AVLINO

AICON SOLUTIONS SUITE

Scaling Throughput in Container Terminals with AI-driven Operations

Q2 2024

Challenges Faced by Container Terminal Operators

Managing Operational Volatility

Hardcoded Software Logic & Ops Systems

Conflicting Business Goals

Underutilized or overutilized equipment & resources
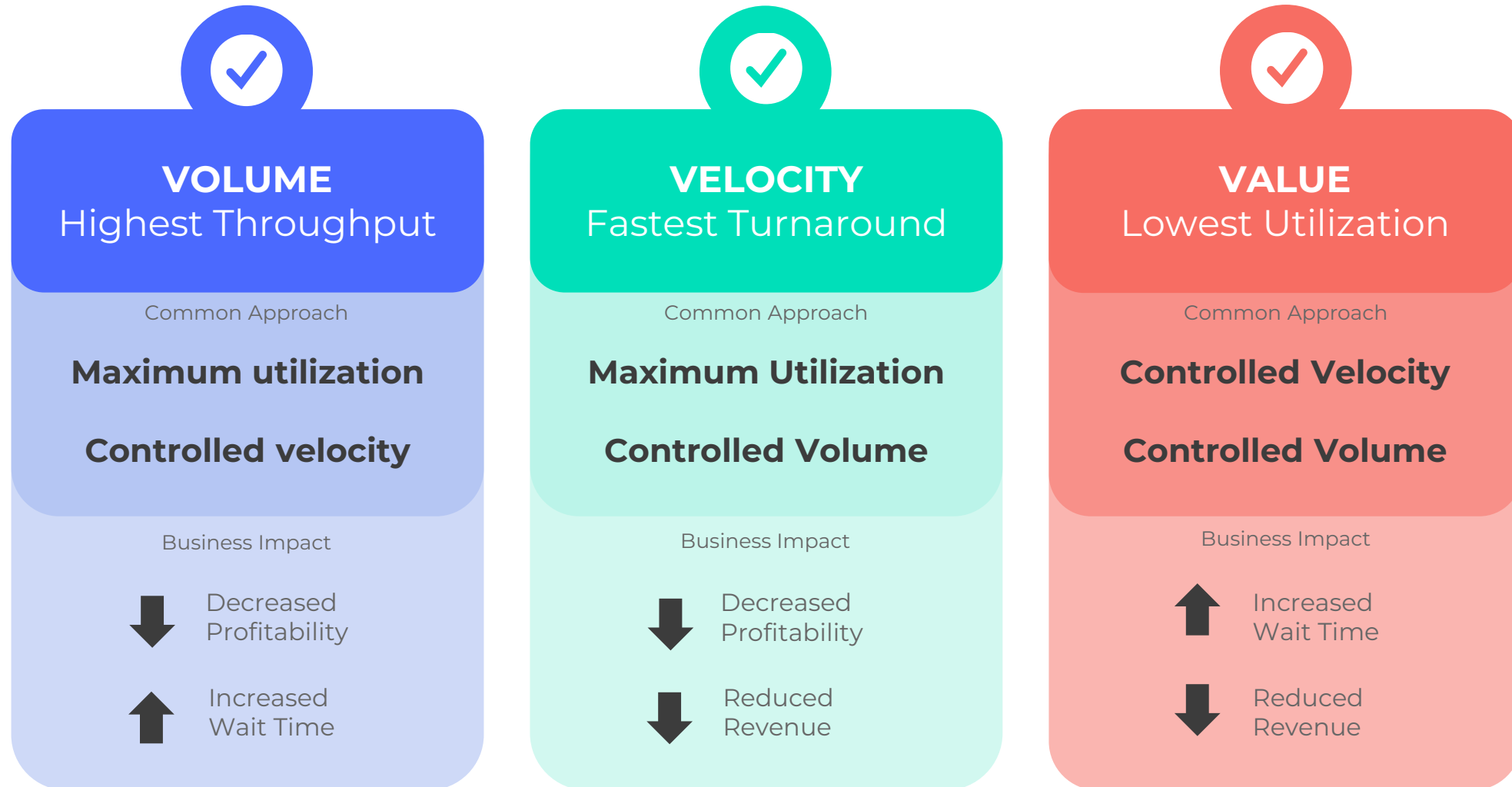
Systems unable to respond to dynamic conditions

Sub-optimal decision-making

The Conflicting Business Objectives

VOLUME
Highest Throughput

Common Approach

Maximum utilization

Controlled velocity

Business Impact

⬇ Decreased Profitability

⬆ Increased Wait Time

VELOCITY
Fastest Turnaround

Common Approach

Maximum Utilization

Controlled Volume

Business Impact

⬇ Decreased Profitability

⬇ Reduced Revenue

VALUE
Lowest Utilization

Common Approach

Controlled Velocity

Controlled Volume

Business Impact

⬆ Increased Wait Time

⬇ Reduced Revenue

Can technology solve the paradox?

AICON SOLUTIONS SUITE

AVLINO

AICON: Solutions Suite for Container Terminals

Easy to Use

AICON is an AI Solutions Suite that works as a **TOS accelerator**, containing a set of cross-functional modules that operate as standalone or stacked as a complete solution. AICON can integrate with all **home-grown TOS** and all leading **commercial TOS.**

Intelligent

AICON's AI modules, assimilate data from TOS, Management and Operational subsystems & external sources to **generate visibility across the Terminal**.

Adaptive

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

Secure

AICON Solutions are deployed on **100% secure public or private Cloud** instances. Additionally, each Terminal has a **separate Cloud instance**, isolating data 100%.

