PORT TECHNOLOGY

THE E-JOURNAL
OF PORTS AND TERMINALS

EDITION 148 - 2025

PORT TECHNOLOGY SUMMIT NORTH AMERICA

PORT TECHNOLOGY SUMMIT
NORTH AMERICA

4 - 6 FEBRUARY 2025
VIRGINIA, USA

PORT TECHNOLOGY SUMMIT NORTH AMERICA

PORT TECHNOLOGY INTERNATIONAL

THANK YOU TO OUR SPONSORS

Host Sponsor

THE PORT OF VIRGINIA

Gold Sponsors

INFORM

LYNXIS

NOKIA

Silver Sponsors

Bentley Advancing Infrastructure

BOXBA

Kalmar

ROCSYS

SSH

TMEIC

Silver Co-Sponsors

IBM

verizon business

Bronze Sponsors

atai

CAMCO TECHNOLOGIES

DSP

Insight Softmax

INTECH THE DESIRE TO PERFORM

moffatt & nichol

navis

passify

RPX OPTIMIZATION

SIEMENS

XANATOS MARINE

Evening Dinner Co-Sponsors

Paige PORT SOLUTIONS A GCG COMPANY

ARISTONCAVI

Lunch Sponsor

DMS DMSLOG.AI

Networking Break Sponsor

BROMMA

Exhibitors

STRATEGIC SERVICE SOLUTIONS INC.

westermo

XRF GUIDING DECISIONS TO A GOOD END

Lanyard Sponsor

KONECRANES

Delegate Bag Sponsor

VISY

CONTAINER TERMINAL AUTOMATION CONFERENCE EUROPE

POWERED BY PORT TECHNOLOGY INTERNATIONAL

EUROPE'S TERMINAL TECHNOLOGY HUB

JOIN EUROPE'S LEADING EXPERTS IN PORTS AND TERMINALS

1 - 2 APRIL 2025
LAS ARENAS BALNEARIO RESORT
VALENCIA
SPAIN

Returning for its 9th edition, **Container Terminal Automation Conference** is back in **Valencia, Spain** from **1 - 2 April 2025**.

Join us for a dynamic two-day conference that delves into the challenges and opportunities on the path to faster, safer and greener operations.

Featuring compelling Keynote presentations and insightful panel discussions, CTAC Europe is the hub for knowledge sharing and collaboration to tackle common industry problems.

Attendees will have ample networking opportunities to forge lasting business relationships with over 250 attendees at the conference's **Welcome Drinks**, **Evening Networking Dinner** and **daily networking breaks**.

Don't miss out!

REGISTER NOW - ctac.ptievents.com

CONTAINER TERMINAL AUTOMATION CONFERENCE EUROPE

EUROPE'S TERMINAL TECHNOLOGY HUB

POWERED BY PORT TECHNOLOGY INTERNATIONAL

SPONSORED BY

Gold Sponsor

INFORM Official AI Partner

NextPort BY MOFFATT & NICHOL

RBS

Silver Sponsor

atai

AVLINO

BOXBAY

CONROO

embotech

endava

FERNRIDE

Kalmar

navis

PORTCHAIN

ROCSYS

SIEMENS

TMEIC We drive industry

VISY

Bronze Sponsor

CAMCO TECHNOLOGIES

DSP

ERICSSON

passify

Solid Port Solutions

Lunch Sponsor

Three Group Solutions

ABB

Dinner Sponsor

prodevelop

REGISTER NOW - ctac.ptievents.com

FROM THE EDITOR

Margherita Bruno,
Editor

Welcome to the 148th edition of our e-Journal! This time, we're diving into the highlights of the Port Technology Summit North America, which took place just a few weeks ago in Norfolk, Virginia. What an incredible turnout—it was great to be back in Virginia for such a special event!

Now that the PTI team is back in the office, it's the perfect moment to reflect on the hottest topics from the conference and share some key takeaways from our esteemed sponsors.

At the Port Technology Summit 2025, Dr Eva Savelsberg and Loren Mathis explored the similarities between aviation and container terminal operations, both of which depend on precision, efficiency, and adaptability. Successful transport hubs require seamless coordination between people, technology, and logistics, and AI-driven, real-time decision-making is proving to be a game-changer. INFORM's solutions, such as GroundStar for airports and the Integrated Terminal Scheduler for ports, help drive efficiency, safety, and sustainability.

Next, we're pleased to welcome back BOXBAY, which is revolutionising container terminal operations with its high-bay storage system. By stacking containers vertically in individual compartments, BOXBAY massively increases storage capacity while reducing land use, carbon footprint, and operational costs. The fully automated system also improves energy efficiency, minimises unproductive moves, and enhances safety, setting a new benchmark for terminal operations.

On the sustainability front, Rocsys' Paul Arms tackles a crucial challenge: charging electrified port equipment. The company's AI-powered robotic charging solution eliminates inefficiencies, improves safety, and helps ports meet their sustainability targets. Innovations like these are key to greener and more efficient port operations.

Kalmar also makes a return to our journal, presenting SmartRead, an Optical Character Recognition (OCR) system that integrates with its SmartPort solution to boost container-handling efficiency. By using spreader-mounted cameras to identify containers automatically, SmartRead reduces human error and minimises exceptions, streamlining terminal operations with impressive accuracy.

