Who we are

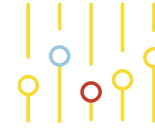We deliver adaptive AI solutions that enhance operational systems and decision-making, to increase Container Terminal productivity and efficiency

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

Our AICON Solution Suite is unique to the industry as it provides directly embedded intelligent answers that help you realize your KPI's

AVLINO

Headquarters
New Jersey, USA

Design Centers
Bengaluru, India | Porto, Portugal

Expertise
Artificial Intelligence, Machine Learning, Operations Research and Big Data Engineering

Model
Software-as-a-Service

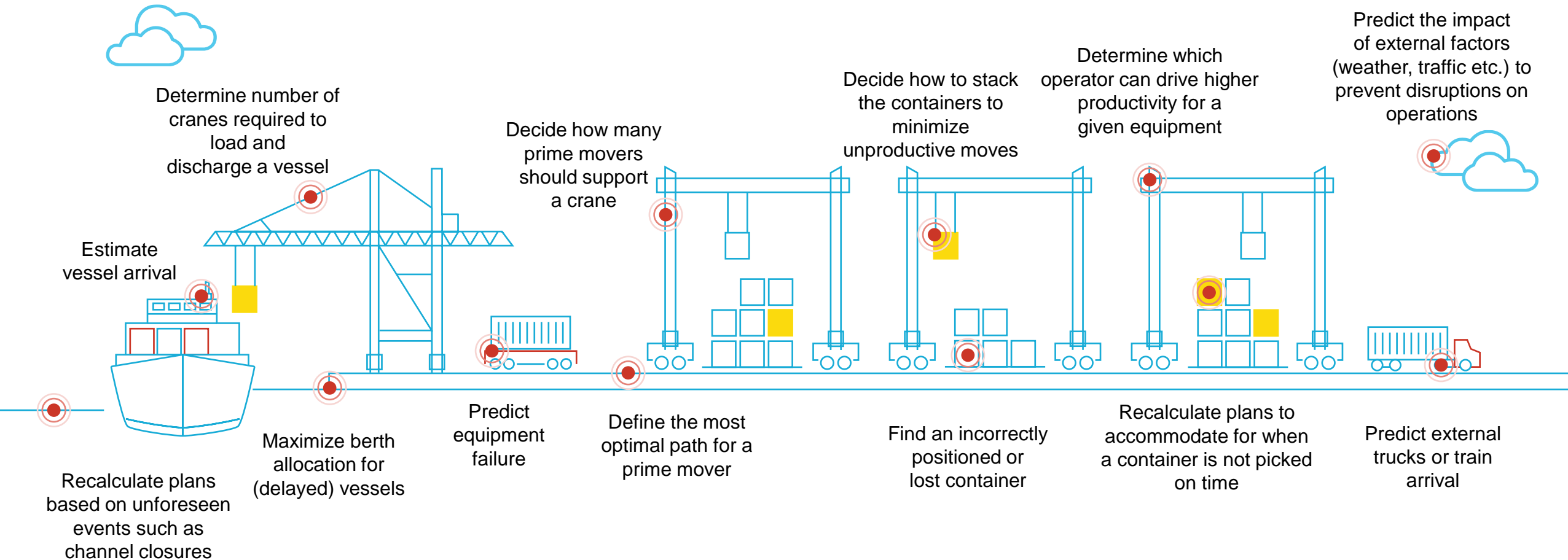# What Industry problem are we addressing?

