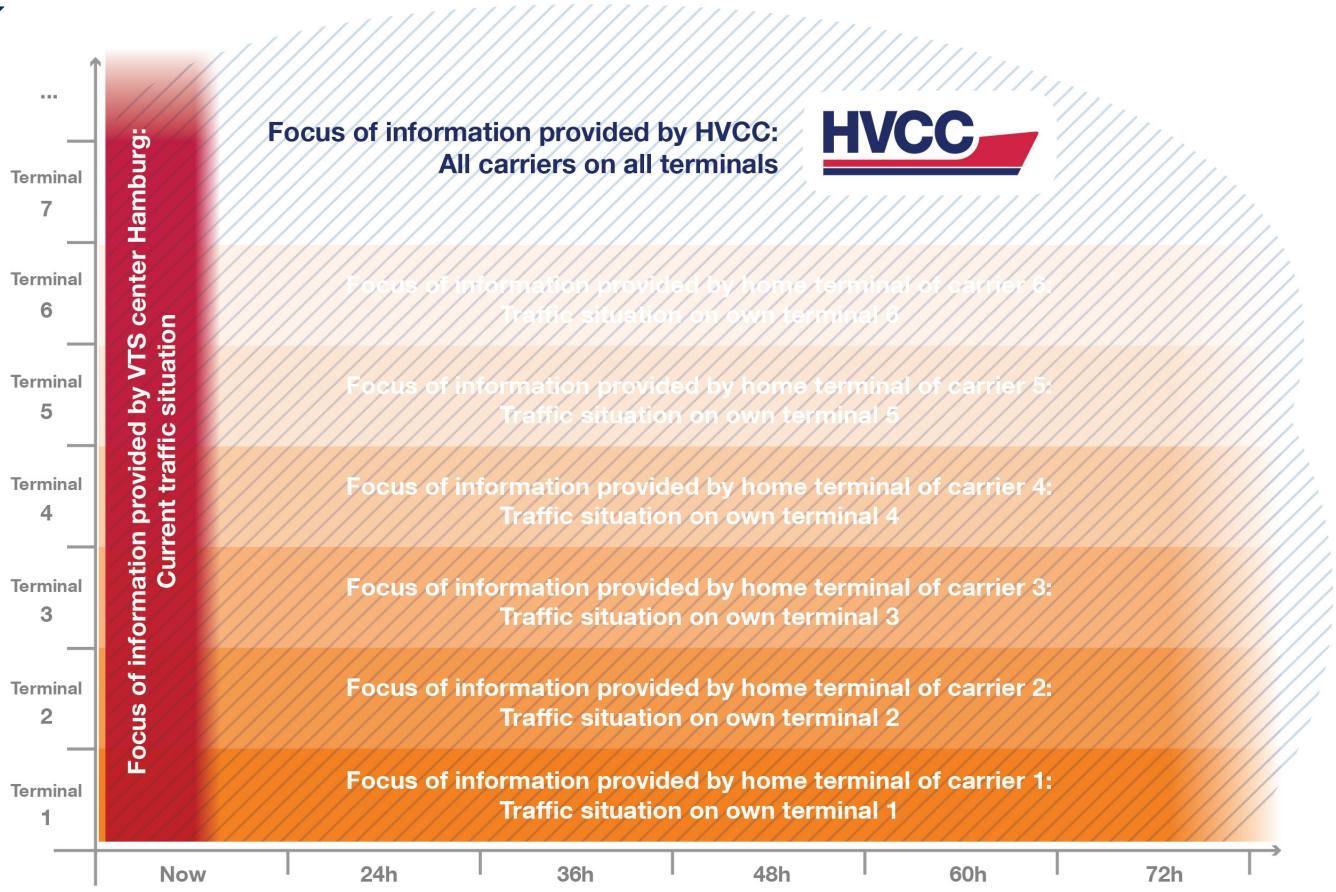
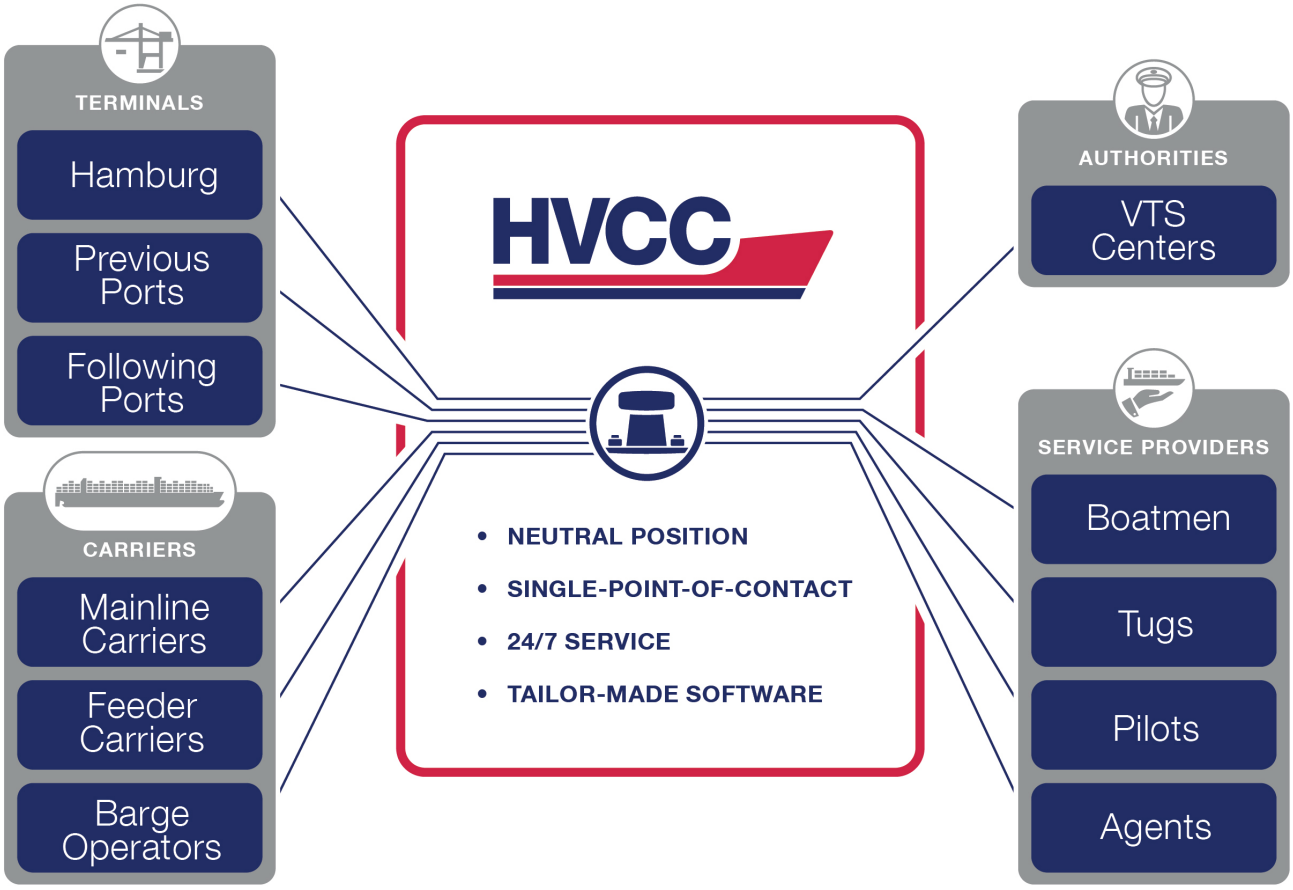


