FEBRUARY 5 - 6 • LOS ANGELES, CA

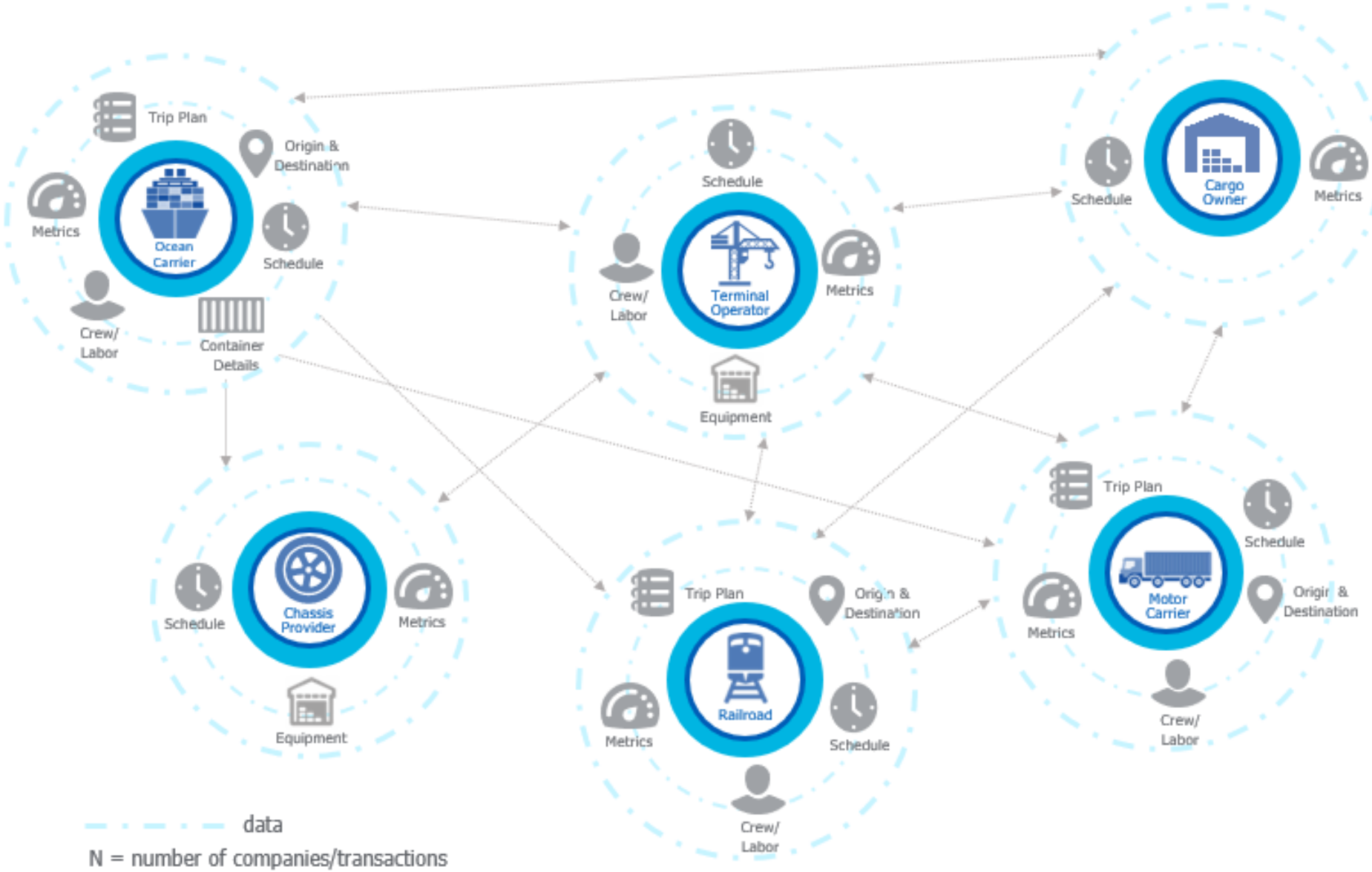
SMART PORTS
(INFORMATION TECHNOLOGY)

Title: Implementing an Interconnected Supply Chain

Presented By: James Shefelbine, Wabtec

AAPA

A new era of interdependence

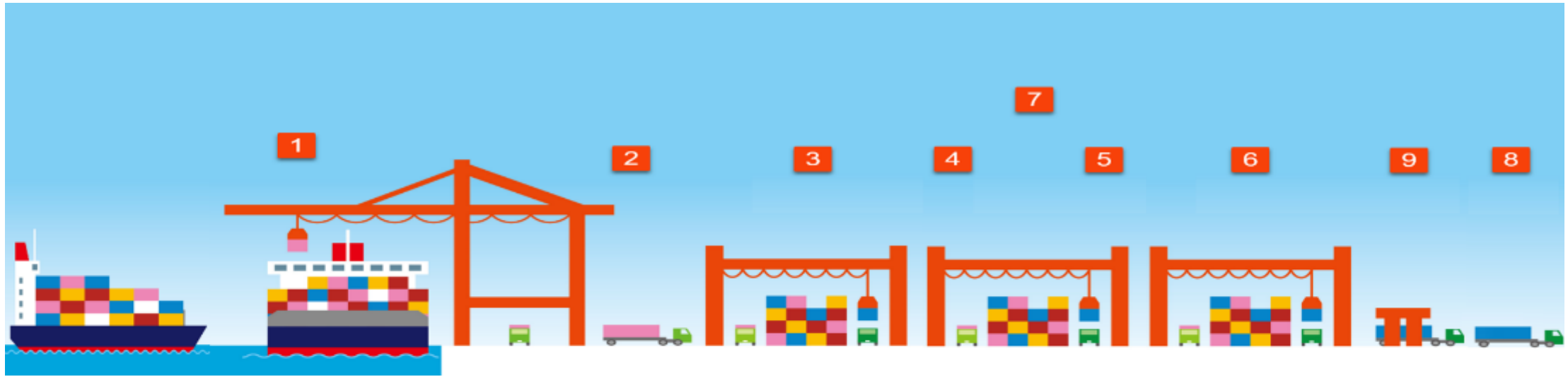


@ Scale: x N

Today, success requires:

