

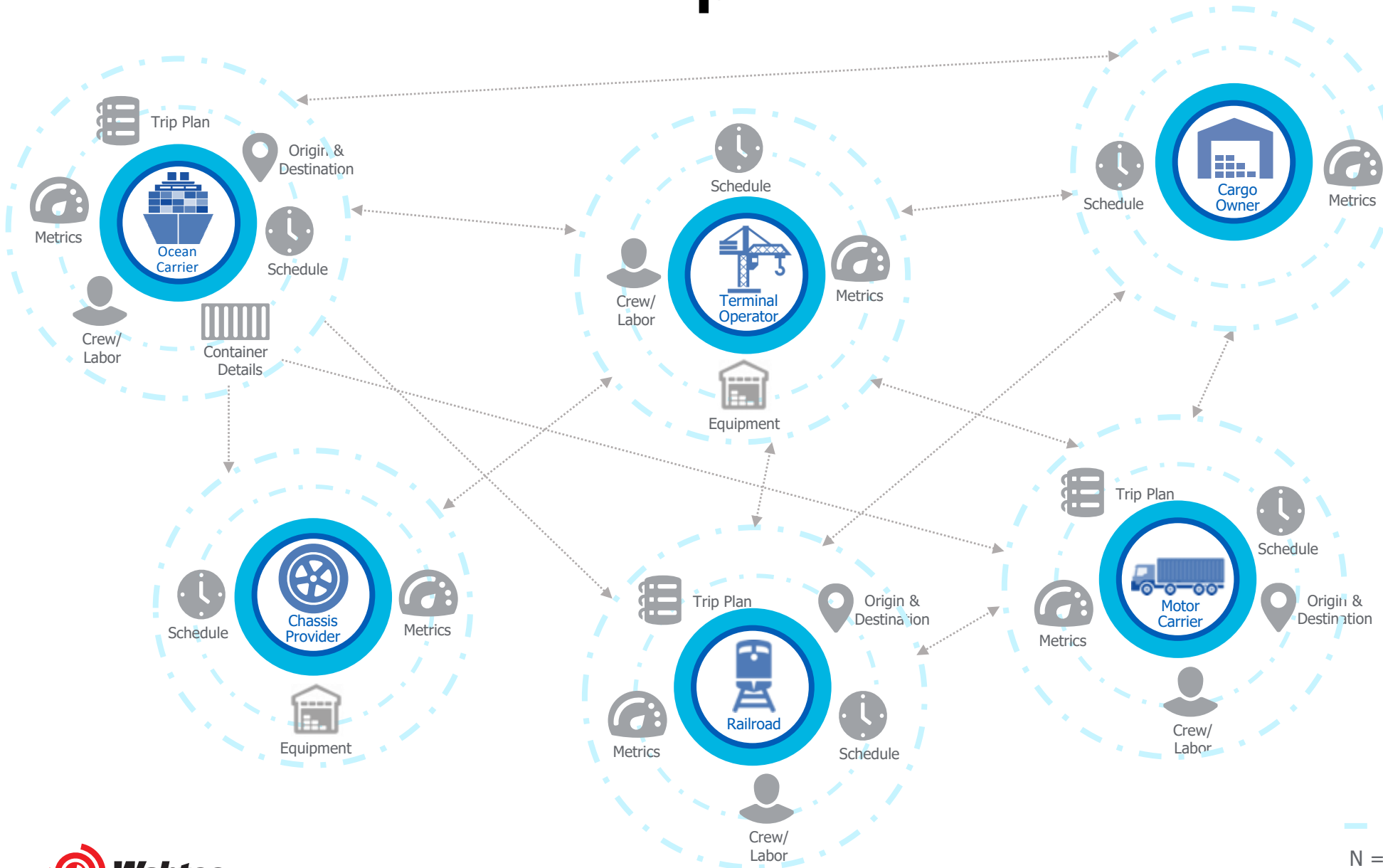
Port Optimizer™

Driving visibility & execution in an integrated supply chain

The information contained in this document may contain confidential, proprietary and/or privileged material of either Wabtec Corporation or one of its subsidiaries. Any review, retransmission, dissemination or other use of, or taking of any action in reliance upon, this information by persons or entities other than the intended recipient is prohibited unless authorized in writing. If you have received this document in error, please contact the sender and delete the material from any system and destroy any copies.



