



CAMCO TECHNOLOGIES

We automate - You operate

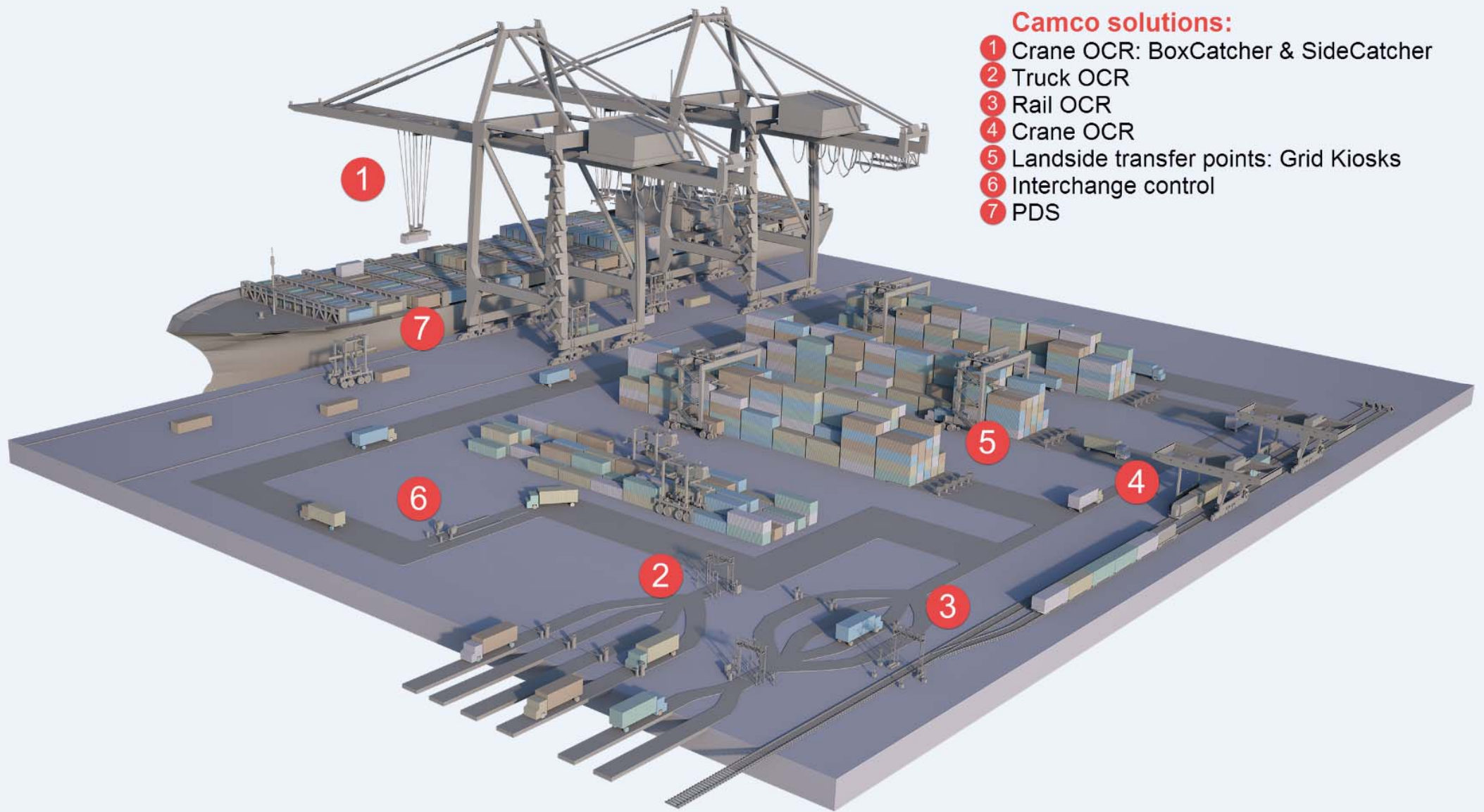


Brecht Thijs

Business Development Manager



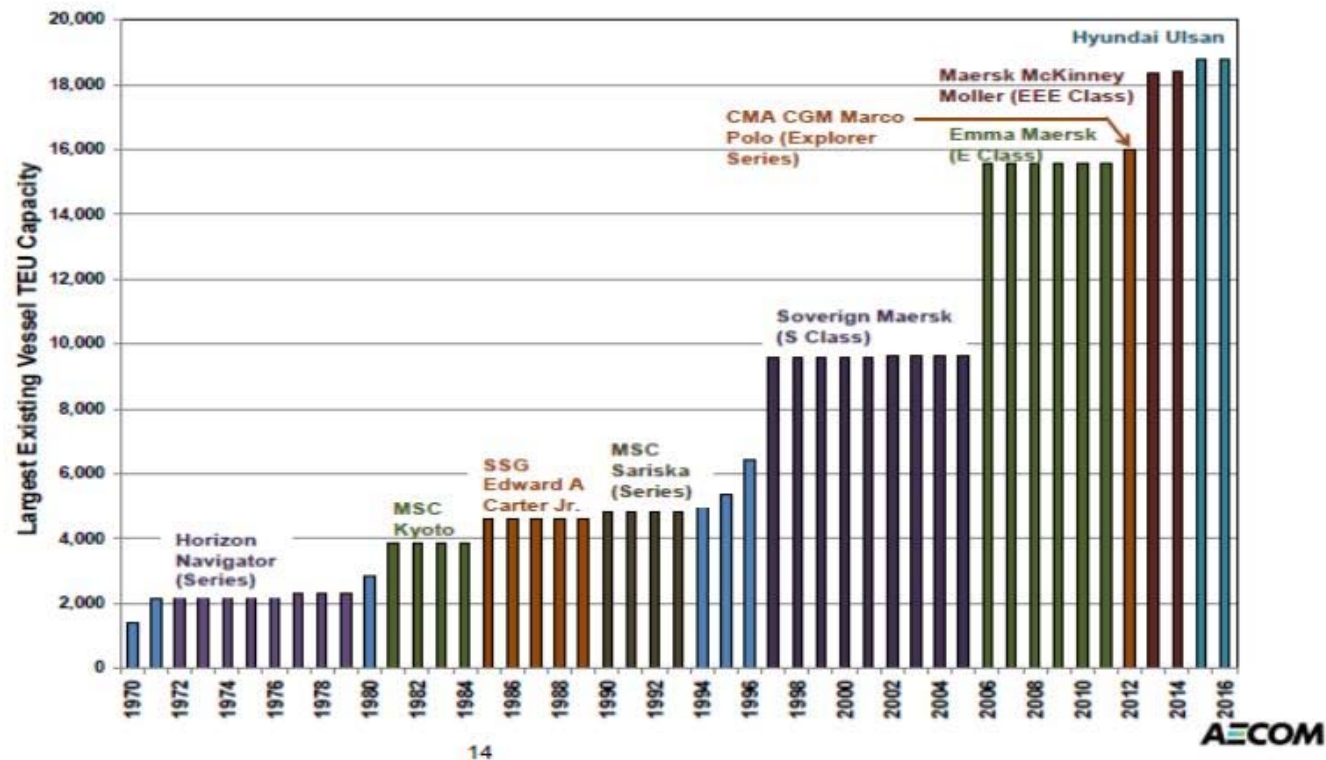
How to add *speed* and *accuracy* to your operations while
improving *labor conditions* and achieving
global optimization.



Camco solutions:

- 1 Crane OCR: BoxCatcher & SideCatcher
- 2 Truck OCR
- 3 Rail OCR
- 4 Crane OCR
- 5 Landside transfer points: Grid Kiosks
- 6 Interchange control
- 7 PDS

Largest Vessel Size over Time



Source: Sisson, M. (2013). "Impact and Opportunities from Global Change." Presented at AAPA Facilities Engineering Seminar on November 6, 2013.

