



Digital Solutions in Reducing Carbon Emissions and Touching on AI for Improved Port Sustainability

ASEAN Ports & Logistics 2024
23rd October 2024 | Datuk Ian James

45 Years of Excellence – what we have achieved

Anchored in Operations



1700+
Projects in
140 COUNTRIES



1976
Founded as subsidiary of
HHLA



180+
Ports and
Terminals
Serviced

OPTIMISATION
Improved Operational
Excellence and
Reduced Costs



120+ Feasibility Studies and
Master Plans
60+ Business Plans
32+ Due Diligences and
Transaction Advisory Services



1st
**CARBON
NEUTRAL
Terminal**

100+ 
SPECIALISTS
With background
from port and
terminal operations
and software



**GREEN
TRANSITION**
Alternative
energies **140+**

Hinterland Connectivity
120 projects implemented for intermodal rail terminals,
inland ports and warehouse logistics

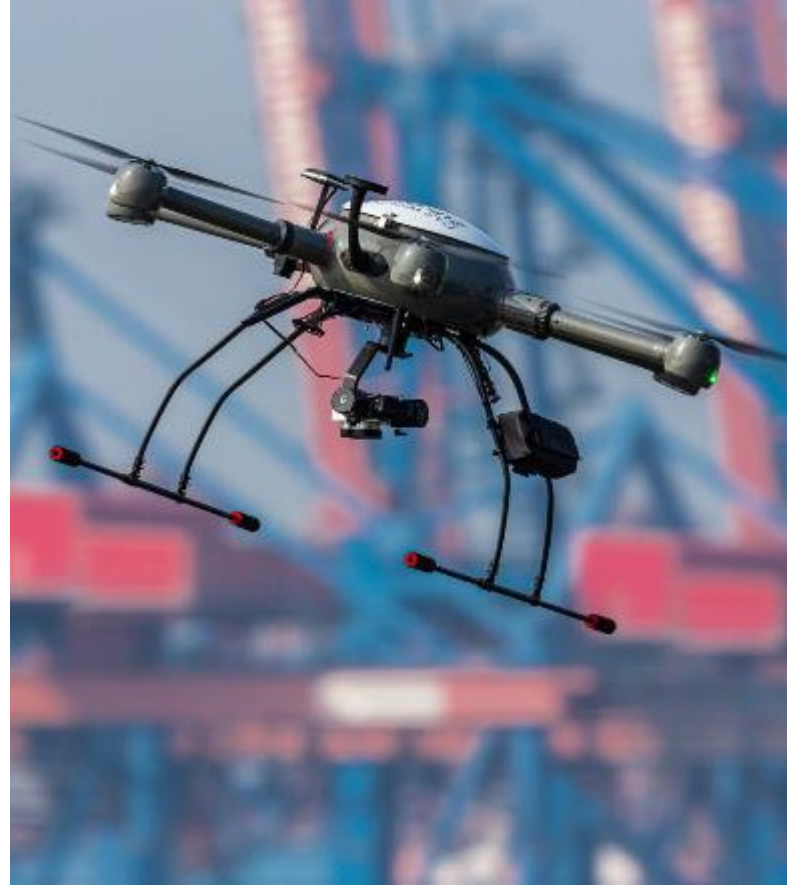


Constantly Innovating
across the Supply chain

Digital as the backbone of climate positive logistics



Port Community Systems



Artificial Intelligence



Automation

Digital as the backbone of climate positive logistics



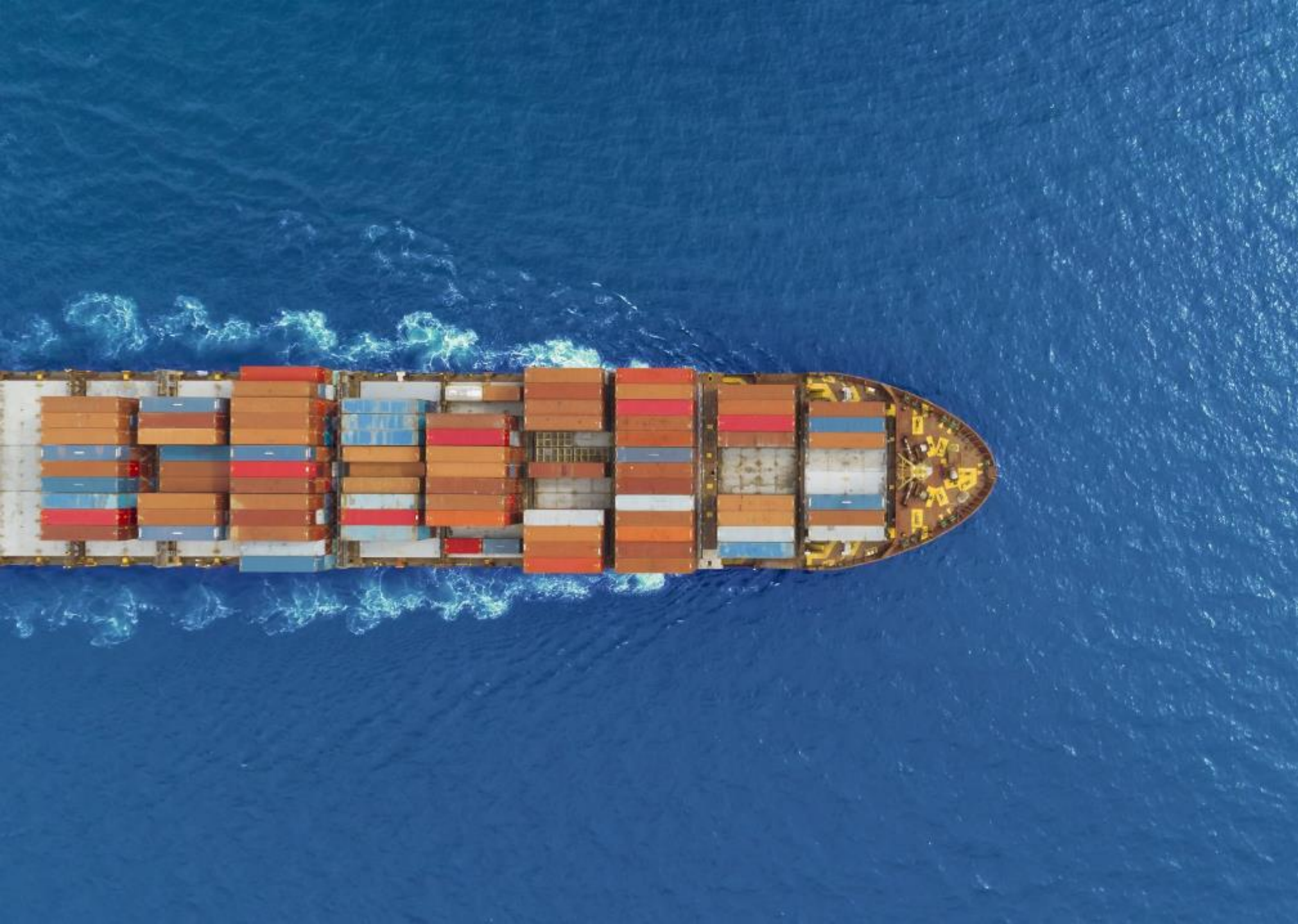
Port Community Systems



Artificial Intelligence



Automation



Maritime Traffic,
2022 published
“JUST IN TIME”
ARRIVAL
EMISSIONS
REDUCTION
POTENTIAL IN
GLOBAL
CONTAINER
SHIPPING

Implementing
Just-in-Time (JIT 24)
arrival concepts leads
to a reduction of CO²
emissions by