A New Era of Interdependence



@ Scale: x N

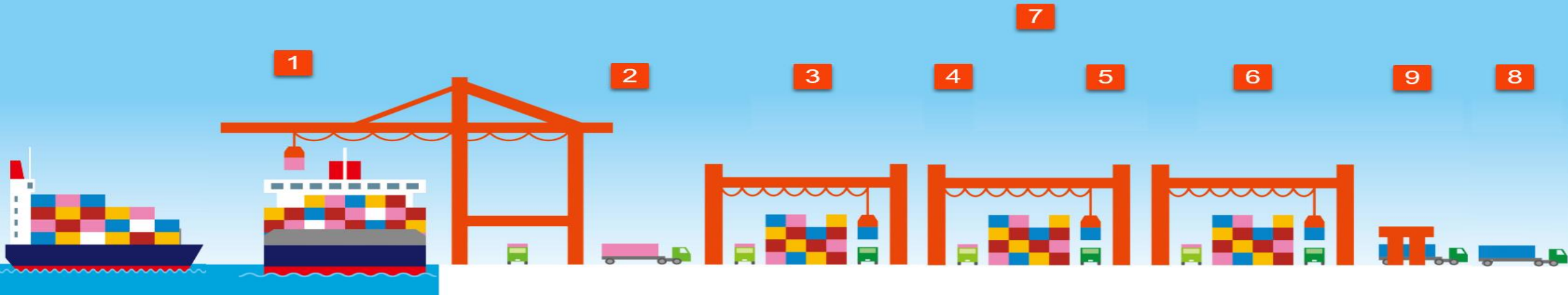
Today, success requires:

- Eliminating silos
- Sharing information
- Predicting & optimizing

--- data

N = number of companies/transactions

Today's Port Ecosystem



1 Inbound Container Volumes
Planning in Silos due to lack of collaboration

2 Horizontal Transport Route Optimization
Complex route optimization

3 Yard Inventory and Inspections
Labor intensive exception handling activity

4 Container Handling Equipment
Operations and APM Gap

5 Equipment and Yard Operations
Simple housekeeping and rehandles

6 Yard Bottlenecks
Demand/Supply unpredictability

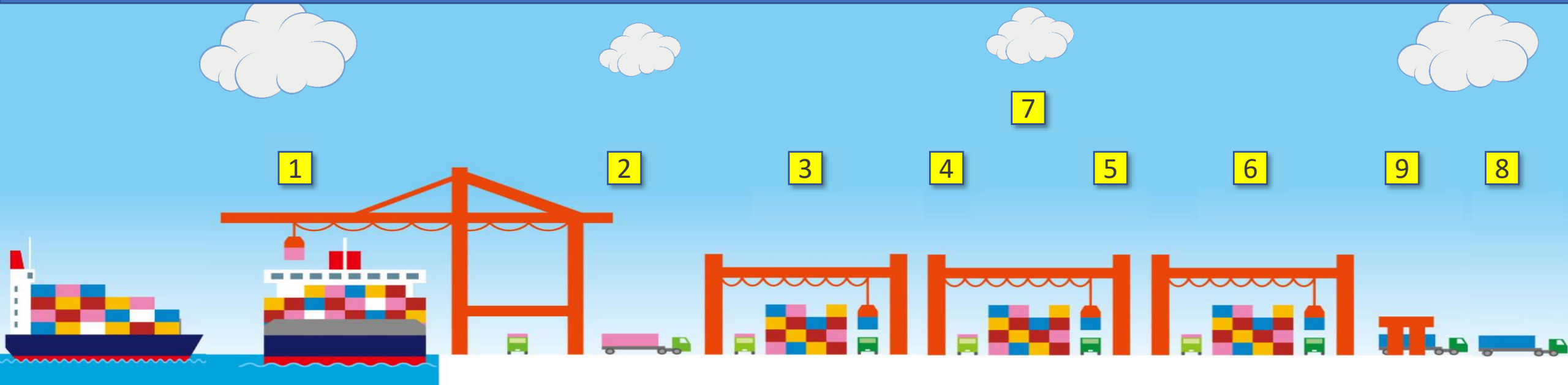
7 Yard Capacity Management
Capacity tracking is a dynamic and complex