Figure 3: The NTC's value added services



Hamburg when it comes to the arrival and departure of their ships. The NTC monitors each ship on its rotation through Northern Europe and assists shipping companies and brokers in planning their vessels' passage from the previous port to the Port of Hamburg, as well as their vessel's departure from the port.

For its partner terminals, the NTC pools all the different operational information to create a comprehensive traffic overview. This enables it to detect conflicts early on and develop solutions that the NTC discusses with the stakeholders involved. On behalf of the terminals, the NTC takes charge of communications with the Hamburg Vessel Traffic Service Centre and the Elbe pilots and is also available 24 hours a day as a point of contact for the authorities and pilots.

The challenge in setting up the NTC was to convince stakeholders of the added value inherent to such an organisation. One of the concerns raised repeatedly by shipping companies at the outset was that they knew exactly where their ships were. Terminal operators also explained that they knew exactly when the ship had been handled. However, the HVCC/NTC concept enjoyed great support from the start from the public authorities that had called for proper centralised operational coordination and delineated its role as guaranteeing navigational safety on the river and in the port. This prevented them from having to deal with coordinating traffic with shipping companies and terminals, which was time-consuming and geographically extensive.

Today, the NTC's services are used by almost all container-shipping companies visiting the terminals with mega-ships. There are also intensive partnerships with ship operators, Carnival Maritime's Fleet Operations Center and the Grimaldi Group, for example. The NTC's services are financed by a number of terminals, including HVCC shareholders HHLA and Eurogate, as well as the Hansaport, Unikai and Cruise Gate Hamburg.