- Eliminating silos
- Sharing information
- Predicting & optimizing

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

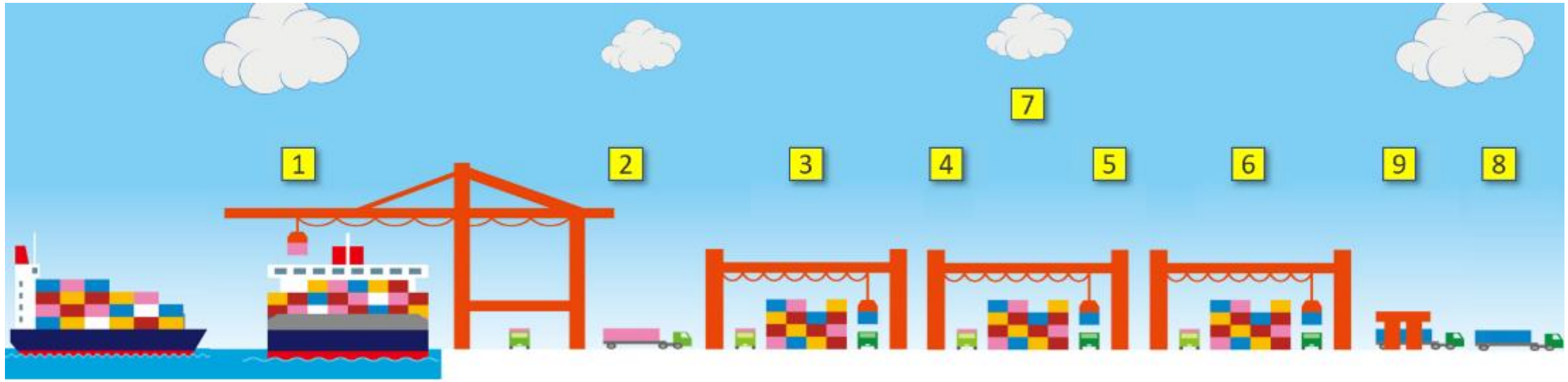
7 **Yard Capacity Management**
Capacity tracking is a dynamic and complex

8 **Container Delivery**
Information gaps and inconsistent lead times

9 **Gate Bottlenecks**
Lack of pre-advised information and uncertainty

Siloes, On Premise Technology

The future port ecosystem



Big Data

1 **Inbound Container Volumes**
Shared visibility and planning across ports

1 **Shipping Line Collaboration**
Standard and efficient exception handling for better operations

Machine Learning

2 **Horizontal Route Optimization**
Pattern recognition, adaptive algorithms

Artificial Intelligence

3 **Yard Inventory & Inspections**
Video recognition, automated yard processes

4 **Container Handling Equipment**
AI cranes with adaptive algorithms

5 **Equipment & Yard Operations**
Human like thinking/automation

6 **Yard Bottlenecks**
Real time simulations, evaluations

Internet of Things

7 **Capacity Management**
IOT devices to track cargo

8 **Container Delivery**
Connectivity across systems & stakeholders

9 **Gate Bottlenecks**
Smart cities connectivity across multiple ecosystems

Interconnected Cloud Systems, Reliable, Autonomous, Data Driven

The opportunity

Cargo Owner / Broker/FF /3PL

Visibility + Cargo Velocity

- ↑ visibility for better customer service
- Better planning for dray partners → ↑cargo velocity thru ports

Marine Terminal Operator

Cargo Dwell + Cargo Velocity + Productivity

- ↓ container dwell
- ↑ velocity through better planning
- Reduced and improved handling (touches, etc)

Ocean Carrier

Visibility + Cargo Velocity

- ↑ velocity of cargo thru port
- ↑ velocity of empty returns

Motor Carrier

Turn Times + Productive Turns

- Faster truck turn times
- ↑ number of productive turns per day

Railroad

Rail Volume + Visibility + Speed

- ↑ rail volume through ports
- ↑ visibility to export dates
- Improved equipment planning
- ↑ speed of rail volume thru ports

Chassis Provider

Accuracy + Chassis Utilization

- ↑ accuracy of chassis inventory and forecast → ↑ chassis utilization
- Improved planning → ↑ chassis utilization

Data overview: examples …

Data Acquisition

Vessel Data:
- Ocean Manifests
- Booking Files
- Baplie/Stowage
- Assigned Railroad
- Marine Terminal Destination
- Empty Return Quotas

MTO Data:
- Terminal Movement Data
- Ocean/Terminal Status
- Container Availability
- Crane Split and Work Instructions
- Train and railcar release ETDs

Railroad Data:
- Rail B/L
- Rail Waybills
- Rail Consist Files
- Rail Car Location Messages

EDIFACT Supported

Data Transformation

Data Services/Offerings
- Vessel ETAs
- Eastbound Container Volumes by destination
- Westbound empty container requests
- Containers by Railroads
- Train and railcar ETDs
- Container ETDS
- IPI Destinations
- Container loaded positions
- Realtime updates for railcar release
- Empty railcar availability at MTO
- Container availability at MTO
- Vessel stowage information

Different data … how to integrate?

