



navis®

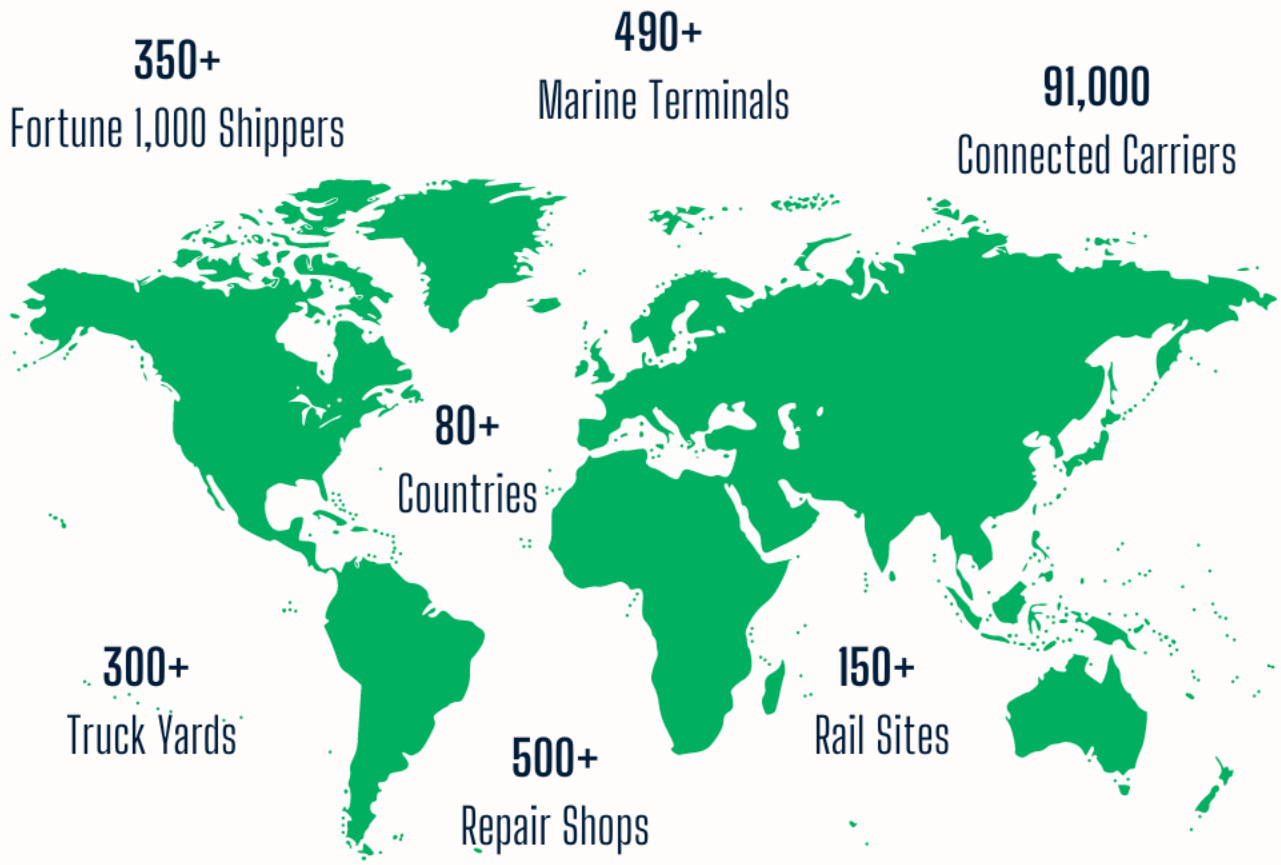
Data Driven Innovation: Harnessing AI/ML with Navis N4 TOS for Sustainable Port Operations and Emissions Reduction

