

Digitalization, Artificial Intelligence, and Enabling Innovation

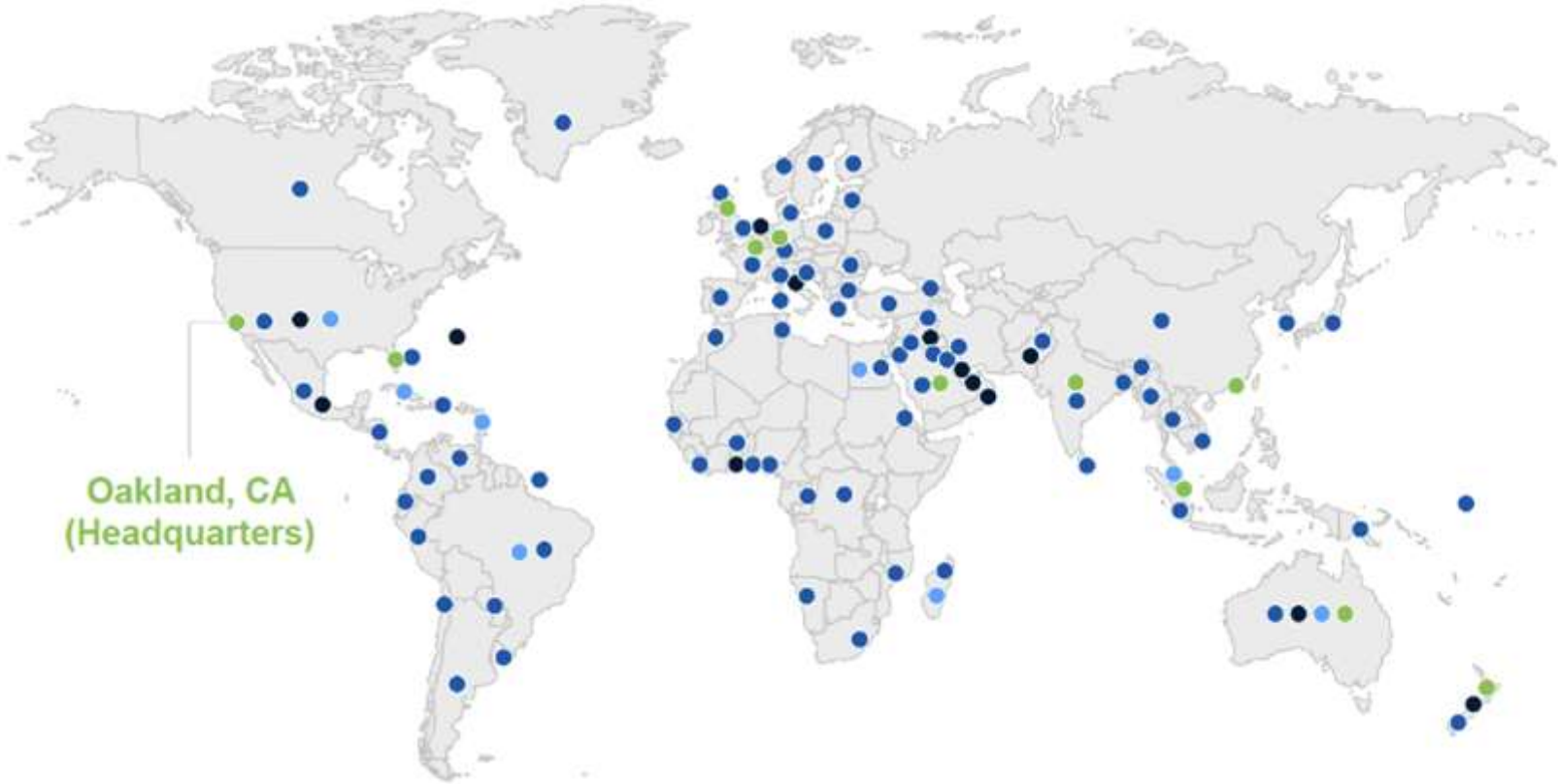
Baltic Ports & Shipping Conference 2021

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Sales Engineer

Navis is the Partner of Choice for Clients Across the Globe

Making global trade smarter, safer, and more sustainable for everyone

- ~460 terminals in 80+ countries
- ~340 Vessel carriers and owners
- +40% Estimated share of world container throughput market
- 23 Offices Globally
- 600+ Employees
- 24/7/365 Customer support