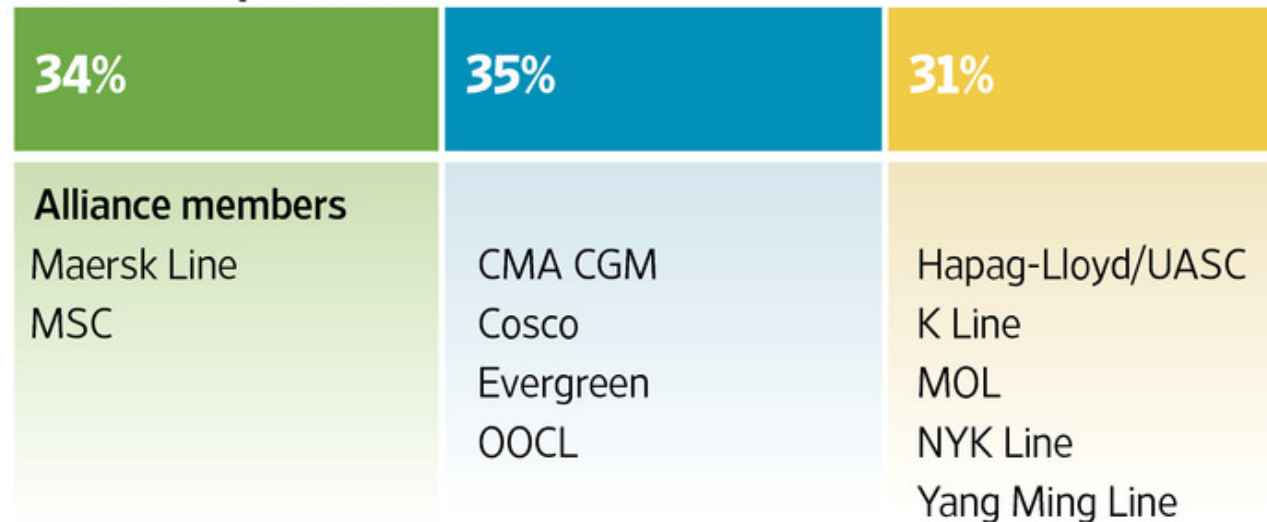
Dominance at Sea

Three shipping alliances move about 95% of all cargo on the world's oceans. Market share, by alliance, of shipping capacity in benchmark routes

Asia to North America route



Asia to Europe route



Sources: Alphaliner; independent brokers estimates

THE WALL STREET JOURNAL.



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Terminals worldwide need to improve operations and lower global operation costs by taking one step at a time.

- Control vessel turnaround time
- Lower handling costs
- Increase yard efficiency
- Improve gate efficiency

Theory of constraints: Identify the handover process that poses a bottleneck, lift it and...begin again

Agile Automation Implementation:

Create a global automation/improvement plan, implement, evaluate and adjust the plan.





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Solution areas

◦ Gate automation

- Truck OCR Portals
- Pedestal
- LandSide Transfer Point kiosk
- GOS (Gate Operating System)



◦ OCR-assisted rail handling

- Rail track OCR Portals
- TGO (Train gate operator)