AICON Equipment

Predicting equipment failures to increase availability

AICON 360

Exploring port analytics for informed decision-making

AICON Dispatch

Synchronizing and scheduling equipment for efficient use

AICON Gate

Coordinating operations to improve container pick-up

AICON Berth

Real-time berth planning to maximize occupancy

AICON Yard

Optimizing yard planning strategy for reduced costs

AI-enabled Modules

Integrating with TOS and sub-systems to generate visibility

Adapting quickly and continuously to changing conditions

Delivering value to the C-Level while helping analysts, managers and planners across the terminal

Adding Value to Container Handling Operations with AICON

Enhanced Resource Management: Ensuring optimal equipment deployment and utilization to reduce operational cost

Driving Continuous Improvement: Monitoring KPIs, Identifying Constraints, and Fostering Efficiency

Maximizing Equipment Availability: Predicting failures and anomalies to reduce operational stoppages and corrective maintenance.

Streamlined Operations in Real-Time: Intelligent container flow to reduce congestion and reduce turnaround time

Maximizing Terminal Throughput: Optimizing yard container placement to reduce unproductive moves and increase productivity

Improving Vessel Productivity: Increasing Berth Utilization, enhancing container flow and SLA compliance

AICON 360

The KPI Command Center

- PortSight is a KPI Dashboard & Analytics solution for data management, analysis, and optimization of terminal operations.

- PortSight focuses on achieving business goals and improving customer satisfaction.

- PortSight allows terminal operators to track how the terminal is performing over time, make data-driven decisions and align terminal operations with the overall strategic and business objectives.

Business Goals and Customer Satisfaction

Data Management, Analysis, and Optimization

Terminal Performance

AICON 360 Features

Visualize, Analyze, Succeed

Data Gathering and Integration

Central hub for collecting and integrating data generated by the TOS and aggregating data from other sources.

KPI and Metrics Display

Dashboard with multiple pages dedicated to displaying KPIs and management metrics

Customization for Business Goals

Support in setting business operational goals tailored to business needs, focusing on efficiency, throughput, or cost.

Issue Identification and Resolution

- Identifying issues within the terminal pinpointing operational problems and bottlenecks.
- Identifying and addressing customer issues effectively.

Integration with AICON Modules

Seamless integration and collaboration with modules such as YardSight, BerthSight, and DispatchSight to provide comprehensive solutions for identified issues.

AICON Yard

Empower smarter moves

- YardSight is a Yard Planning Solution that strategically places containers in the yard based on predictive insights.

- YardSight minimizes unproductive moves and maximizes yard capacity.

- YardSight empowers terminal operators to reduce costs, increase throughput and improve customer service.

PRIMARY BENEFITS

5 – 20 %

Increased CHE Productivity

25 – 60 %

Reduction in Rehandles and Unproductive Moves

5 – 10 %

Improved Vessel Load Sequencing and Productivity
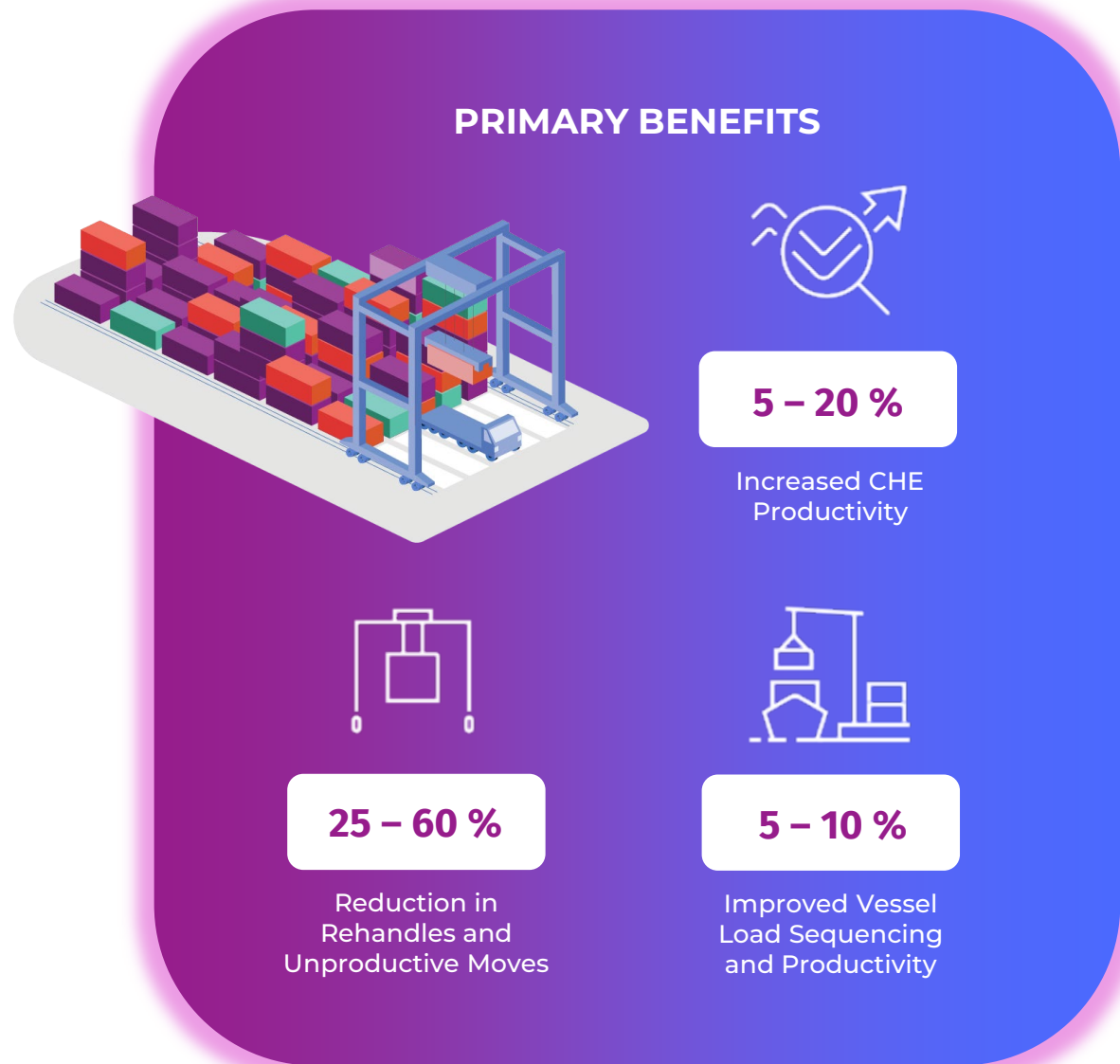
AICON Yard Features

Stay ahead of every move

Optimal Container Stacking

Considers predictive exit times, vessel berth, load patterns, QC splits, and sequencing, to ensure containers are strategically decked.

