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AVLINO

Who is Avlino?

We deliver adaptive **AI solutions** that enhance operational systems and decision-making, to increase **Container Terminal productivity and efficiency**

Our **AICON solution Suite** is unique to the industry as it provides directly embedded intelligent answers that help client realize operational KPI's

We **combine domain knowledge and analytical thinking with innovative technology** that continually self-adjusts to the most demanding and dynamic conditions

AVLINO

Headquarters
New Jersey, USA

Design Centers
Bengaluru, India
Porto, Portugal

Expertise
Artificial Intelligence
Machine Learning
Operations Research
Big Data Engeneering
Cloud Infrastructure

Revenue Model
Sotfware-as-a-Service

Challenges Faced by Container Terminal Operators

Unpredictable Customer Demand

Hardcoded Software Logic & Ops Systems

Conflicting Business Goals

Underutilized or overutilized equipment & resources

Systems unable to respond to dynamic conditions
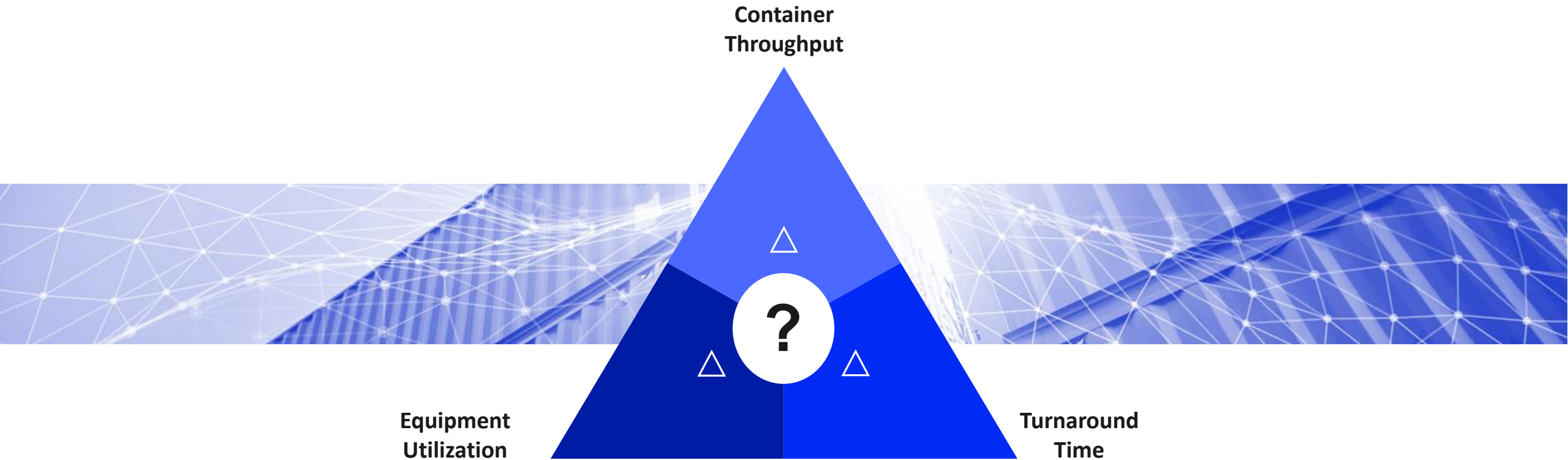
Sub-optimal decision-making

The conflicting business goals

- Terminals struggle to balance Volume (Throughput), Velocity (Turnaround time), and Value (Utilization/Profitability)

Quantifying the Challenges

High Rehandle Rate
$10-25
Avoidable expense per container due to higher number of touches

Penalties
Levied by Vessel operators when container terminals are unable to meet the vessel ETD

Lost Revenue
Unable to accommodate adhoc vessel calls

Based on this conclude the approximate loss in revenue and the increased operational expense per 1M throughput container terminal.

≈ $5 - 8M
Annual Revenue Lost

≈ $6 – 10M
Annual Excess Cost Incurred

Can Technology Solve this Paradox?

