

How AI is Reshaping the Future of Ports & Logistics

From waiting & reacting to predicting & optimizing



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THE HISTORY

Maritime Operation Digital Transformation in the 90's

Lead by Ir. Mohd Najib Jaafar,
Former CEO of Malaysia Shipyard & Engineering (MSE) Sdn Bhd
Pasir Gudang, Johor

**1990s–2000s:
Maritime Leadership
& Digital Innovation**



Pioneered Industrial Digital Transformation (1991)

Led a RM 1.7 million IBM/JDEdwards ERP integration at MSE to digitize shipyard operations.



THE REVOLUTION

Like digitisation — but bigger and much faster



1980s–90s — Digitisation

Paper records became computer systems



2000s–10s — Internet & mobile

Everything and everyone got connected



Now — AI

Systems that predict, decide and improve on their own

Time to reach 100 million users



Each wave changed ports. This one is adopting faster than anything before it.

THE UNDERSTANDING

Let's be clear what I mean by using "AI"



The AI most of us use today



- ChatGPT, Gemini, Claude and friends
- Writes emails, answers questions, helps with homework
- A helpful assistant on your phone or laptop



The AI I'm talking about today



- Works quietly inside port operations, 24/7
- Reads sensor, vessel & yard data — not chat messages
- Predicts breakdowns & arrivals, optimises yards and fleets

THE BIG SHIFT

From “wait and see” to “know before it happens”



See

Live vessel, yard & gate visibility



Predict

Accurate ETAs, days in advance



Re-plan

Berths, cranes & trucks rescheduled automatically

REGIONAL PROOF

This is not science fiction — We are already moving



Westports, Port Klang

Automated Gate System (AGS) with AI cameras reading container numbers and truck plates using OCR — trucks clear the gate in seconds, not minutes.



PTP, Tanjung Pelepas

Smart-port and data analytics initiatives with its shareholders — using data to lift crane productivity and vessel planning.



The ASEAN race

Laem Chabang (Thailand) and Indonesian ports are investing too. The whole region is digitalising — together and in competition.