World's Most Connected TOS

TOC Asia 2024



A more Connected Supply Chain Starts Here



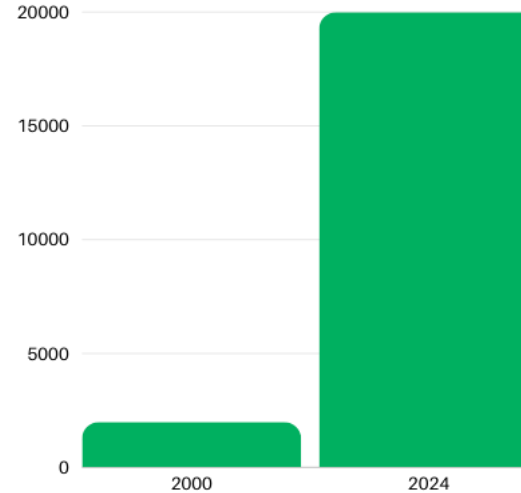
See Jean Lau
VP, Sales (APAC)



Trends Changing the Business Climate



Just In Time(JIT) supply chain methods are putting more pressure on terminals to perform better, quicker



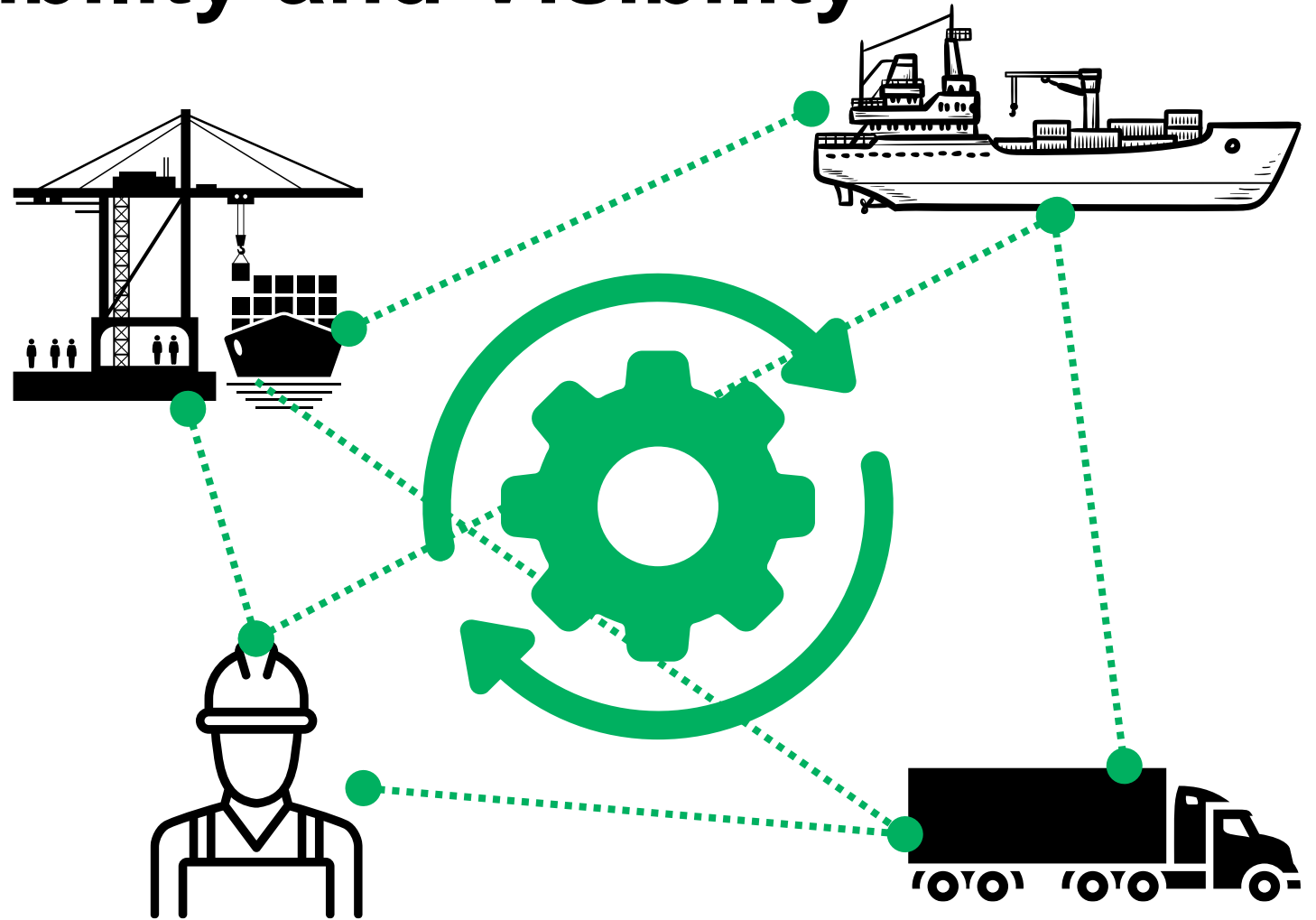
Container vessel sizes have increased from 8000 TEUs to nearly 20000 TEUs now