8 Container Delivery
Information gaps and inconsistent lead times

9 Gate Bottlenecks
Lack of pre-advised information and uncertainty

Siloes, On premise technology, Predictability

The Future's Port Ecosystem



Big Data

Inbound Container Volumes

Shared visibility and planning across ports

Shipping Line Collaboration

Standard and efficient exception handling for better operations

Machine Learning

Horizontal Route Optimization

Pattern recognition, adaptive algorithms

Artificial Intelligence

Yard Inventory & Inspections

Video recognition, automated yard processes

Container Handling Equipment

AI cranes with adaptive algorithms

Equipment & Yard Operations

Human like thinking/automation

Yard Bottlenecks

Real time simulations, evaluations

Internet of Things

Capacity Management

IOT devices to track cargo

Container Delivery

Connectivity across systems & stakeholders








Gate Bottlenecks

Smart cities connectivity across multiple ecosystems

Interconnected Cloud Systems, Reliable, Autonomous, Data Driven

Port Optimizer



 Cargo Owner	 Broker/FF/3PL	 Marine Terminal Op'r	 Ocean Carrier
Visibility + Cargo Velocity <ul style="list-style-type: none"> • ↑ visibility for better customer service • Better planning for dray partners → ↑ cargo velocity thru ports 		Cargo Dwell + Cargo Velocity + Productivity <ul style="list-style-type: none"> • ↓ container dwell • ↑ velocity through better planning • Reduced and improved handling (touches, etc) 	Visibility + Cargo Velocity <ul style="list-style-type: none"> • ↑ velocity of cargo thru port • ↑ velocity of empty returns
 Motor Carrier	 Railroad	 Chassis Provider	
Turn Times + Productive Turns <ul style="list-style-type: none"> • Faster truck turn times • ↑ number of productive turns per day 	Rail Volume + Visibility + Speed <ul style="list-style-type: none"> • ↑ rail volume through ports • ↑ visibility to export dates • Improved equipment planning • ↑ speed of rail volume thru ports 	Accuracy + Chassis Utilization <ul style="list-style-type: none"> • ↑ accuracy of chassis inventory and forecast → ↑ chassis utilization • Improved planning → ↑ chassis utilization 	