EDI:
- Domestic
- International

API:
- Custom
- Standardized

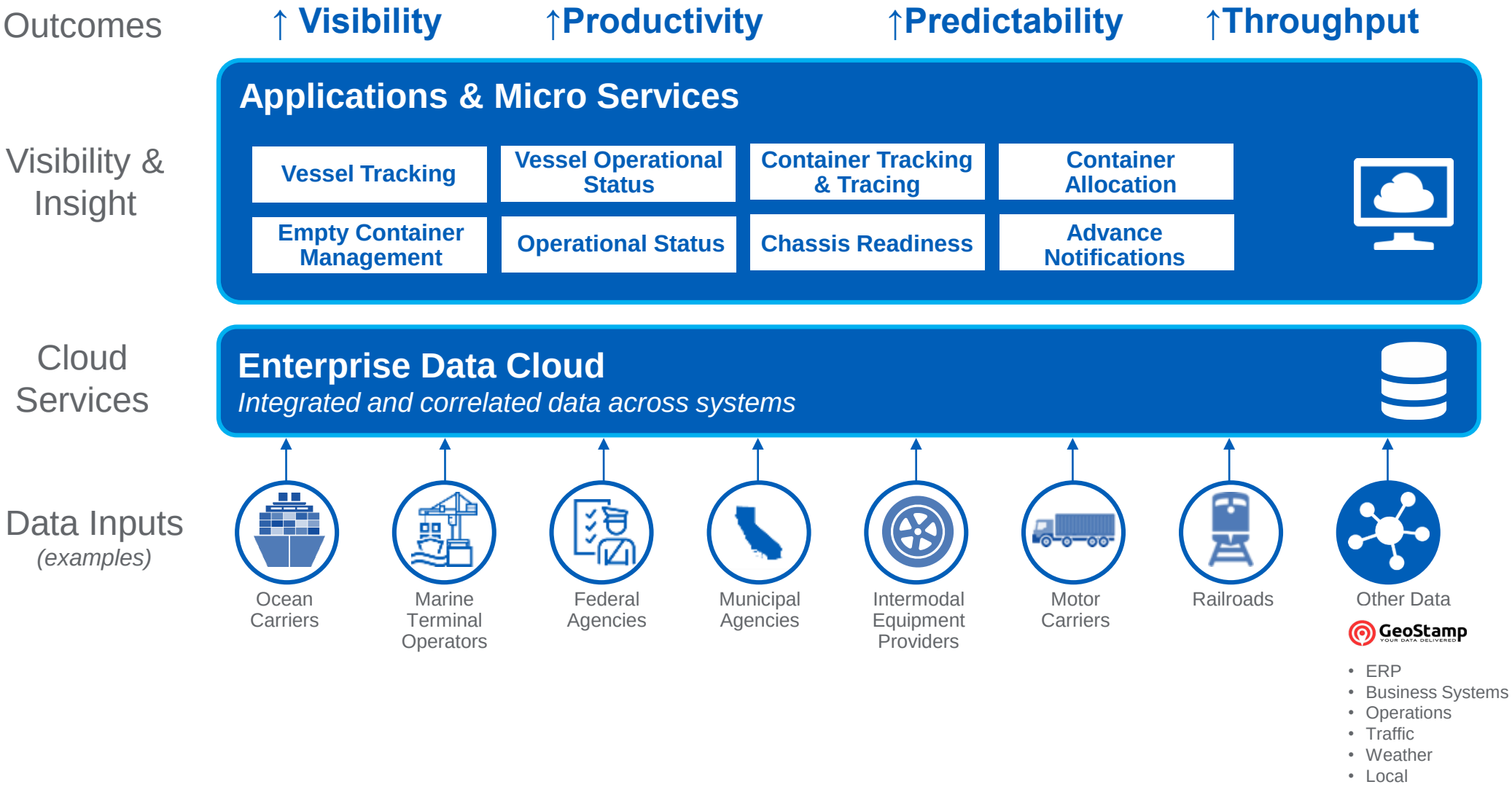
XLS

PDF

Blockchain (future)

EDI	API
• Computer-to-computer • Industry standards • Utilizes batch files	• Cloud-to-computer • Customized for each customer • Utilizes individual transactions