Supply chain disruptions in maritime trade causing major havoc in day-to-day activities requiring data-driven decisions



The Future is Flexibility and Visibility

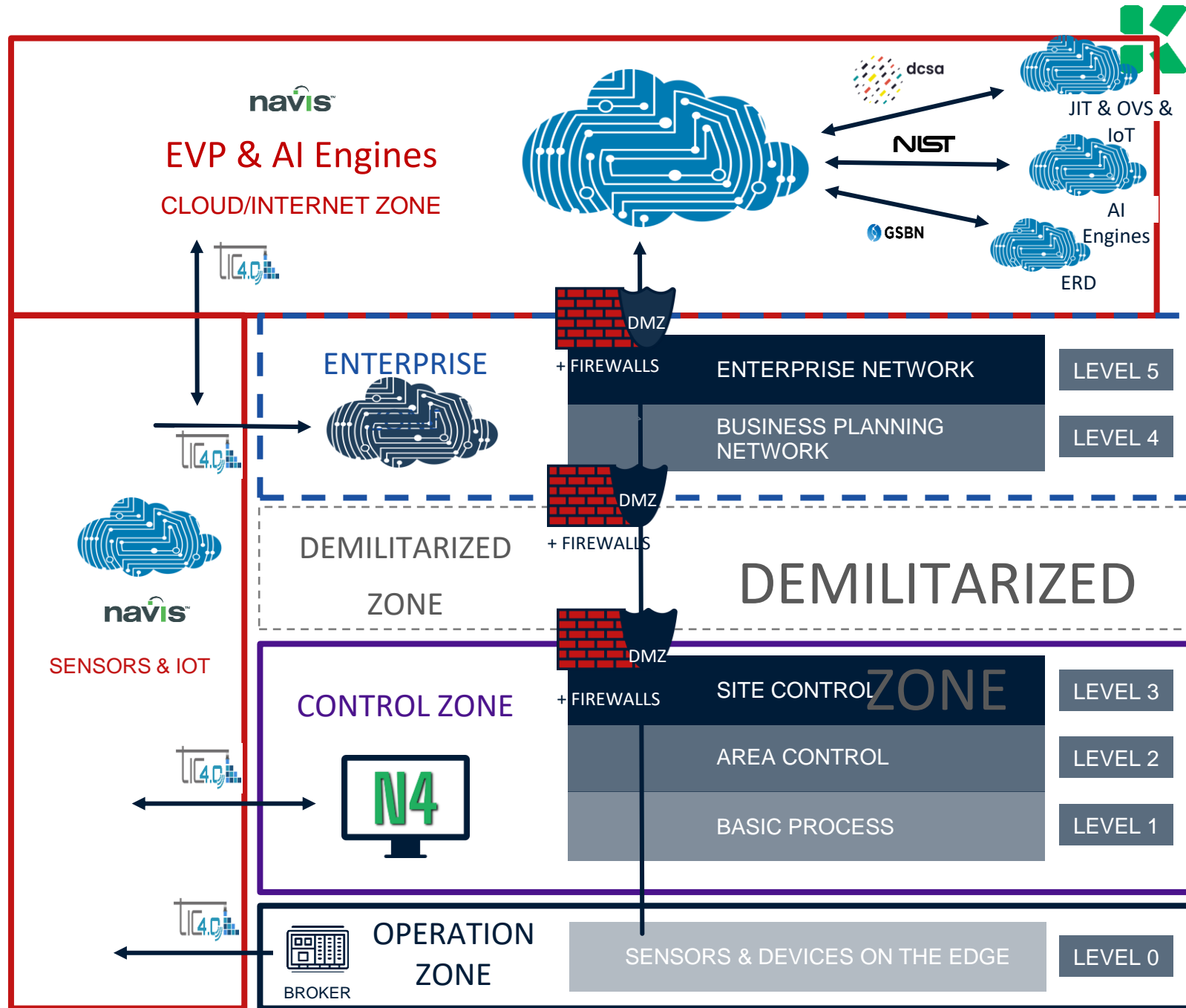


In today's supply chain, everyone needs to see vessel operations clearly, driven by high expectations for performance and credibility