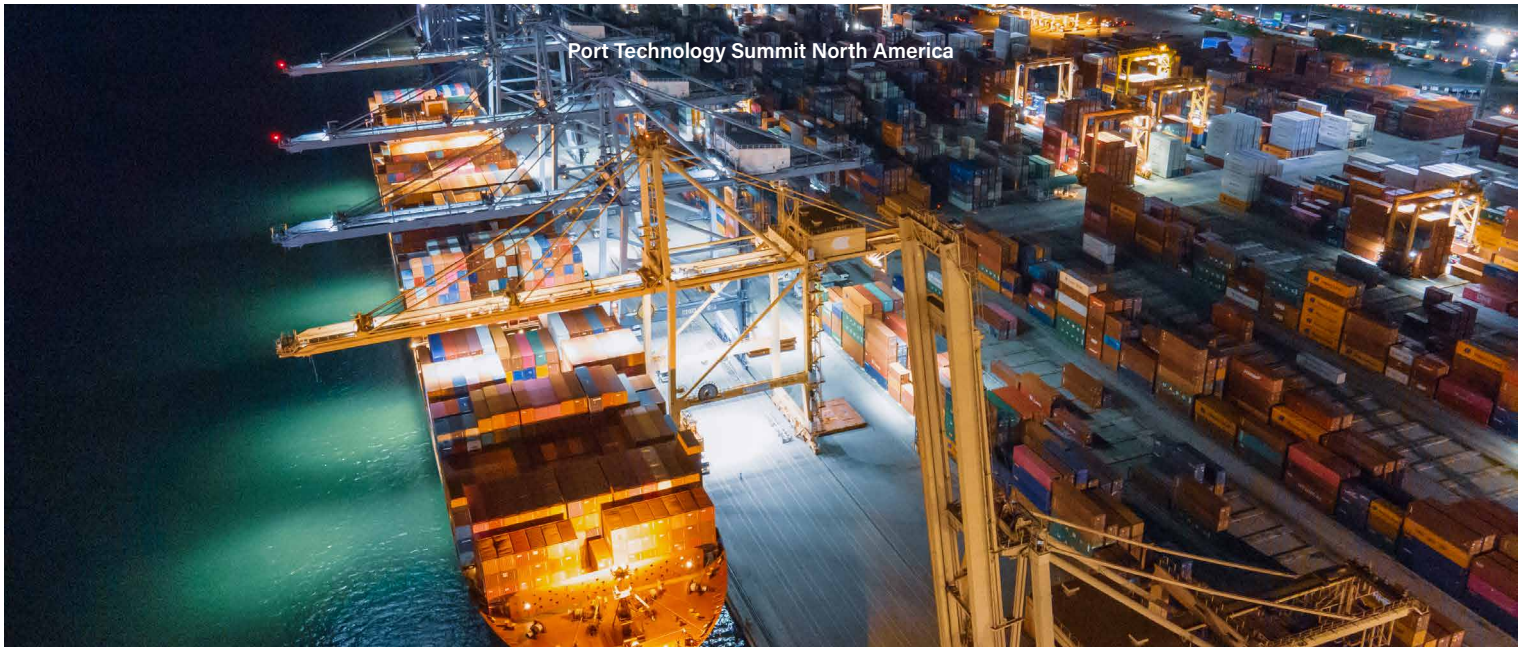
Moving on, Navis by Kaleris shares insights on how logistics is adapting to increasing complexity, driven by larger vessels, rising cargo volumes, and evolving operational demands. Their RTG Optimization solution, developed in collaboration with leading terminals, improves RTG management through advanced scheduling, workload balancing, predictive analytics, and real-time visualisation. By reducing idle time and optimising crane operations, Navis is helping terminals operate more efficiently in an increasingly demanding industry.

Meanwhile, Shailendra Shukla, Executive Director of Xanatos Marine Ltd., discusses how smart solutions are transforming port operations. With ongoing disruptions in global trade, digitalisation and automation are more crucial than ever. Xanatos Marine integrates AI, Digital Twins, and IoT to enhance efficiency, safety, and sustainability. The company's Titan Sentinel platform provides real-time data integration, predictive analytics, and robust cybersecurity, optimising port operations while ensuring regulatory compliance.

Passify also makes a comeback, highlighting how synchromodality is reshaping intermodal transport. By enabling real-time, dynamic switching between transport modes, synchromodality enhances supply chain performance. However, challenges like limited transparency, fragmented planning, and underutilised assets continue to impact efficiency. Passify and RailSync are actively working on solutions to tackle these barriers and create more resilient logistics networks.

Finally, we explore how TIC4.0 is driving the evolution of Digital Twins in container terminals by establishing a standardised data language, enabling seamless integration and smarter decision-making. By removing interface complexities, TIC4.0 fosters collaboration and streamlines operations. The IHATEC TwinSim project at Eurogate Container Terminal Hamburg is a great example of this in action, integrating real-time equipment and process data to enhance efficiency, forecasting, and simulation. As digitalisation accelerates, TIC4.0 is set to play a key role in shaping the future of port operations.

A huge thank you to everyone who joined us for the first-ever Port Technology Summit—it's been three days packed with insightful discussions, new connections, and groundbreaking tech. We hope this edition serves as a proper send-off for the event before we set our sights on even bigger things ahead!



CONTENTS

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

INTERMODAL CONTAINER TERMINAL CONFERENCE

POWERED BY PORT TECHNOLOGY INTERNATIONAL

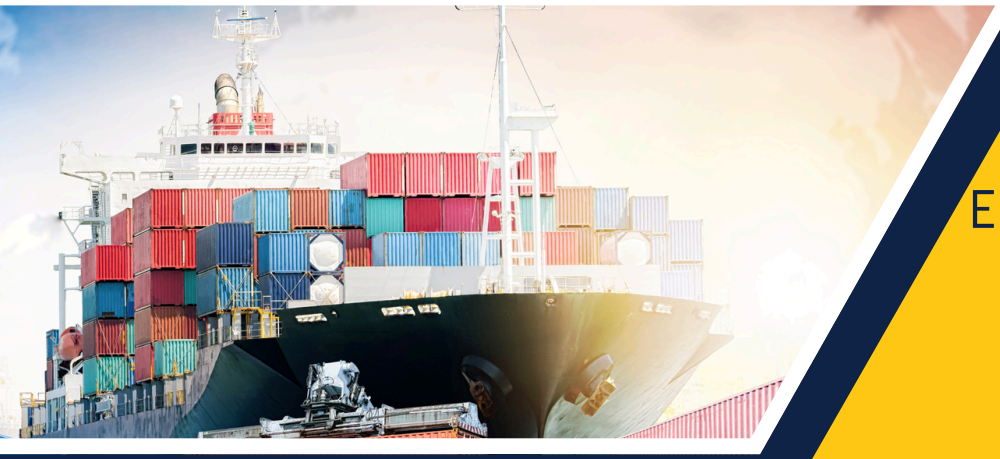
The New Hub for Efficient and Sustainable Container Transportation

23 - 24 APRIL 2025
Dusseldorf, Germany

Intermodal Container Terminal Conference 2025: A New Hub for Inland Ports and Terminals.

Two days of in-depth, single-stream content and valuable networking opportunities.

This event is designed to address the challenges and opportunities facing Inland Ports and Terminals as the industry prepares for rising volumes.