Architecture approach



Port Optimizer™

IMPROVES SUPPLY CHAIN PREDICTABILITY

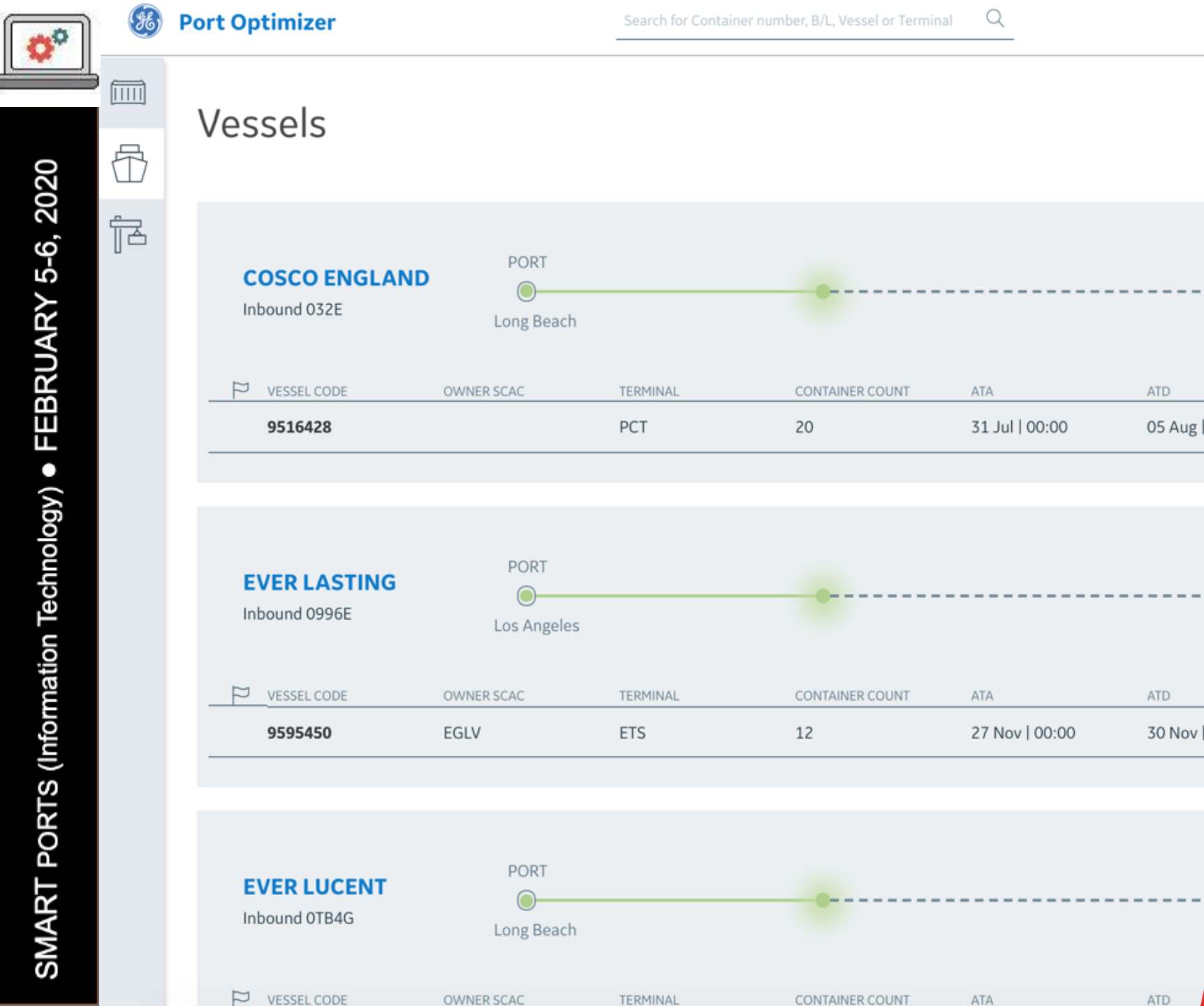
ENHANCES CONTAINER VISIBILITY + REPORTING

INCREASES PRODUCTIVITY

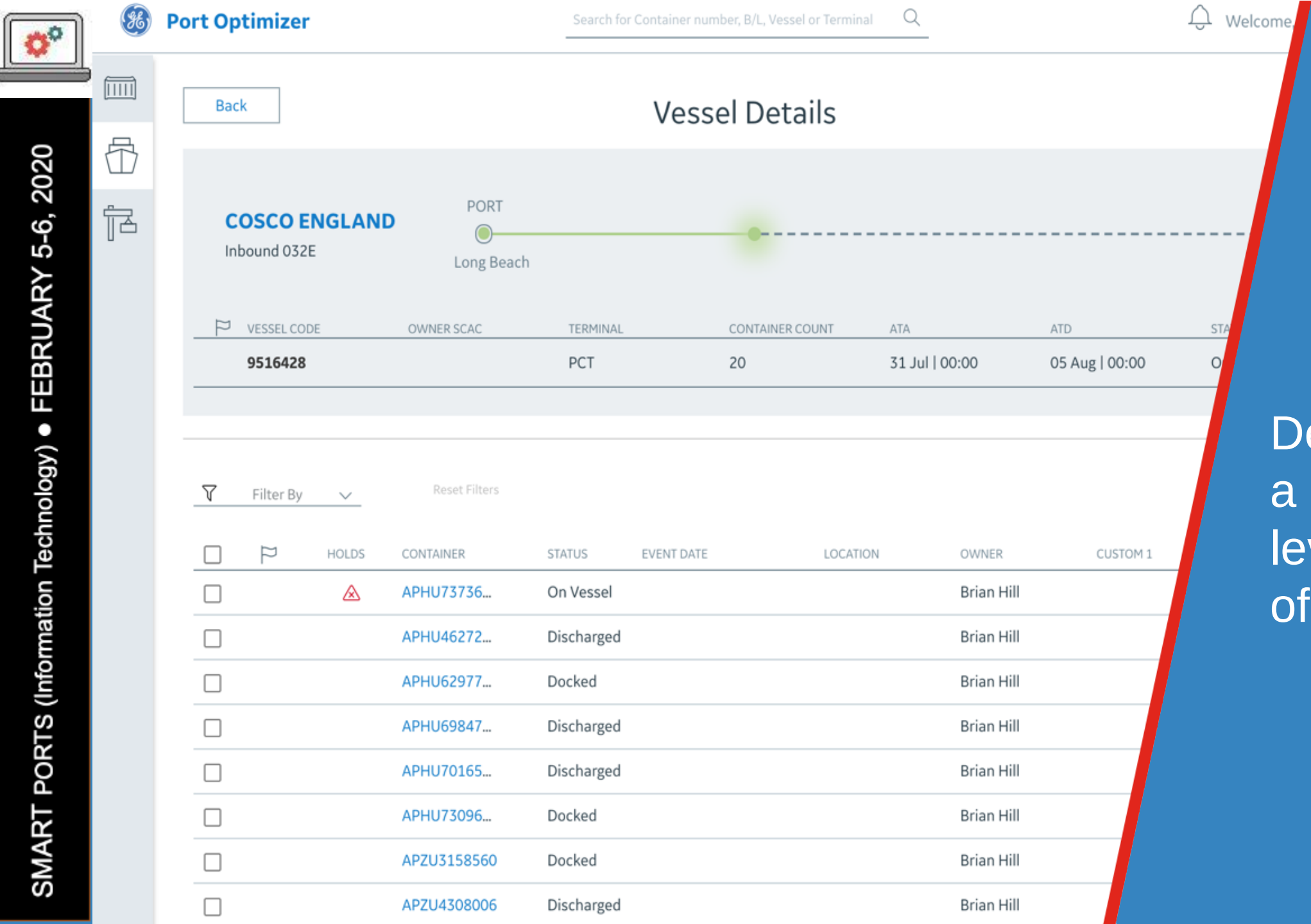
Enabling visibility and execution across an integrated supply chain