Navis & IoTC Ecosystem

Benefits to Terminals:

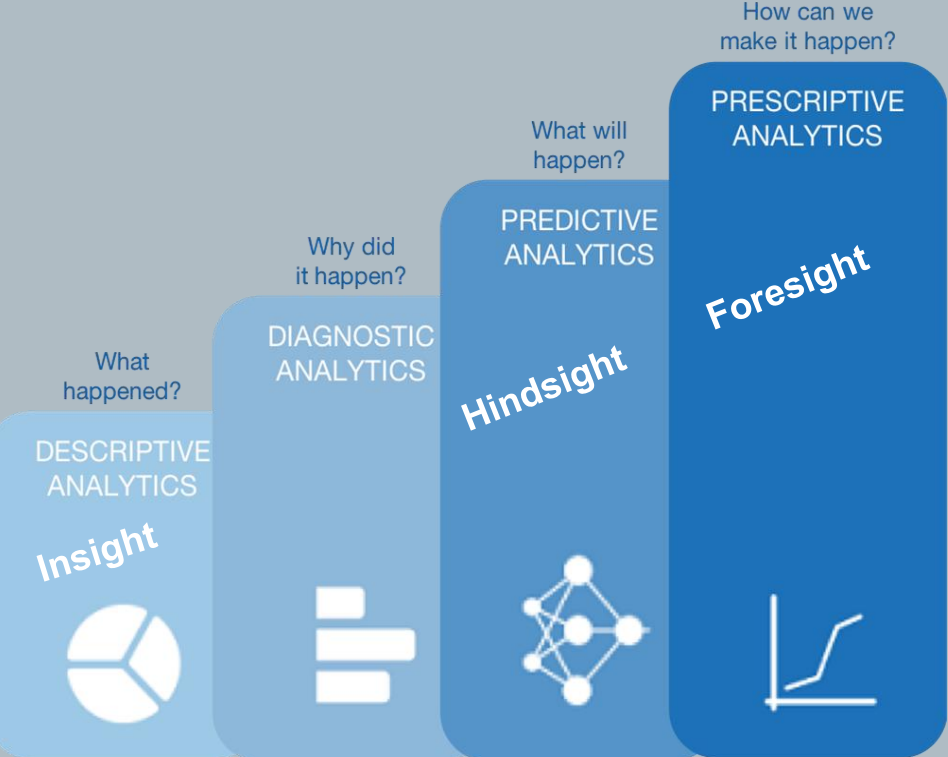
1. Satellite applications following industry standards
2. Large and heavy Non-critical data extraction independent of the TOS
3. Single points of failure are distributed
4. Business Critical requirements remains under terminal control (ie. billing, PPI)
5. Devices on the edge can communicate large amounts of data with speed
6. Computational power and storage enabled for AI engines
7. Cybersecurity enhanced as there's limited access between zones