Key Topics:

Regulation
Sustainability
Emergency Technologies
Modernised Operations
Digitalisation
Resiliency

intermodal.ptievents.com

Hilton Dusseldorf, Dusseldorf, Germany

SPONSORS

HOST PARTNER

The Port of Virginia is proudly recognized as CPPI's top-performing port and is located in Site Selection's 2022 Top State for Business Climate. The port exclusively owns and operates its terminals and the nation's leading chassis pool. At The Port of Virginia, customers and partners experience the efficiency and service excellence only offered through the most modern and technologically advanced container terminal operations on the coast. Currently underway, the port's $1.4 billion Gateway Investment Program is building even greater port efficiency through additional semi-automation, expansion, and industry-leading sustainability commitments.
www.portofvirginia.com

GOLD SPONSOR AND OFFICIAL AI PARTNER

INFORM specializes in AI and optimization software to improve operational decision making. Based in Aachen, Germany, the company has been in the optimization business for 50 years and serves a wide span of logistics industries including ports, maritime, and intermodal terminals. With a broad range of standalone and add-on software modules, INFORM's unique blend of algorithmic based software expertise, rich industry experience, and big world thinking delivers huge value for their customers. For over 25 years INFORM's industry proven optimization algorithms have been delivering real world results at the world's most complex ports and terminals improving everything from yard stacks, vehicle utilization, crane productivity, through to rail processes.
www.infrm.co/terminal

GOLD SPONSORS

Lynxis was born to deliver exponential operational and financial improvements for customers in the landside supply chain. Their aim is to transform terminal operations from the ground up. They are an independent and financially-sound operating company following a 'build & buy' strategy to construct a platform of powerful innovations. The teams at Lynxis think like operators, but act like tech experts balancing their drive to do things differently.
www.lynxis.com

Nokia create technology that helps the world act together. As a B2B technology innovation leader, they are pioneering networks that sense, think and act by leveraging their work across mobile, fixed and cloud networks. In addition, they create value with intellectual property and long-term research, led by the award-winning Nokia Bell Labs. Service providers, enterprises and partners worldwide trust Nokia to deliver secure, reliable, and sustainable networks today – and work with them to create the digital services and applications of the future.
www.dac.nokia.com/industry/port-terminal-operations

SILVER SPONSORS

Bentley is the leading software provider for the infrastructure sector. Our platform enables engineering firms and owners/operators to manage their assets through infrastructure delivery and ongoing infrastructure performance. We empower the unsung heroes of infrastructure working to improve quality of life around the world. The infrastructure digital twin is the core of our offering. By integrating a wide range of inputs into a digital simulation, Bentley provides unmatched understanding into an asset's performance, allowing engineers to work in context, at scale, and in real time. This enables clear design, efficient construction, and reliable monitoring and maintenance.
www.bentley.com

BOXBAY is an international joint venture formed by global trade enabler DP World and industrial engineering specialists SMS group and is offering a disruptive technology that significantly improves operations at container terminals. The BOXBAY High Bay Storage (HBS) systems achieve a three-fold increase of the transshipment capacity of container terminals and use only one third of the footprint of conventional storage systems for an equivalent number of containers. Instead of stacking containers directly on top of each other BOXBAY places each container in an individual rack, making each one directly accessible.
www.boxbay.com

Kalmar is recognized as the global leader in sustainable cargo and material handling for ports, terminals, distribution centers, and heavy industry. The company boasts an extensive electric portfolio and a worldwide service network, which enables them to assist their customers in transitioning towards safer, more eco-efficient, and productive operations. Collaboratively, Kalmar and its customers work towards developing innovative solutions that have the potential to shape the future of the industry, ultimately enhancing the efficiency of their customers' operations.
www.kalmarglobal.com

Rocsys is recognized as a frontrunner in the field of autonomous charging solutions for electric transportation. Employing a pioneering methodology that integrates soft robotics, AI-driven computer vision, and data-centric services, Rocsys is dedicated to delivering a dependable, smooth, productive, and economical charging encounter for both fleets and consumers. By actively participating in industry consortiums and establishing strategic alliances with multinational corporations and OEMs, Rocsys establishes itself as the benchmark for the forthcoming era of autonomous charging.
www.rocsys.com

SSH Communications Security is a defensive cybersecurity company with the mission to secure critical data and communications between systems, automated applications, and people. Their products are developed to defend your business secrets and the access to them – now and in the future. The company started in 1995 when founder Tatu Ylönen developed the original SSH protocol; a revolutionary concept that had an immeasurable impact on the adoption of electronic transactions over the internet. SSH's portfolio is focused on data protection, such as PrivX OT – a solution for Access Control between users or applications and industrial automation devices.
www.ssh.com

TMEIC has a long, proud history in the crane industry, supplying equipment and systems throughout the world. Their control systems are designed to meet the most demanding applications and environmental conditions, including the latest in automation for both manned and unmanned operation to maximize crane productivity. At TMEIC, they drive industry.
www.tmeic.com

SPONSORS Continued

BRONZE SPONSOR

An applied AI company pioneering Digital Transformation for the Maritime, Logistics, and Supply Chain industries. **ATAI's** innovative business models are targeted toward optimizing productivity and identifying opportunities for sustainability and cost efficiency. ATAI streamlines existing processes with true problem-solving applied AI solutions end-to-end. Powered by AI algorithms, sensors (Camera, Location sensors, Wireless mesh networks (LoRa, 5G, etc.), Lidar and Radar), and other cutting-edge technologies, ATAI has addressed a multitude of operational challenges across different market sectors.
www.atai.ai

Camco Technologies is a pioneer and market leader in container terminal automation. The Camco Technologies image recognition and location tracking solutions register all moves during the container hand-over processes at the gate, in the yard, under cranes and during rail operations. The captured data allows optimization of the terminal processes, while the Camco software solutions empower the terminal reaching their digitalization objectives. Their solutions contribute significantly to efficient operations, customer satisfaction and profitability. All hardware and software are being developed at their headquarters in Belgium. Camco Technologies solutions have been implemented in 250+ terminals across the globe. With a global network of subsidiaries and partnerships, their clients are always within reach.
www.camco.be

DSP began as a visionary support system for Contship Line's top management, focusing on decision-making, IT strategies, and innovation in 1986. They revolutionized the industry by developing a Shipping Information System that connected branch offices worldwide with the central office in Ipswich (UK) in real-time via a virtual private network—a ground-breaking innovation for its time. With over 40 years of experience, their dedicated team of over 40 professionals brings global expertise and a passion for innovation, you won't be able to find it elsewhere.'
www.dsp.team/news-projects

Insight Softmax Consulting (ISC) specializes in transforming complex data challenges into practical business solutions. Since 2016, our team of 50 professionals has served over 40 enterprises with data science, AI/ML, and high-performance computing applications. Recently, ISC helped design and administer California's groundbreaking $27M Ports Data Interoperability Grant Program, establishing technical frameworks, guiding investment in data systems, and fostering cooperation between major ports. We help maritime organizations navigate the technical landscape through data-centric solutions, from AI applications to data warehousing and strategic roadmapping. Our expertise spans data analytics, infrastructure optimization, and program management for lasting operational impact.
www.insightsoftmax.com