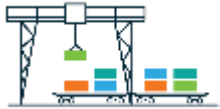
Leading Automation Solutions



Terminal Solutions



Carrier & Vessel Solutions



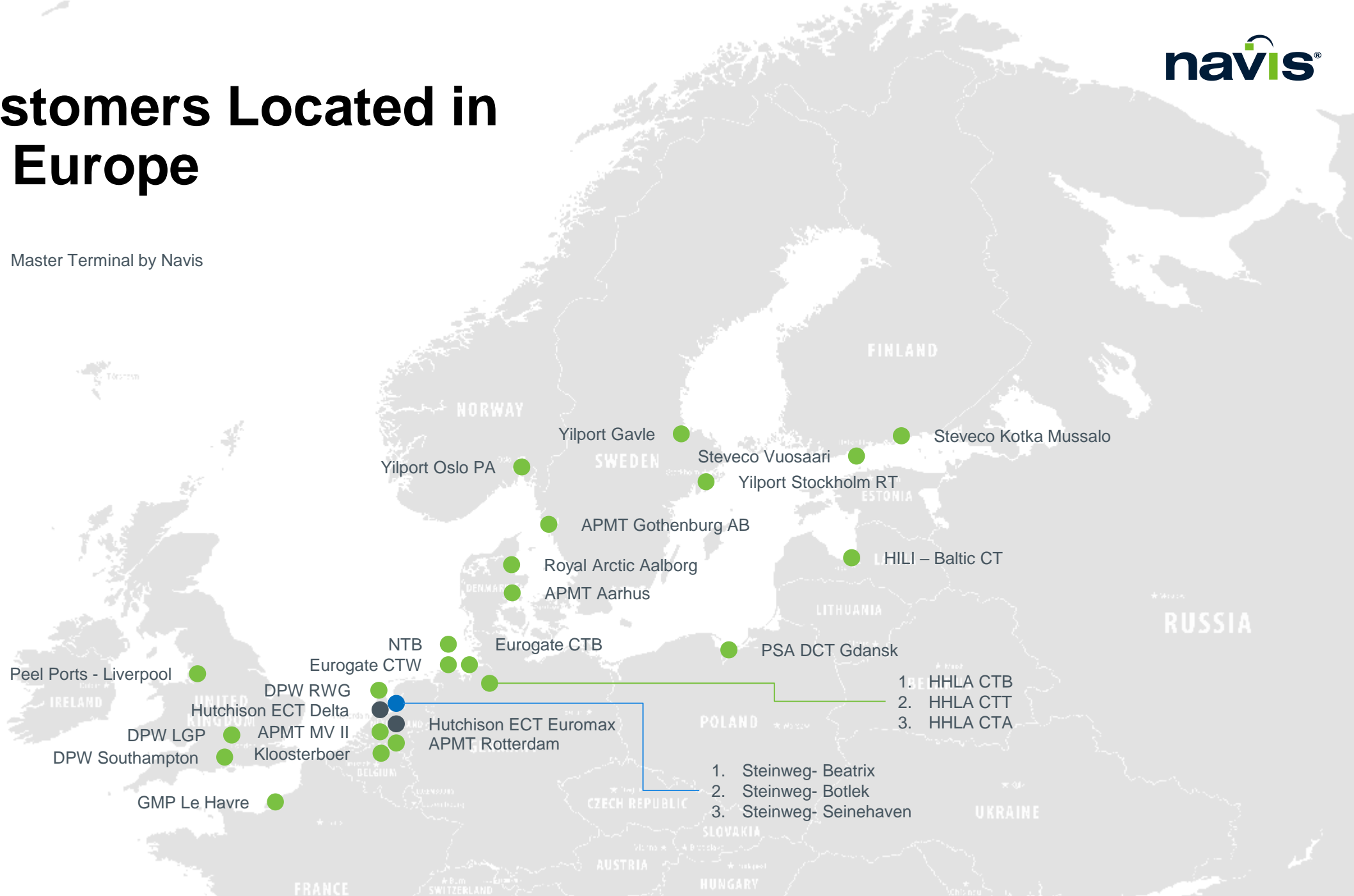
Inland Solutions

Projects Running with Navis Software:

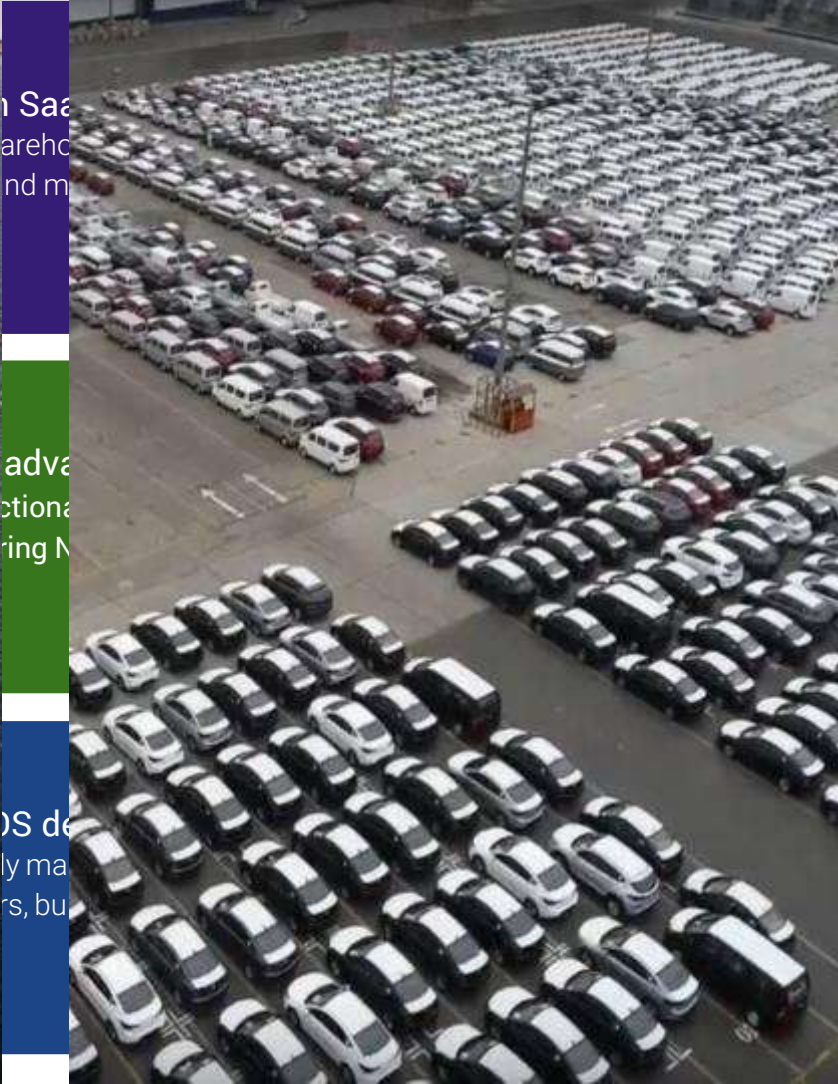
- N4
- Master Terminal by Navis
- Octopi by Navis
- Primary Office Location

