

Al: Benchmarking Across Industries for Transferability to FVL

The Al-mazing Seven



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The Al-mazing Seven



Characteristics of the Logistics Industry

Complex, dynamic environment and problems

Produces lots of data (subject to data sovereignty management)

Faces workforce transformation in the future

High relevance for economy

Characteristics of Artificial Intelligence

Ability to map complex interrelationships

Requires a lot of data to map complex interrelationships

> Enables to generate and capture knowledge

Particularly large lever for optimization

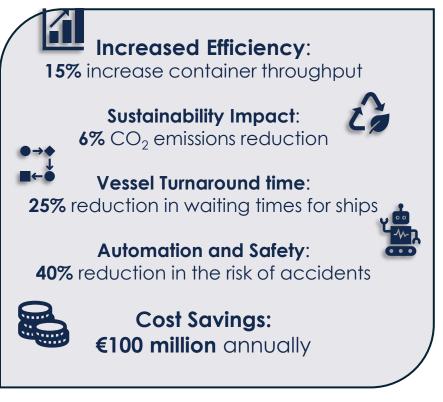
White Paper: Al in Logistics, ALICE (Alliance for Logistics Innovation through Collaboration in Europe)



From Container Yard Al Management System

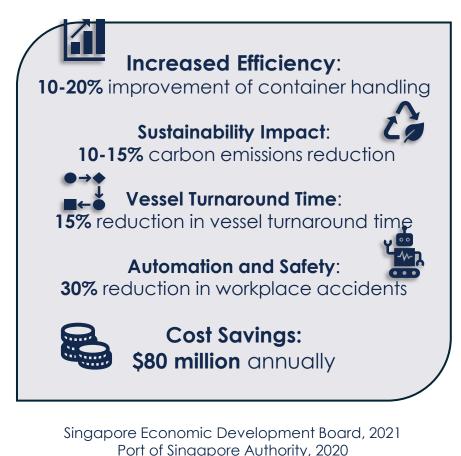
Why AI Container Yard Management

Port of Rotterdam



Port of Rotterdam Authority, 2020 Van der Meer & Zunder, 2021 Khan & Pallis, 2022

Port of Singapore





To AI Compound Management System

Why Al Compound Management?

 Changing Capacity at RoRo Ports in Europe.

 Image: News > News from ECG > Changing Capacity at RoRo Ports in Europe

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 ECG = 20241127

 News from ECG >

 The times they are a changin. And for port and terminal operators in Europe, its either to accept that the flows have changed, adapt to the new demands of the market or indeed believe firmly that the tides will change again, though how soon is anyone's guess.

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CEU Capacity in New Build PCTCs Rises



New PCTC surge results in CEU jump, as average PCTC capacity rises





ILLI ECG

From containers to cars: Adaptation process

Input

- Adapt data in from container to compound
- Identify vehicle specific data in



Adaptation Steps

- Adapt unit and yard measures
- Movement Scheduling
- Loading/Unloading process
- Vehicle Specific Data
- FVL Specific Systems
- Al Sustainability Metrics
- Environmental Factors



Customisation

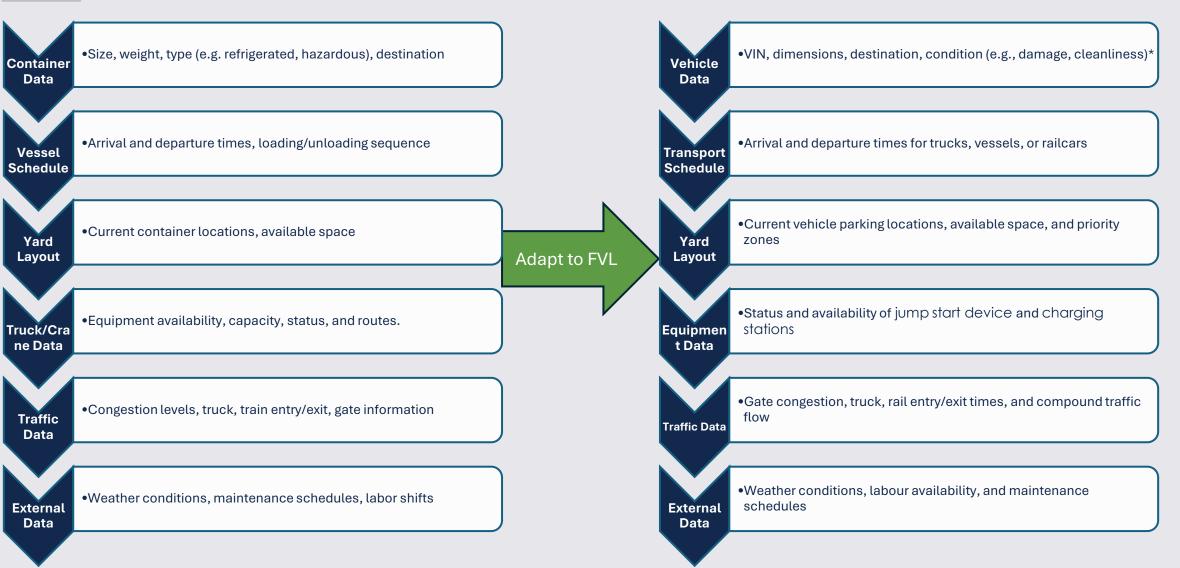
- Space allocation to vehicles
 types and activities
- Equipment Utilisation and Predictive Maintenance
- Loading/Unloading schedule

Containers are NOT cars and cars are NOT containers \rightarrow a part of the adaptation process, focuses on vehicle specific data



Al Container Yard Management Data In





Further Vehicle Specific Data In

Damage Detection:

• Use AI-powered cameras for automated visual inspections of vehicles to detect scratches, dents, or other damages.

→ Automatically log and tag vehicles with detected issues for repair or additional handling



Statement of Charge SOC (for EVs):

• Integrate IoT sensors to monitor electric vehicle (EV) battery levels.

→ Automatically allocate charging stations for EVs requiring a recharge before transhipment.

Processing Needs:

 Identify vehicles needing additional steps, such as cleaning, refuelling, or installation of accessories.

 \rightarrow Generate work orders for staff and schedule tasks to ensure readiness.

Al Compound Management

Forwarders Data

Shipping Line Data

OEM Data

Inspection Data

Al Processing

- Processes & Analyses data
- Predicts missing data
- Combine data

AI Outputs

 Smarter Space Utilisation
 Predictive Planning
 Real-Time Decision-Making
 Resource Optimization
 Damage & Risk Reduction
 Improved Visibility and Reporting
 Sustainability Gains Al in Compound Management

Breaks the limitations of any existing system.

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Al in Compound Management brings: Efficiency through automation and optimization

 Predictability through forecasting and pattern recognition

Agility through real-time responsiveness

✓ Sustainability through smarter resource use



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Thank you