Real-time Housekeeping

Generates ongoing housekeeping moves to maintain optimal yard conditions in response to changing information and schedules.
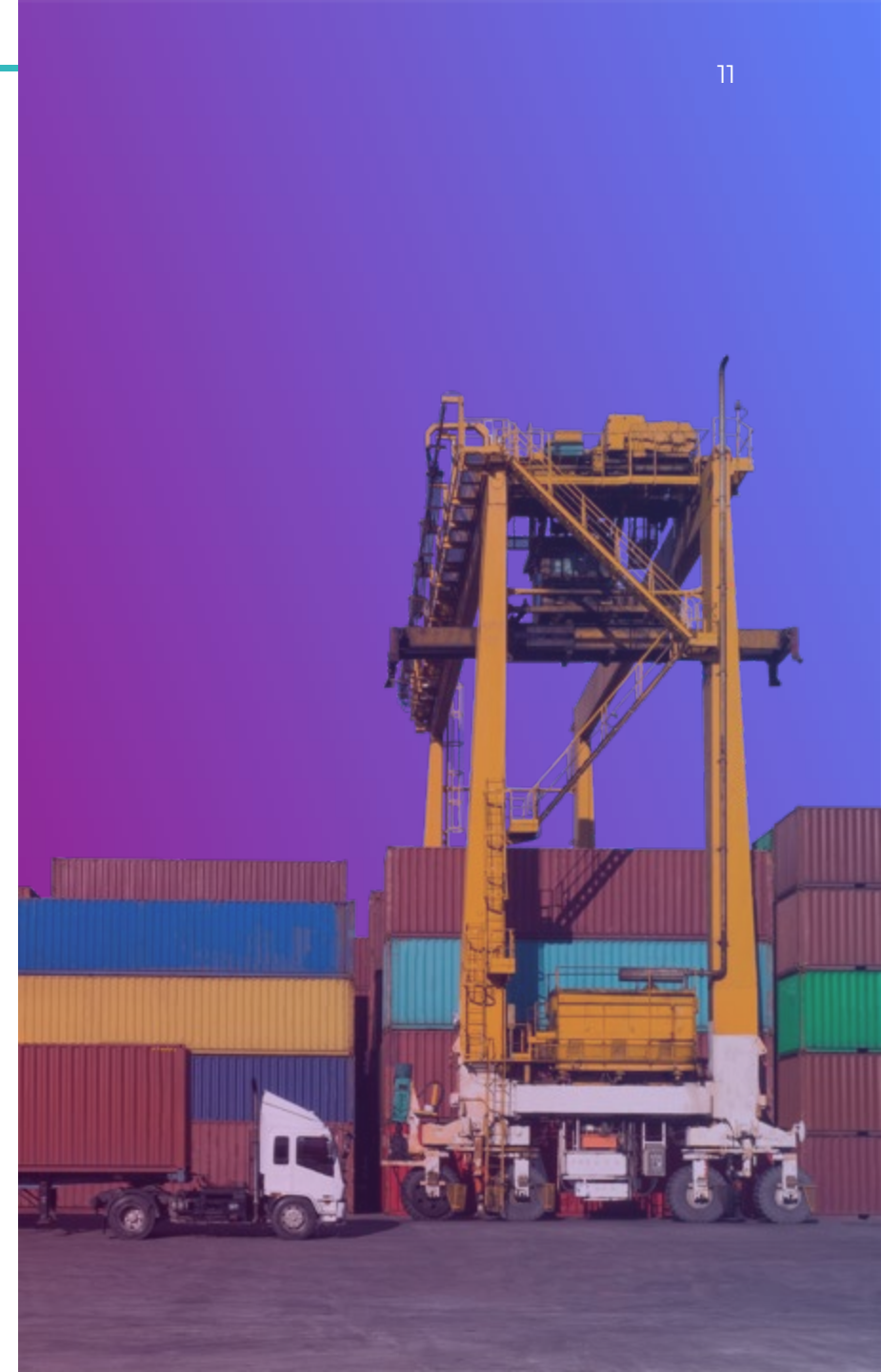
AI-Powered Digital Twin Modeling

Creates a virtual replica of the yard to capture real-time data and simulate container movements, enabling precise predictions and enhanced planning.

AICON Yard Features

Stay ahead of every move

CHE Ranges and Equipment Positioning

Determines CHE ranges dynamically to optimally position and utilize the equipment.