Navis Customers Located in Northern Europe

● SPARCS
 ● N4
 ● Master Terminal by Navis



A TOS for All Terminals – a leader in General Cargo



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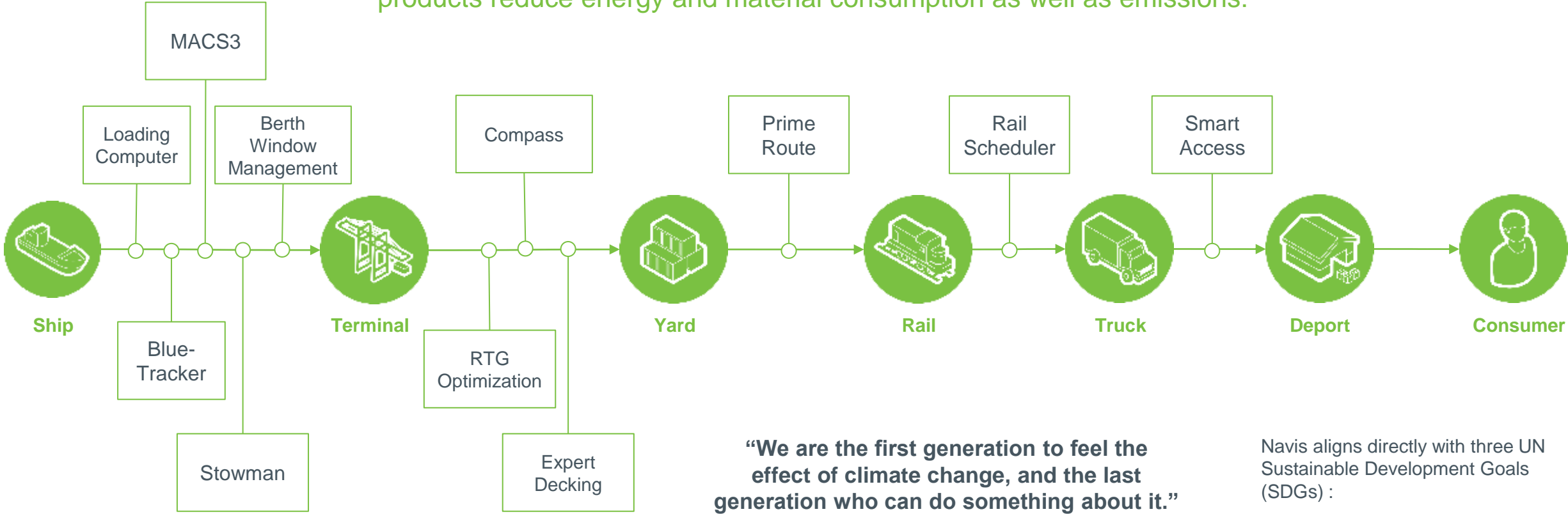
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Data Integration, Optimization, and Sustainability

At every point of a container's journey, by creating operational efficiency, Navis products reduce energy and material consumption as well as emissions:



“We are the first generation to feel the effect of climate change, and the last generation who can do something about it.”

--
 Former United States President
 Barack Obama
 September 23, 2014

Navis aligns directly with three UN Sustainable Development Goals (SDGs) :



Digitized Container Track & Trace



Real Time Visibility

Eliminate blind spots in the global supply chain

Desktop & mobile application (iOS & Android) for ocean carriers and the trucking community to track and trace containers' entire business & operational cycle;

- Ability to fleet-wide monitoring, tracking and tracing of containers for any kinds of routes
- Ability to aggregate and integrate different data sources - efficiently meet unique requirements of the maritime industry & supply chain
- Event notifications and alerts - avoiding delays, costly mistakes, safer operations
- Real-time collaboration across relevant business and operational partners - data ownership by ocean carriers

The screenshot displays the Navis application interface. At the top, there is a search bar with the number '2667' and a dropdown menu set to 'Container'. Below this, the 'Search Results' section shows two container entries:

Container	Position	Status	ISO
APLU 215266 7	Y-VIG-09E10E3	Available	22G1
APLU 520266 7	Y-VIG-01A01A1	Hold	45G1

The 'Container Details' section for APLU 215266 7 provides further information:

- Position: Y-VIG-09E10E3
- Status: Available
- ISO: 22G1
- Facility: Virginia International Gateway
- Demurrage paid to: May 28, 2021
- Last Free day: May 26, 2021

The 'Unit events' section is a table with the following data:

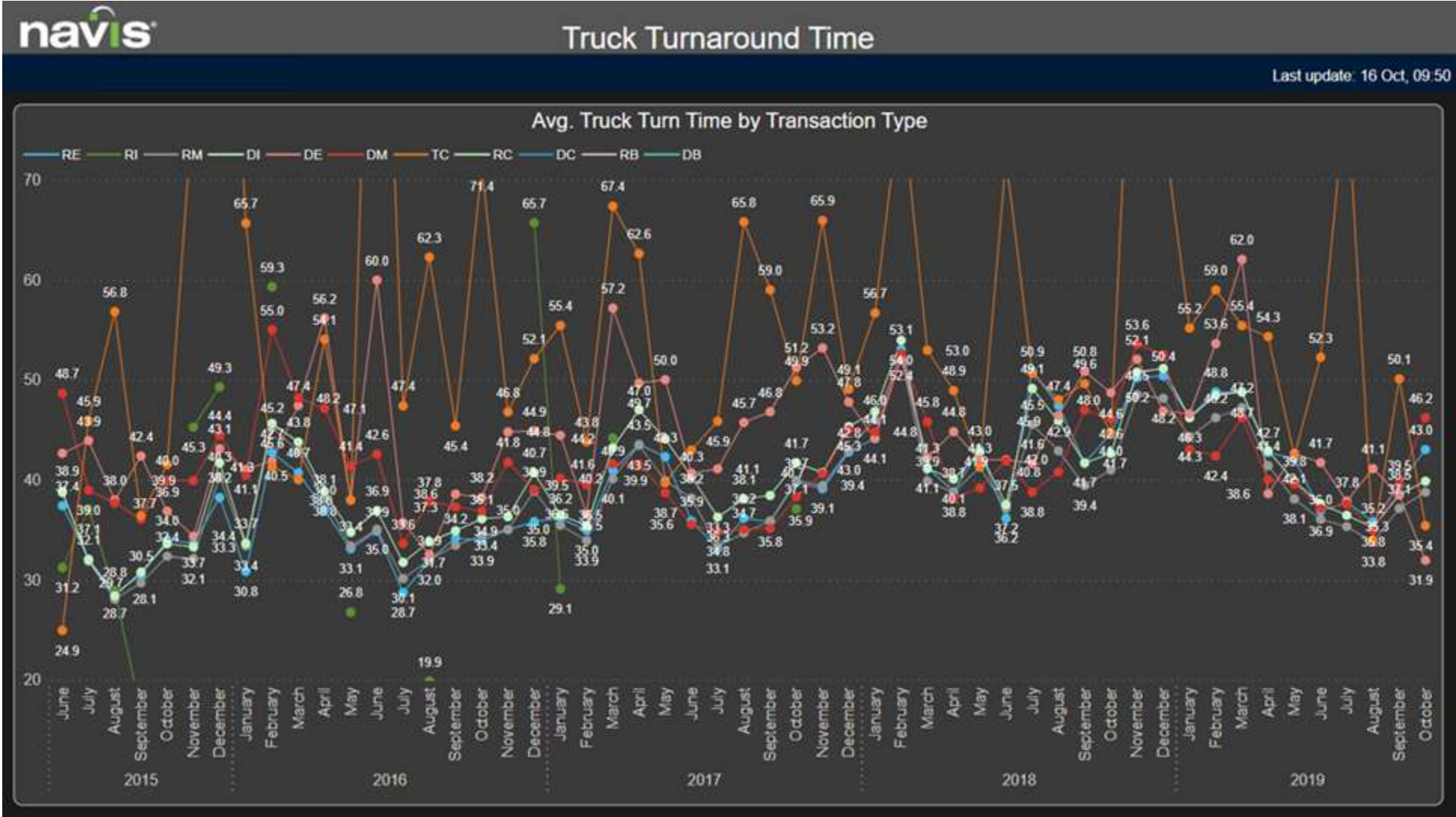
Apply Date	Event ID	Order Nbr	Billable	Recorder	Notes	Changes
14-Dec-2019 16:17:09	UNIT_YARD_MOVE			xps;EON4/RTG100 - ZPE1(T)/4K1571		Y-VIG-VWBCI->Y-VIG-09E10E3
14-Dec-2019 17:51:21	UNIT_VGM_ASSIGNED			user:ahnaf	VGM Changes	null->18780.0, null->VIG, null->Sat Dec 14 16:21:21 IST 2019, null->V
14-Dec-2019 17:50:44	CFSD TA-ZC	5012547		user:ardy		