◦ Crane OCR

- High-end BoxCatcher
- Basic SideCatcher (Sill beam)
- COS server software

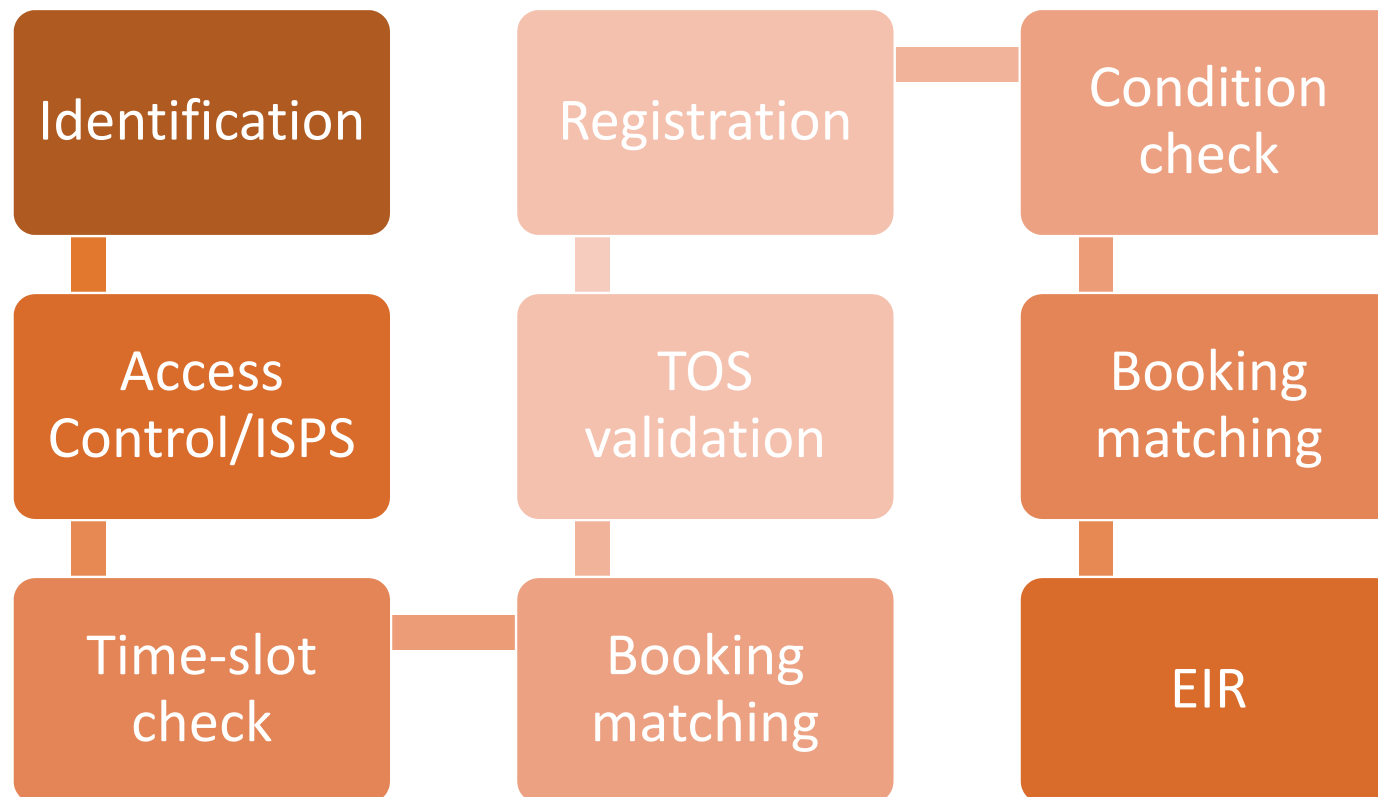


◦ Micro Location Technology

- UWB/DGPS/INS/distance Ranging
- VMT client software for CHE's (strads,TT's,..)
- CHEOPS Server software



Gate management





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9th PHILIPPINE
PORTS AND SHIPPING 2017

Gate management - Manual





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Gate management - Manual



HIGH COST

- Each lane is manned – gate operator

TIME-INTENSIVE

- Timely gate processes, paperwork

INACCURATE DATA

- Manual data input – people make mistakes

FRUSTRATED TRUCK DRIVERS:PERSONNEL

- People make even more mistakes

MANUAL DAMAGE-, SEAL-, IMDG DETECTION

- Unsafe environment for clerks



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Gate Management Automated



360° High res images + OCR





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360° High res images + OCR

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Gate System – Kiosk system

APM TERMINALS Welkom



Hou uw CargoCard voor de kaartlezer.

Ik heb geen CargoCard.

NEDERLANDS
 ENGLISH
 DEUTSCH
 FRANÇAIS

TPS رحلة معدة داخلية

ادخل رمز رحلة المعدة الداخلية.

1	2	3	تصحیح
4	5	6	
7	8	9	إدخال
	0		



Kennzeichen Chassis: GER-GA 102

Container: TRLU5632872 [F][OUT]
Container Typ: 40HC
Siegeln: N, 6000121

Bestätigen Sie diese angezeigte Daten?

JA
 NEIN

Deutsch
 Nederlands
 Français
 English



Παρουσιάστηκε πρόβλημα.
Παρακαλώ περιμένετε όσο ο Χειριστής διορθώνει το πρόβλημα.

ΕΛΛΗΝΙΚΑ
 ENGLISH





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Gate Management Systems - Automated



OCR CAMERA PORTAL

- Condition recording
- Identification truck – container(s)

KIOSK/PEDESTAL SYSTEMS

- Drivers process own registration

GATE OPERATING SYSTEM GOS

- Interface with TOS

FAST - PRECISE - EFFICIENT

- Limited gate staff
- Safe environment
- **Remote exception handling**



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Gate Management Systems: Rail