Technology Change Drivers Enabling Next Gen Smart Solutions

DATA ENGINEERING

➤ Sources
➤ Granularity
➤ Immediacy

COMPUTE INFRASTRUCTURE

➤ Faster
➤ Cheaper

MACHINE LEARNING & OPS RESEARCH

➤ Improved algorithms

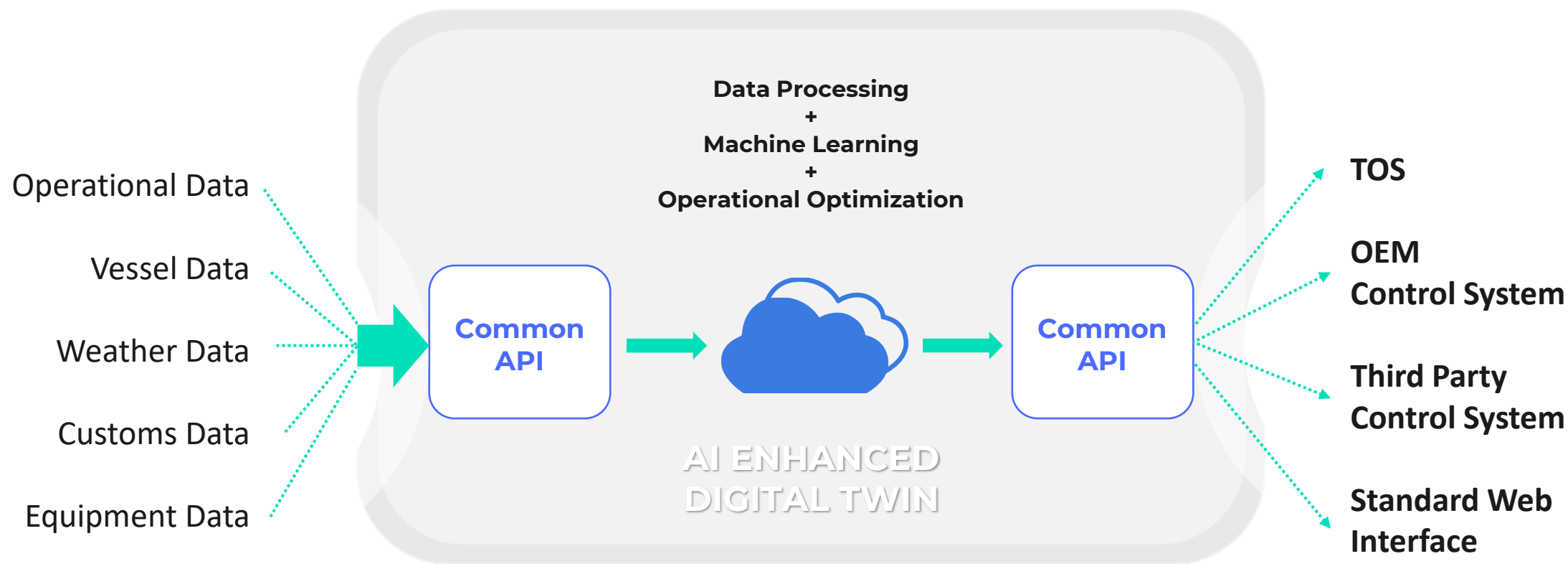**CLOUD INFRASTRUCTURE**

➤ Zero CapEx.
➤ Scale as you grow.