Current systems deliver sub-optimal planning

2+ unnecessary moves per container

UP TO $30 in handling costs caused by inefficiencies

Where can AI make a difference

Determine number of cranes required to load and discharge a vessel

Decide how many prime movers should support a crane

Decide how to stack the containers to minimize unproductive moves

Determine which operator can drive higher productivity for a given equipment

Predict the impact of external factors (weather, traffic etc.) to prevent disruptions on operations

Estimate vessel arrival

Recalculate plans based on unforeseen events such as channel closures

Maximize berth allocation for (delayed) vessels

Predict equipment failure

Define the most optimal path for a prime mover

Find an incorrectly positioned or lost container

Recalculate plans to accommodate for when a container is not picked on time

Predict external trucks or train arrival

AICON

Easy-to-use

Intelligent

Adaptive

Experience-Driven

Solution Suite for Container Terminals

- AICON is an AI Solution Suite that works as a **TOS Plug & Play accelerator**, containing a set of cross-functional modules that operate on a stand-alone basis or stacked as a complete solution

- Its AI modules, assimilate data from TOS, Management and Operational subsystems & external sources to **generate visibility** across the Terminal

- Compared to rule-driven TOS, AICON's machine and deep learning algorithms quickly and continuously **adapt to shifting business goals**
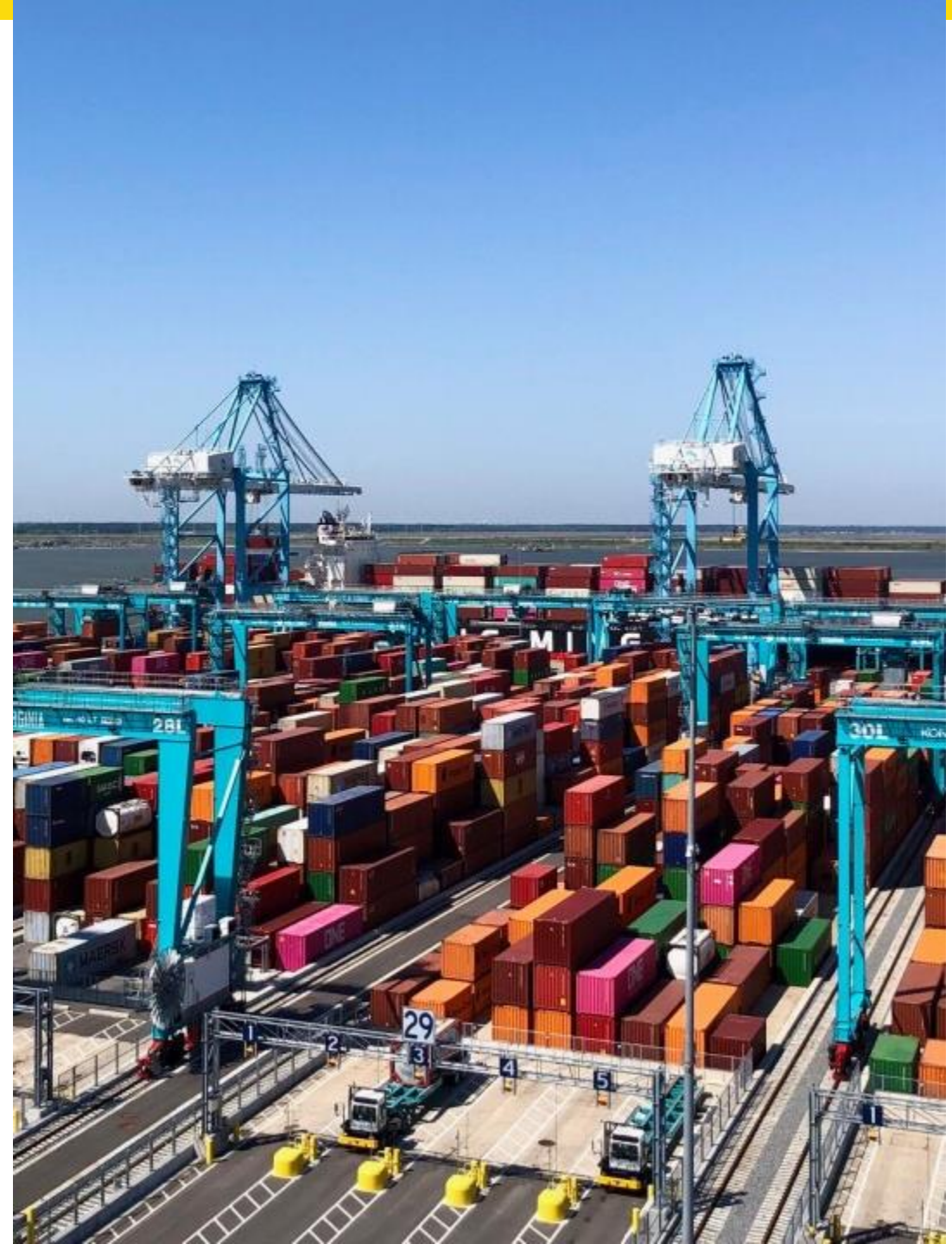
01