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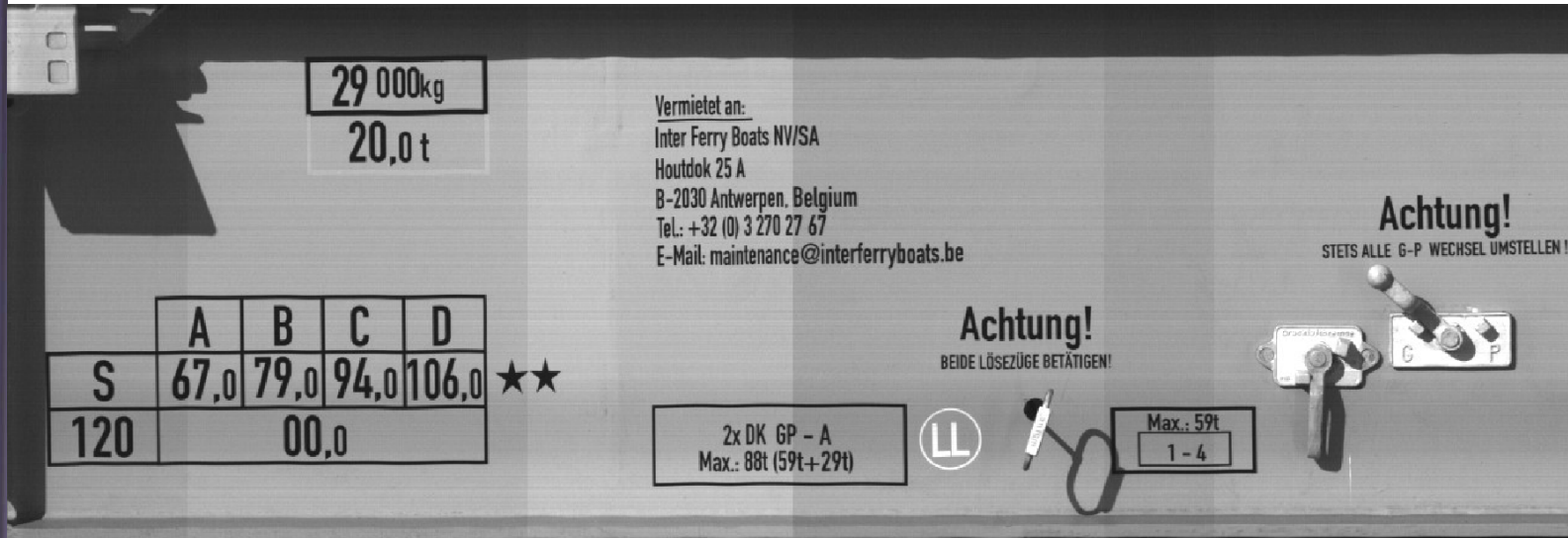
Gate Management Systems: Rail





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Gate Management Systems: Rail



Gate Management Systems: Rail

OCR - Assisted	Manual
<ul style="list-style-type: none">• Data available on entry/exit (Speed)• >95% overall accuracy (Accuracy)• Remote checking (Safety)	<ul style="list-style-type: none">• Checking starts at standstill• Manual input (Condition of top side?)• Checkers walk alongside tracks

Crane OCR - When do you benefit?

- ❑ 'Catch' each and every container 360° & 24/7
- ❑ No constraint on crane cycle times
- ❑ Minimal number of **remote** exception operators



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'Catch' each and every container 360°