Leveraging these change drivers, Avlino developed AICON – an AI Solution Suite to solve the Container Terminal challenges
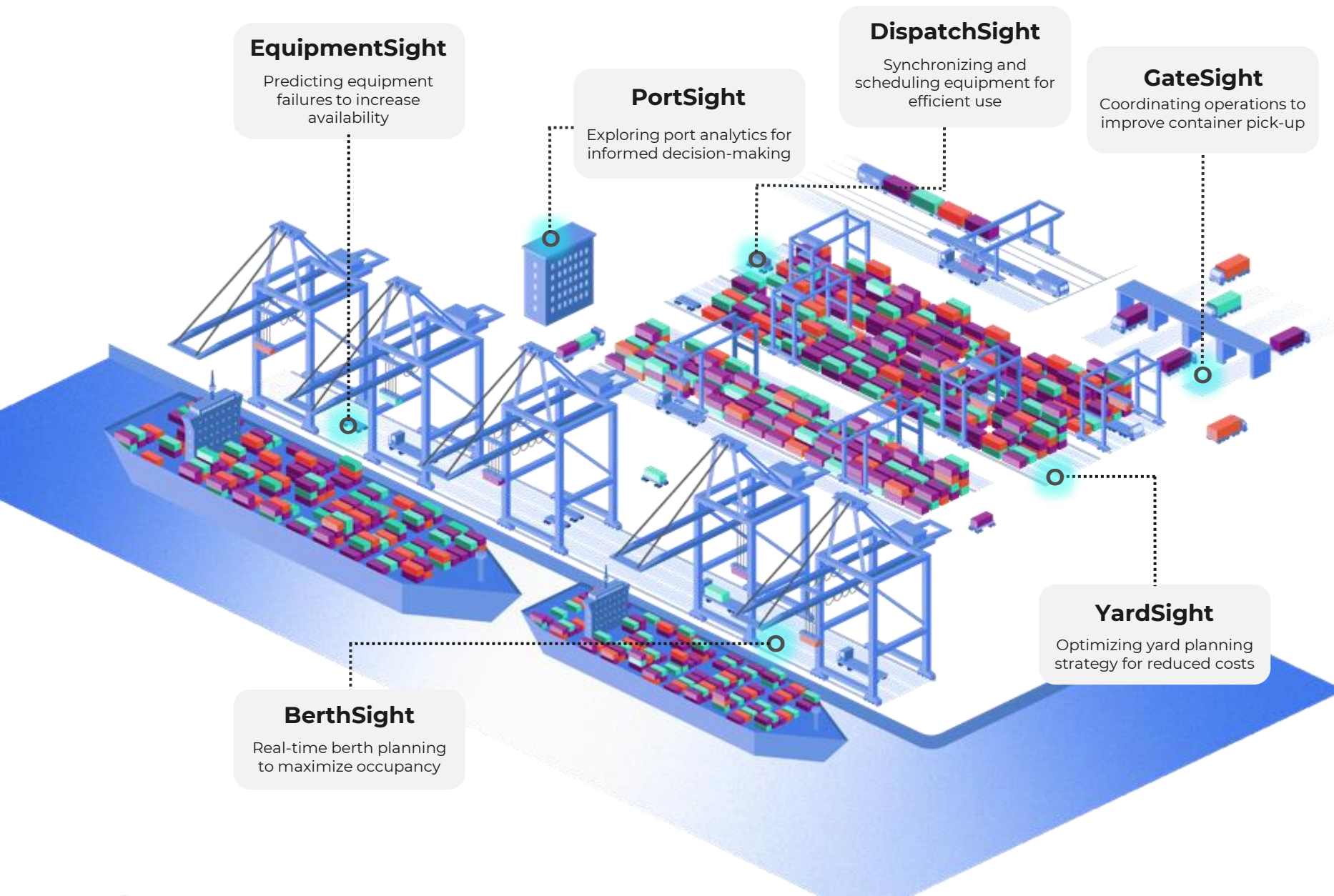
AICON SOLUTION SUITE
Comprehensive View