Case Study

Customer Pain Point

- Limited Gate Delivery Throughput especially during peak hours

Business Objective

- Maintain or Increase the yard throughput with increased terminal occupancy (greater than 85%)
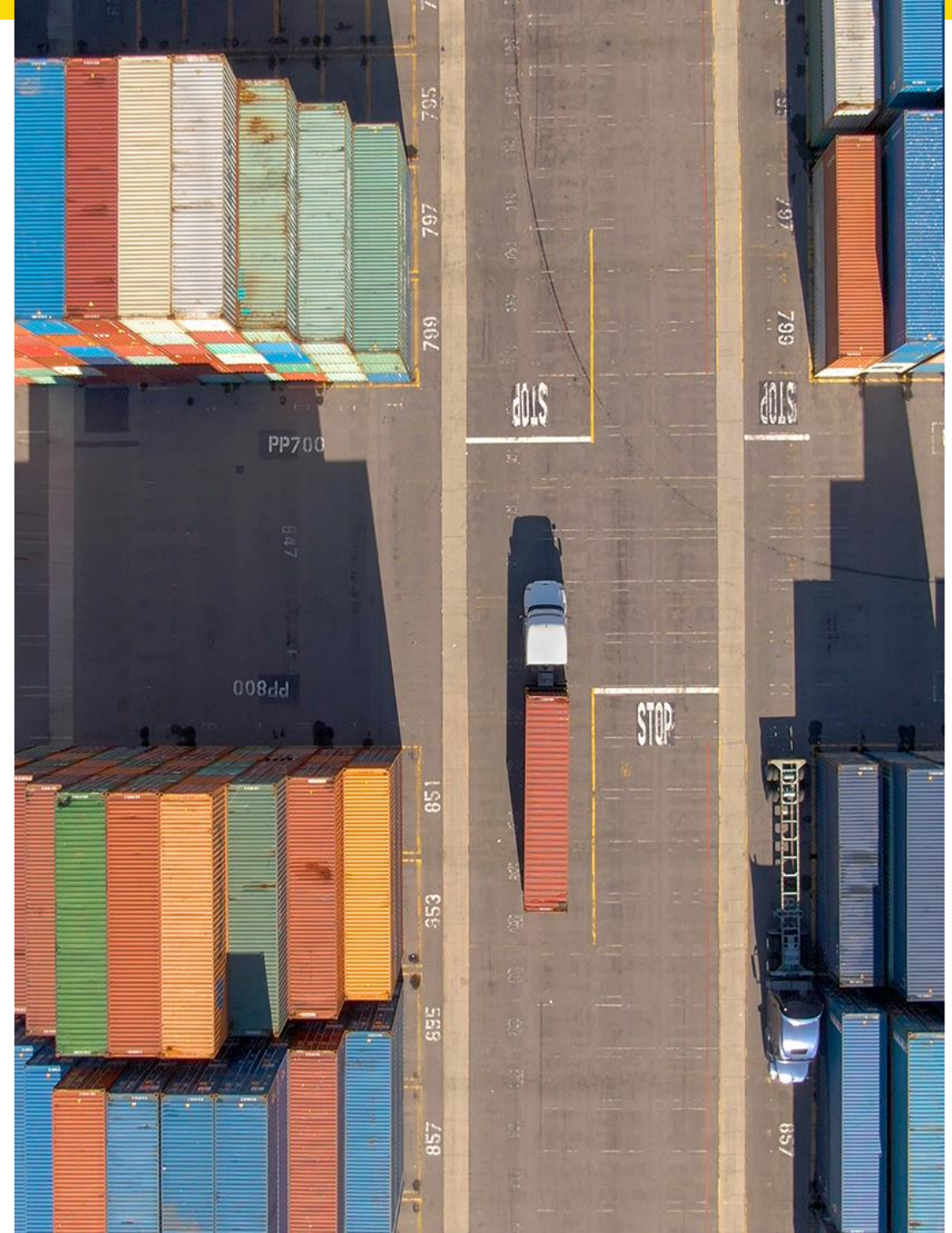
YardSight – Housekeeping