Dynamic Block Allocation

Predicts the yard density/utilization and proactively reconfigure amongst 20-40 and import-export blocks to prevent yard congestion issues.
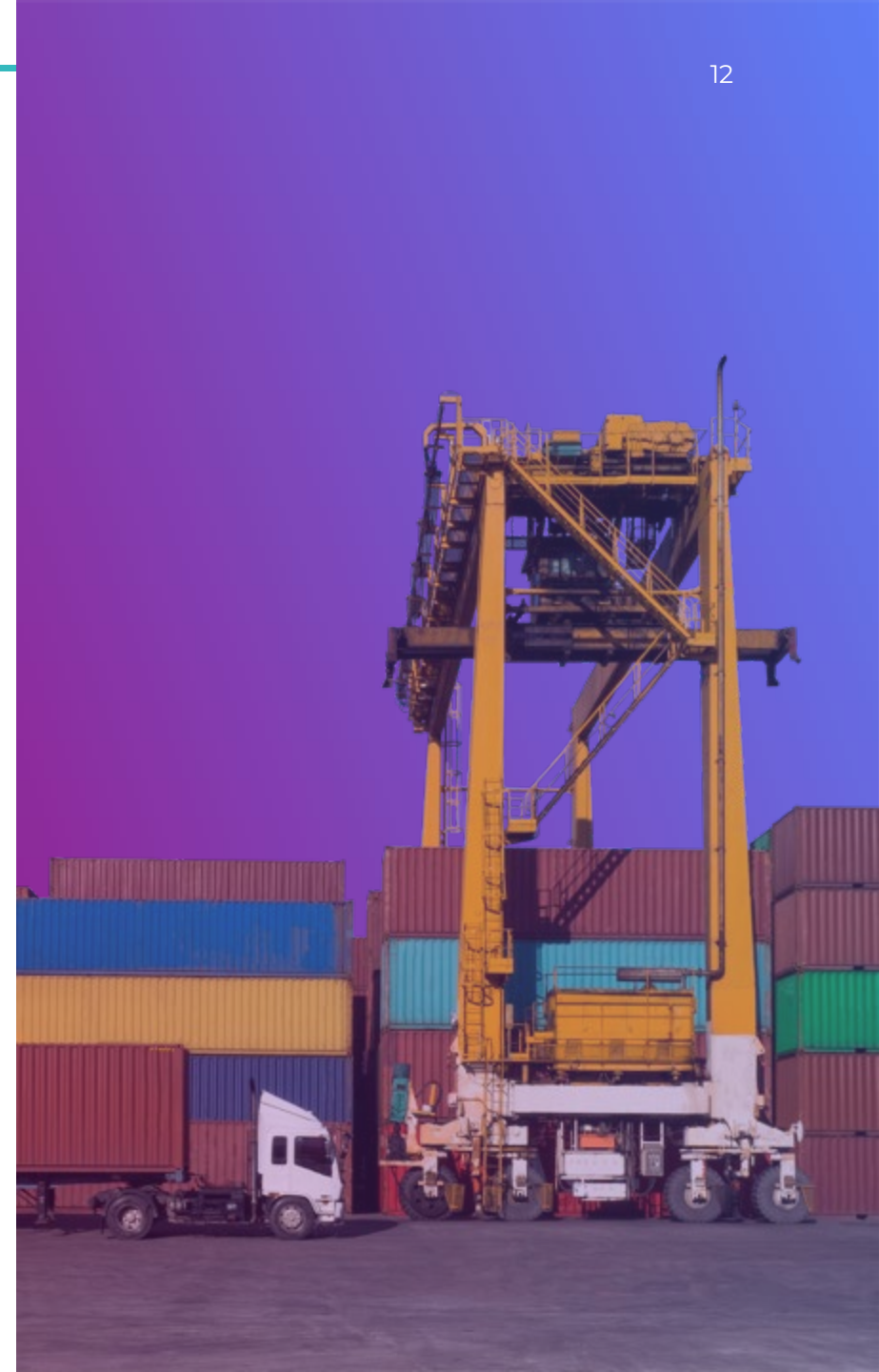
Optimal Equipment Allocation

Determines optimal number of Horizontal Transport Equipment (HTE) and Yard Cranes for the next 1-3 days to accomplish the highest productivity, without compromising throughput.