Increase visibility of inbound shipments

- Receive ETAs directly from the vessel traffic control center
- Dynamically updated



View ocean carrier status with up-to-date ETAs/transit information



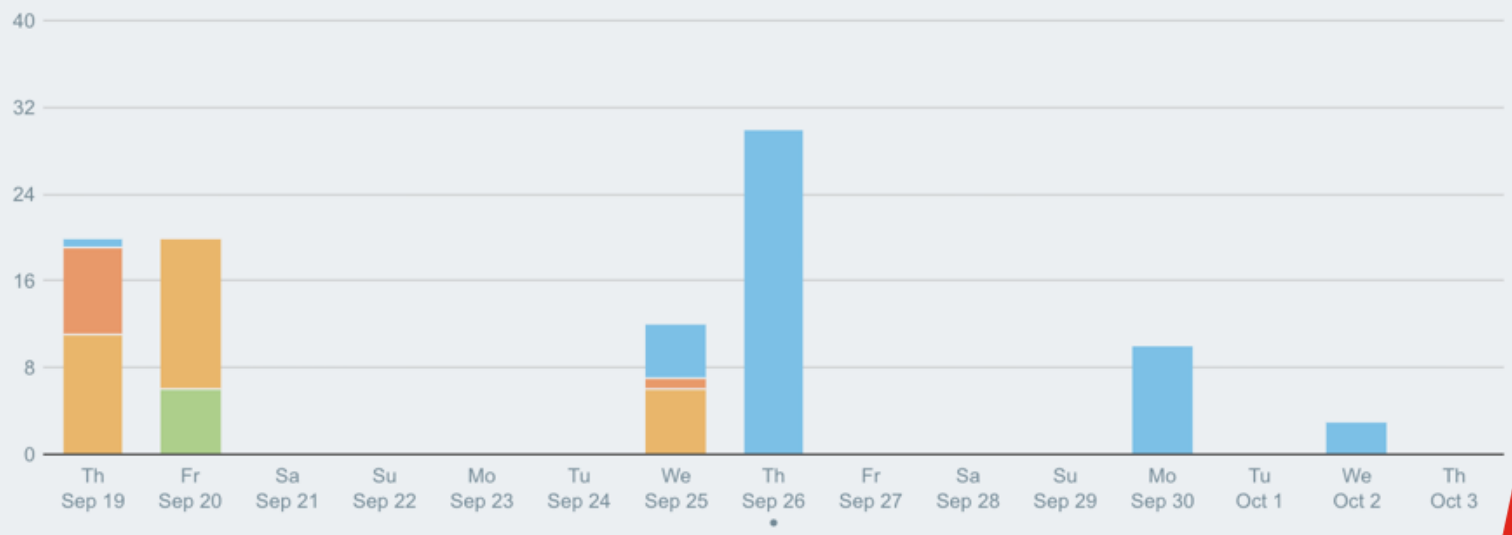
Detail views at a per vessel level for ease of tracking