INTECH are a global self-led technology conglomerate, passionate for excellence and innovation, making difference to the businesses since 2003. They are a trusted and committed growth partner for their customers with profound listening to their needs. They are the partner of choice for many of the world's leading enterprises predominantly in the Port, Terminal & Logistics space with their extensive domain expertise and technological excellence. They provide a range of services that are tailored to each customer's individual needs, helping them 'Being AI Ready' with other modern edge technology solutions. INTECH has been key partner for its customers in developing cutting edge technology solutions for port and terminals, viz. Smart Terminal Operating System, Smart Container Freight Station, General Cargo Management, Smart Stowage Planning, Terminal Automation System, Port Operations and Revenue Tracking System, Sea Port Logistics Software for Maritime, etc.
www.theintechgroup.com

Moffatt & Nichol is a highly specialized maritime advisory, planning and engineering company. Moffatt & Nichol has defined the evolution of modern marine terminals, being the first to revolutionize port planning and design with a focus on efficient goods movement, containerization and automation. Today, they are committed to providing our port and terminal clients with innovative solutions to the complex challenges associated with achieving net zero. They have been at the forefront of this global imperative for decades, providing clients with strategies for achieving shoreside power, equipment electrification, eco-friendly terminal transport, regulatory emissions compliance and the transition from conventional to partial or fully automated systems.
www.moffattnichol.com

Navis is a leading provider of cloud-based supply chain execution and visibility technology solutions. Many of the world's largest brands rely on Navis to provide mission-critical technology for yard management, transportation management, maintenance and repair operations, terminal operating systems, and ocean carrier and vessel solutions. By consolidating supply chain execution software assets across major nodes and modes, we address the dark spots and data gaps that cause friction and inefficiency in the global supply chain.
www.kaleris.com/solutions/terminal-operating-system

RPX believes in the power of technology and data to make the global supply chain better, more efficient and reliable. With our team of seasoned industry experts we assist our clients in their goal to optimize their infrastructure solutions to new levels of performance and provide real world consulting services to develop first conceptual ideas to their full-scale implementation.
www.rpxoptimization.com/home

Siemens technology empowers customers to transform the industries that form the backbone of economies: industry, transportation, buildings and grids. Our solutions accelerate the digital transformation of multiple industries, to scale sustainability impact.
www.siemens.com/global/en

Passify is an app to simplify gate access without compromizing security. Our vision is to revolutionize the security and logistics industry by providing seamless and efficient gate access Management as a Service. The team founded the company to address the challenges faced by the industry, such as long waiting times, manual processes, and security issues, by introducing innovative technology solutions.
www.passifyapp.de

Xanatos Marine offers customised Maritime Domain Awareness Solutions to enhance accuracy & efficiency of port operations. The reliable, mission-proven, TITAN platform has been selected and successfully implemented for several major maritime projects around the world, including projects overseen by IMO and funded by the World Bank. With over 20,000+ sensors and/or systems sold over the past 25 years, XM aims to focus on the importance of ensuring safe and efficient port operations, not only for the benefit of their clients, but also for the environment and the surrounding communities.
www.xanatosmarine.com

SPONSORS Continued

LUNCH SPONSOR

DMSLOG.AI is a pioneering French startup dedicated to transforming port terminals into smart ports through AI-powered SaaS solutions. Specializing in the optimization, decongestion, and decarbonization of container terminals, our technologies integrate seamlessly with existing Terminal Operating Systems (TOS), enhancing efficiency and sustainability across global port operations
www.dmslog.ai

EVENING DINNER SPONSORS

Aristoncavi starts its activity in Brendola (Vicenza) in 1958. Today, it is one of the main European independent manufacturer of rubber insulated low and medium voltage cables (up to 45kV). In order to provide a better service to our clients, Aristoncavi has a commercial presence in Dubai, Shanghai and Santiago de Chile.
www.aristoncavi.com

Paige Port Solutions: Engineering Tough, Reliable Cable Systems for U.S. Ports delivers cutting-edge wire and cable systems engineered for the toughest port environments. Backed by decades of expertise, we specialize in high-speed crane cables, power, and data solutions designed to withstand extreme temperatures, UV exposure, and the wear-and-tear of constant motion. Our commitment to durability is unmatched—each product is crafted using advanced materials that enhance flexibility, reduce mechanical stress, and extend cable life. With no order minimums, fast lead times, and competitive pricing, Paige Port Solutions ensures you get exactly what you need when you need it. For U.S. ports seeking reliability and superior performance, Paige is your trusted partner.
www.paigeports.com

NETWORKING BREAK SPONSOR

Bromma is the industry's most experienced spreader manufacturer, known worldwide for crane spreaders of exceptional reliability. Today Bromma manufactures more than 2000 spreaders per year of all types. Bromma spreaders are in use in 99 out of the top 100 ports worldwide.
www.bromma.com/

EXHIBITORS

Strategic Service Solution (SSS) is an IT service provider for medium to enterprise level organizations throughout the U.S offering MSP, MSSP with 24/7 NOC and call center availability. Our engineering division provides LAN/WAN wired and wireless systems along with Cybersecurity solutions. As an integrator we provide Logical/Physical Access Control, Biometrics, Video surveillance/analytic platforms. We are a licensed general and electrical contractor. Our telecom solutions include Structured Cabling, Wireless Infrastructure and Fiber Optic design, troubleshooting, and Installation. We manufacture the S-Cone, a wireless mobile router which supports 2.4 5g, WiFi6, Wifi6E and LTE and is designed to perform in rugged environments.
www.sssinc.biz/about

Westermo designs and manufactures industrial data communications products for mission-critical systems in physically demanding environments. Our products are used in social infrastructures, such as rail and transport, water, energy supplies, and process industries, such as mining and petrochemical.
www.westermo.com