Enabling visibility and execution across an integrated supply chain

Data Sources

Ocean Carrier Data



Marine Terminal Data



Additional Data Sources



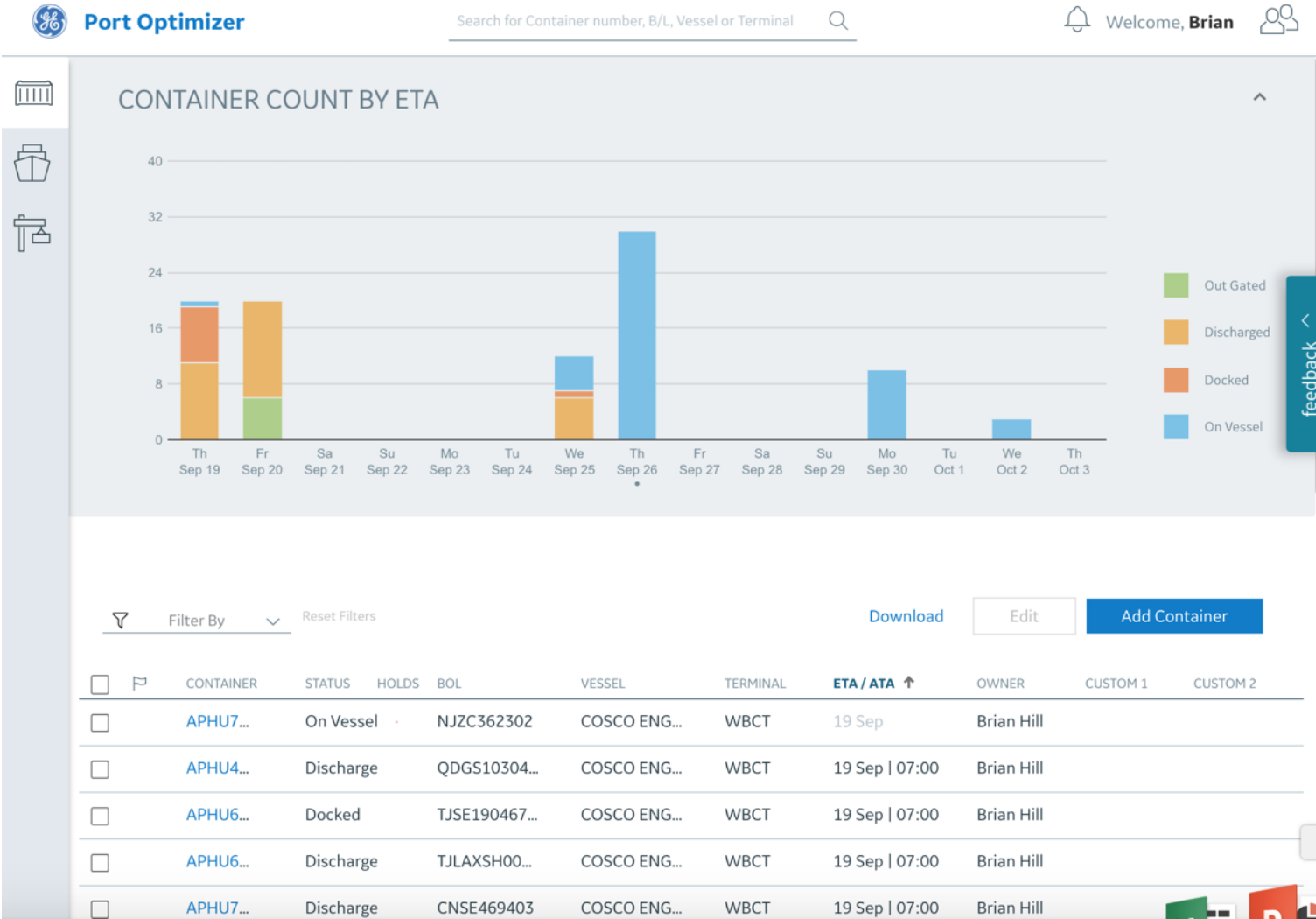
U.S. Customs and Border Protection



- Additional Data Sources constantly being evaluated and added to ensure best in class data
- Sequencing/Cleaning data to ensure timely and accurate delivery
- New Modules being developed for Port Optimizer™ to add additional functionality

Product Scope

- View all cargo from a single view for all terminals and carriers



Product Scope

- View all cargo from a single view for all terminals and carriers
- Holistic overviews to see near real-time statuses at a container level



Product Scope

- View all cargo from a single view for all terminals and carriers
- Holistic overviews to see near real-time statuses at a container level
- Deep container details including Availability, Last Free Day, Yard Locations, Holds

The screenshot displays the Port Optimizer interface. On the left, a list of containers is shown, sorted by Date ETA. The selected container, KTDU3477964, is highlighted in blue. The main panel shows detailed information for this container, including its status (Out Gated), terminal (TERMINAL), and various data points like BOL, Shipping Line, and Origin Port. A container tracker timeline is visible at the bottom, showing the container's journey from Valparaiso to Los Angeles and its outgating status.