The 'Holds & Permissions' section includes a table:

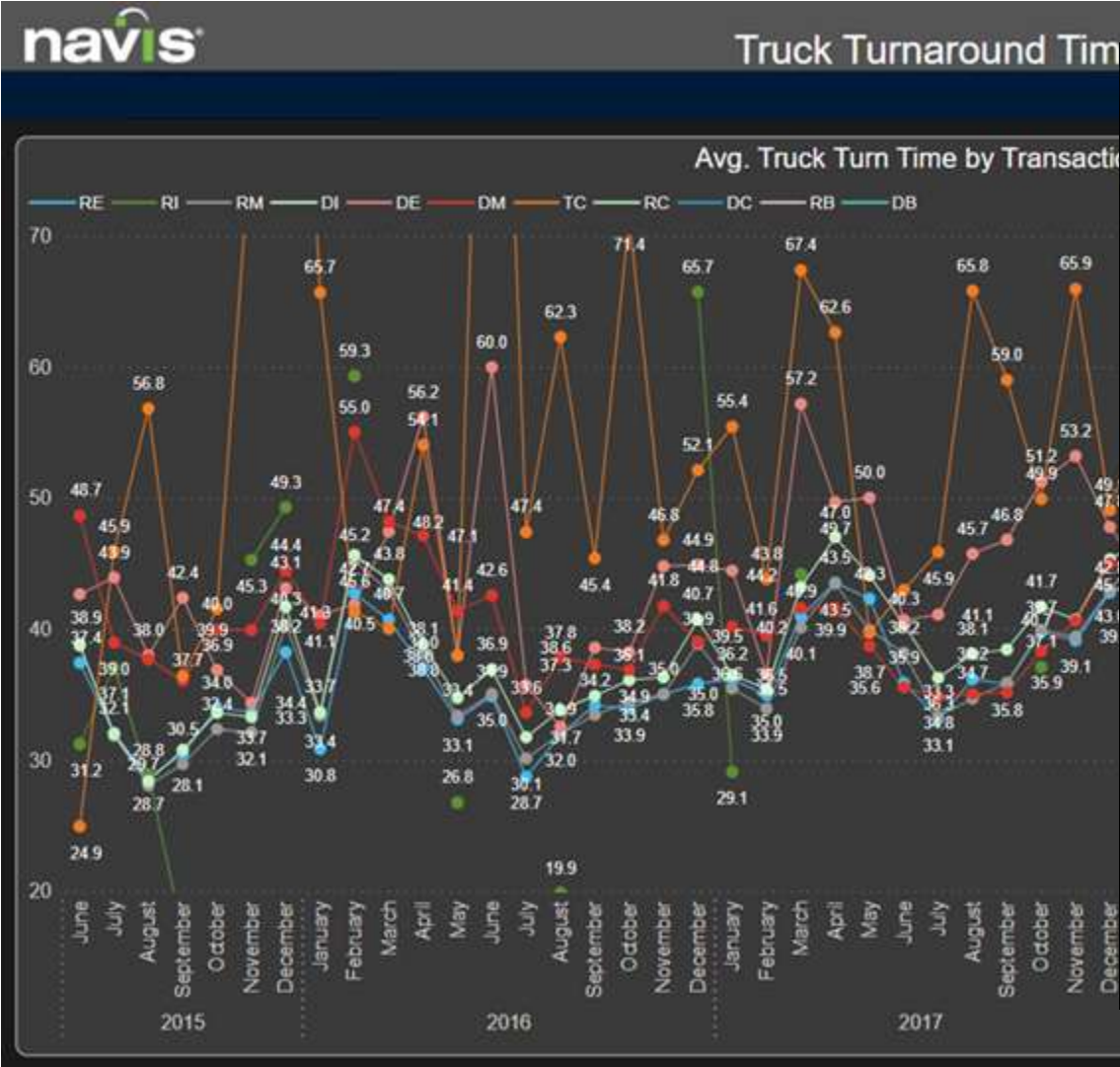
Status	Applied On	HoldPerm	Appl To Entry	HoldPerm View
GRANTED	14-Dec-2019 12:16:02		Unit	

A 'Back' button is visible at the bottom left of the interface.

A New Data Reality



Data & Collaboration



Upcoming appointments

- CNIU 5707177**
Drop Off Export - Kloosterboer - Gate 2 - TAR9217
Booking number: 00000000000000000000 | Date & Time: 12/01 06:30 | ISO: 45G1
- ENAU 7175258**
Drop off Storage Empty - Kloosterboer - Gate 1 - TAR555
Receive Order: 00000000000000000000 | Date & Time: 12/01 10:00 | ISO: 2200
- CLQU 1011404**
Pick up Import - Kloosterboer - Gate 2 - TAR9217
Visit PIN: 00000 | Date & Time: 12/01 10:00 | ISO: 45G1
- ERMU 9410960**
Drop Off Export - Kloosterboer - Gate 2 - TAR9217
Booking number: 00000000000000000000 | Date & Time: 12/01 16:30 | ISO: 2201

Gate business today

Bar chart showing activity from 0:00 to 24:00.