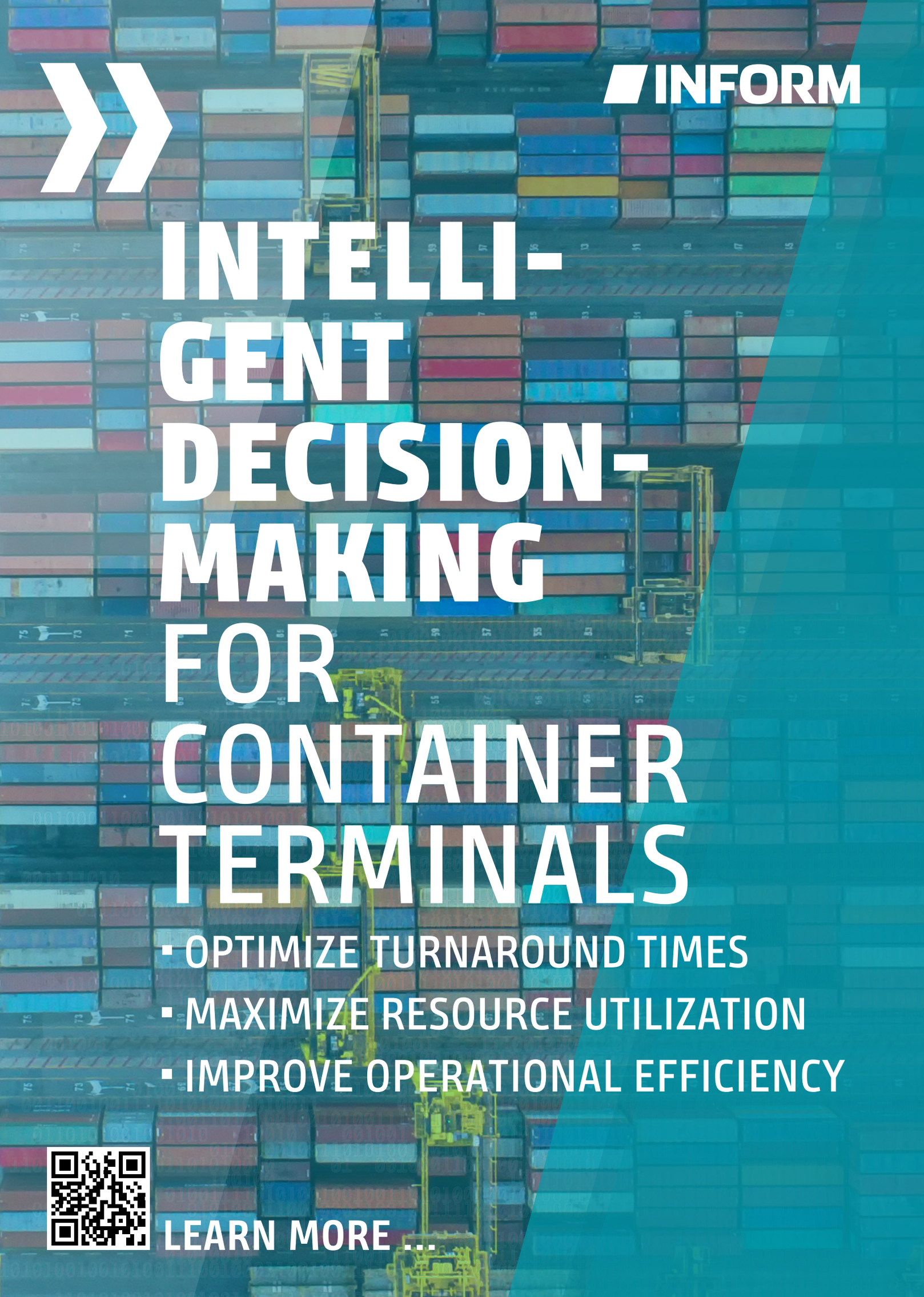
XRF specialises in developing software solutions to aid decision-making for complex scenarios. By leveraging extended reality and artificial intelligence, XRF transforms critical information into visually engaging and easily accessible formats. Their innovative approach has earned an international clientele, including the the Port of Valencia, and Saudi Arabia's NEOM Line project
www.xrf.ai

LANYARD SPONSOR

Konecranes Port Solutions is a global business that delivers a complete range of container handling equipment for both manual and automated container terminals. The business is driven by Ecolifting, our continuing mission to reach zero tailpipe emission operations for equipment types that are largely diesel-driven today. It's strengthened by the path to automation, where container terminals can move towards automation in manageable, cost-effective steps if desired. The offering is completed by our range of heavy-duty lift trucks for diverse applications and Port Services from basic maintenance services to advanced digital services. Port Solutions is a business unit of Konecranes Plc, a global leader in material handling solutions that serves a broad range of customers across multiple industries, with around 16,700 professionals in over 50 countries.
www.konecranes.com

DELEGATE BAG SPONSOR

Visy Oy (Visy) provides process automation ecosystems to manage the flow of traffic, cargo and personnel in ports, terminals, and logistics centers. Every asset that goes in or out of a facility, whether by road, rail, or quay, can be managed by Visy technology. Visy's mission is to help its customers save time and money on each transaction, therefore improving operational KPIs. With a history spanning three decades, Visy is a pioneer in Optical Character Recognition (OCR), deep learning, and AI-based vision technology for camera systems. Visy ecosystems manage and automate more than 6,000,000 events per day in over 30 countries to improve the quality of the supply chain.
www.visy.fi/evolving-automation-ecosystems


INFORM
INTELLI-
GENT
DECISION-
MAKING
FOR
CONTAINER
TERMINALS
▪ OPTIMIZE TURNAROUND TIMES
▪ MAXIMIZE RESOURCE UTILIZATION
▪ IMPROVE OPERATIONAL EFFICIENCY
LEARN MORE ...

NAVIGATING COMMON WATERS: INSIGHTS AND LEARNINGS FROM DECADES OF OPTIMISING THE CONTAINER TERMINAL AND AVIATION INDUSTRIES

Dr. Eva Savelsberg, SVP Terminal & Distribution Center Logistics, INFORM, and **Loren Mathis**, CSO Aviation, INFORM

At first glance, the aviation and container terminal industries might seem like two separate worlds—one soaring through the skies, the other anchored at bustling ports. Airports move people at high speeds across continents, while terminals guide containers through intricate supply chains. But when you zoom out, both industries share the same fundamental challenge: managing transport hubs where precision, efficiency, and adaptability determine success.

At the Port Technology Summit 2025 in Norfolk, Virginia, Dr. Eva Savelsberg (SVP, Terminal & Distribution Center Logistics, INFORM) and Loren Mathis (CSO Aviation, INFORM) explored this fascinating intersection, drawing on decades of experience optimising operations in both industries. Whether it's a gate or a berth, a tarmac or a terminal yard, the key to efficiency remains the same: seamless coordination across multiple transport modes and stakeholders.

DIFFERENT TERMINALS, SAME NATURE

From airport terminals to container terminals, smooth operations rely on a delicate dance between people, technology, and logistics. Behind every departing flight and every docked vessel is a team of professionals working in perfect coordination—whether they are air traffic controllers clearing a plane for take-off or crane operators carefully unloading a ship's cargo. These industries depend on skilled hands and sharp minds, ensuring that passengers reach their gates and goods arrive at their destinations on time.