Container ID	Status	Terminal	Date ETA
KTDU3477964	Out Gated	TERMINAL	30 Aug 04:55
AURU9283868	Out Gated	CUSTOMS	31 Aug 08:17
QOOU1204038	Out Gated		31 Aug 08:17
HXIU1031589	Out Gated	TERMINAL	31 Aug 13:25
BPHU8966326	Out Gated	CUSTOMS	31 Aug 09:13
KZJU6098378	Out Gated		31 Aug 09:13
YYDU5991839	Out Gated		31 Aug 09:13

KTDU3477964			
Out Gated TERMINAL			
DATA			
BOL	SHIPPING LINE	CUSTOM HOLDS	ORIGIN PORT
MAEU498031732	MAERSK LINE	Cleared	Valparaiso
VESSEL	ATA	VOYAGE NO.	DESTINATION PORT
BALTIC AUTUMN	30 Aug 04:55	924A	Los Angeles
TERMINAL	BERTH	YARD LOCATION	TERMINAL HOLDS
APMT			Yes
LAST FREE DAY	OUTGATED TIME	MODALITY (SCAC)	CHASSIS NO.
	08 SEP 06:20	Rail	
TYPE CODE	HAZARDOUS	BAPLIE VIEW	
42T6		<input type="checkbox"/> 2D <input checked="" type="checkbox"/> 3D	

CONTAINER TRACKER

PORT OF ORIGIN: Valparaiso | VESSEL SHIPPING LINE: BALTIC AUTUMN MAERSK LINE | PORT OF DESTINATION: Los Angeles ATA - 30 Aug | 04:55 | CONTAINER DISCHARGED: 31 Aug | 06:20 | CONTAINER OUTGATED: 08 Sep | 06:20

Product Scope

- View all cargo from a single view for all terminals and carriers
- Holistic overviews to see near real-time statuses at a container level
- Deep container details including Availability, Last Free Day, Yard Locations, Holds
- Sortable/searchable results that allow users to handle exceptions as they come up

The screenshot displays the Port Optimizer interface. On the left, a list of containers is shown, sorted by Date ETA. The selected container, KTDU3477964, is highlighted in blue. The main panel on the right provides detailed information for this container, including its status (Out Gated), terminal (TERMINAL), and various data points such as BOL, Shipping Line, Custom Holds, Origin Port, Vessel, ATA, Voyage No., Destination Port, Terminal, Berth, Yard Location, Terminal Holds, Last Free Day, Outgated Time, Modality (SCAC), Chassis No., Type Code, and Hazardous status. A container tracker timeline at the bottom shows the container's journey from Valparaiso to Los Angeles and its outgating status.

Container ID	Status	Terminal	Date ETA
KTDU3477964	Out Gated	TERMINAL	30 Aug 04:55
AURU9283868	Out Gated	CUSTOMS	31 Aug 08:17
QOOU1204038	Out Gated		31 Aug 08:17
HXIU1031589	Out Gated	TERMINAL	31 Aug 13:25
BPHU8966326	Out Gated	CUSTOMS	31 Aug 09:13
KZJU6098378	Out Gated		31 Aug 09:13
YYDU5991839	Out Gated		31 Aug 09:13

Field	Value
BOL	MAEU498031732
SHIPPING LINE	MAERSK LINE
CUSTOM HOLDS	Cleared
ORIGIN PORT	Valparaiso
VESSEL	BALTIC AUTUMN
ATA	30 Aug 04:55
VOYAGE NO.	924A
DESTINATION PORT	Los Angeles
TERMINAL	APMT
BERTH	
YARD LOCATION	
TERMINAL HOLDS	Yes
LAST FREE DAY	08 SEP 06:20
OUTGATED TIME	08 SEP 06:20
MODALITY (SCAC)	Rail
CHASSIS NO.	
TYPE CODE	42T6
HAZARDOUS	
BAPLIE VIEW	<input type="checkbox"/> 2D <input checked="" type="checkbox"/> 3D

CONTAINER TRACKER

PORT OF ORIGIN: Valparaiso | VESSEL SHIPPING LINE: BALTIC AUTUMN MAERSK LINE | PORT OF DESTINATION: Los Angeles ATA - 30 Aug | 04:55 | CONTAINER DISCHARGED: 31 Aug | 06:20 | CONTAINER OUTGATED: 08 Sep | 06:20

Product Scope

- Vessel views with accurate ETAs/Transit information

Port Optimizer Search for Container number, B/L, Vessel or Terminal 🔍 🔔 Welcome, Brian 👤