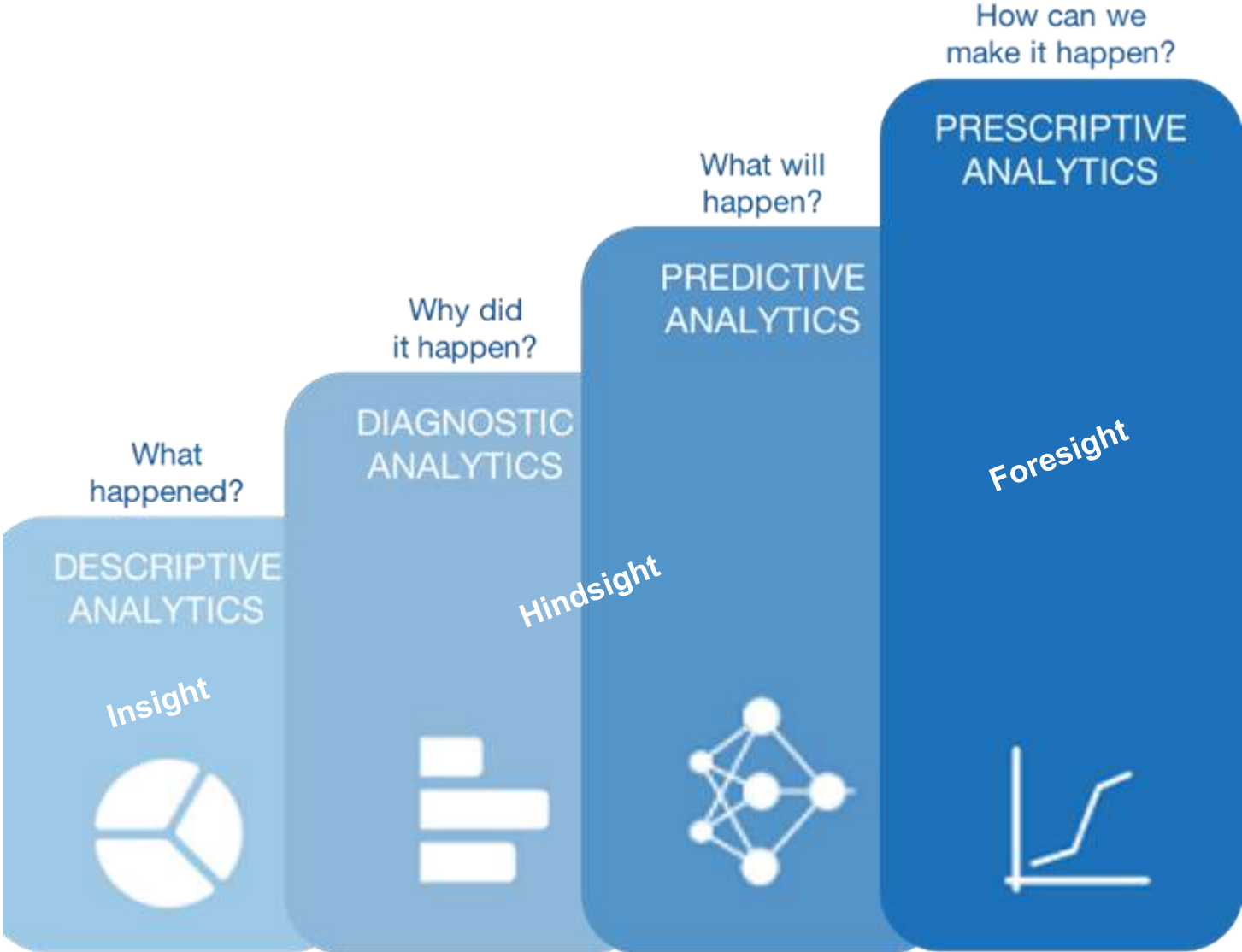
Notifications

- Container CBHL024567 has been unloaded from MSC Freedom ...
- MSC Oscar delay
- CN - 385652 departed

Vessels / Trains on terminal

Header	Agency	Service	Terminal	Trailer	Truck	Next	Next	Next
NYTD Shanghai Trader	NYK Line	TAAL2	GPA	CB06	019W	019E	mon-dô thurs	mon-dô thurs
UPRR 024568	UPRR	024568	GPA	1,3,4,7	019W	019E	mon-dô thurs	mon-dô thurs

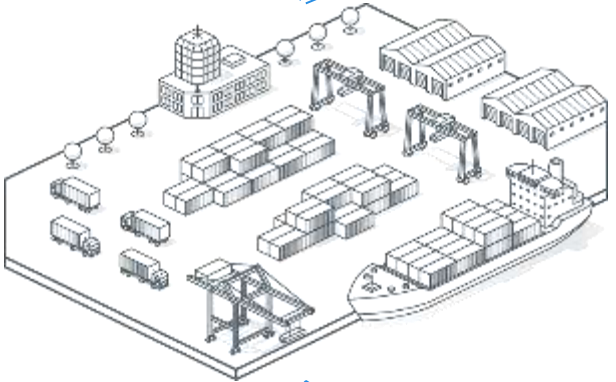
Evolving Beyond Visibility Insight to Actionable Foresight



Beyond the Digital Twin

IoT Connectivity

A digital real-time version of the terminal



Continuous Optimization

Leverage real-time granular data for terminal-wide integrated and optimized decision making

Predictive & Prescriptive

- Historic data & events
- AI-enabled and ML-based decision
- Predict future exceptions
- Recommended prescriptions

Virtual Experiments

Visualize decision tradeoffs for different scenarios

Analytics Smart Suite Powered by AI & ML



Control Room
(+Rail, Yard, GC)



OpsView



Data Analytics

Recommended Equipment Deployment

Prescriptive Analytics

navis

User: 1234 - Equip: RT49 13:32:33

Working

Lane Changes

Hide proposed Show only current

6-10 min

CHE ID	Origin
RT49	02D
Source	Destination
	01E

10-20 min

None

20-30 min

None

30-40 min

None

40-50 min

None

50-60 min

None

Select job to perform More jobs

Block 01F

Capacity	0
Coverage	Under
Demand	2
Section Demand	0

Lane 01

Capacity	0
Demand	18

0 10 20 30 40 50 60 Meters

Recommended Equipment Deployment

Prescriptive Analytics

The screenshot displays the Navis software interface for equipment management. At the top, it shows 'User: 1234 - Equip: RT49' and the time '13:33:39'. The main interface is divided into several sections:

- Left Panel:** A large grey area with a 'Working' button and a 'Select job to perform' button at the bottom.
- Top Center Panel:** A 'Lane Changes' section with a search bar and a table of equipment movements. It includes a 'Hide proposed' toggle and a 'Show only current' toggle. The table shows a recommendation for CHE ID RT49 moving from origin 02D to destination 01E.
- Right Panel:** A detailed view of the 'RT49 Lane Change' recommendation. It states: 'Recommendation: RTG optimization recommends the following. Move RT49 from 02D to 01E. TimeFrame: T0. Lane Detail: 02.' Below this is a 'Confirm change' button.
- Main View:** A large map area showing a network of lanes. A specific lane is highlighted in blue, and a mouse cursor is visible over it. Below the map is a timeline or Gantt chart showing the movement of equipment RT49 across different lanes over time.