Solution

- Use YardSight to optimally and automatically housekeep containers for incoming trucks to improve the efficiency of each truck transaction, starting with deliveries (Phase 1)

- Expand YardSight's capabilities to include Load, Discharges, and Deliveries (Phase 2)
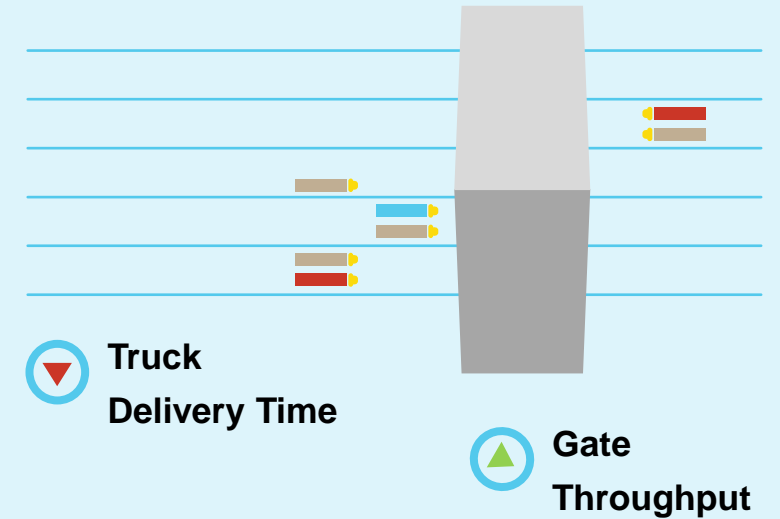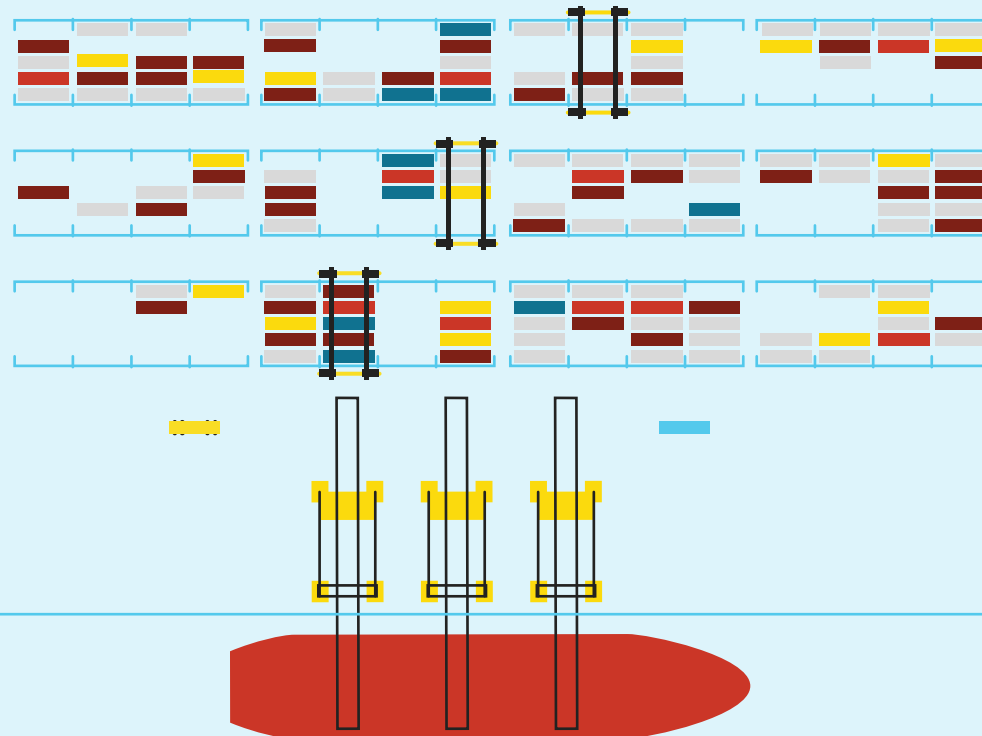
Success Metrics