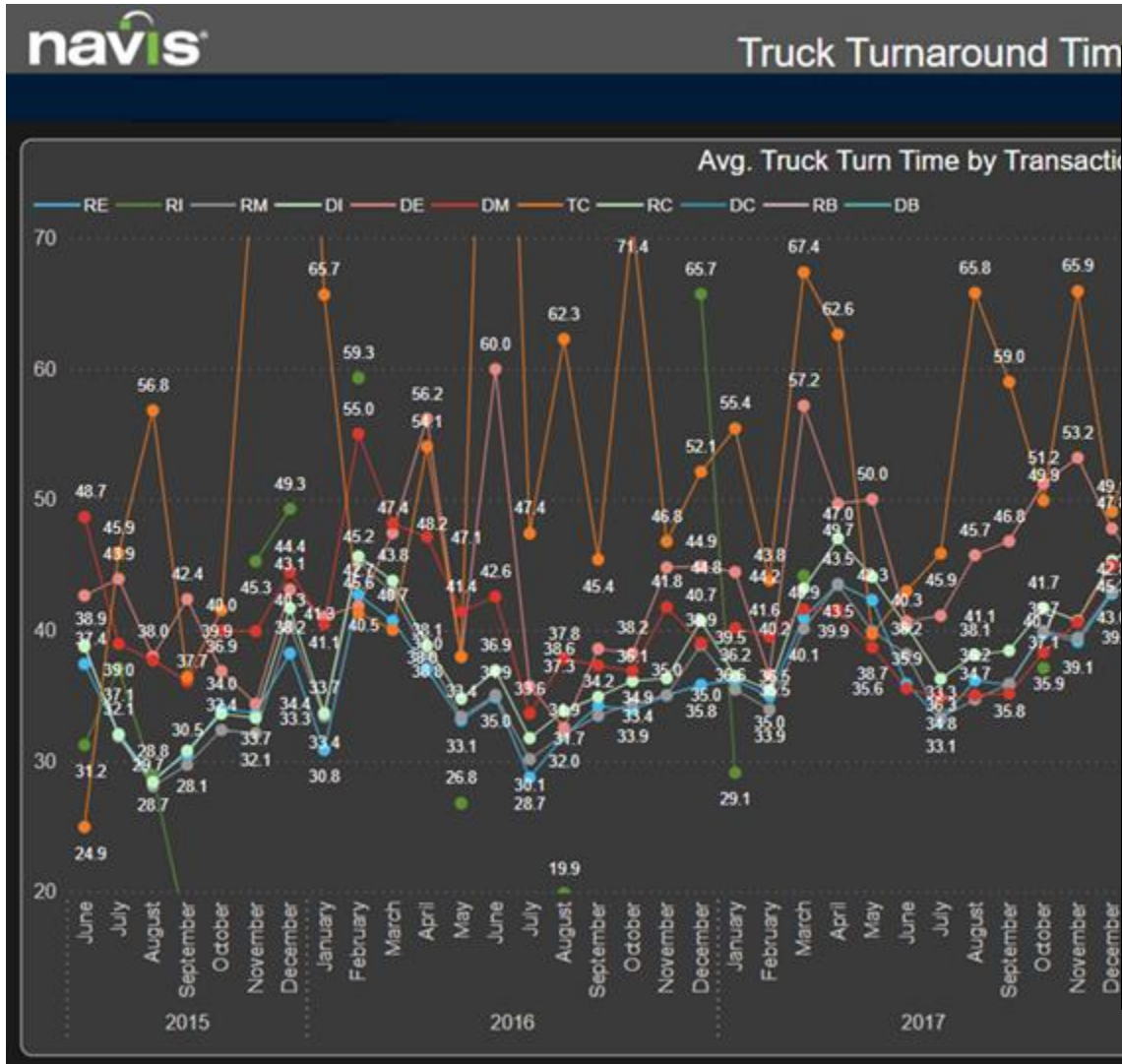
The Digital Twin is Terminal Visibility



Evolving Beyond Visibility Insight to Actionable Foresight



New Data Reality: Enabling Actionable Foresight



navis

Upcoming appointments

Drop Off Export - Kloosterboer - Gate 2 - TAR9217
CNIU 570717 7
Booking number: 00000000000000000000 Date & Time: 12/01 06:30 ISO: 45G1

Drop off Storage Empty - Kloosterboer - Gate 1 - TAR655
ENAU 717525 8
Receive Order: 00000000000000000000 Date & Time: 12/01 10:00 ISO: 2200

Pick up Import - Kloosterboer - Gate 2 - TAR9217
CLQU 101140 4
Visit PIN: 00000 Date & Time: 12/01 10:00 ISO: 45G1

Drop Off Export - Kloosterboer - Gate 2 - TAR9217
ERMU 941096 0
Booking number: 00000000000000000000 Date & Time: 12/01 16:30 ISO: 2201

Gate business today

Time: 0:00 2:00 4:00 6:00 8:00 10:00 12:00 14:00 16:00 18:00 20:00 22:00
2:00 4:00 6:00 8:00 10:00 12:00 14:00 16:00 18:00 20:00 22:00 24:00