Port Optimizer

Search for Container number, B/L, Vessel or Terminal

Welcome, Br

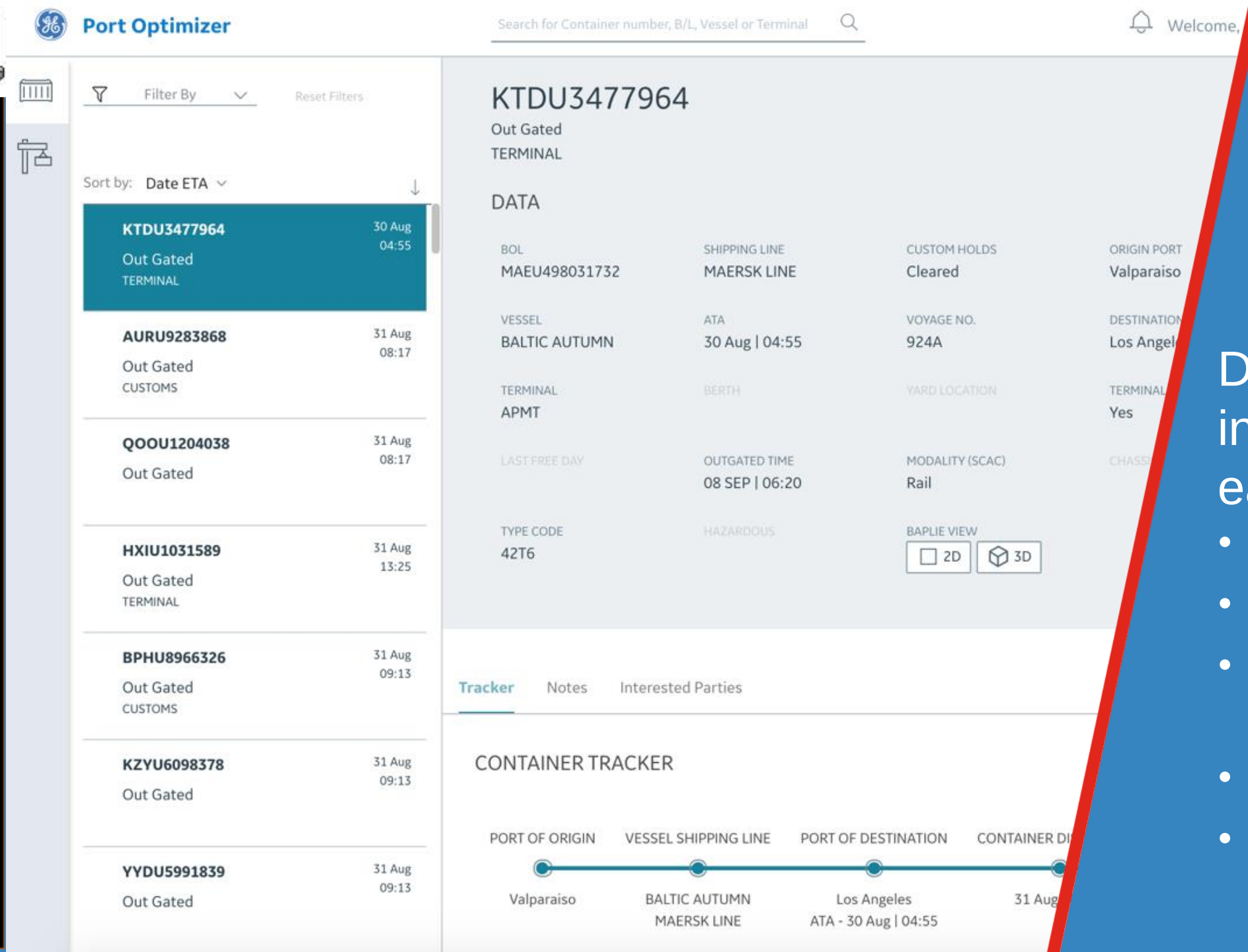
CONTAINER COUNT BY ETA



Filter By | Reset Filters | Download | Edit

CONTAINER	STATUS	HOLDS	BOL	VESSEL	TERMINAL	ETA / ATA	OWNER
APHU7...	On Vessel		NJZC362302	COSCO ENG...	WBCT	19 Sep	Brian Hill
APHU4...	Discharge		QDGS10304...	COSCO ENG...	WBCT	19 Sep | 07:00	Brian Hill
APHU6...	Docked		TJSE190467...	COSCO ENG...	WBCT	19 Sep | 07:00	Brian Hi
APHU6...	Discharge		TJLAXSH00...	COSCO ENG...	WBCT	19 Sep | 07:00	Brian H
APHU7...	Discharge		CNSE469403	COSCO ENG...	WBCT	19 Sep | 07:00	Brian

View cargo from a single view for all terminals and carriers



Delivers detailed information on each container:

- Customs status
- Holds
- Empty container availability
- Last free day
- Dwell time