AICON Berth

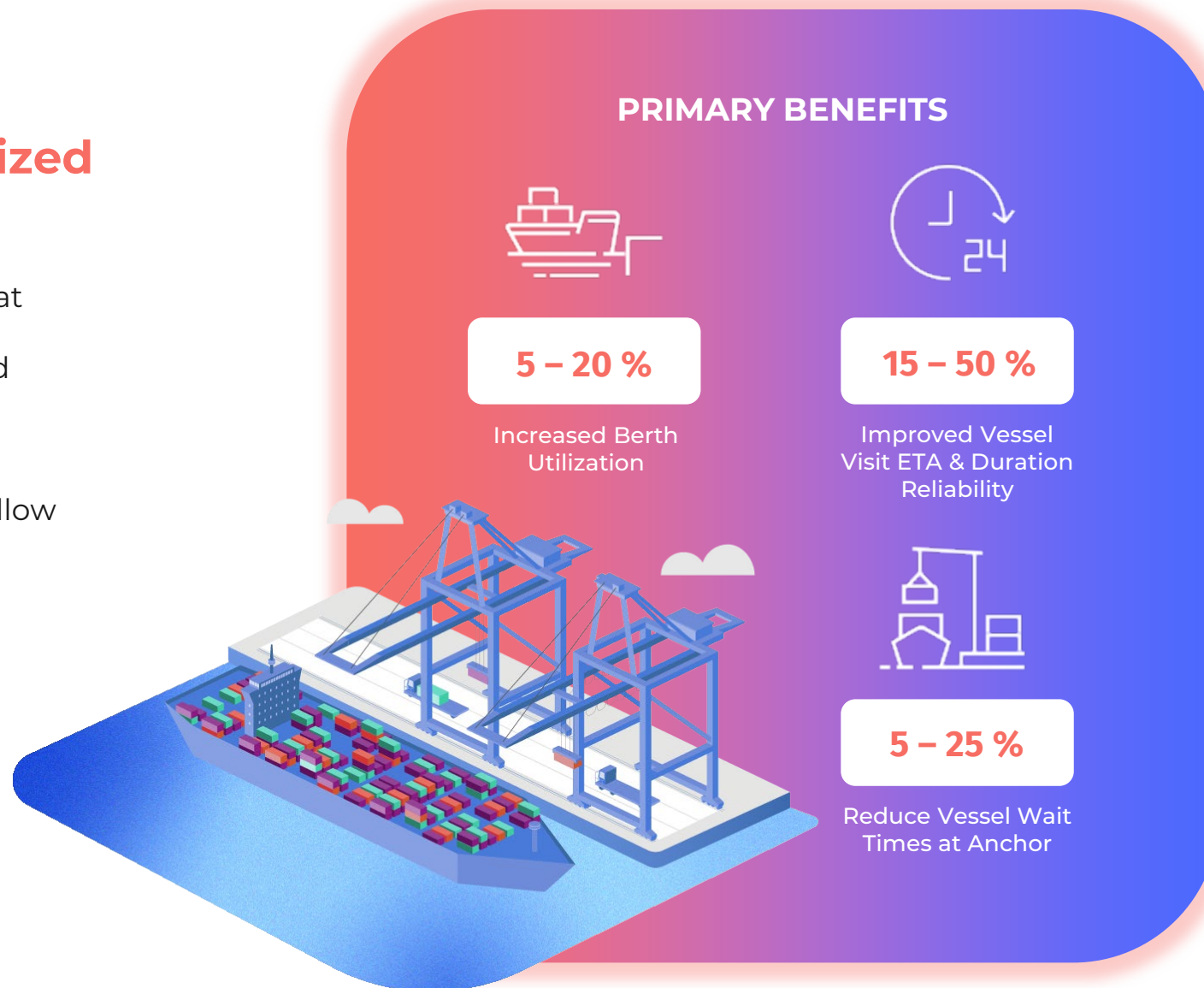## Your Quay Potential, Maximized

- BerthSight s a Berth Planning Solution that transforms berth operations with AI-based optimization techniques.

- BerthSight increases berth utilization to allow for higher revenue.

- BerthSight provides a collaborative environment for all stakeholders.

PRIMARY BENEFITS

5 – 20 %
Increased Berth Utilization

15 – 50 %
Improved Vessel Visit ETA & Duration Reliability

5 – 25 %
Reduce Vessel Wait Times at Anchor

AICON Berth Features

Intelligent Berth Management Activated

AI-Powered Berth Optimization

Aligns berth planning with yard container inventory position and provides accurate predictions of vessel ETAs, ETCs, visit duration, and berth assignments.

Auto Berth Plan and QC Allocations

Automates the berth planning process, generating efficient berth plans, and optimizing the allocation of QCs across the entire quay.
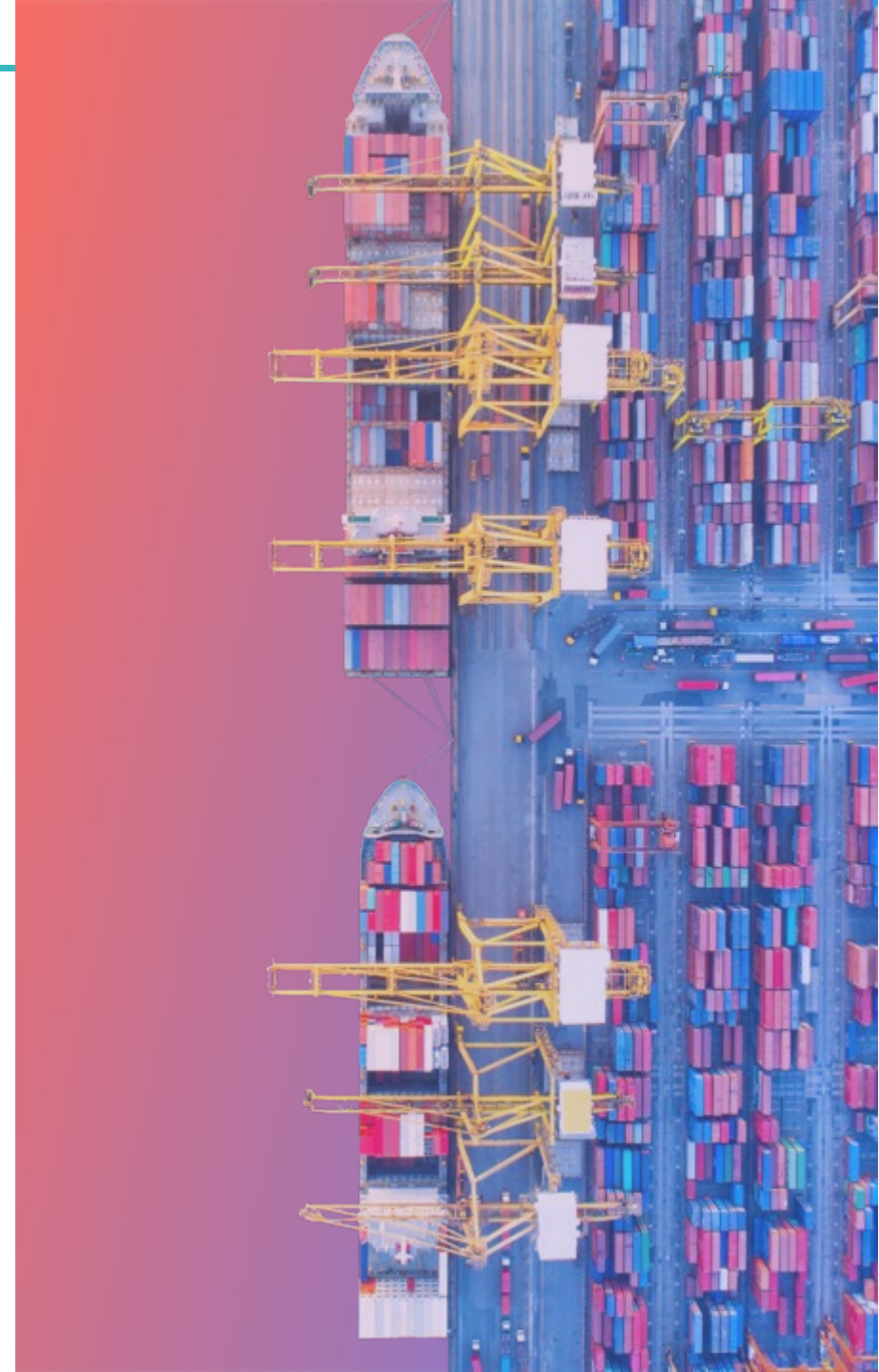
Vessel Operator Collaboration