Notifications

- Container CBHU224567 has been
- MSC Oscar delay
- CN - 585632 departed

Vessels / Trains on terminal

NYTD Shanghai Trader
Agency: NYK Line Service: TAAL2 Terminal: GPA Berth: CB06
Status: Working

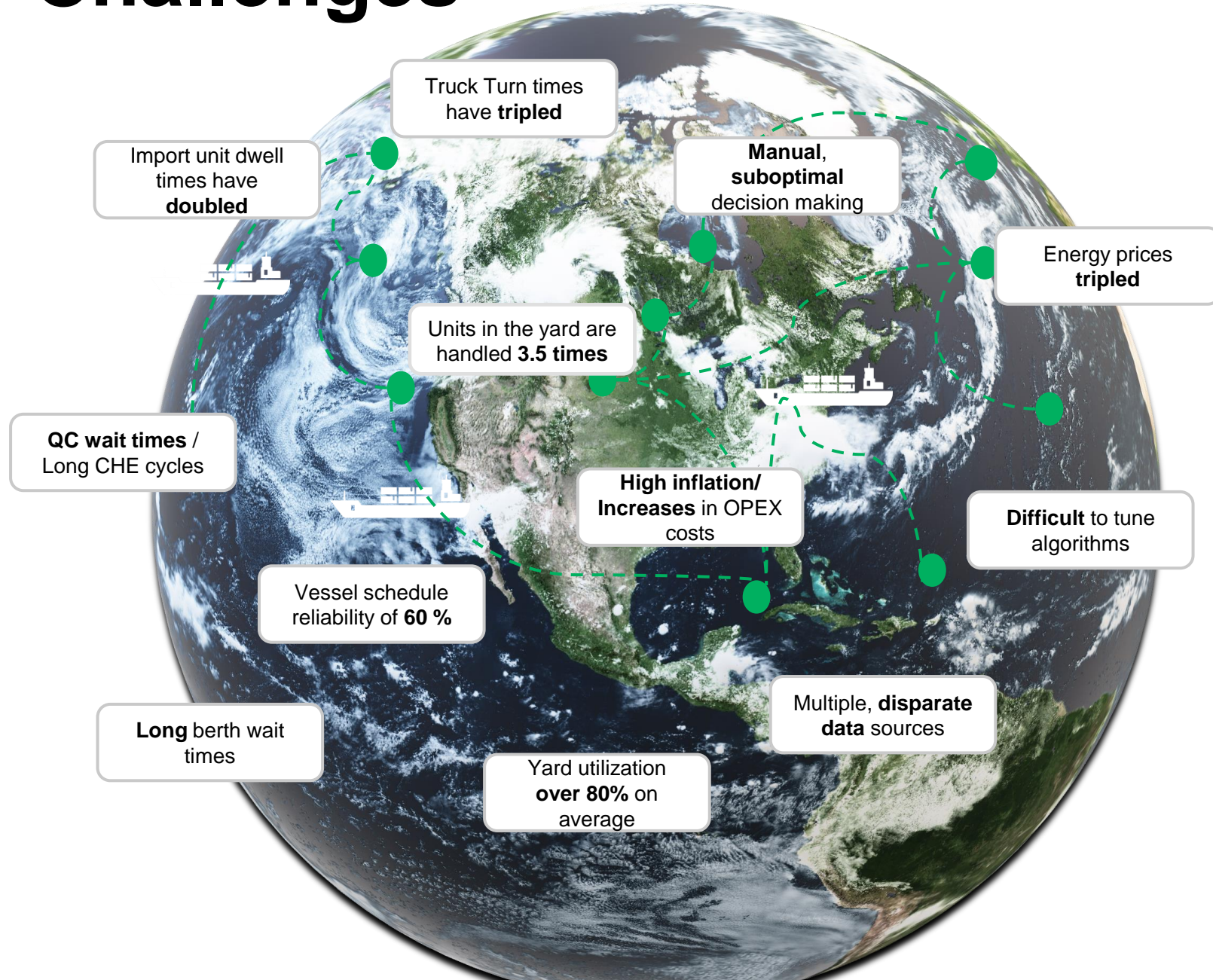
UPRR 024568
Agency: UPRR Service: 024568 Terminal: GPA Berth: 1,3,4,7