AVLINO

AICON Solution Blueprint

EquipmentSight
Predicting equipment failures to increase availability

PortSight
Exploring port analytics for informed decision-making

DispatchSight
Synchronizing and scheduling equipment for efficient use

GateSight
Coordinating operations to improve container pick-up

YardSight
Optimizing yard planning strategy for reduced costs

BerthSight
Real-time berth planning to maximize occupancy

- AI-enabled Modules
- Combines Machine Learning, Operations Research and Big Data Engineering
- Integrates with TOS and sub-systems to generate visibility
- Adapts in real-time to the changing conditions
- Delivers value to the C-Level, while helping analysts, managers and planners across the terminal
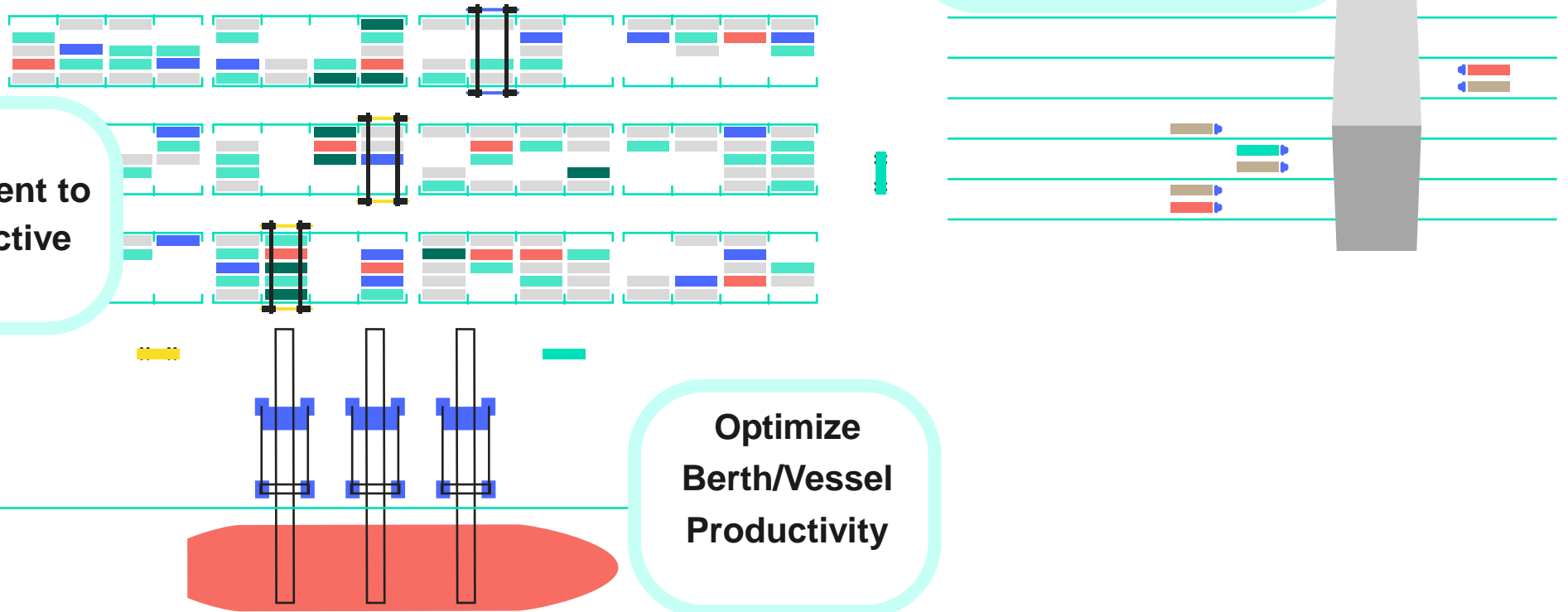
AICON Value Addition to Container Terminal Operations

Improving resource allocation to minimize equipment utilization and travel distance

Reduce congestion and truck turn around time with AI-based operational strategies

Optimize container placement to reduce unproductive moves

Optimize Berth/Vessel Productivity

AICON - Beyond Software

AI systems are outperforming current systems:

- Dynamically adapting to real time operational changes

- Delivering ML-based self-learning

- Reconfiguring parameters automatically

- Replacing the penalty approach with an objective functional realization approach