Beyond the human factor, technology is transforming both sectors. Airports leverage AI-driven baggage handling, self-service kiosks, and real-time air traffic management, while container terminals adopt real-time cargo visibility platforms, predictive maintenance, and Digital Twin simulations to optimise planning and decision-making.

CHALLENGES THAT SPAN LAND, SEA, AND SKY

Whether it's coordinating aircraft turnaround or container vessel unloading, both industries face mounting pressure to handle increasing demand while maintaining efficiency and security. Rising passenger numbers strain airport infrastructure just as megaships with ever-larger container loads push terminals to their limits.

Disruptions in flight schedules can ripple across entire airline networks, just as delays in unloading a vessel can cause cascading inefficiencies across the supply chain. That's why real-time coordination and data-driven decision-making are essential for both industries. From flight dispatchers monitoring inbound aircraft to port controllers managing vessel traffic, every second counts when ensuring smooth logistics in high-stakes environments.

INFORM'S CROSS-INDUSTRY EXPERTISE BRIDGES TWO WORLDS

While air freight is focused on speed and high-value, time-sensitive cargo and maritime logistics prioritise volume and cost efficiency, the operational core of

both industries remains the same. We are looking at transport hubs where multiple transport modes must be coordinated to load and unload goods or people efficiently.

With this shared foundation, INFORM has been at the forefront of optimising these complex transport ecosystems for over five decades. The company, based in Aachen, Germany, celebrated its 56th anniversary in early February! Starting in 1969 with industrial logistics, it expanded into aviation in 1991, revolutionising cabin crew management and ground operations. By 2000, INFORM turned its expertise to maritime container terminals, helping operators streamline cargo handling, optimise yard operations, and improve vessel turnaround times—ensuring efficiency from the runway to the quay.

FROM TOUCHDOWN TO TAKE-OFF: HOW GROUNDSTAR KEEPS AIRPORTS RUNNING

On the aviation side, GroundStar helps airports, airlines, and ground handlers plan for and manage their daily operations. Simply put, if it's an airport process that occurs when the aircraft is on the ground, GroundStar optimises it. This could mean optimising gate selection to minimise taxi time and fuel burn, or ensuring that ramp workers are in position, properly trained, and certified to operate the necessary equipment before offloading baggage.

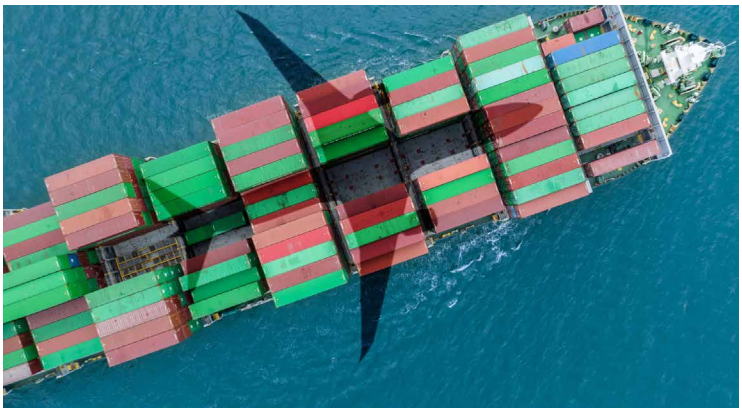
GroundStar's impact extends beyond efficiency—it plays a critical role in tracking inbound activity, including both people and equipment. It isn't just about managing numbers; operating ground equipment in such a high-traffic environment is inherently risky. GroundStar ensures that employees assigned to specific tasks have the necessary qualifications and safety training, reducing operational risks while keeping everything running smoothly. Leveraging Digital Decision-Making, AI, and Operations Research, GroundStar enables proactive adjustments in real-time, ensuring that staffing, gate assignments, and resources are deployed with maximum efficiency.

MASTERING CONTAINER TERMINAL LOGISTICS - AND HOW IT RESEMBLES AVIATION

Just like aviation hubs, container terminals require intelligent, real-time decision-making to handle increasing freight volumes efficiently. INFORM helps terminal operators orchestrate the complex ballet of cranes, vehicles, and storage areas—ensuring that containers don't just arrive, but move seamlessly through the port.

Take PSA Antwerp as an example. Here, INFORM's Integrated Terminal Scheduler (ITS) synchronises the entire transport chain, from quay cranes to horizontal transport with Straddle Carriers and Automated Stacking Cranes. At HHLA Container Terminal Burchardkai (CTB), a similar project scope is implemented, and enhanced by the AI-powered Yard Optimiser, which leverages Machine Learning to further refine operations. By analysing historical data of container entry, exit, and movement patterns, the Yard Optimiser gains improved insights that enable smarter stacking, reduce unnecessary rehandling, optimise crane moves and travel distances, and ultimately enhance yard space utilisation. Likewise, INFORM identified the potential of historical data in aviation, and leverages Machine Learning algorithms with GroundStar to optimise ground operations even further. Although it may sound unbelievable, many airlines still rely on manual or Excel-based scheduling, planning for an unrealistic "blue sky day" where everything runs perfectly.

Beyond full-suite systems, INFORM also offers AI-powered modular optimisation solutions that layer on top of existing Terminal



Operating Systems (TOS). From GCT Deltaport's Rail Scheduler, which aligns train loading and unloading, to Trapac LA's Crane Optimiser and Control System, which enhances rail crane operations, these solutions bring efficiency and predictability to the terminal landscape. The ability to integrate these modules means that terminals can scale their optimisation efforts gradually, aligning investments with strategic priorities while realising immediate efficiency gains. This mirrors aviation operations, where airlines frequently begin with a targeted optimisation—such as ramp or baggage handling—before expanding to a full suite of integrated solutions.

SAFETY, SUSTAINABILITY, AND SMART INFRASTRUCTURE: DO CONTAINER TERMINALS AND AVIATION FACE THE SAME FUTURE?

Efficiency alone is not enough—safety, sustainability, and technological infrastructure are the cornerstones of resilient and future-proof operations in both aviation and container terminals. As mentioned above, INFORM's GroundStar ensures that only properly trained and certified employees are assigned to specific tasks, mitigating operational risks while maintaining seamless workflows. Safety is equally paramount in container terminal operations, where AI-driven analytics assess yard layouts, traffic patterns, container attributes, and stacking strategies to minimise congestion, reduce accidents, and prevent workforce fatigue, while fostering work focus across personnel.