- Reduce rehandles per delivery

- Reduce truck turnaround time per delivery

AI-Driven Housekeeping

Optimize housekeeping: reduce re-handles, and minimize travel distance

Truck Delivery Time

Gate Throughput

15% Reduction in the re-handle rate after AI-based optimization of housekeeping

Results

YardSight has improved overall delivery efficiency by 19.4% in the last ten weeks

Results for:

- The previous 2 months; Including weekly trend

- About 20% of the yard controlled by YardSight

- For Trucks that had an appointment

Note:
Selected = Avlino Stacks
Non-Selected = Non – Avlino Stacks

Week and Day ⌄	Day of Week ⌄	Avlino Stack ⌄	Stack ⌄	Reservation Period ⌄	All Data
All ⌄	All ⌄	True ⌄	All ⌄	Previous Day ⌄	

8/1/2022 10/5/2022

S/M Gain (c / b)

19.4%

-80.0%   80.0%

Move Count (Selected)

(h) Deliver Shuffle	(g) Deliveries
728	3772

Move Count (Non-Selected)

Deliver Shuffle	Deliveries
4717	19687

Shuffle per Move = S/M = h/g | Selected vs Non-Selected Stacks

(a) S/M (Stacks selected)	(b) S/M (Stacks not selected)	(c) S/M Diff (b - a)	S/M Gain (c / b)
19.3%	24.0%	4.7%	19.4%

All Selected Stacks by Reservation Period

S/M all periods	S/M previous day	S/M imminent	S/M same day	S/M no reservation
31.3%	19.3%	41.4%	23.6%	29.5%

All Non Selected Stacks by Reservation Period

S/M all periods	S/M previous day	S/M imminent	S/M same day	S/M no reservation
33.7%	24.0%	41.5%	29.7%	35.9%

Daily Trend | Weekly Trend

Shuffle per Move | Selected vs Non-Selected Stacks (a & b)

● S/M (Avlino Stack or Selected Stacks) ● S/M (Non Selected Stacks)

Week of Year	S/M (Avlino/Selected)	S/M (Non Selected)
32	20.6%	26.7%
33	16.0%	23.5%
34	20.7%	24.8%
35	23.1%	25.8%
36	32.3%	31.3%
37	10.4%	17.3%
38	5.4%	18.2%
39	14.8%	17.0%
40	24.6%	21.0%
41	18.8%	35.1%

YardSight

Smart Planning for Efficient Cost Reduction

Automated yard planning module

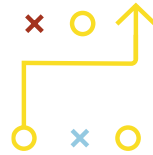**Optimal Housekeeping**

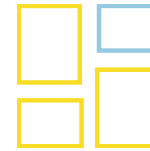**Smart Equipment Utilization**

Next generation Stacking Strategy
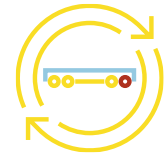
AI-generated work queues