THANK YOU

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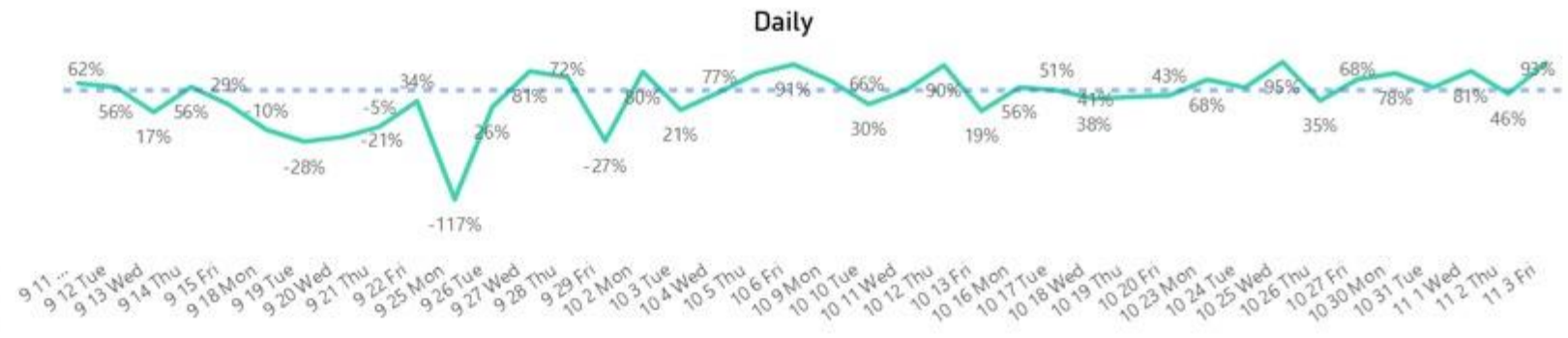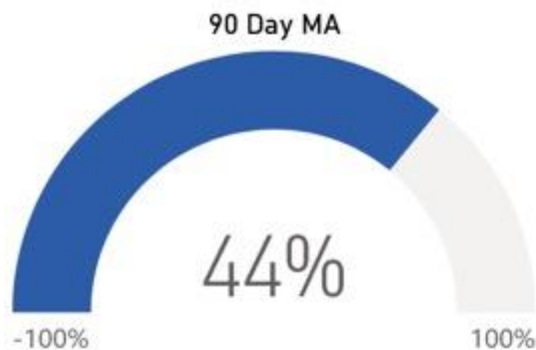
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Case Study #1

Semi- Automated ASC Terminal

Rehandle Reduction Rate by ~ 50%

Results from Jan 10, 2023.

Details: Rehandles saved

Date	Day of Week	Avlino Stack	Stack	Reservation	
All	All	True	All	All	1/10/2023

S/M (Selected) (a) — 8.7% — 0.0% to 100.0%
215660 — Deliveries (All)

S/M (Non Selected) (b) — 15.9% — 0.0% to 100.0%
34310 — Expected Delivery Shuffles w/o Avlino

S/M (Diff = b-a) (c) — 7.2% — -100.0% to 100.0%
18843 — Expected Delivery Shuffles w/ Avlino

Gain (c / b) — 45% — -100% to 100%
15466 — Expected Delivery Shuffles Saved

Weekly
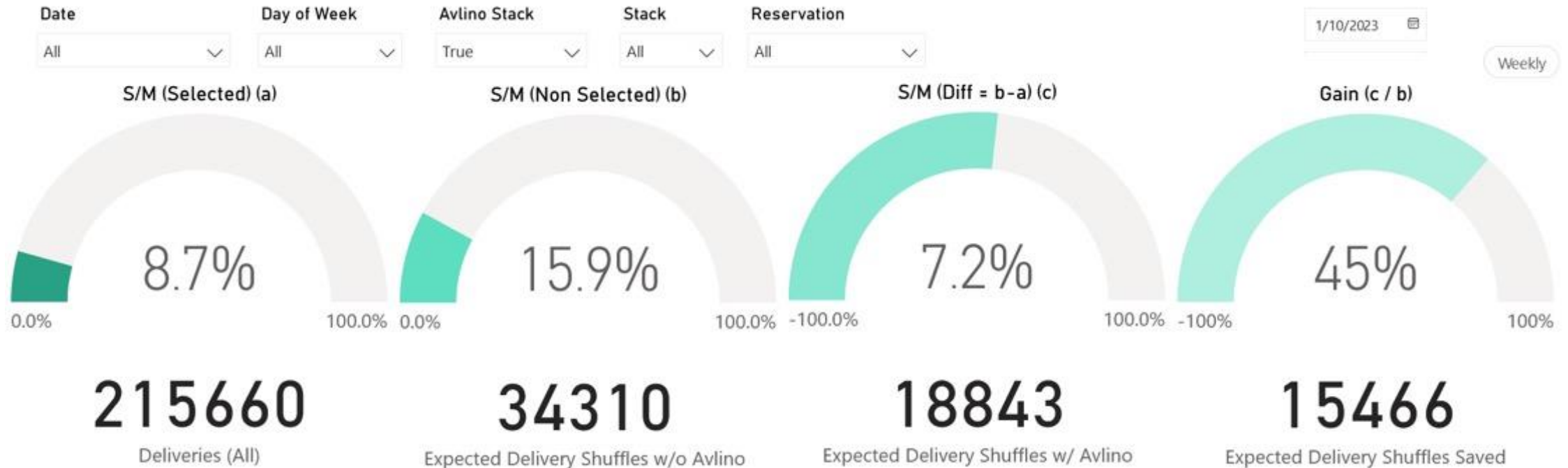
YardSight has consistently reduced rehandles by more than 40%