- 50% or more of STS moves happen during night time

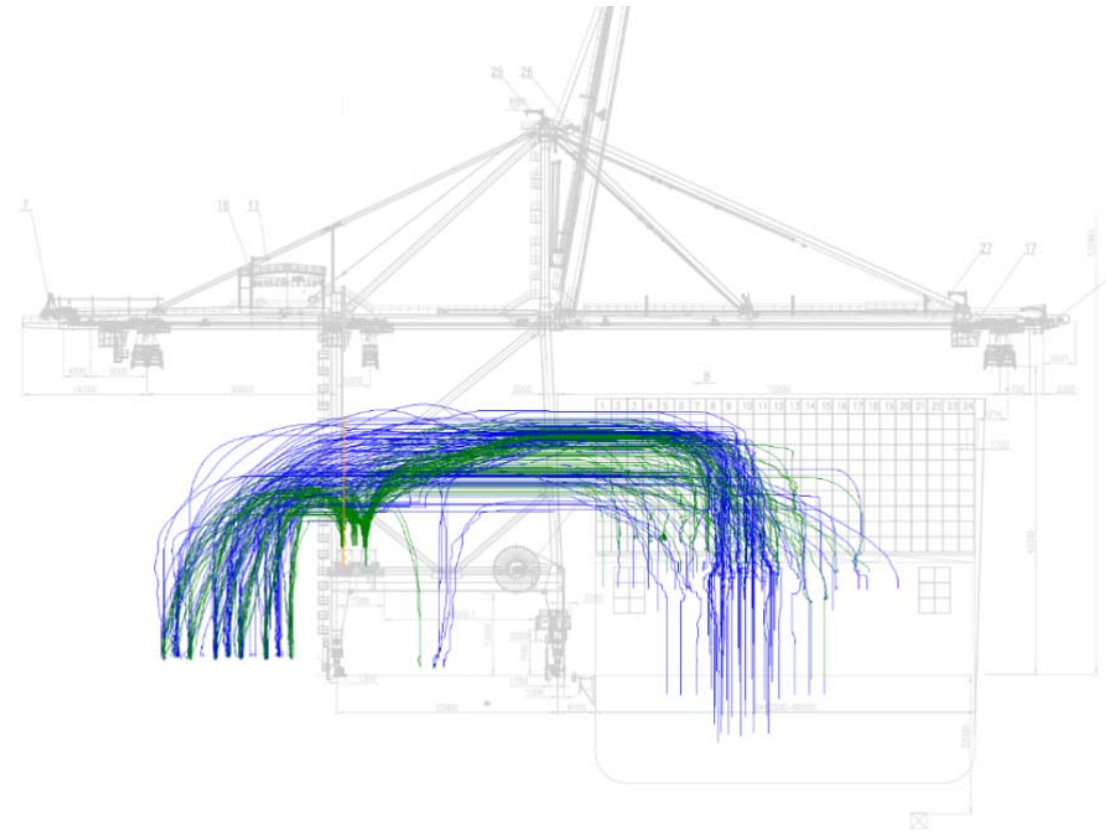


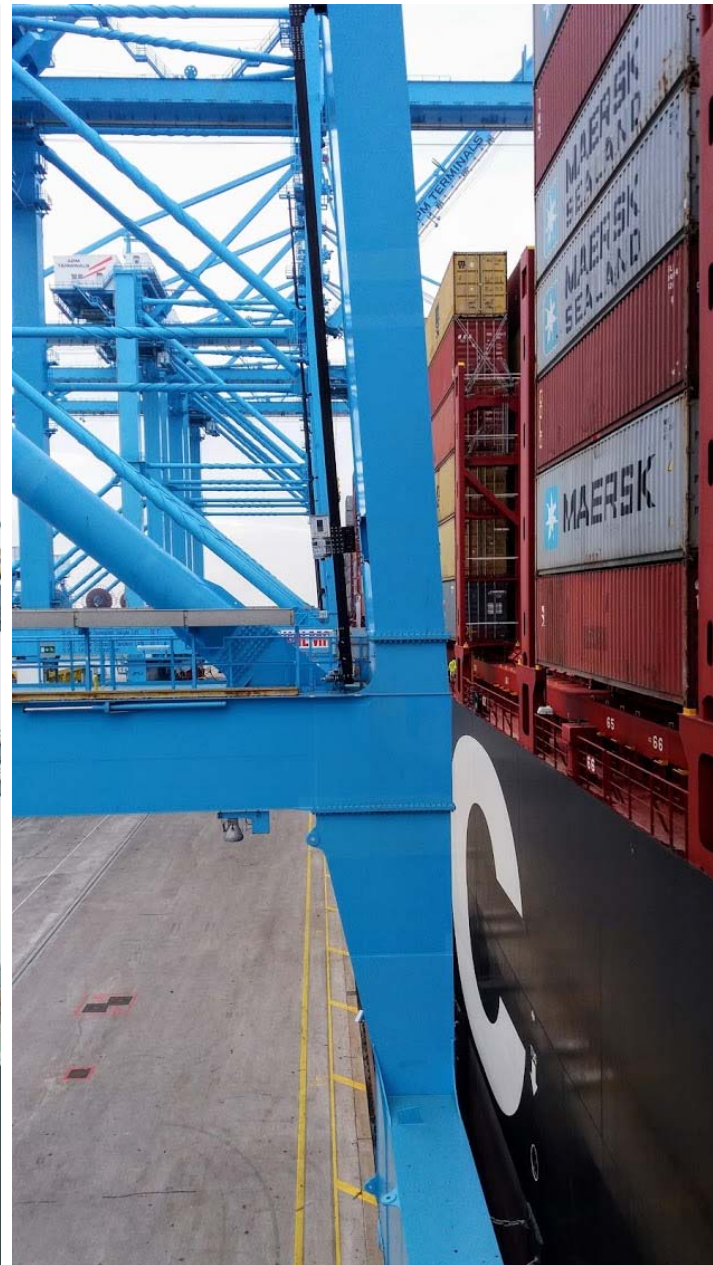


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No constraint on crane cycle times

- ❑ **Automatic position:**
Crane operator can choose the most efficient flight path
- ❑ **Early recognition during discharge:**
Issues are identified before containers hit the ground or platform
- ❑ **Continuous moves:**
Exception handling can be performed while move is continued, no stop required