Sustainability is another shared priority, with electrification playing a crucial role in driving greener operations. However, integrating electric vehicle charging into complex, high-traffic hubs presents an additional logistical challenge. As Polly Crispin, Senior Business Development Manager at ROCSYS, highlighted at Port Technology Summit 2025, opportunity charging—allowing electric vehicles to recharge during natural downtime—is emerging as a key solution in container terminals. These hands-free charging solutions enable electric cranes, trucks, and handling equipment to recharge strategically without compromising operational flow. In airports, this is a well-established idea as well, ensuring that ground vehicles, from baggage tugs to pushback tractors, are charged efficiently without disrupting tight turnaround schedules.

When it comes to emerging technologies, companies in both industries are actively exploring cloud-based and SaaS options, recognising their potential for scalability and efficiency. However, given the critical nature of aviation and terminal operations, it is understandable why many still depend on on-premise systems to maintain the highest standards of safety, security, and reliability. INFORM is also closely monitoring this trend, considering ways to provide flexible, future-ready solutions that align with the evolving needs of its customers.

WHERE DO WE GO FROM HERE?

From airport runways to shipping lanes, the challenges of optimising transport hubs are universal. As automation, AI, and smart logistics continue to evolve, the opportunities for cross-industry learning will only grow.

The conversation at Port Technology Summit 2025 highlighted the striking parallels between aviation and terminal logistics, proving that no matter where a hub is located, the key to success is seamless coordination, intelligent decision-making, and continuous innovation.

If you're interested in learning how INFORM's optimisation solutions can elevate your operations, don't hesitate to reach out. Let's keep the world moving – together.

ABOUT THE AUTHORS

Dr. Eva Savelsberg is Senior Vice President of INFORM's Terminal & Distribution Center Logistics Division. Specialising in AI and optimisation, she enhances operational efficiency. With a PhD from RWTH Aachen, she has authored five books and more than 50 papers on freight transport innovation and contributes to industry publications and events.

Loren Mathis is Chief Strategy Officer of INFORM GmbH's Aviation division, leading AI-driven ground operations optimisation. With 15 years in aviation, he has managed billion-dollar workforce and GSE budgets and shaped airport operations strategies for major airlines, driving efficiency and innovation in global airport management.

ABOUT THE COMPANY

INFORM develops software to optimise business processes using AI and advanced mathematics of operations research. Founded in 1969, the company promotes sustainable value creation in various industries through intelligent decision-making. Its solutions are tailored to specific industry requirements and help customers worldwide to operate resiliently and sustainably with greater success.

BOXBAY'S REVOLUTIONARY AND DISRUPTIVE IMPACT ON CONTAINER TERMINALS

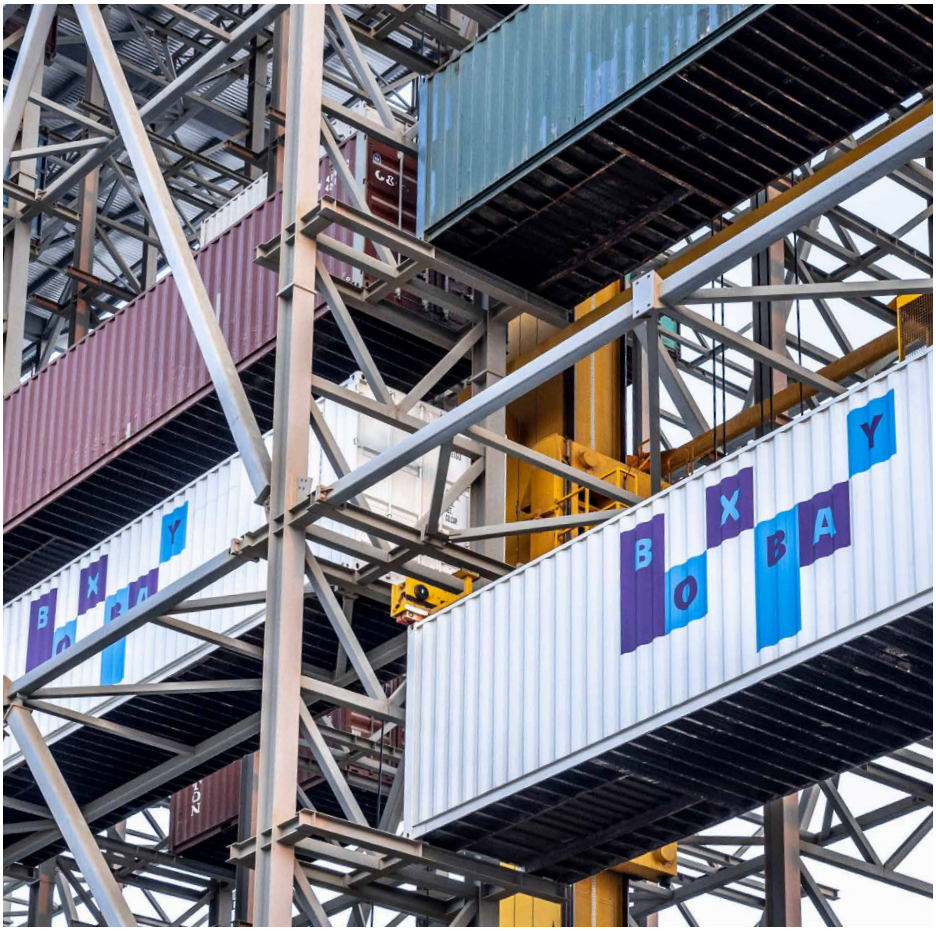
Peter Slootweg,
Managing Director for the Americas, BOXBAY

BOXBAY: REVOLUTIONISING CONTAINER TERMINALS WITH DISRUPTIVE INNOVATION

The logistics industry is evolving at a breakneck pace. Increasing competition, stricter regulations, and a growing shortage of skilled labour are pushing terminals to their limits. However, the most persistent bottlenecks remain: space constraints and limited container handling capacity. BOXBAY is transforming these challenges into opportunities with its groundbreaking high-bay storage technology which seamlessly integrates with digital innovation. This revolutionary system optimises the container supply chain, driving sustainable growth and securing a decisive competitive edge.

MASSIVE SPACE SAVING AND CAPACITY INCREASE

One of the most significant advantages of BOXBAY's system is its ability to drastically reduce the footprint required for container storage. Traditional container terminals rely on horizontal stacking, which leads to inefficient use of space and limits the capacity of a terminal. Due to space constraints, many container terminals tend to stack containers higher and higher. While stacking heights of four containers were quite normal 30 years ago, nowadays a stacking height of six or even higher is common. This makes the facilities increasingly inefficient because more and more re-stacking is necessary to gain direct access, which consumes time, energy, and resources. BOXBAY's vertical system allows for containers to be stored in individual compartments, effectively utilising the vertical dimension to increase storage capacity by up to 200 per cent. With the high-bay warehouse principle, containers can now be stacked as high as 11 tiers without losing direct access to each individual compartment.