We estimate that YardSight saves over 15K rehandles, on a yard with 215K deliveries

Results from Jan 10, 2023. Results based on trucks that had an appointment and exit time predictions.
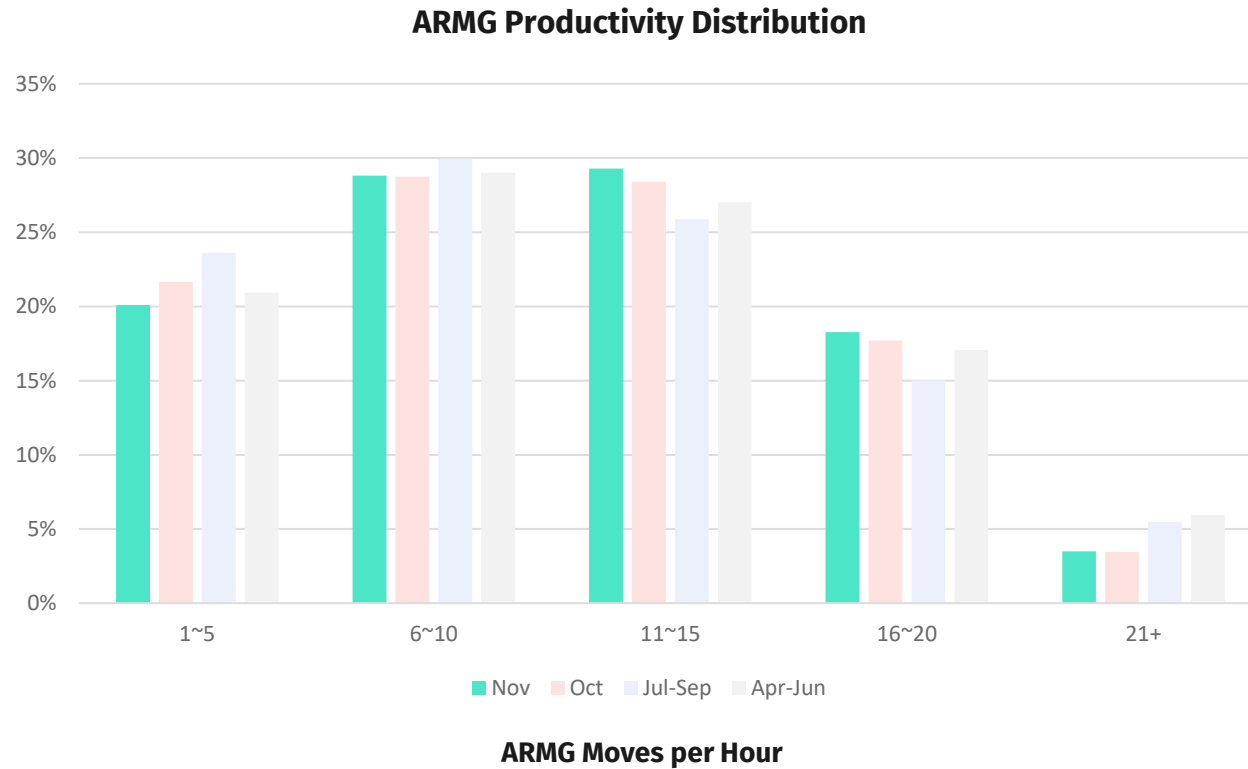
Case Study #2