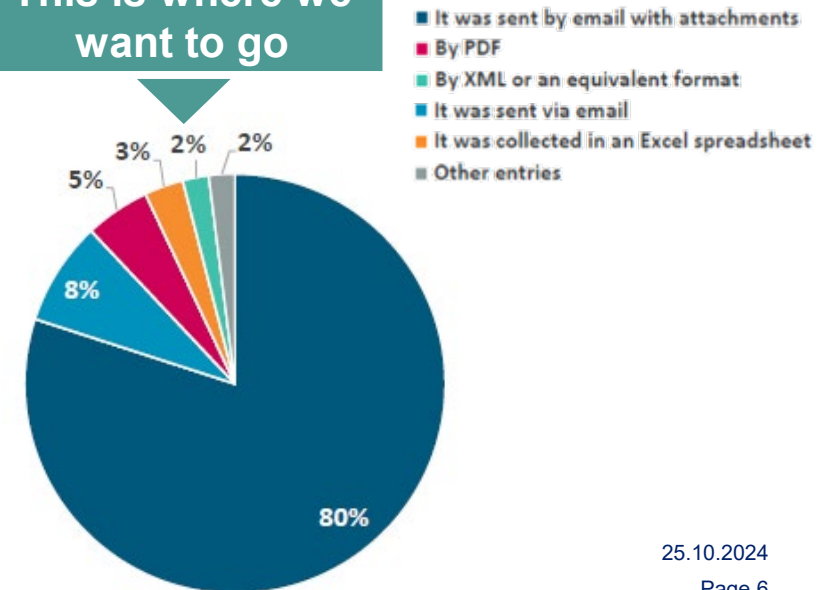
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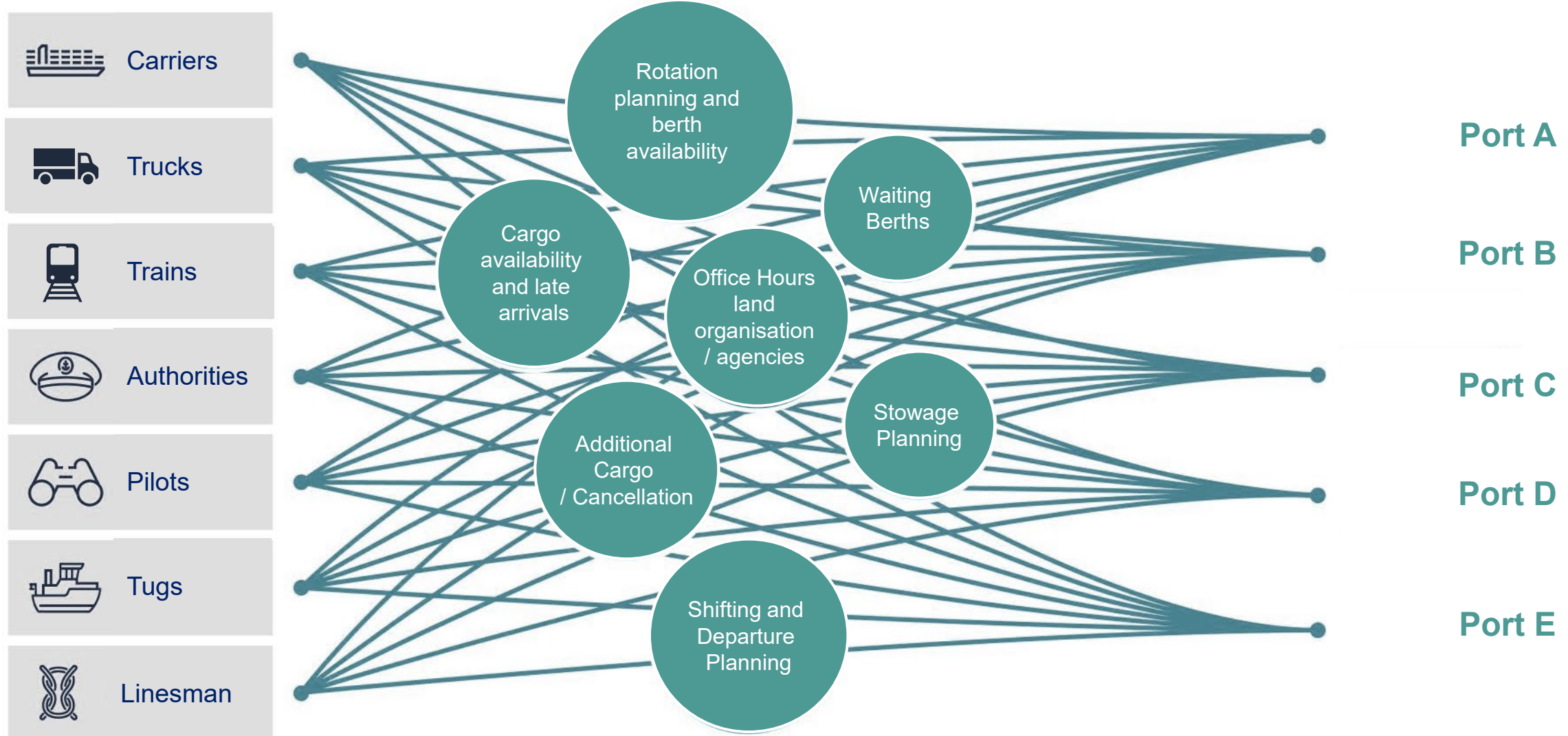
BIMCO Global Survey on the Administrative Obligations Set by Authorities for Port Calls