Recommended Equipment Deployment

Prescriptive Analytics

The screenshot displays the Navis software interface for equipment deployment. At the top, it shows 'User: 1234 - Equip: RT49' and the time '13:33:53'. The main interface is divided into several sections:

- Left Panel:** A sidebar with a menu icon, a search bar, and a 'Lane Change' section. The 'Lane Change' section includes a dropdown menu, a search bar, and a 'Use cross lane' checkbox.
- Top Panel:** The Navis logo, a search bar, and a user profile icon.
- Center Panel:** A 'Lane Changes' section with a toggle for 'Hide proposed' and 'Show only current'. Below this is a list of time intervals: 0-10 min, 10-20 min, 20-30 min, 30-40 min, 40-50 min, and 50-60 min, each with a 'None' status.
- Right Panel:** A large map area showing a road network. A red line indicates a recommended route. A scale bar at the bottom of the map shows distances up to 60 miles.

Resolving Exceptions

Real-time Data Visibility Combined with Ability to Act on Issues Right Away

The screenshot displays the Navis Alerts interface. On the left, a list of alerts is shown, with alert 04 (OOLU134882 6) selected. A green callout box with a red '1' points to the 'Details' button for this alert, with the text 'Open detailed window'. The central part of the screen shows the 'Unit Inspector for OOLU134882' window, which provides detailed information about the unit, including its status, location, and various metrics. A green callout box with a red '2' points to the 'Details' button in the alert list, with the text 'Add information that is stored and visible via N4 All Alarms'. On the right, a grid of unit utilization data is visible, with a green callout box with a red '3' pointing to a specific unit's status, with the text 'Open N4 Unit Inspector'. The grid shows utilization percentages for various units, with some units highlighted in red to indicate high utilization or exceptions.

Open detailed window

Add information that is stored and visible via N4 All Alarms

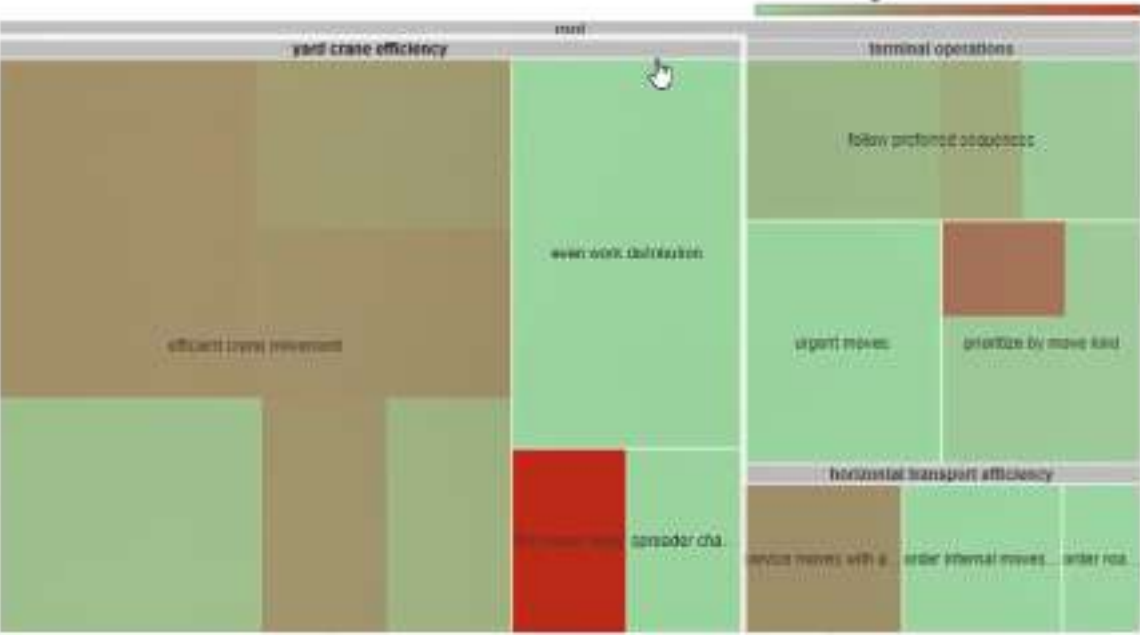
Open N4 Unit Inspector

Configuration & Diagnostics

Objective Performance

Shows the performance of each individual measure in the objective score. The size of each box represents the strength preference. The color of each box represents the performance of the individual measures.

Total Score: 0.22052908 (smaller values preferred)

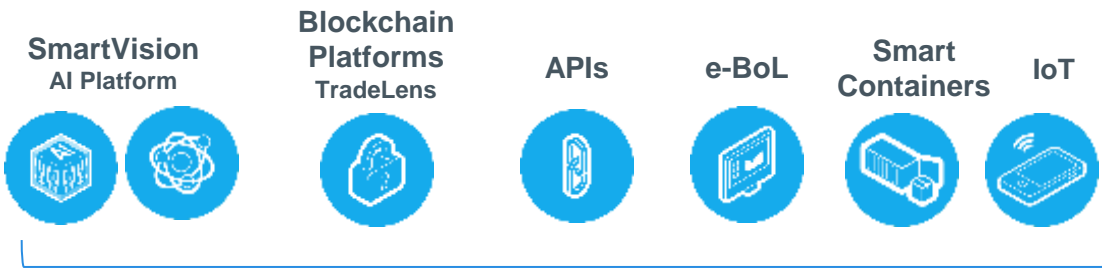


Objective Hierarchy Shows the hierarchical model used for this objective.