Fosters improved decision-making, better customer service and cost savings across multiple parties with real-time collaboration and visibility.
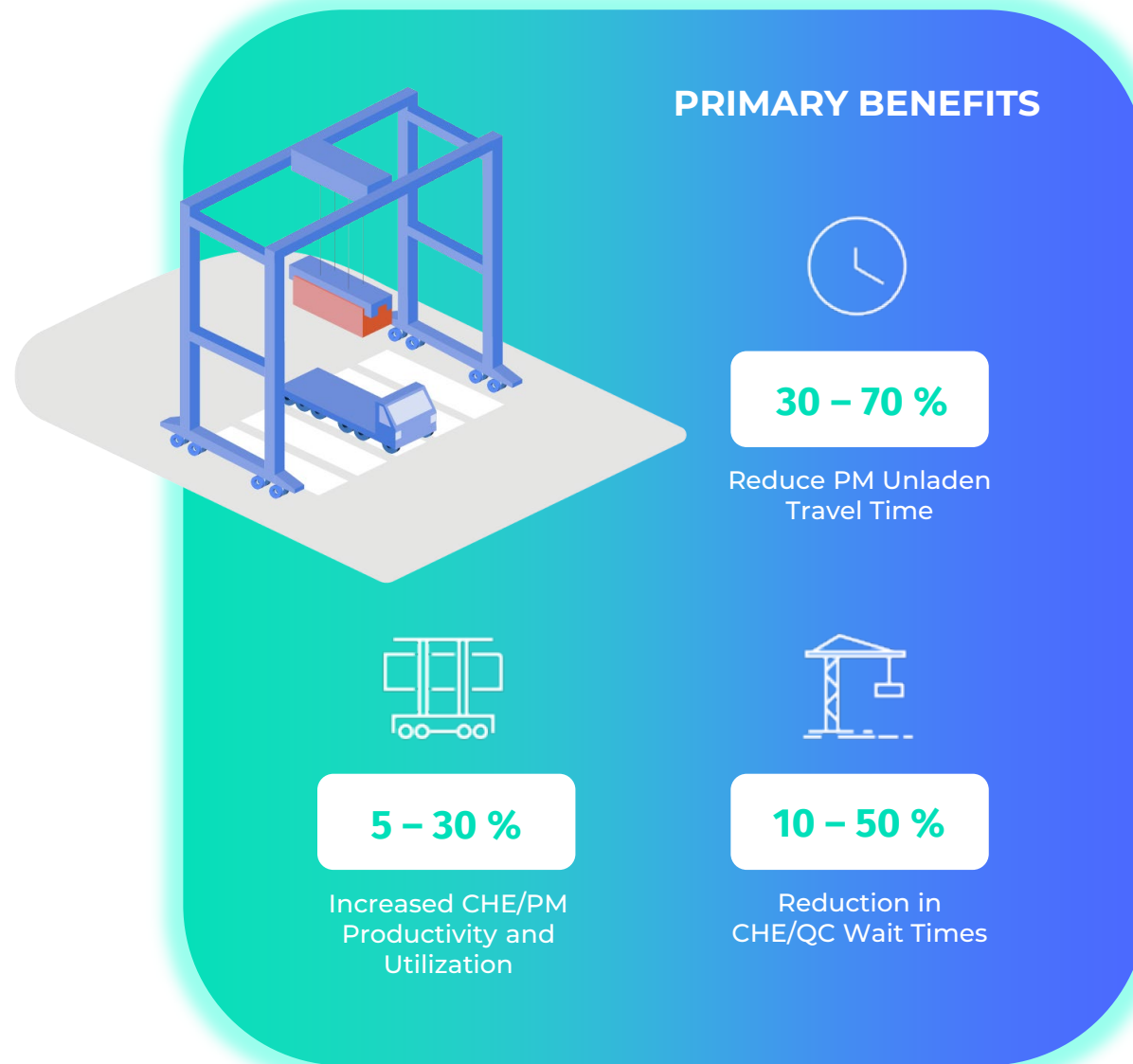
AICON Dispatch

Let Efficiency Drive More Cargo

- DispatchSight is an Equipment Management and Control Solution that optimizes scheduling, dispatching, and routing within container terminals.

- DispatchSight assesses container handling operations continuously to ensure optimal resource allocation and minimizes downtime.