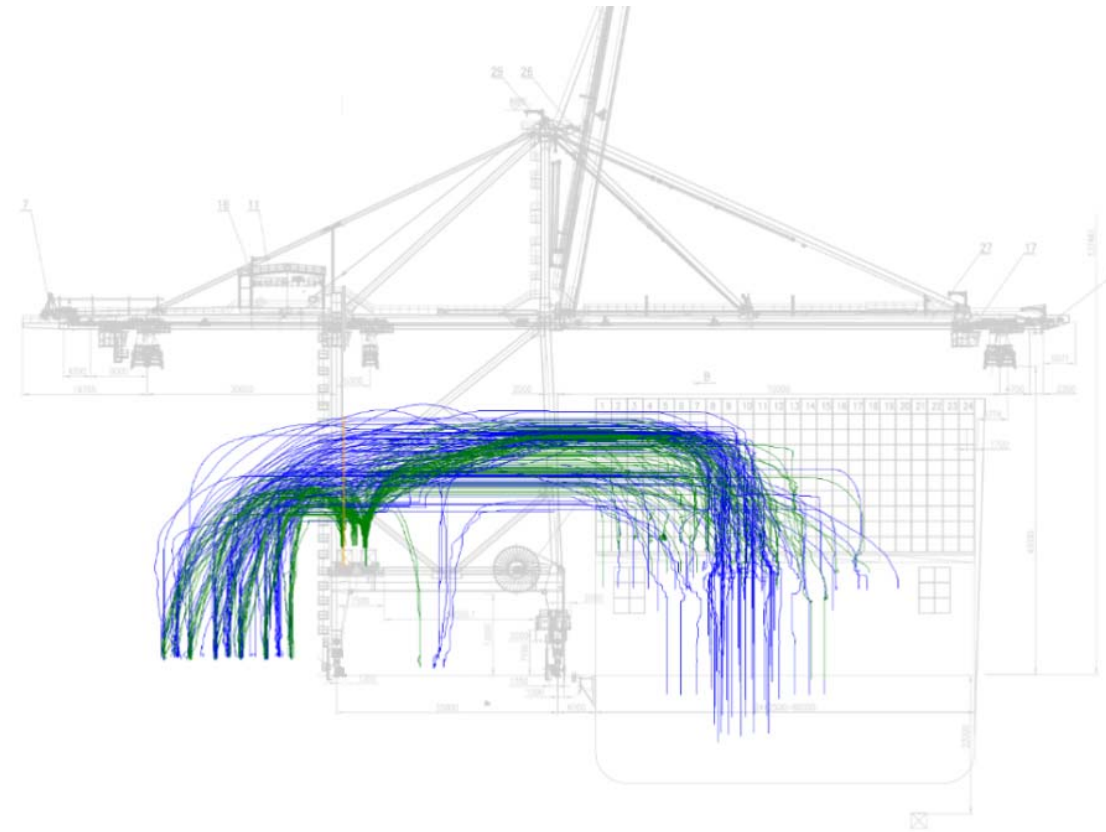




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Minimal number of remote exception operators

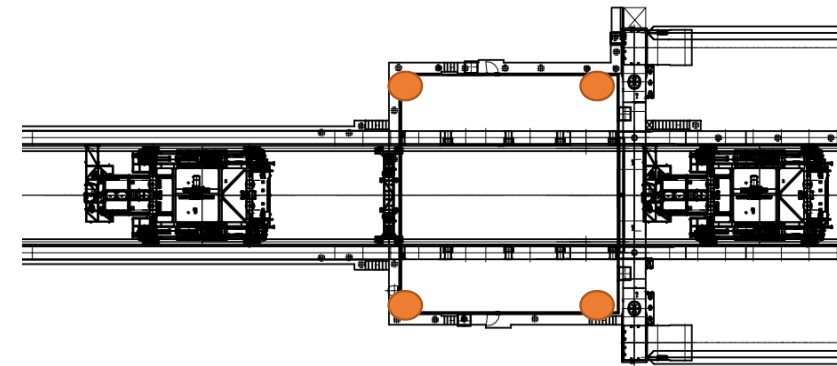
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remote operator
for 8 operational cranes