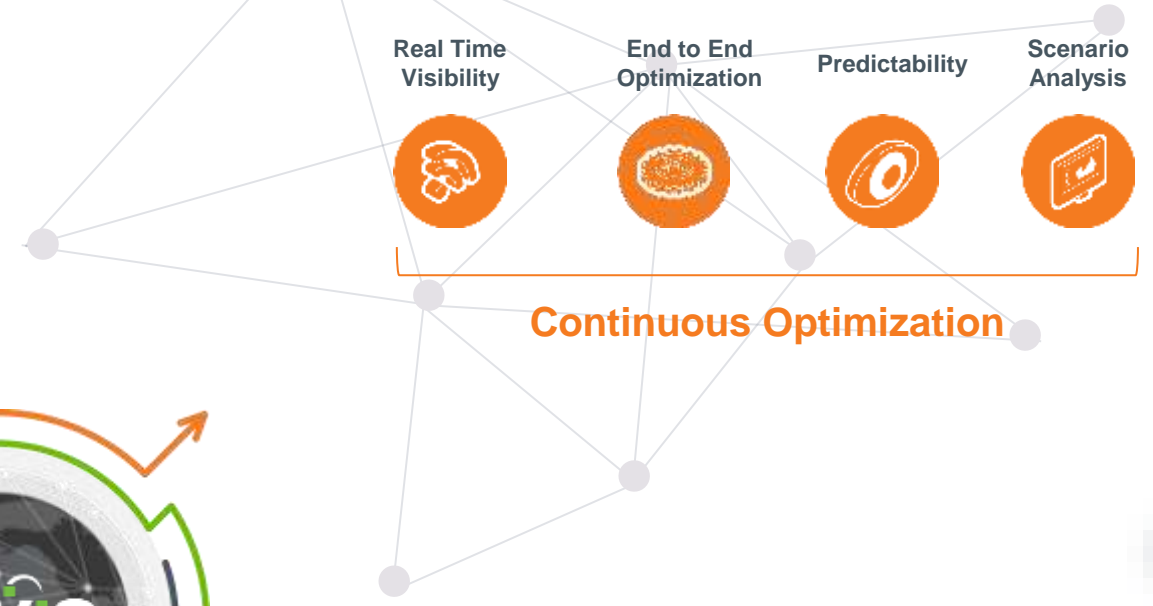
The screenshot shows the 'navis RTG Optimization' configuration interface. On the left, a sidebar lists various optimization parameters with their current values and controls:

- Strategic Penalties: [icon]
- Terminal Operations: 50
- Urgent Moves: 80
- Follow Preferred Sequences: 30
- Prioritize By Move Kind: 40
- Yard Crane Efficiency: 30
- Horizontal Transport Efficiency: 20

At the bottom of the sidebar, there are fields for 'Strategy Name' (set to 'New') and 'DefaultRtgStrategy' (set to 'DefaultRtgStrategy'), along with 'Save as', 'Delete', 'Reset', and 'Save' buttons. On the right, a donut chart displays the performance of these measures, with segments in shades of green and orange. A tooltip for 'Prioritize By Move Kind' shows a value of 40.



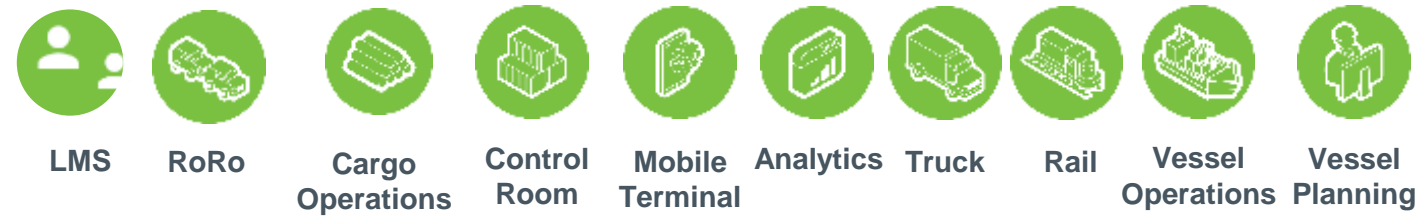
Innovative Technology



Next-Gen TOS



navis SMARTSUITE
Plug & Play Apps



Improving Confidence

3rd party API
(ML-enriched)