Vessels

COSCO ENGLAND
Inbound 032E

PORT: Long Beach

VESEL CODE	OWNER SCAC	TERMINAL	CONTAINER COUNT	ATA	ATD	STATUS
9516428		PCT	20	31 Jul 00:00	05 Aug 00:00	Outbound

EVER LASTING
Inbound 0996E

PORT: Los Angeles

VESEL CODE	OWNER SCAC	TERMINAL	CONTAINER COUNT	ATA	ATD	STATUS
9595450	EGLV	ETS	12	27 Nov 00:00	30 Nov 00:00	Outbound

EVER LUCENT
Inbound 0TB4G

PORT: Long Beach

VESEL CODE	OWNER SCAC	TERMINAL	CONTAINER COUNT	ATA	ATD	STATUS

feedback <

Product Scope

- Vessel views with accurate ETAs/Transit information
- Detail views at a per vessel level for ease of tracking

Port Optimizer Search for Container number, B/L, Vessel or Terminal Welcome, Brian

Vessel Details

COSCO ENGLAND
Inbound 032E

PORT
Long Beach

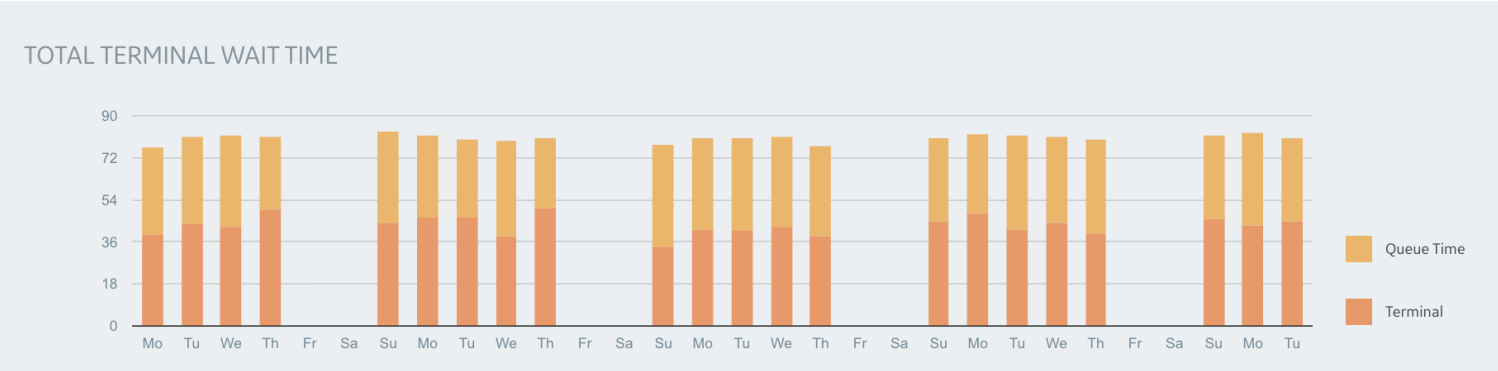
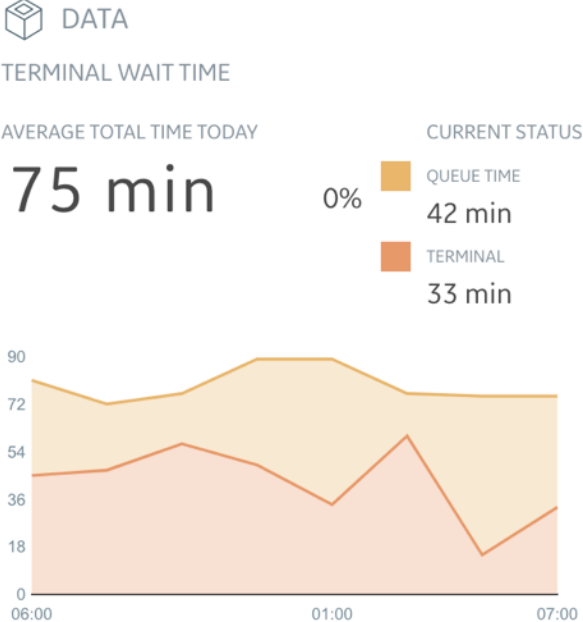
VESEL CODE	OWNER SCAC	TERMINAL	CONTAINER COUNT	ATA	ATD	STATUS
9516428		PCT	20	31 Jul 00:00	05 Aug 00:00	Outbound