PRIMARY BENEFITS

30 – 70 %

Reduce PM Unladen Travel Time

5 – 30 %

Increased CHE/PM Productivity and Utilization

10 – 50 %

Reduction in CHE/QC Wait Times

AICON Dispatch Features

Dispatch Smarter with End-to-end Intelligence

Intelligent Job Assignment

Ensures precise sequencing, timing, and allocation of specific jobs, optimizing operational efficiency.
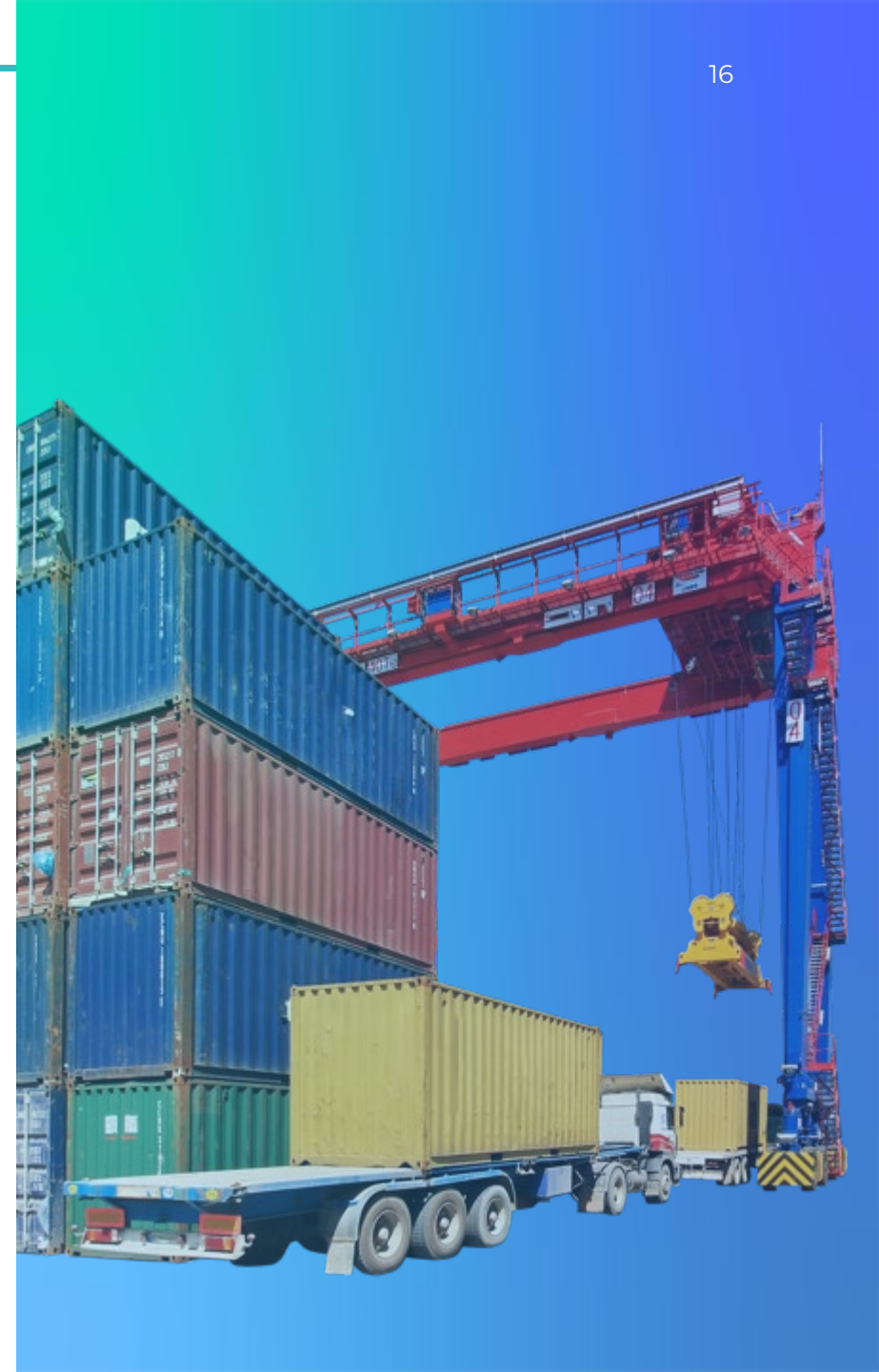
Dynamic Equipment Pooling

Provides various pooling options for Prime Movers and dispatching.

Multi-Lift Support

Facilitates multi-lift equipment moves, enabling efficient handling of multiple containers in a single operation.

Yard Crane Optimization

Enables double cycling of Yard Cranes and offers opportunistic tailgate moves for blocks with multiple cranes, to maximize productivity.
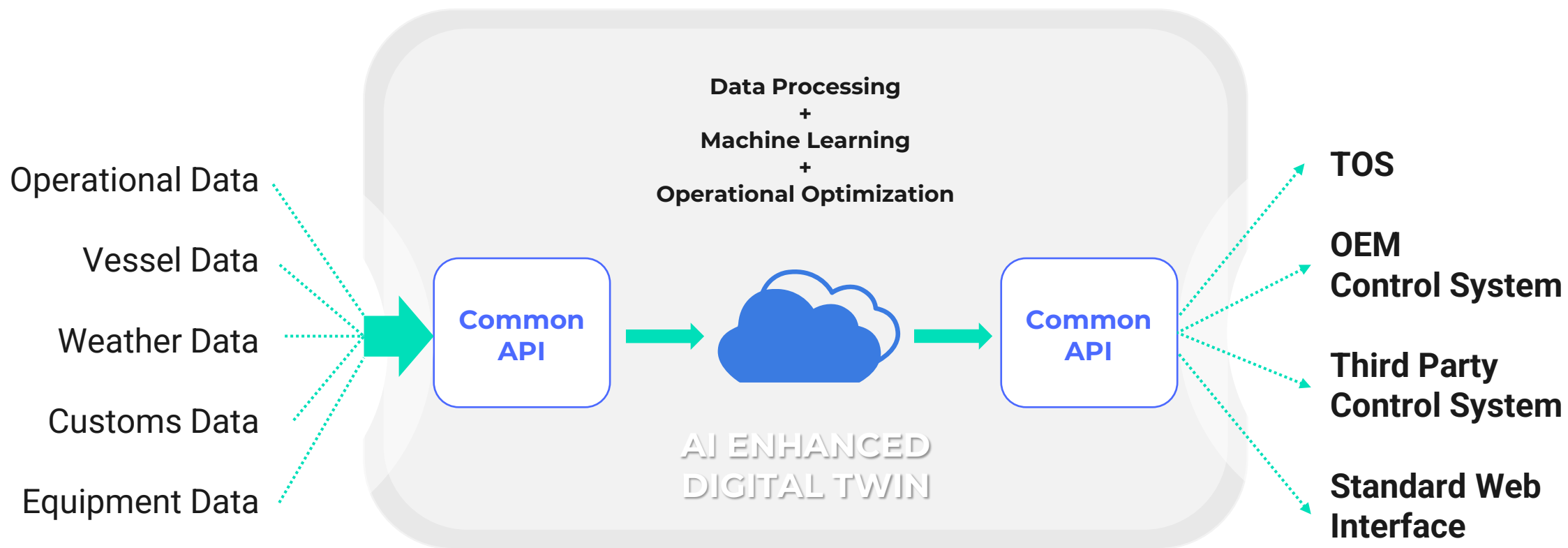
Blueprint for Optimal Solutions