Semi-Automated ARMG Terminal

Main KPI's

Unproductive Moves %
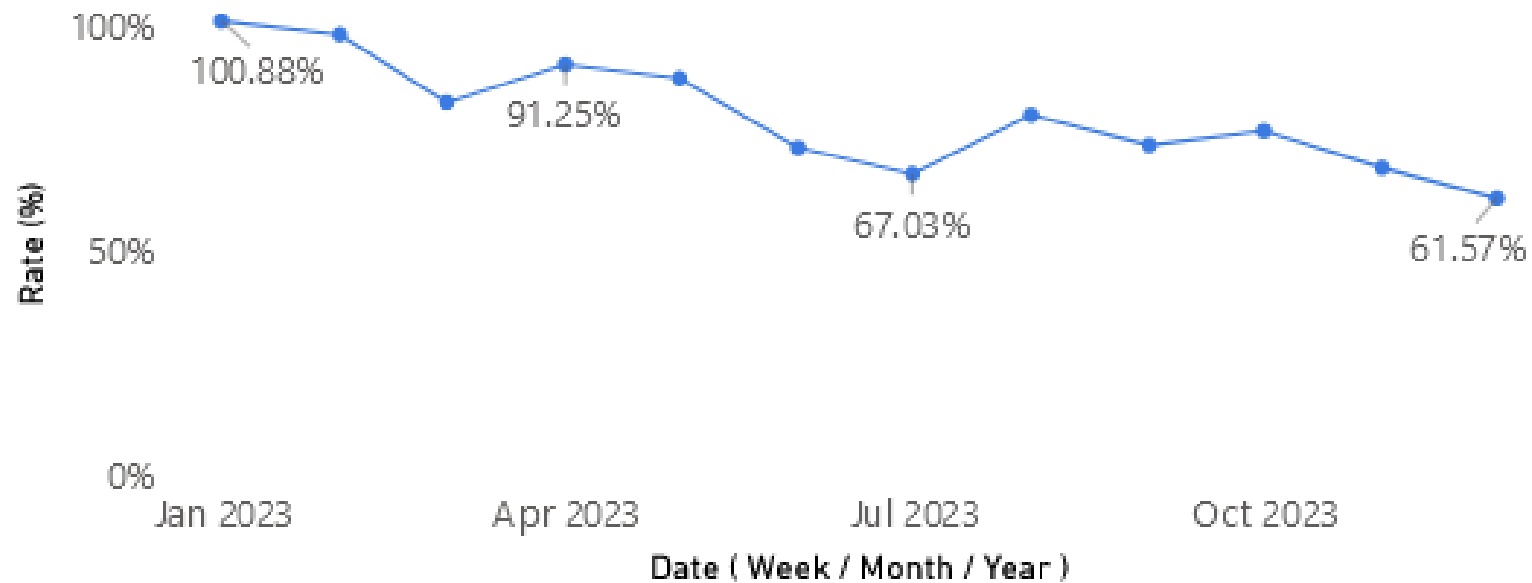
During 2023 AICON Yard reduced unproductive moves by 30-40%

Improved Workload Distribution

ARMG Productivity Distribution

35%
30%
25%
20%
15%
10%
5%
0%

1~5   6~10   11~15   16~20   21+

■ Nov   ■ Oct   ■ Jul-Sep   ■ Apr-Jun

ARMG Moves per Hour

ARMG Symmetrical Workload Distribution (7 - 17 moves per hour) Improved from 50% to 57%

- Current TOS does not have a feature to enable dynamic equalization for symmetrical workload distribution.

- YardSight improved ARMG productivity through better load distribution.

- With the deployment of YardSight's dynamic CHE allocation, the ARMGs symmetrical workload distributed is expected to further improve to 60-65%.