This space-saving capability is particularly beneficial for ports located in urban areas or regions with limited or costly land availability. By maximising the use of existing space, terminals can handle a much larger volume of containers without the need for physical expansion, thus reducing the environmental and financial costs associated with land acquisition and development.

CHAMPIONS SUSTAINABILITY AND REDUCES CARBON FOOTPRINT

BOXBAY sets new benchmarks for sustainability in port operations, significantly reducing the carbon footprint of container terminals. This groundbreaking system achieves environmental excellence through:"

- **Energy Efficiency:** The automated system minimises energy consumption through the use of energy-efficient machinery and optimised logistics processes. Energy is recuperated from the lowering movement of the stacker cranes - a process similar to the one employed in electrically propelled vehicles, where the braking energy is converted into electricity. However, while the above features are beneficial, the most significant energy savings are simply due to the elimination of shuffle moves and storage optimisation movements, which are no longer necessary.
- **Reduced Equipment Use:** The need for less container handling equipment and vehicles compared to conventional terminal designs leads to a decrease in fuel consumption and emissions, further enhancing the sustainability of terminal operations.
- **Solar Powered:** For the first time solar panels can be put on top of container storage space. With solar panels on the roof, the BOXBAY high bay storage system (HBS) can produce 150-300 per cent more energy than it consumes thereby creating a negative carbon footprint.

By aligning with global sustainability goals, BOXBAY not only improves the environmental performance of container terminals but also supports the broader industry shift towards greener logistics solutions.

BOXBAY does so much more than resource-saving and CO2 reduction. The BOXBAY engineers have also addressed land use, noise and light pollution—issues that severely affect people living in cities or the neighbourhood of ports.

- BOXBAY enables capacity increases without the need for extra land. Land reclamation, which is very often the only way to expand existing container terminals, can be avoided with BOXBAY—and consequently also the risk of affecting the delicate ecosystems in seas.
- Being a fully automated system, BOXBAY does not need any light during its around-the-clock operation. This means that sky glow, which is typical of ports lit during the night, can be significantly reduced, improving the quality of life for residents living near the port.
- BOXBAY reduces noise pollution because it can be completely covered by noise-reducing cladding, which itself may even be green giving BOXBAY a more appealing look. Green cladding can even improve the microclimate by its plants capturing particulates contained in the air.

UNPRECEDENTED REDUCTION OF OPERATING AND MAINTENANCE COSTS

The design, automation, and efficiency of the BOXBAY system result in significant cost savings in both operational and maintenance expenses. Key factors contributing to these savings include:

- **Complete Elimination of Unproductive Moves:** BOXBAY's design enables direct access to every container, which means 0 per cent wasted movement. Every move is productive compared to up to 60 per cent unproductive, wasted moves in modern ASC terminals.
- **Labour Efficiency:** Automation reduces the reliance on manual labour, leading to lower labour costs and minimising human error.
- **Maintenance Reduction:** Direct access, fewer moving parts, and robust machinery decrease the frequency and cost of maintenance activities.
- **Energy Savings:** As mentioned, the energy-efficient nature of the system reduces utility costs.

These cost reductions enhance the profitability of terminal operations, allowing operators to invest in further technological advancements and infrastructure improvements.

BOOST TERMINAL PRODUCTIVITY AND SERVICE LEVELS

BOXBAY's system dramatically increases terminal productivity and service levels by enabling faster and more efficient container handling. The vertical storage design allows for direct access to any container without the need to move others, significantly reducing retrieval

times and eliminating the need for yard planning. This efficiency even translates to improved performance of all the yard's connecting equipment (quay cranes, trains, RTGs, straddle carriers, ASCs, trucks, AGVs etc.) because BOXBAY delivers this 100 per cent efficient and predictable performance for every container moved into and out of the system.

This ability to quickly and accurately handle containers reduces vessel turnaround times, a critical factor in maintaining competitive advantage in the shipping industry. By improving operational efficiency, BOXBAY helps terminals meet the increasing demands of global trade.

UNMATCHED YARD SAFETY AND SECURITY

Safety and security are paramount in port operations, and BOXBAY offers significant improvement. The closed and automated nature of the system reduces the risk of accidents associated with manual handling and traditional stacking methods. With containers stored in secure compartments, the potential for theft and damage is minimised. Even if a person could get into the BOXBAY system, it is impossible to open the container door.

Additionally, the system's design enhances operational safety by reducing the need for personnel to work in hazardous areas. This focus on safety not only protects workers but also reduces liability and insurance costs for terminal operators.

CONCLUSION

BOXBAY aims to revolutionise container logistics by simultaneously enhancing performance, efficiency, capacity, and sustainability in container terminals. The disruptive technology offers a transformative approach to container storage, moving away from traditional horizontal stacking to a vertical arrangement that optimises space and operational efficiency.

BOXBAY is revolutionising container terminals by addressing the industry's most pressing challenges: space optimisation, sustainability, cost efficiency, productivity, and safety. With its transformative approach, BOXBAY delivers a comprehensive solution tailored to the dynamic needs of the global logistics sector.

The importance of this topic lies in its potential to transform the way container terminals operate, making them more efficient, sustainable, and competitive. As global trade continues to grow, the demand for innovative solutions like BOXBAY will only increase, underscoring the significance of presenting this topic to industry stakeholders. The industry is ripe for this solution because container yards have not innovated very much for so long and BOXBAY practically solves all the priority issues facing container terminals now and in the future.

BOXBAY is the solution to stay ahead of the competition.

ABOUT THE AUTHOR

Peter Slootweg has served as Managing Director for the Americas at BOXBAY since early 2024, focusing on unlocking the company's disruptive potential within the North, Central, and South American container logistics sectors. Having started in logistics at APM Terminals in The Hague in 2007, Peter has 18 years of senior leadership experience most recently performing in roles such as CEO of a 1 million-TEU multipurpose terminal in Southern Vietnam, CCO at BNCT, Asia's first 3.2 million-TEU automated container terminal in Busan, CCO at APM Terminals in Mumbai, and Global Sales at Maersk Line in Copenhagen.

ABOUT THE COMPANY

BOXBAY is an international joint venture formed by global trade enabler DP World and industrial engineering specialists SMS group. The company offers a disruptive technology that significantly improves operations at container terminals.

The BOXBAY High Bay Storage (HBS) systems achieve a three-fold increase in the transshipment capacity of container terminals and use only one-third of the footprint of conventional storage systems for an equivalent number of containers. Instead of stacking containers directly on top of each other BOXBAY places each container in an individual rack, making each one directly accessible.