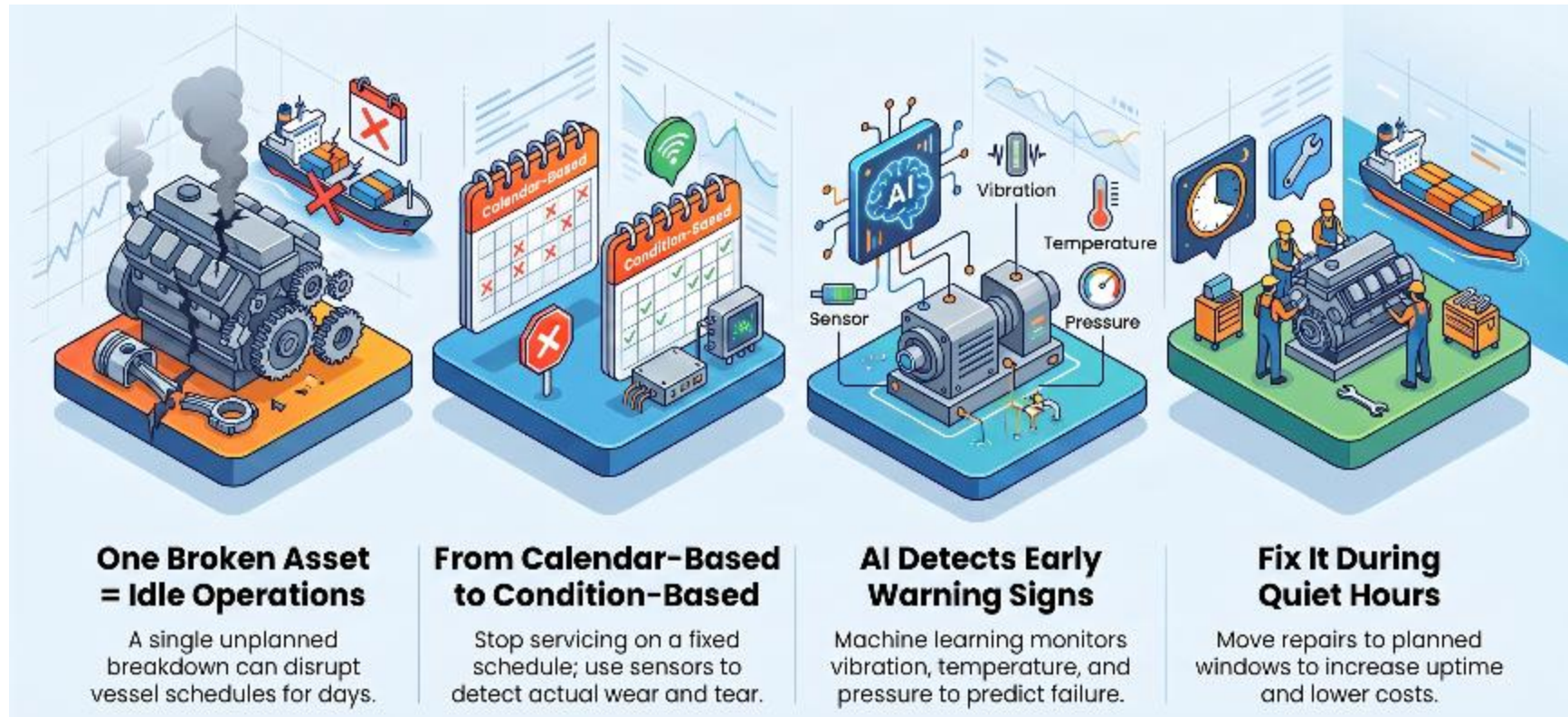


Singapore

AI-based vessel traffic and yard planning, built as one of the world's largest fully automated ports with automated guided vehicles & automated cranes.

PREDICTIVE MAINTENANCE

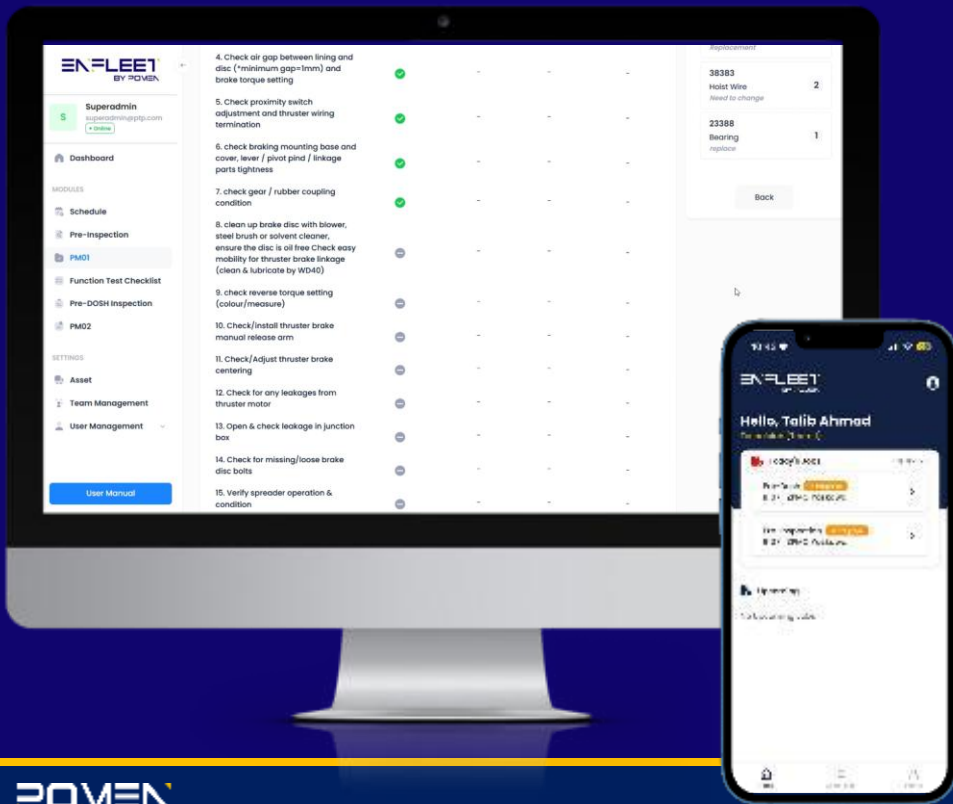
AI as the doctor for asset and equipment



POMEN CASE STUDY — 1

Smarter RTG maintenance at PTP

RTG are the workhorses of the container yard. Every hour of RTG downtime slows the whole terminal.