This is where we want to go



Traditional error-prone interruption-based model of port calls



Centralized JIT-enabled PCS allows management by exception



Tremendous potential of bunker and emissions savings per voyage

Example of just one transit to the Port of Hamburg



If sailing with 14 kn
instead of 18 kn

22 t

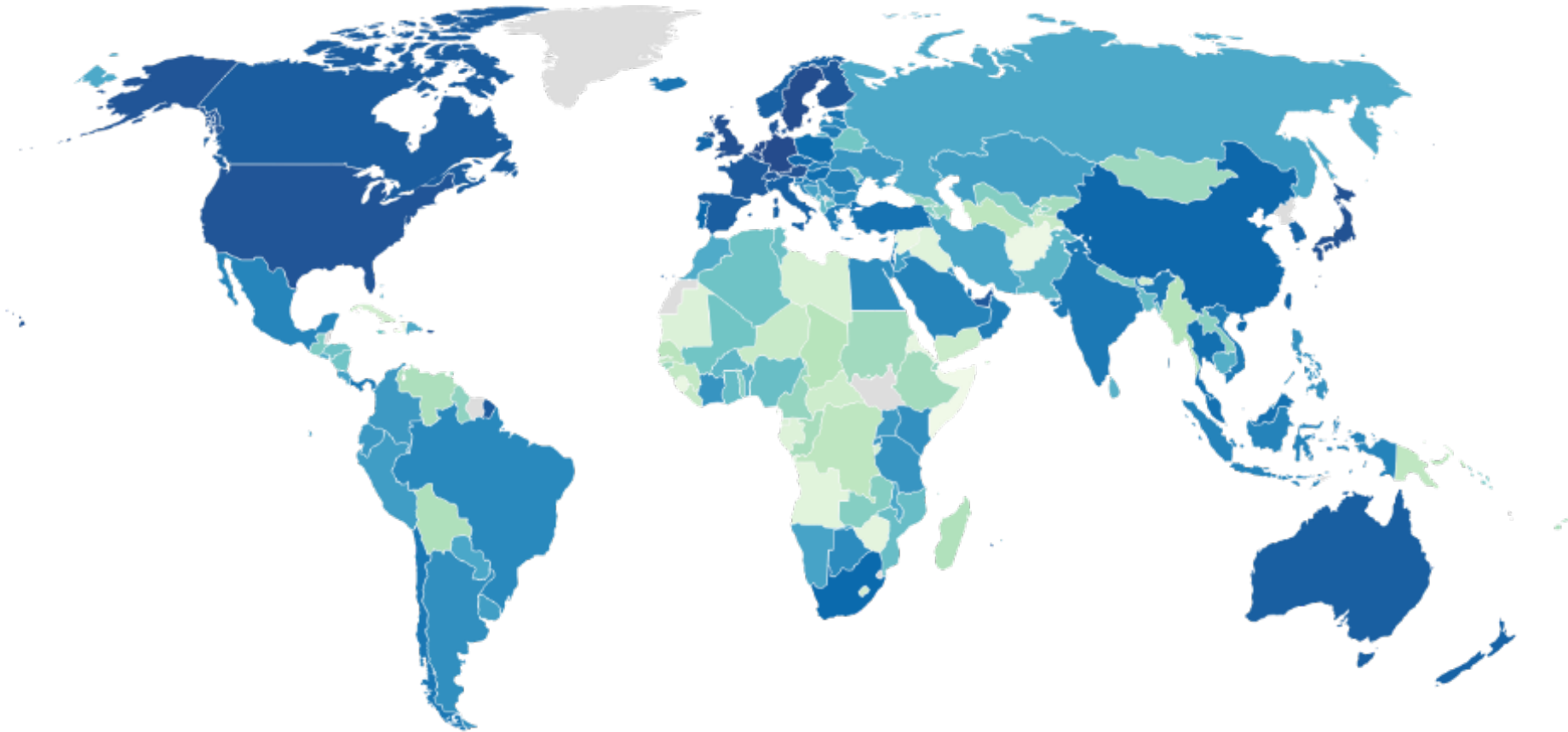
bunker savings

66 t

less CO₂-emissions



Port Community Systems are the future backbone of port digitalization and automation

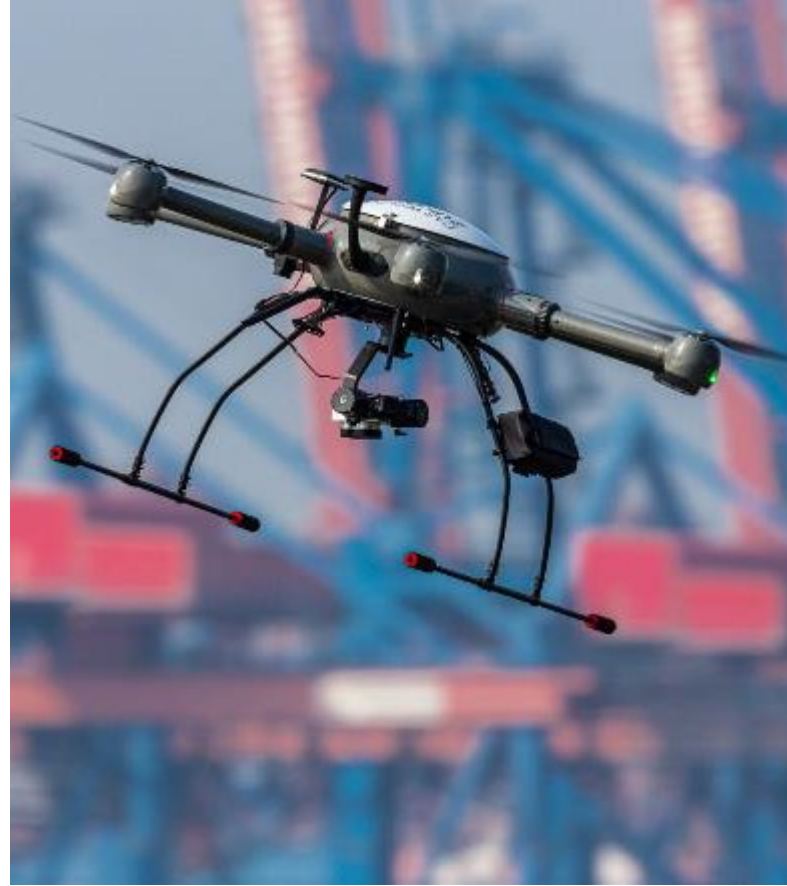


“It’s no coincidence that ports with the highest scores on the World Bank’s Logistics Performance Index—an important competitiveness indicator—have all adopted the system, while most of the laggards have not.”

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Automation

Predictive Maintenance: Ropes at Container Gantry Cranes

Client: HHLA, Hamburg, Germany | Project period: 2021 – 2022



■ Problem:

- Hundreds of steel ropes are deployed at the container gantry cranes in the container terminals in Hamburg

■ Consequence:

- Cost-intensive and frequent inspections of ropes according to static maintenance schedule to detect potential damages in time

■ Solution:

- Development of a machine-learning model to provide a dynamic inspection and maintenance schedule
- Data from the container gantry cranes' operation and the ropes' maintenance documentation was used to train the model
- The solution provides data-driven recommendations to reduce the amount of maintenance work as well as to replace ropes just-in-time when required