Navis-verified
data

ETA 22:10

ETS 00:10

Moves 1000

BMPH 46.15

ETC 21:50

ETD 22:50

Terminal Stay 23:40hrs

Operations 21:40hrs

May 21

Fr, 07

by Bollard

Section aft 103

Bollard aft B14

offset (m) -0.9

Vessel Direction Starboard

Section fore 101

Bollard fore B5

offset (m) -0.9

Arr. Draft (m) 0.00

Dep. Draft (m) 0.00

Stop 1

Berth Optimization Service

Ignore ships in the same time slot: No Yes

Calculate

Apply

Actual Containers in Yard: 102

Distance Improvement: 42.6 %

Cancel Save

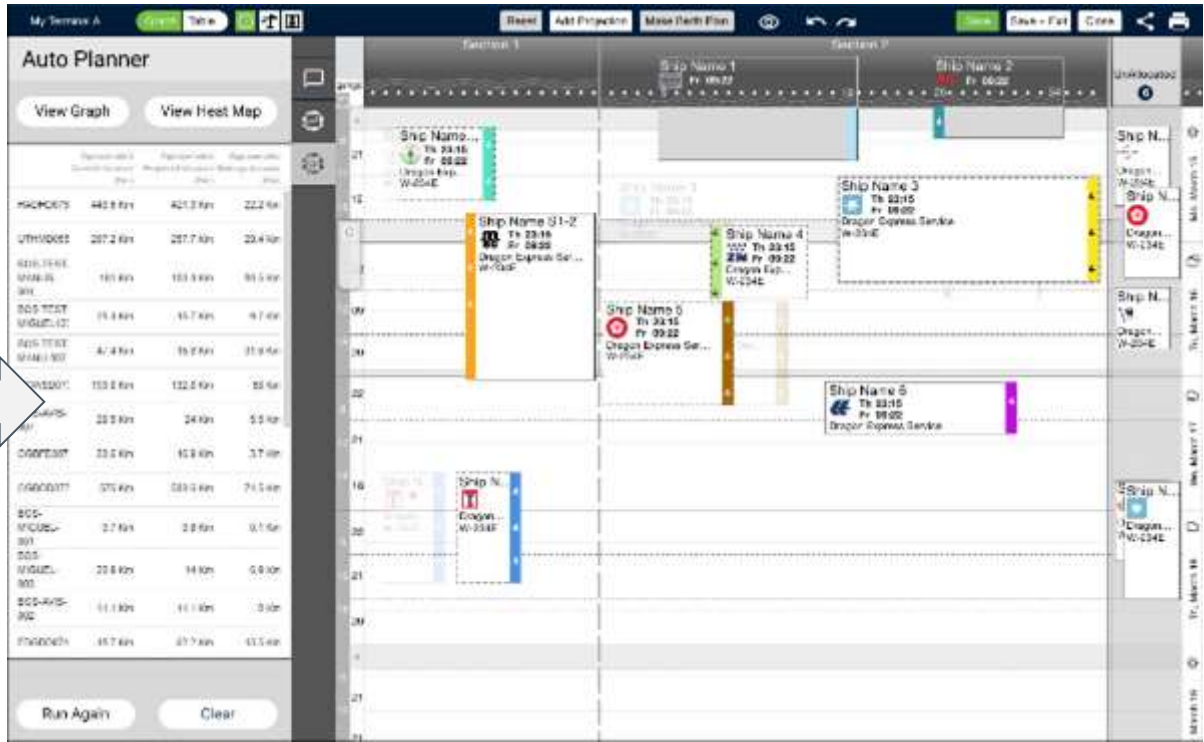
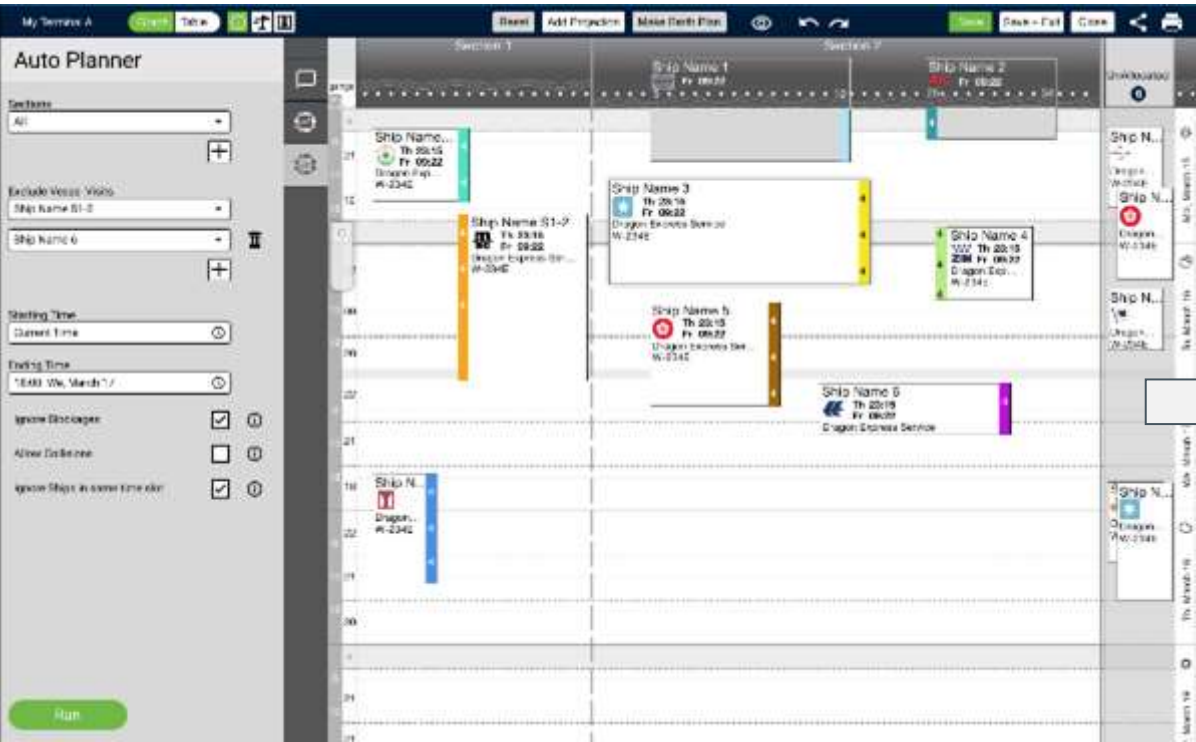
Navis ML (pre-
vessel planning)

Navis
Optimization
(ML-enriched)

Navis calculated
embedded KPI

Run Virtual Experiments

Scenario Analysis



Cloud Enables Actionable Visibility



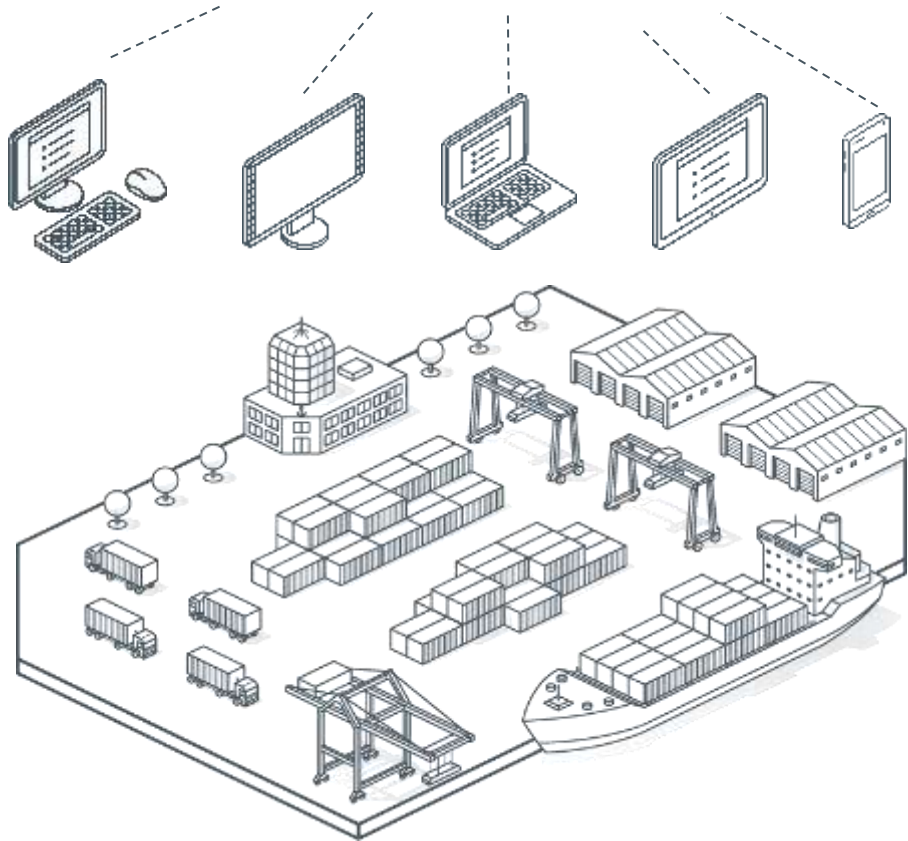
Easier to Innovate with AI & ML



Global Management



World Class Security



Blockchain & API Integration



Flexibility of Elastic Demand



Cost Savings

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

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Sales Engineer



THANK YOU!

Making Global Trade Smarter, Safer, and More Sustainable for Everyone



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