DATA

TERMINAL WAIT TIME

AVERAGE TOTAL TIME TODAY

75 min

0%

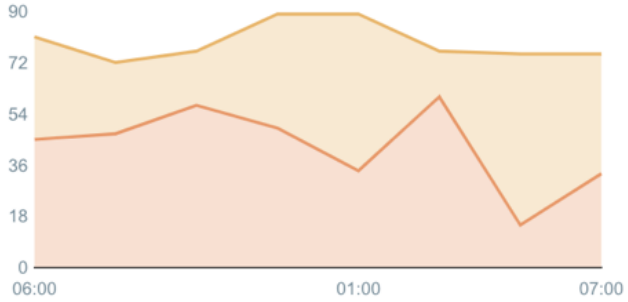
CURRENT STATUS

QUEUE TIME

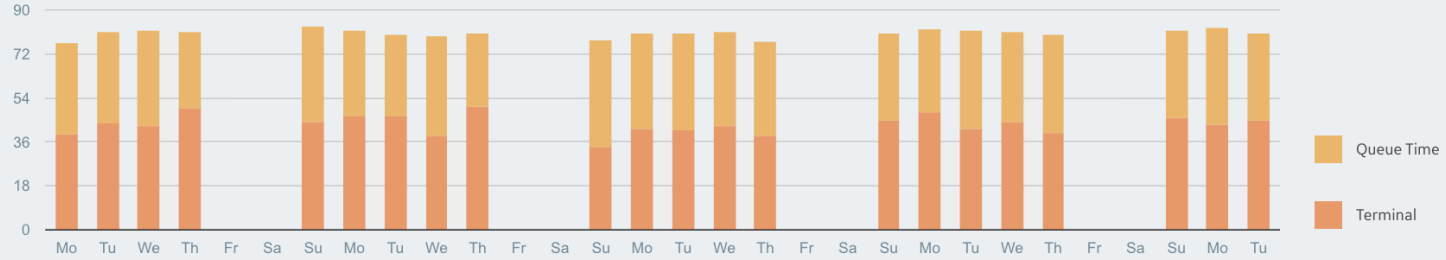
42 min

TERMINAL

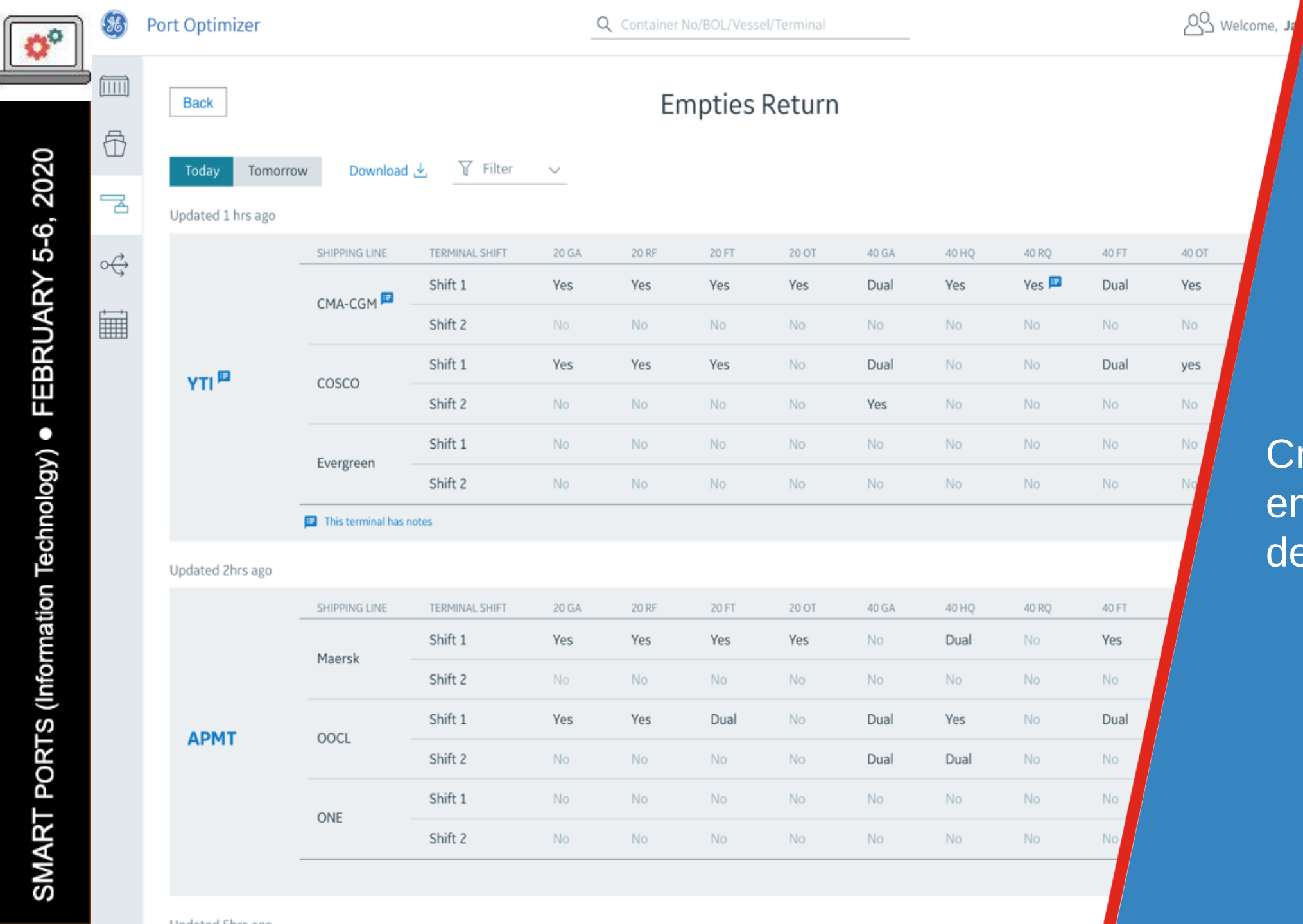
33 min



TOTAL TERMINAL WAIT TIME



View wait times/turn times at a terminal level powered by GeoStamp



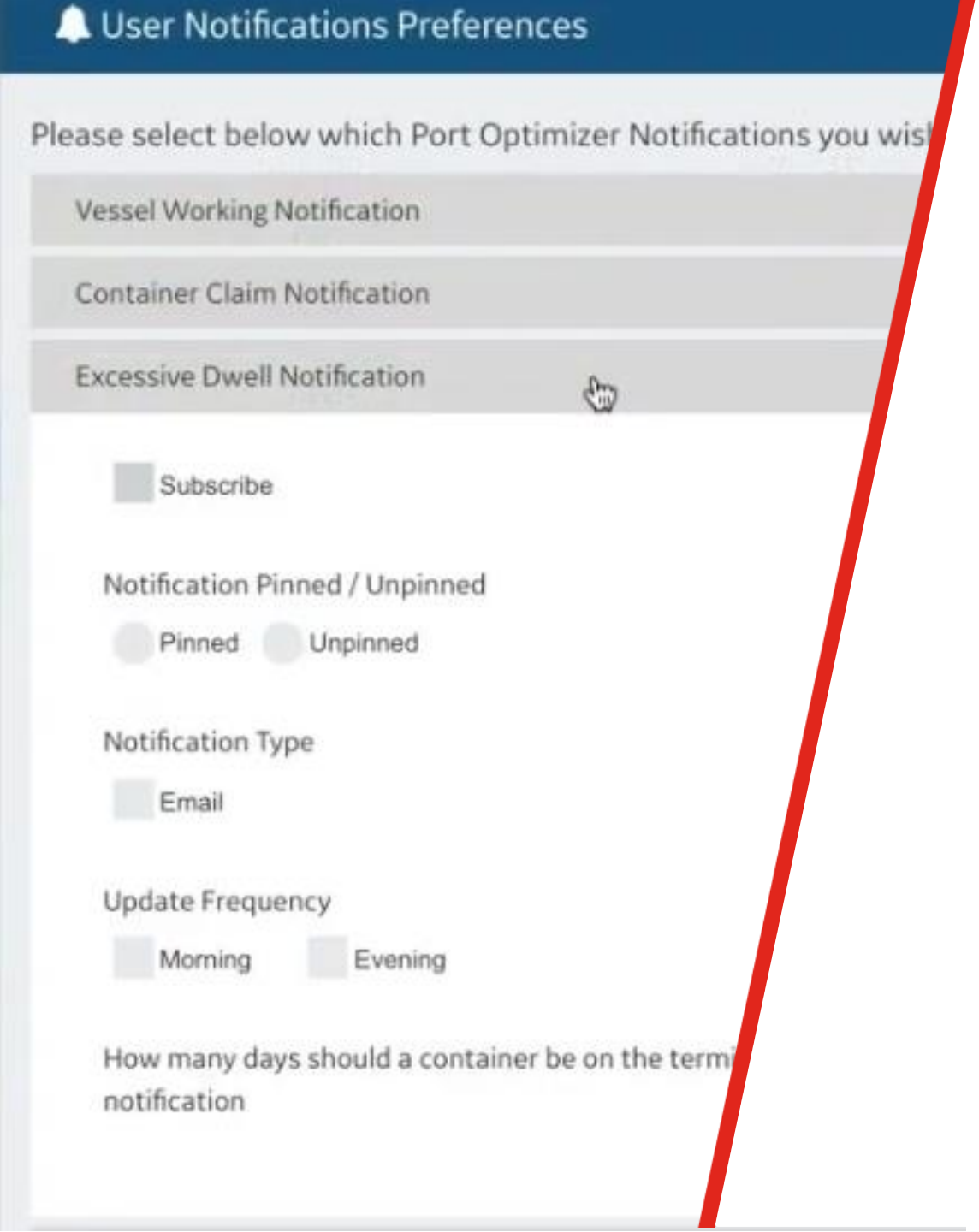
Cross terminal empty return details

Better forecast equipment and resource needs up to two weeks in advance

View milestones as a container moves through the terminal, from offloading to outgate.

Views customized uniquely for each user persona:

- Beneficial Cargo Owner
- Port
- Marine Terminal Operator
- Ocean Carrier
- Motor Carrier
- Railroad
- Intermodal Equipment Provider