Dwell Time Prediction: Optimizing Container Terminals' Operation

Client: HHLA, Hamburg, Germany



▪ Technical Setup:

- AI Dwell Time Predictor as TOS add-on module
- Receiving data on container
- Returning optimal container slots
- Implemented at HHLA Container Terminals CTA and CTB in Hamburg

▪ Data Insights & Achievements:

- Reduced number of unproductive container restacking moves by +120,000 per year
 - → Saving Operating Cost
- Increasing equipment productivities
 - → Improving terminal capacity
 - → Improving terminal service level
- Cutting energy and emissions
 - → Reducing diesel by 390,000 litre
 - → Cutting emissions by 1,050 tonnes

Digital as the backbone of climate positive logistics



Port Community Systems



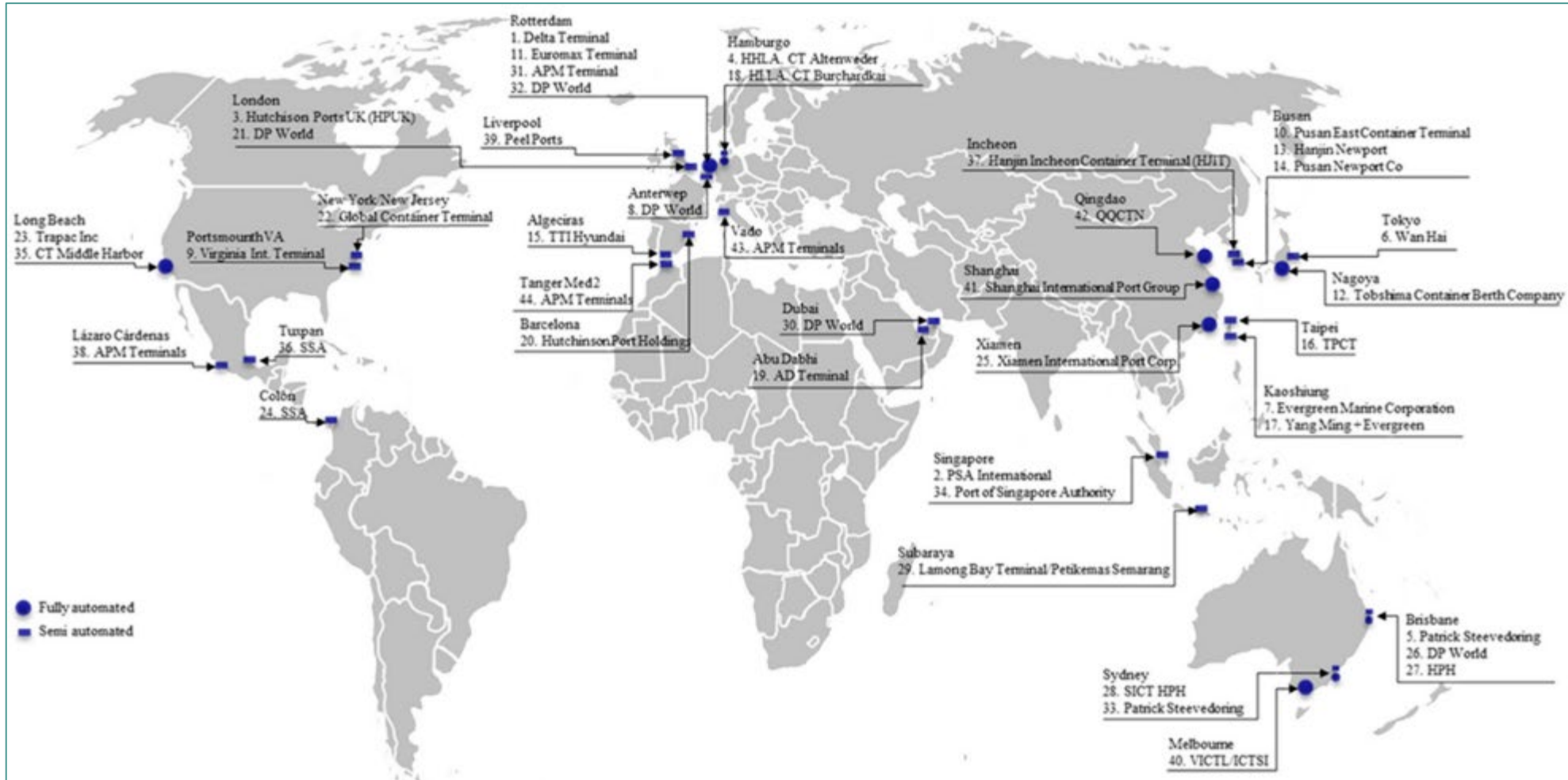
Artificial Intelligence