Ideal Container Location

Minimize future unproductive moves

Block Optimizing

Minimize CHE utilization and travel time

Congestion Solving

Reduce Truck turn around time and meet related SLAs

02

Case Study

Import Operations

Client

- 3.3M TEU Manual RTG Operation

- High Yard Utilization

Challenges

- Uneven RTG Workload distribution

- High Rehandle Count

- Lower Productive Moves %

Solution

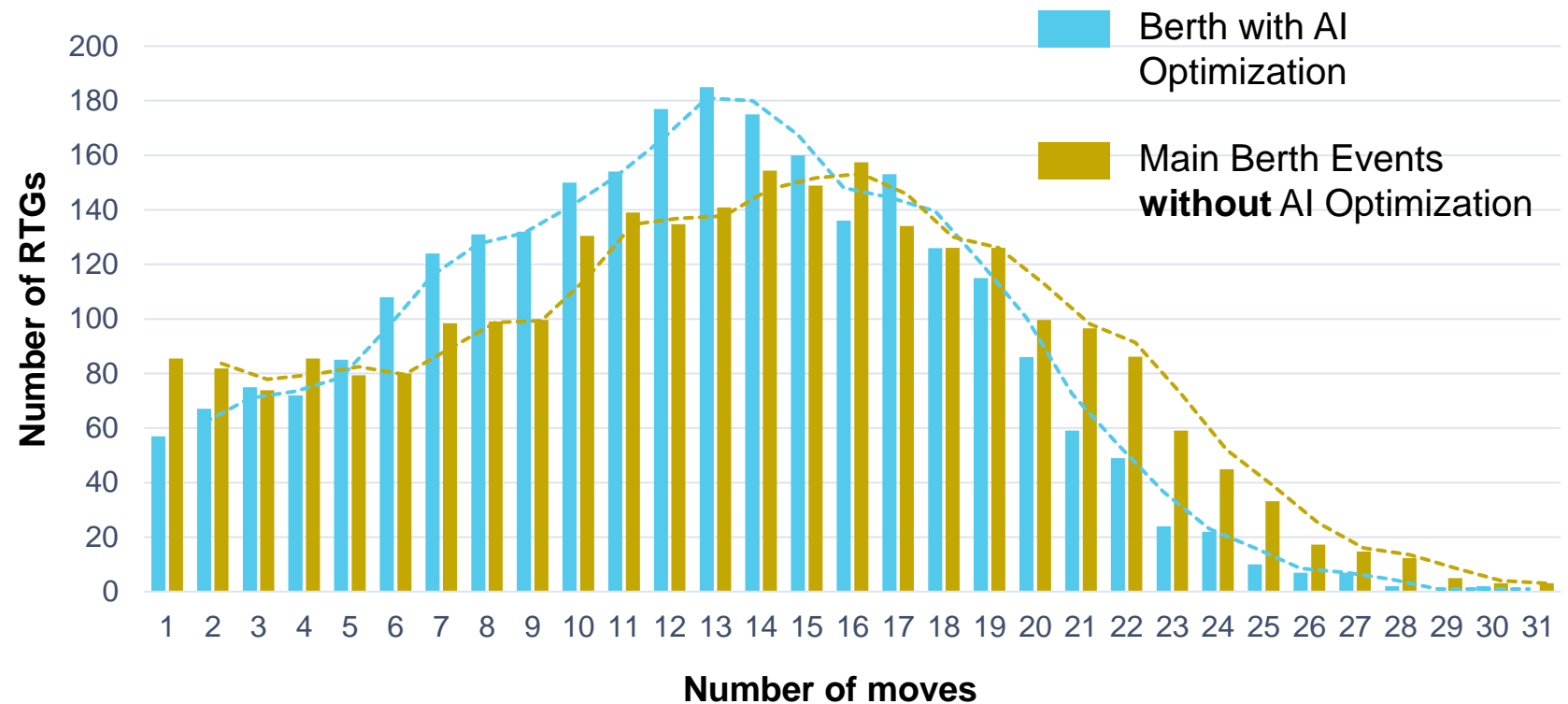- Deploy AICON's Yard Optimization module: YardSight

AI Optimization Results

The client quickly saw an improved bell curve with better RTG work distribution.