Digital work orders & inspections

Paper checklists become structured, trackable data



Full maintenance history per RTG

Every fault, part and repair captured against each asset



Data for smarter decisions

Downtime patterns and recurring faults become visible — the foundation for predictive maintenance

DOCUMENTS & CUSTOMS

AI reads the paperwork, so humans don't have to



Read



Check



Clear

POMEN CASE STUDY — 2

POS Logistics: Automated RORO operation

Thousands of vehicles move through the car yard — arriving by vessel, stored, processed and delivered nationwide.



Car yard management

Live view of every vehicle and slot in the yard — no more searching, no more lost units



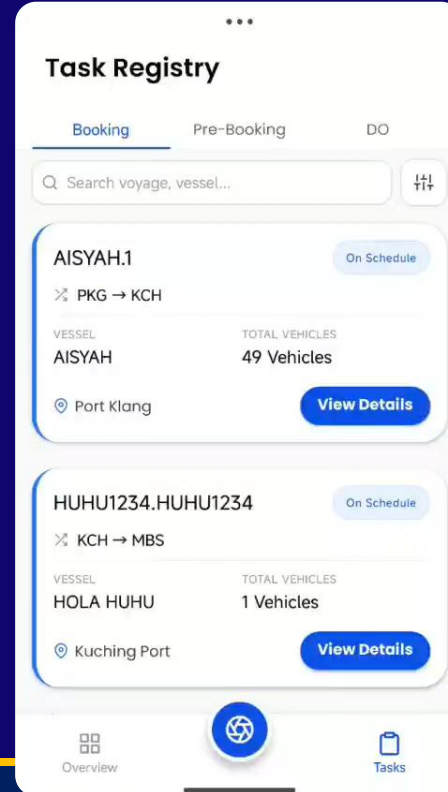
Order management

Customer orders captured, tracked and fulfilled digitally from booking to delivery



Vessel scheduling management

Vessel arrivals matched to yard capacity and manpower — the yard is ready before the ship berths



LANDSIDE LOGISTICS

Helping trucks & hauliers – the part everyone complains

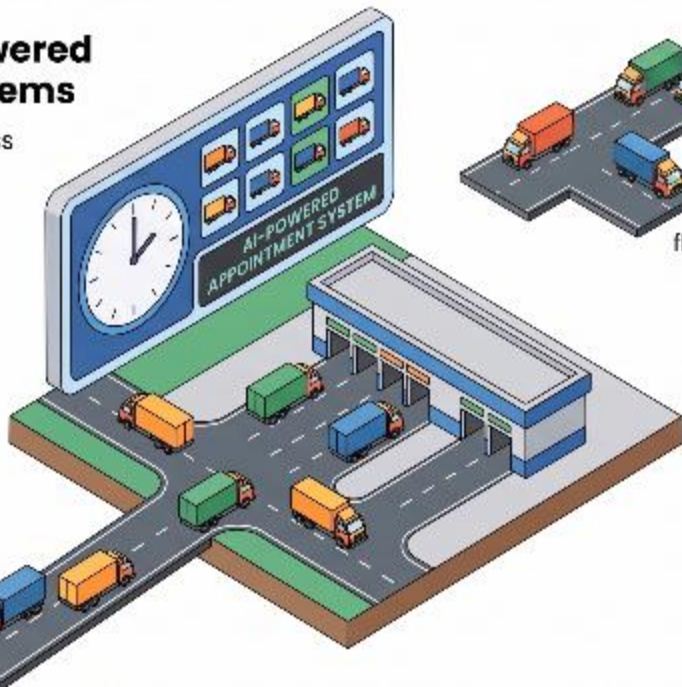
AI-powered appointment systems smooth arrivals across the day, so hauliers stop all showing up at 9am and waiting for hours.