Filter By Reset Filters Download

HOLDS	CONTAINER	STATUS	EVENT DATE	LOCATION	OWNER	CUSTOM 1	CUSTOM 2
	APHU73736...	On Vessel			Brian Hill		
	APHU46272...	Discharged			Brian Hill		
	APHU62977...	Docked			Brian Hill		
	APHU69847...	Discharged			Brian Hill		
	APHU70165...	Discharged			Brian Hill		
	APHU73096...	Docked			Brian Hill		
	APZU3158560	Docked			Brian Hill		
	APZU4308006	Discharged			Brian Hill		

Product Scope

- Vessel views with accurate ETAs/Transit information
- Detail views at a per vessel level for ease of tracking
- Ability to view wait times/turn times at a terminal level powered by GeoStamp



Product Scope

- Vessel views with accurate ETAs/Transit information
- Detail views at a per vessel level for ease of tracking
- Ability to view wait times/turn times at a terminal level powered by GeoStamp
- Cross terminal empty return information

Port Optimizer Container No/BOL/Vessel/Terminal Welcome, Jane Doe

Empties Return

Back | Today | Tomorrow | Download | Filter

Updated 1 hrs ago

SHIPPING LINE	TERMINAL SHIFT	20 GA	20 RF	20 FT	20 OT	40 GA	40 HQ	40 RQ	40 FT	40 OT	45 HQ	SPQ
CMA-CGM	Shift 1	Yes	Yes	Yes	Yes	Dual	Yes	Yes	Dual	Yes	Yes	Yes
	Shift 2	No	No	No	No	No	No	No	No	No	No	No
COSCO	Shift 1	Yes	Yes	Yes	No	Dual	No	No	Dual	yes	Yes	No
	Shift 2	No	No	No	No	Yes	No	No	No	No	No	No
Evergreen	Shift 1	No	No	No	No	No	No	No	No	No	No	No
	Shift 2	No	No	No	No	No	No	No	No	No	No	No

This terminal has notes

Updated 2hrs ago

SHIPPING LINE	TERMINAL SHIFT	20 GA	20 RF	20 FT	20 OT	40 GA	40 HQ	40 RQ	40 FT	40 OT	45 HQ	SPQ
Maersk	Shift 1	Yes	Yes	Yes	Yes	No	Dual	No	Yes	Yes	Yes	Yes
	Shift 2	No	No	No	No	No	No	No	No	No	No	No
OOCL	Shift 1	Yes	Yes	Dual	No	Dual	Yes	No	Dual	Yes	Yes	No
	Shift 2	No	No	No	No	Dual	Dual	No	No	No	No	No
ONE	Shift 1	No	No	No	No	No	No	No	No	No	No	No
	Shift 2	No	No	No	No	No	No	No	No	No	No	No