- ~15% Positive shift
- Reduced turn for internal PM ~2 minutes too

Discharge RTG Work Distribution, May 2021 with same Average Prod.

Legend:
- Berth with AI Optimization
- Main Berth Events **without** AI Optimization

Y-axis: Number of RTGs (0–200)
X-axis: Number of moves (1–31)

PM METRIC [BERTH 6/ IMPORT]
Improvement in PM Active Time

Within YardSight Physical Access	1-3 months prior to YardSight implementation		1-3 Months post YardSight implementation	
YardSight	Total Moves / Number of PMs	18,000 / 34	Total Moves / Total Number of PMs	**16,500** / 30 ▲
	Productivity Enhancement Metric – This metric demonstrates the reduction in the total numbers of moves, and reduction in the total number of Prime Movers to accomplish the total moves			
	Active Time / Inactive Time	73 hrs. / 94 hrs.	Active Time / Inactive Time	**91 hrs.** / 76 hrs. ▲
	Productivity Enhancement Metric – This metric demonstrates the increase in productive utilization of the Prime Movers. i.e. by increasing the active (laden) time.			
	Productive Moves / Total Moves	15,000 / 18,000	Productive Moves / Total Moves	**15,500** / 16,500 ▲
Yard	Productivity Enhancement Metric – This metric demonstrates the increase in profitability and efficiency, by reducing the number of unproductive moves			

Metrics indicated are from a subset of weekly operations

RTG METRIC [BERTH 6/ IMPORT]
Reduce distance traveled and increase productive moves

Within YardSight Physical Access	1-3 months prior to YardSight implementation		1-3 Months post YardSight implementation	
	Total Moves	17,000	Total Moves	**21,000**
	Number of RTGs	10	Total Number of RTGs	9
	Productivity Enhancement Metric – This metric demonstrates the reduction in the total numbers of moves, and reduction in the total number of RTG to accomplish the total moves			
YardSight	Total moves	17,000	Total moves	**21,000**
	Total distance travelled	350 Km	Total distance travelled	287 Km
	Productivity Enhancement Metric – This metric demonstrates the increase in productive utilization of RTG's, by reducing the distance traveled for a given number of moves			
	Productive Moves	15,000	Productive Moves	**19,500**
	Total Moves	17,000	Total Moves	21,000
Yard	Productivity Enhancement Metric – This metric demonstrates the increase in profitability and efficiency, by reducing the number of unproductive moves			

Metrics indicated are from a subset of weekly operations

Reduce unproductive moves

	Re-handle Reduction

Within YardSight Physical Access	1-3 months prior to YardSight implementation	1-3 Months post YardSight implementation
	Avg Re-handles Per Container in the Past Month For Deliver $=$ 1.65	Avg Re-handles Per Container in the Past Month For Deliver $=$ **1.4** ▼
	Yard Utilization in the Past Month 85%	Yard Utilization in the Past Month 85%
YardSight	Productivity Enhancement Metric – This metric demonstrates the increase in profitability based on reduced number of rehandles	
	Containers Delivered 20,000	Containers Delivered 20,000
	Total Unproductive Moves 33,000	Total Unproductive Moves **28,000** ▼
	Productivity Enhancement Metric – This metric demonstrates the increase in productivity and profitability based on reduction in unproductive moves	
	Total Moves 53,000	Total Moves **48,000** ▼
Yard	Productivity Enhancement Metric – This metric demonstrates the increase in profitability and optimized equipment utilization by reducing the total number of moves	