Implement AI-Powered Appointment Systems

Smooths truck arrivals across the day to prevent massive morning queues

SLASH HAULIER OPERATING COSTS

Reducing queue times allows for more trips per truck every day.



EASE LOCAL ROAD CONGESTION

Creates smoother traffic flows for the entire community surrounding the port.



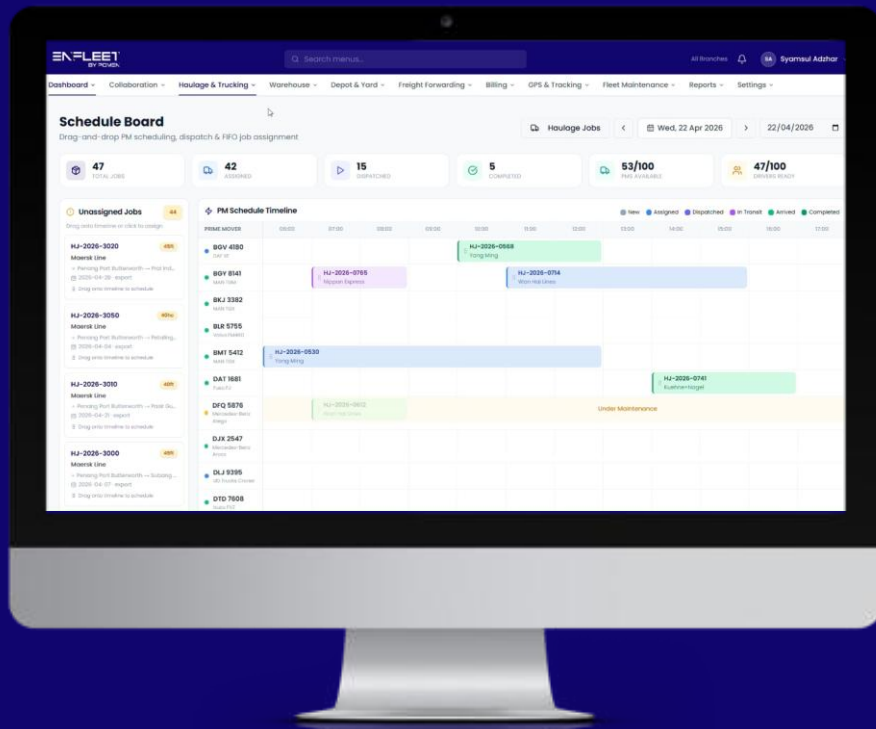
CUT FUEL BURN AND EMISSIONS

Prevents idling engines from wasting fuel and releasing unnecessary carbon.

POMEN CASE STUDY — 3

ENFLEET by POMEN: Manage the fleet, then just ask the data

Every day operation generates mountains of data — trips, trucks, drivers, fuel, delays. Most of it sits unused in spreadsheets.



Haulage management

Plan, assign and track every trip, truck and driver in one system — from job order to delivery



AI dashboard reporting

Live dashboards on utilisation, on-time delivery and costs — no manual report-building



Just ask — in plain language

"Show me last month's trips by customer" — type a prompt and AI pulls the answer instantly. No IT request, no Excel.

THE HONEST PART

The technology is the easy bit



Data is guarded

Ports, carriers, hauliers, forwarders and customs each hold a piece of the puzzle. AI only works when data is shared — governance and trust come first.



People worry about jobs

AI should make the operator, the planner and the clerk better at their jobs — not replace them. Be honest about change management.



Skills must be built now

We need a port workforce fluent in data and AI. This aligns directly with national digital-economy ambitions like MyDIGITAL.

A SIMPLE ROADMAP

See → Predict → Optimise → Automate



1. See

Digitalise operations & get real-time visibility



2. Predict

Forecast arrivals, demand & equipment failures



3. Optimise

Let AI plan operation, fleets & manpower



4. Automate

Selective automation where the ROI is proven

Most ports in our region are still moving from step 1 to step 2. Where is your organisation on this ladder?

THE TAKEAWAY

The ports that win won't be the ones with the most concrete — they'll be the ones that know first, decide fastest and waste least.

AI is how we get there — and we has everything we need.



Terima kasih | Thank you

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