Routes for the around 250 major ships per month approaching Hamburg, for example from Gibraltar, are plotted automatically by specially customised software. Shipping companies provide the NTC with their coastal schedules so that the software can provide an ongoing target or an actual comparison. The NTC is also in direct contact with some of the previous ports to integrate them into NCT planning, in particular for estimated time of departure and outgoing draught at the previous port. Vice versa, the NTC then provides the same information of vessels in Hamburg to their next port of call. On the basis of this information, and in combination with the parallel planning of outbound ships with the partner terminals in Hamburg and the relevant environmental data such as tide and wind forecasts, the NTC creates a precise plan for the passage of each shipping company's vessels, long before the vessel is on the Elbe approach.

This plan comprises recommendations in terms of speed and draught for transit towards Hamburg, as well as in-depth nautical and water-traffic-related data. Passage plans are updated in the event of changes and provided to the shipping companies. All information compiled by the NTC can be viewed in real time by the partner terminals via a terminal dashboard so that all stakeholders can work using the same data at the same time.

ADDED VALUE IN PORT PARTNERSHIP

The value added for stakeholders can be summarised as follows:

- Optimised approach for ships coming from the previous port. This minimises bunker costs for the shipping companies and improves their carbon footprint
- Terminal operators in the previous port in Hamburg and in the next port of call can optimise the use of their resources on the basis of a coordinated, consistent operational perspective. This also reduces costs and improves the carbon footprint of the terminal operator, and furthermore, the shift manager at the terminal can also focus on the processes, rather than having to also deal with issues related to coordinating water traffic
- The authorities can largely focus on their own function and on the execution of the current traffic situation
- Other stakeholders can also benefit from a long term, continuously-updated overview

SUMMARY AND OUTLOOK

After the launch of the HVCC, questions were often asked about the cost and benefit. With each passage plan produced by NTC or feeder coordinated within the Port of Hamburg by FLC doubts gradually subsided. A major prerequisite for the success of a project like this is the insight and readiness of terminal operators not only to adapt terminal hardware and infrastructure, but also to invest in process optimisation. HHLA and Eurogate recognised this necessity when they set up the FLC 13 years ago and are taking the next logical step with the NTC.

Meanwhile, a growing number of stakeholders is ready to share some of their data, consequently putting their individual interests on the back burner.

HVCC's aim is to extend the scope of collaboration further in the years to come. Therefore, HVCC want to integrate more terminals and carriers in the scope of planning, convince more stakeholders to participate and even collaborate with competing ports. In a first pilot-project, HVCC started sharing data with the Port of Rotterdam, exchanging relevant operational data for vessels going from Hamburg to Rotterdam and vice versa, using a defined port call standard. Further, HVCC participate in the follow-up project of the Sea Traffic Management Project (STM) and put forward a project idea to explore the possibility of a data-sharing platform for all European ports.

Apart from these innovative ideas, HVCC also aims to establish partnerships and direct interfaces with shipping companies (mainliners, feeders and barge operators) for exchanging relevant data and passage plans. Further, HVCC, local authorities and pilots associations continuously working together to extend the scope of exchanging data, which is also a good example of collaboration between private and public bodies.

In this way, HHLA and Eurogate will continue to blaze a trail of innovation for digitization and vessel coordination not only in the Port of Hamburg.

ABOUT THE AUTHOR

Gerald Hirt served two years in the Navy, then studied seaborne transport and port management at the University of Applied Sciences in Oldenburg, graduating with a degree in industrial engineering. Following a period of training at the shipping company P&O Nedlloyd, he began his career with the HHLA Group at HPC Hamburg Port Consulting in 2003. Mr Hirt has been Operations Manager at HVCC since November, 2012. In this role he expanded the portfolio of services for the Feeder Logistics Center (FLC) and developed the Nautical Terminal Coordination (NTC). In June 2017, he became Managing Director of HVCC.

ABOUT THE ORGANIZATION

The Hamburg Vessel Coordination Center (HVCC) is a joint venture between the two container terminal operators in the Port of Hamburg, Hamburger Hafen und Logistik (HHLA) and Eurogate Container Terminal Hamburg (CTH). Terminals and shipping companies can make use of its operational coordination services for the arrival of ships in the Port of Hamburg, routes around the port and departure after handling - whether for container mega-ships, bulkers, cruise ships, feeders or inland vessels. Furthermore, HVCC acts a central communication interface to the Hamburg Vessel Traffic Service Centre and the Elbe pilots.

ENQUIRIES

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PORT TECHNOLOGY

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