Predictive Truck Queue and Service Times

Predictive Truck Arrival based on current location

Recommend Appointment Times

Industry Challenges



Improve Efficiency Through Predictive Insights



Challenges

- Truck Turn times have tripled
- Energy prices tripled
- QC wait times / Long CHE cycles
- Difficult to tune algorithms
- Manual, suboptimal decision making
- High inflation / Increases in OPEX costs
- Long berth wait times
- Multiple, disparate data sources
- Import unit dwell times have doubled
- Units in the yard are handled 3.5 times
- Vessel schedule reliability of 60%
- Yard utilization over 80% on average



Data Insights

Cargo Volume, Mode, Timing, Cost/Revenue

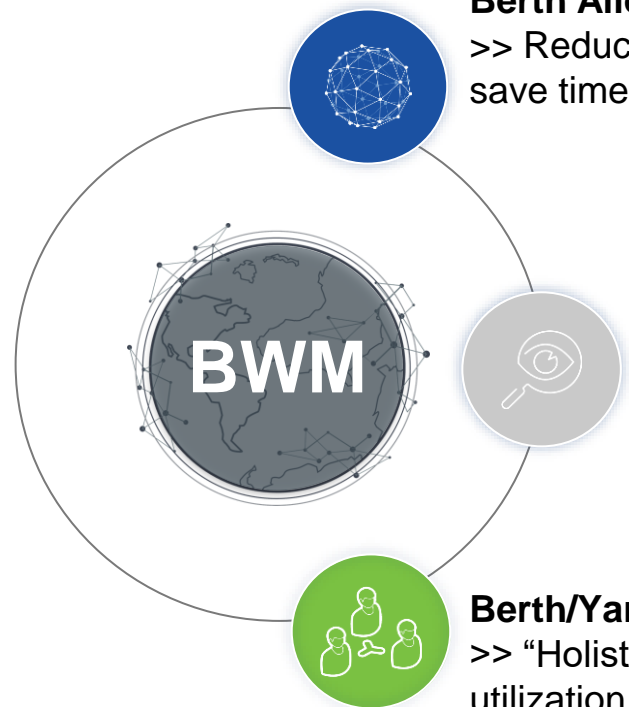
- Needed equipment
- Wind/weather
- Estimated time of arrival of ships, trains or trucks
- Mode of departure
- Long term yard utilization
- Quota appointment per hour
- Block space in yard for recurring cargo
- Gate visits, pickup time of imports
- Estimated time of departure of vessels
- Container damages
- Weight discrepancies
- Dwell time