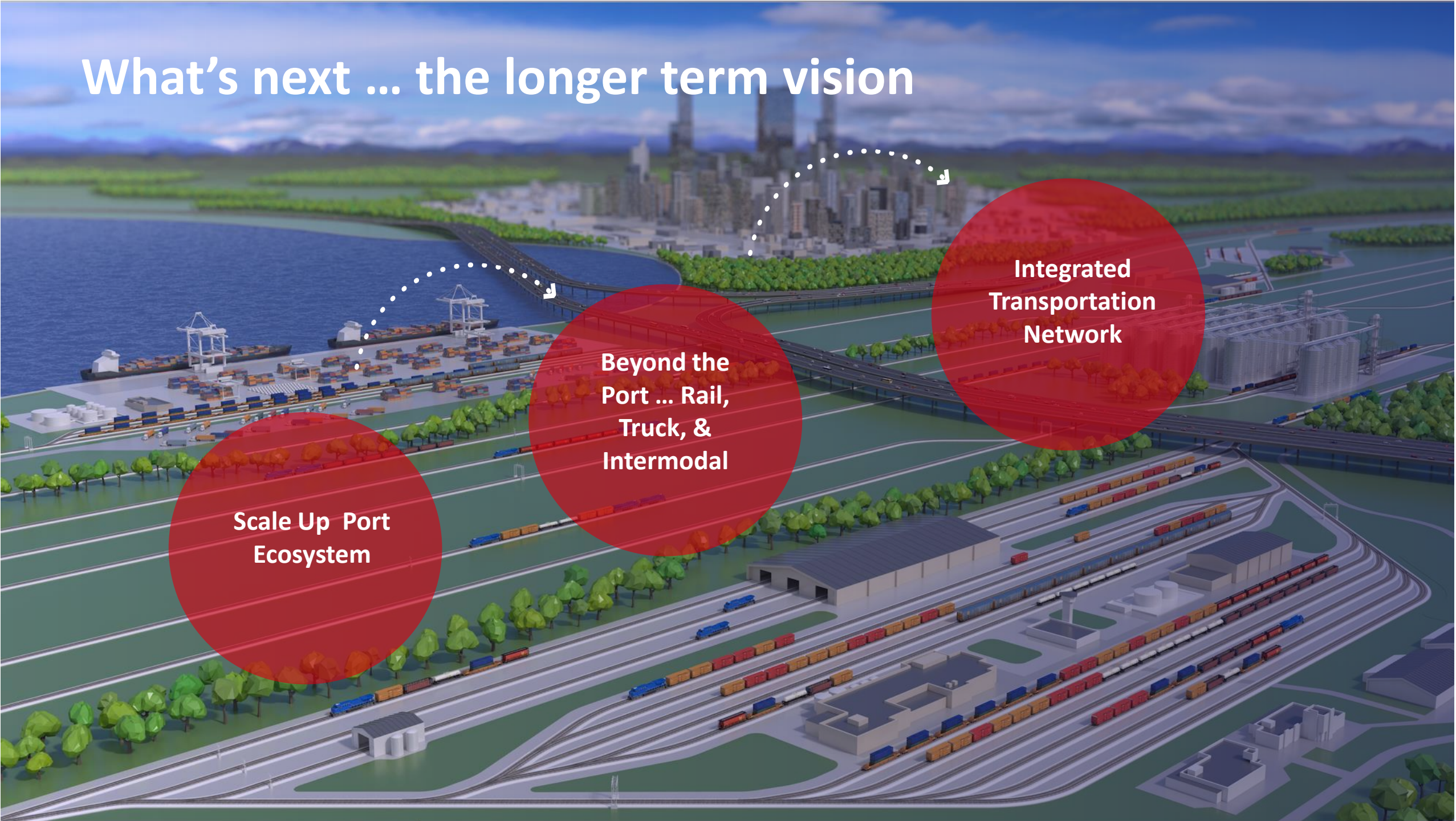


Set up notifications to receive information that is important to you – automatically.

For example:

- Be alerted when containers exceed targeted dwell times
- Proactively monitor priority containers

What's next … the longer term vision



3 Lessons Learned …

1

Get started! Refine the scope: *Pilot*

- Create a digital solution that works (think: minimum viable product)
- Demonstrate value quickly

3 Lessons Learned …

2

Create a Digital Thread:

- Vertical: Digitize within key processes
- Horizontal: Digitize across key processes

3 Lessons Learned …

3

Strong Leadership: *Visionary thinking*

- Someone who can take the vision of digital transformation and sell it across the organization as well as with external stakeholders.

Wabtec
CORPORATION