Automation

Overview of global automated container terminals cluster

63 (semi-) automated facilities among 2,000+ terminals worldwide (as of Jan 2022)



Automation originated in high labour cost environments and technologically prone areas

- Key regional cluster focus
 - North Europe
 - East Asia
 - Australia
 - Middle East
 - US
- Technology pilots and improvements in China

Technology developments with game changing potential

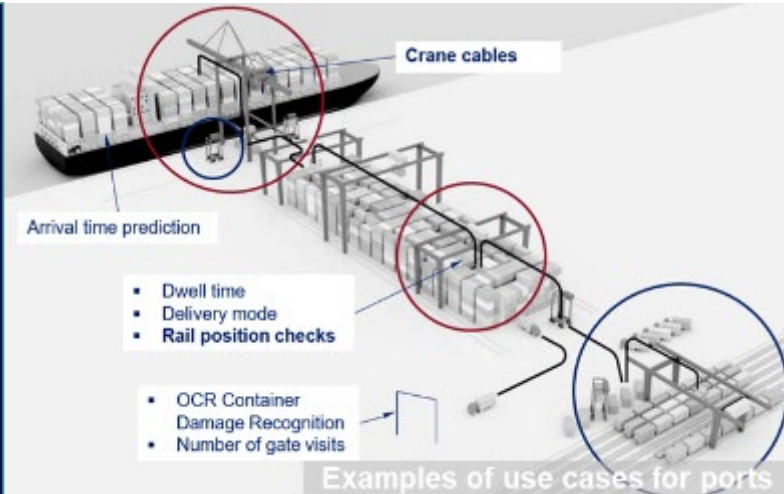
Autonomous trucks enable full automation in traditional setup



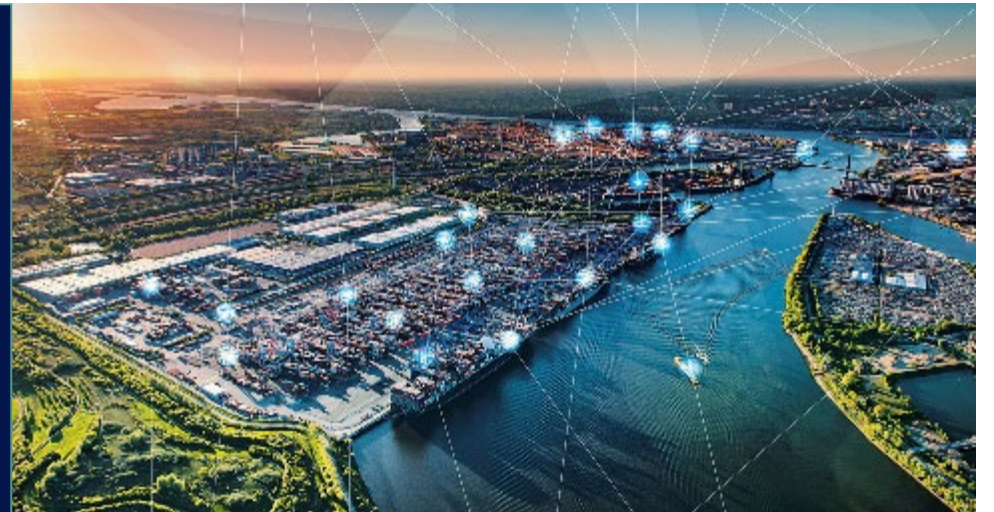
Boxbay changes layout and operations



AI / Machine Learning increases efficiency



Digital Twin(s) for predictive maintenance



How can we help future-proof your port?




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