SOLUTION

Maximized Benefits Vs Cost of Time, Effort and Resources

- Berth allocation
- Yard Occupancy
- Vessel Move Count
- Dwell Time

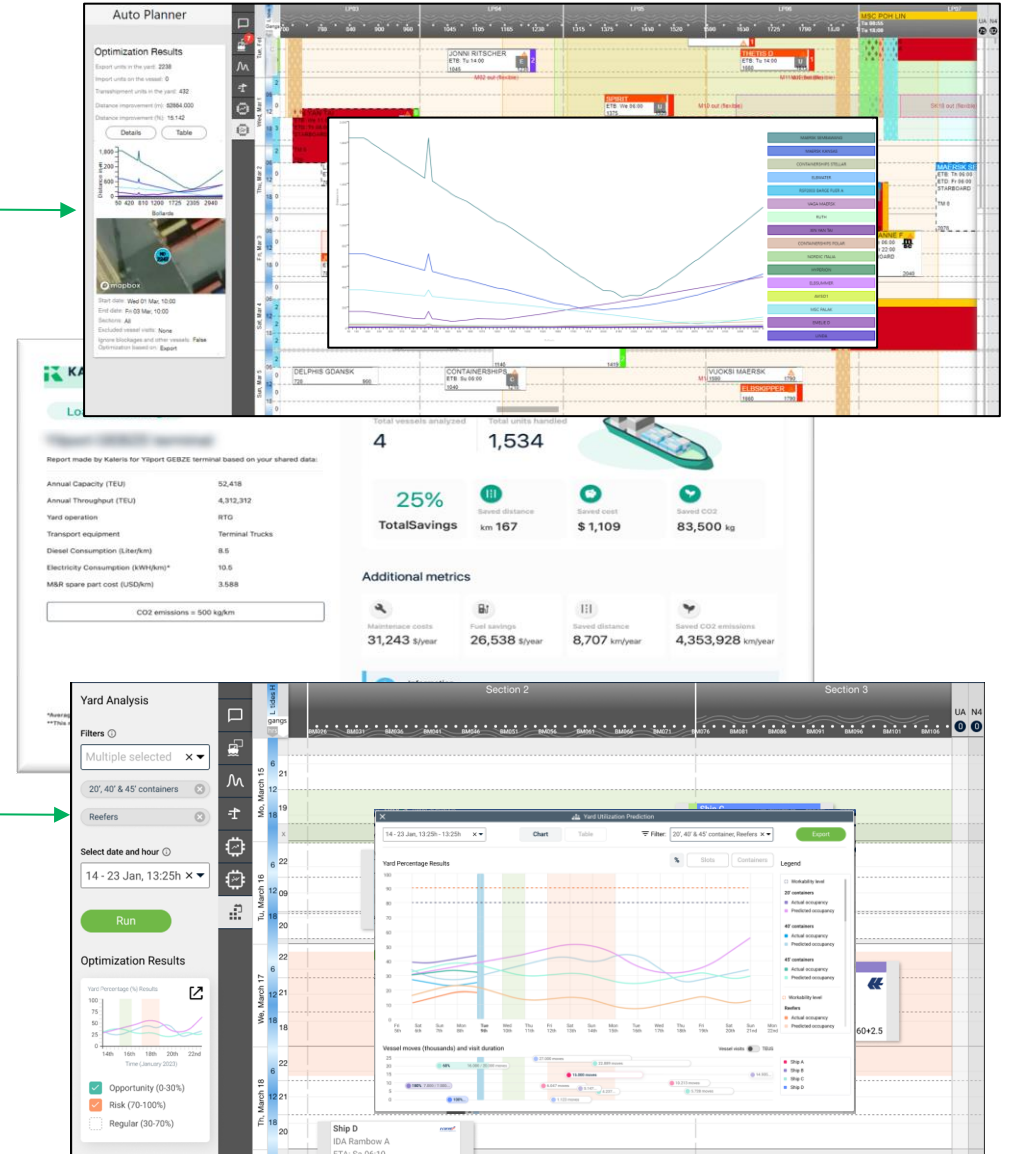
Adding AI Capabilities



Berth Allocation Optimization
->> Reduce laden CHE travel by up to 20%,
save time & OPEX

Sustainability Analysis
->> CO2 emissions reduction reports from
reduced travel time

Berth/Yard Impact Optimization
->> “Holistic” understanding of yard/berth
utilization to spot risks and identify opportunities



Recommended Equipment Deployment



The screenshot displays the navis Lane Changes interface. At the top, it shows 'User: 1234 - Equip: RT49' and the time '13:33:53'. The main panel is titled 'Lane Change' and shows 'Origin' and 'Destination' as '01E'. A 'Use cross lane' checkbox is present. A 'Unavailable' button is also visible.

The 'Lane Changes' sidebar on the right lists various time intervals and their corresponding recommendations:

- 0-10 min: CHE ID RT49, Origin 02D, Source, Destination 01E
- 10-20 min: None
- 20-30 min: None
- 30-40 min: None
- 40-50 min: None
- 50-60 min: None

The main map area shows a grid of lanes with equipment icons. A pop-up window titled 'RT49 Lane Change' provides a recommendation: 'RTG optimization recommends the following: Move RT49 from 02D to 01E. TimeFrame: T0. Lane Details: 02'. A 'Confirm change' button is located at the bottom of this pop-up.

Enable the Port of the Future



Equipment is the Key Driver

Workers link individual process steps and direct yard operations



Management by Process

- Business processes mapped to TOS
- Decisions made by control tower operators



Automated Equipment

- Scheduling & Optimization Algorithms
- Management by Exception



AI Driven Ecosystem

- Data-driven and AI supported decision making
- Optimizing flow of cargo between Carriers, port complex, and larger logistics supply chain

See Jean Lau
seejean.lau@kaleris.com

THANK YOU!



KALERIS