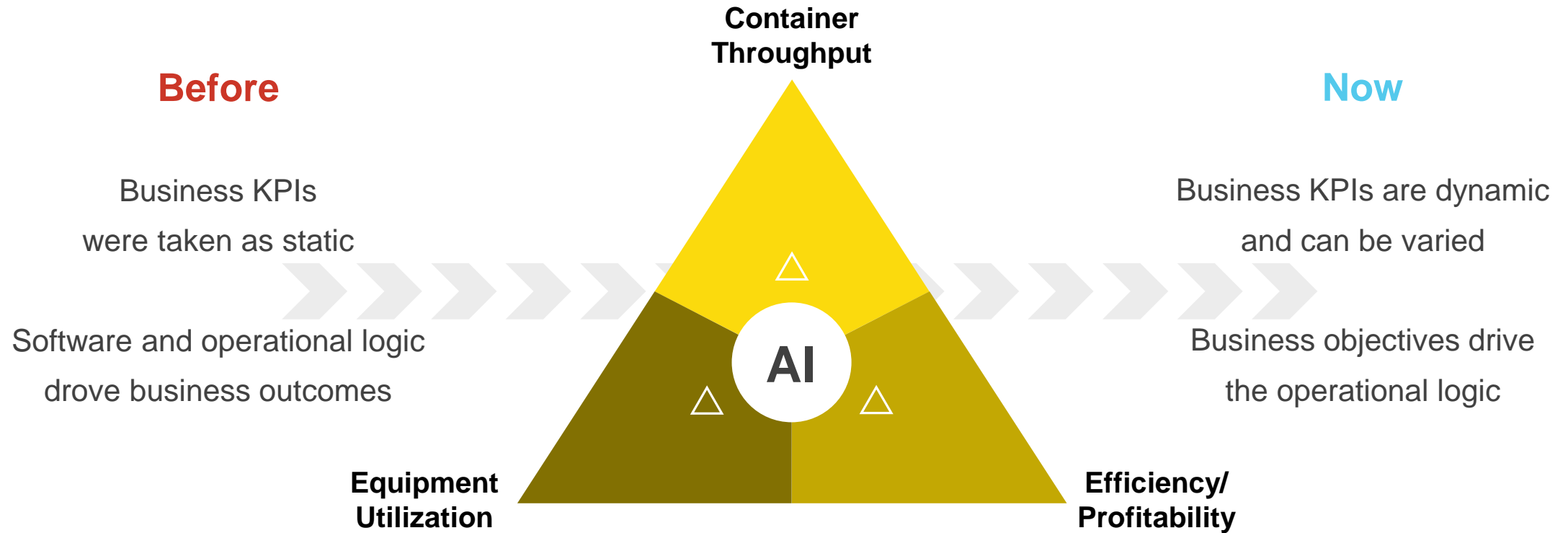*Metrics indicated are from a subset of weekly operations*

CONTAINER SLOT METRICS [BERTH 6/ IMPORT]
Processed more containers within the same time

Within YardSight Physical Access	Current TOS Estimated Time			YardSight Position Cost Estimated Time		
	Total Time (Hours)	168	=	Total Time (Hours)	**168**	▲
YardSight	Number of Containers	20,000		Number of Containers	21,000	
	Productivity Enhancement Metric – This metric demonstrates the optimization of human and equipment utilization based on reduction in time/effort required to move a given # of containers.					
	Overhead Time (Hours)	42	=	Overhead Time (Hours)	**31**	▲
	Active Time	126		Active Time	137	
Yard	Productivity Enhancement Metric – This metric demonstrates the reason for the increased efficiency – attributed to increased laden time and reduction in overhead hours					

Estimated Position Cost =   RTG Travel Time + Container Put Time
+ Container Get Time + Estimated Container Shift Time

Metrics indicated are from a subset of weekly operations

AI-Based Paradigm Shift

Before

Business KPIs
were taken as static

Software and operational logic
drove business outcomes

Now

Business KPIs are dynamic
and can be varied

Business objectives drive
the operational logic

Container Throughput

AI

Equipment Utilization

Efficiency/ Profitability

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