Updated 5hrs ago

Feedback

Product Scope

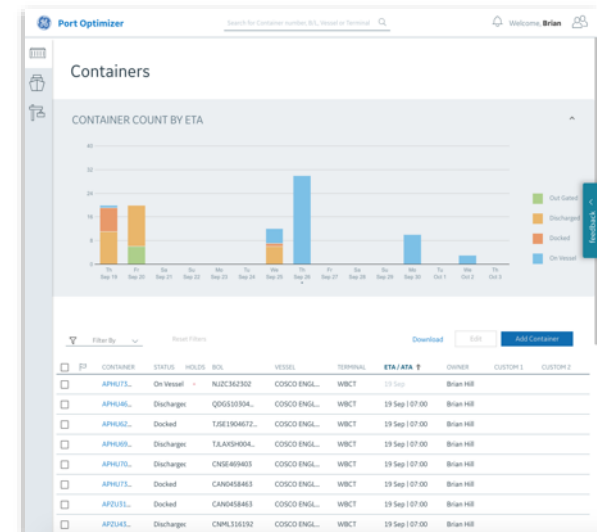
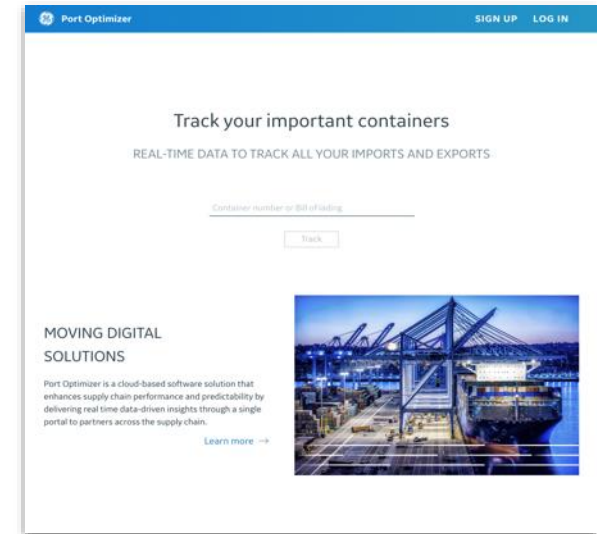
- Vessel views with accurate ETAs/Transit information
- Detail views at a per vessel level for ease of tracking
- Ability to view wait times/turn times at a terminal level powered by GeoStamp
- Cross terminal empty return information
- Full API connectivity allowing users to maintain their own infrastructure

```
1  {
2    "vesselName": "COLOMBO EXPRESS",
3    "totalContainersInVessel": 982,
4    "vesselDetails": {
5      "atd": 0,
6      "eta": 1552608000000,
7      "etd": 0,
8      "destinationTerminalName": "TraPac",
9      "portOrigin": "57047",
10     "vesselStatus": "INBOUND",
11     "portDestination": "2704",
12     "vesselName": "COLOMBO EXPRESS",
13     "ata": 0,
14     "berth": null
15   },
16   "twentyFeet": {
17     "totalContainers": 225,
18     "unloadedFromVessel": null,
19     "outgatedByRail": null,
20     "ingated": null,
21     "outgatedByTruck": null,
22     "loadedOnVessel": null,
23     "onVessel": 225
24   },
```

```
25   "fortyFeet": {
26     "totalContainers": 615,
27     "unloadedFromVessel": null,
28     "outgatedByRail": null,
29     "ingated": null,
30     "outgatedByTruck": null,
31     "loadedOnVessel": null,
32     "onVessel": 615
33   },
34   "fortyFiveFeet": {
35     "totalContainers": 21,
36     "unloadedFromVessel": null,
37     "outgatedByRail": null,
38     "ingated": null,
39     "outgatedByTruck": null,
40     "loadedOnVessel": null,
41     "onVessel": 21
42   },
43   "others": {
44     "totalContainers": 121,
45     "unloadedFromVessel": null,
46     "outgatedByRail": null,
47     "ingated": null,
48     "outgatedByTruck": null,
49     "loadedOnVessel": null,
50     "onVessel": 121
51   }
52 }
```

Product Principals

- **“System of systems”** ... fits within the existing Supply Chain ecosystem to enable interoperable supply chain visibility through direct API connections.
- **Partnerships** ... open to and actively exploring technology partnerships across the Maritime shipping / broader Supply Chain ecosystem.
- **Data Stewardship** ... Robust data security that adheres to the most strict global standards, including GDPR/CCPA.
- **Highly elastic for easy and rapid growth:**
 - Scalable to support expected Port growth
 - Headroom for big data traffic
- **Cloud based, Modular and service oriented:**
 - Upgrades with no customer disruption
 - Minimized setup and maintenance cost
 - User online services
 - Easy to access/switch over
- **Short release cadence:**
 - Rapid production deployment
 - Experiment oriented feedback and Analytics



Thank you