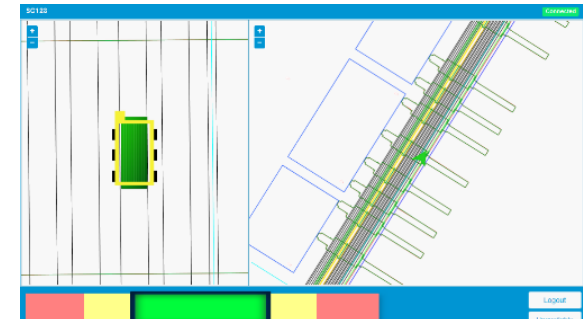
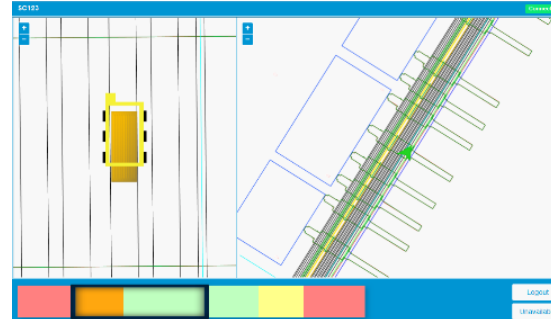
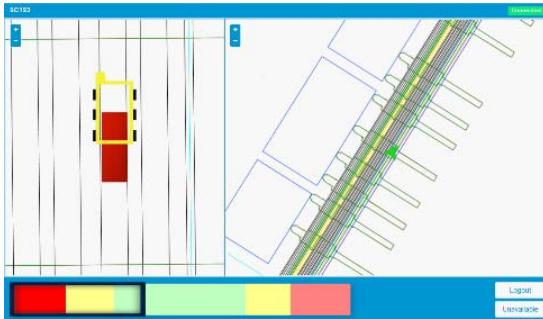
Micro Location Technology – The missing link

- ❑ Container ID is known via OCR
- ❑ Container drop-of position/lane is known via spreader PLC
- ❑ Prime Mover ID is digitalized via a reference node with integrated antennas
- ❑ Exact (<15cm) location is determined via 4 transponders/anchors in the crane
- ❑ Connection with prime mover
Determines and confirms drop-of/pick-up

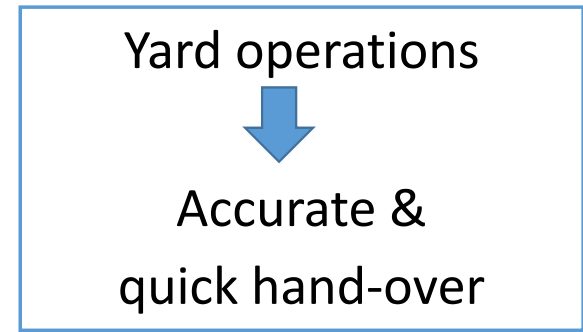
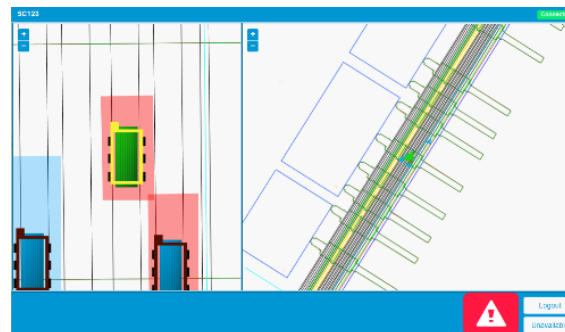
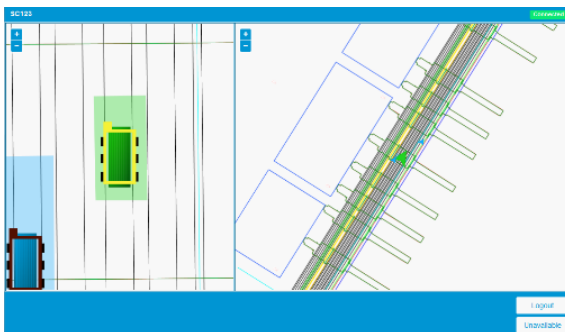


MLT - Functionalities

? Prime mover alignment via VMT or LED display



? Anti collision via VMT or LED display





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Greenfield - Brownfield

Greenfield	Brownfield
<ul style="list-style-type: none">+ Lay out free to design+ No ongoing operations (implementation)+ “Everything at once”+ Budgets foreseen - No real idea on impact- Processes based on assumptions- No idea of bottlenecks	<ul style="list-style-type: none">+ Volumes and distributions are known+ Processes in place & bottlenecks identifiable+ Efficient optimization+ Cost/benefit (20/80 rule) - Space constraints- In operation (implementation)



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Conclusion

Smart implementation of automation is gaining importance fast

Even when labour costs are relatively low

Increasing *speed, accuracy & safety* results in *global optimization* which generates a global cost reduction