Operational Data

Vessel Data

Weather Data

Customs Data

Equipment Data

**Data Processing
+
Machine Learning
+
Operational Optimization**

Common API

Common API

AI ENHANCED
DIGITAL TWIN

TOS

**OEM
Control System**

**Third Party
Control System**

**Standard Web
Interface**

AI vs. Traditional Software Logic

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

Why AICON?

| Seamless and adaptable | Cutting-edge technology | KPI alignment |

Seamless and adaptable

- Non-intrusive, easy-to-use and adaptable to any operations mode: Manual, Semi and Fully automated.

- Deployment modes: Cloud, In-house, or Hybrid.

- Cross-functional stackable modules.

Cutting-edge technology

- Predictive analytics: Deeper workflow insights through accurate forecasting.

- Prescriptive capabilities: Recommended course of action through advanced optimization.

- Intelligent actions: AI-powered operational commands.
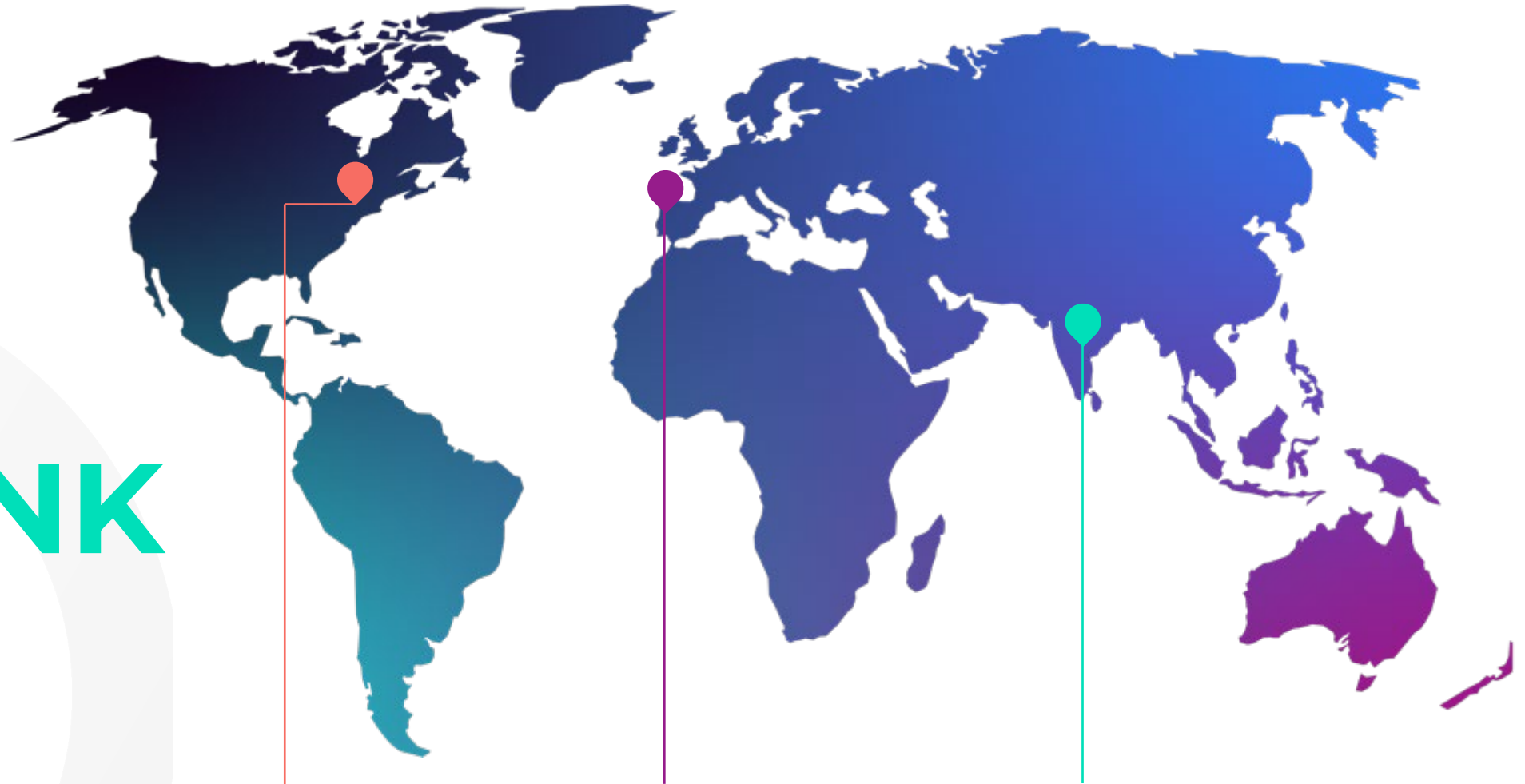
KPI alignment

- Conformance with Customer SLA's.

- Business KPIs drive operational logic by ongoing management of demand-based trade-offs.

THANK YOU

Contact us

www.avlino.com

Headquarters

100 Matawan Road

Matawan, NJ 07747

+1 732 946 0472

Porto Office

Rua Sá da Bandeira, nº605

4000-437 Porto, Portugal

+351 221 145 999

India Office

Orbis, 1st Floor, #61

2nd Cross, Residency Rd

Bengaluru, Karnataka 560025