The Path to Port Automation

A practical guide from vision to execution

**Philippine
PORTS AND LOGISTICS 2026**

12 March 2026

CAMCO
TECHNOLOGIES

Outlines

- About Camco

- Digitizing operations: From Road to Vessel Journey

- MPET Video BoxCatcher

- Digital twin

Jan Bosses
Camco Group CEO

Camco Technologies Overview

CAMCO Headquarters in Belgium

CAMCO Shanghai Office

CAMCO USA Office

CAMCO UAE Office

CAMCO Australia Office

- ## 27 Years
  ## The longest history

  CAMCO established in 1999, with 350 employees becomes the biggest company in terminal automation. CAMCO is the most stable technology company guarantee to provide long term services for her supplied systems.

- ## Local M&S teams
  ## The Efficient Service

  With five M&S teams located in Belgium, Abu Dhabi, Shanghai, Los Angels and Australia, CAMCO provides the 24/7 full time efficient maintenance service globally.

- ## Design and produce own hardware
  ## In-house engineered Solutions

  Camco designs, develops and implements its own technologies. Unlike sales organizations or system integrators, we keep total control over our hardware and software, and support a long-term product strategy.

- ## 300+
  ## Biggest Project Reference

  More than **300** container terminals worldwide installed Camco automation systems, it makes Camco the global leader in our industry with the richest experience and knowledge for all types of projects. And same time all the new technology developed by CAMCO are proved.

- ## Innovation Focus

  With a >50 engineers R&D team, CAMCO never stopped innovation, it guarantees the customers of CAMCO have always the most advanced technology in the industry.

Camco at a Glance

CAMCO Customers

Maritime terminal operators

Camco in Asia

Our presence in Asia

Adani Ports
Mundra | INDIA

DP World
Nhava Sheva
International Container
Terminal, Mumbai | INDIA

Hateco Haiphong International
Container Terminal (HHIT) | VIETNAM

Adani Ports Vizhinjam | INDIA

ECT Container Terminal Colombo | SRI LANKA
South Asia Gateway Terminals | SRI LANKA
Colombo West Internationa Terminal | SRI LANKA

New Priok Container Terminal One, Jakarta | INDONESIA

Asia Service Hub 2025

CAMCO ASIA OFFICE SHANGHAI

Yokohama CMA D5 I JAPAN

Qingdao Qianwan Intelligent
Container Terminal | CHINA

Wanhai Lines Kaoshiung | TAIWAN

Port of Tangshan | CHINA

International Container
Terminals Manilla | PHILIPPINES

China Rail Nanchang | CHINA

Beibu Gulf Port Qinzhou | CHINA

PTP I MALAYSIA

Camco Product Portfolio

RAIL AUTOMATION

START PROCESSING TRAINS WITHOUT DELAY AND IMPROVE TRAIN TURNAROUND TIME

- ▶ OCR RAIL PORTAL
- ▶ RMG OCR CAMERAS
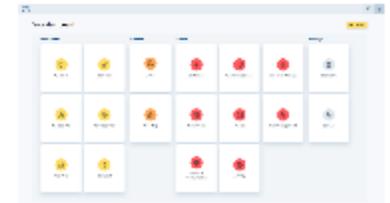- ▶ RTLS
- ▶ SPREADER CAMERA

YARD AUTOMATION

FROM A STEP BY STEP INTEGRATION TO FULL INTEGRATION OF TERMINAL PROCESSES

- ▶ RFID RTG/RMG TRUCK HANDOVER
- ▶ VMT MANUAL / AUTO JOB STEPPING
- ▶ RTG/RMG OCR CAMERAS
- ▶ ASC KIOSKS
- ▶ RTLS
- ▶ SPEADER CAMERA

**THE BRIDGE**
Management by Intelligence

RT DIGITAL TWIN

GATE AUTOMATION

THE INDUSTRY REFERENCE IN VISION-BASED GATE AUTOMATION SOLUTIONS

- ▶ OCR PORTALS
- ▶ KIOSKS
- ▶ VBS + ITT VEHCILE BOOKING SYSTEM
- ▶ RFID
- ▶ WEIGHT IN MOTION (WIM)

QUAY AUTOMATION

IMPROVING WATERSIDE OPERATIONS FOR A LEANER, GREENER INDUSTRY READY FOR INCREASING TRAFFIC

- ▶ OCR BOXCATCHER
- ▶ TT AND SC IDENTIFICATION AND ALIGNMENT
- ▶ BLV BAY LOAD VERIFICATION
- ▶ RTLS
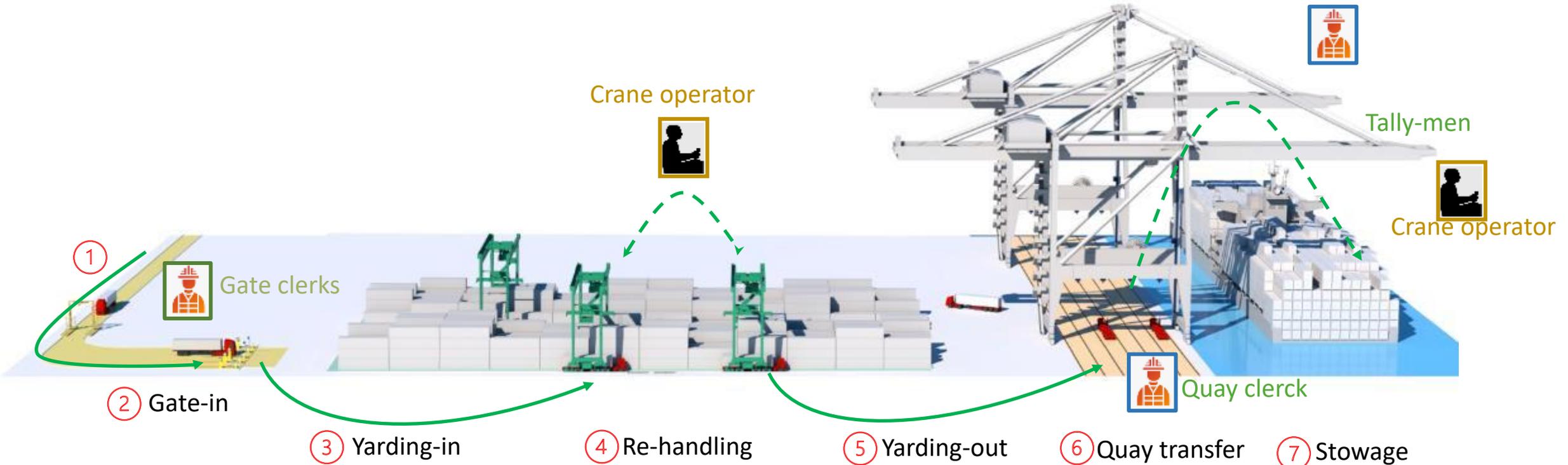- ▶ SPREADER CAMERA
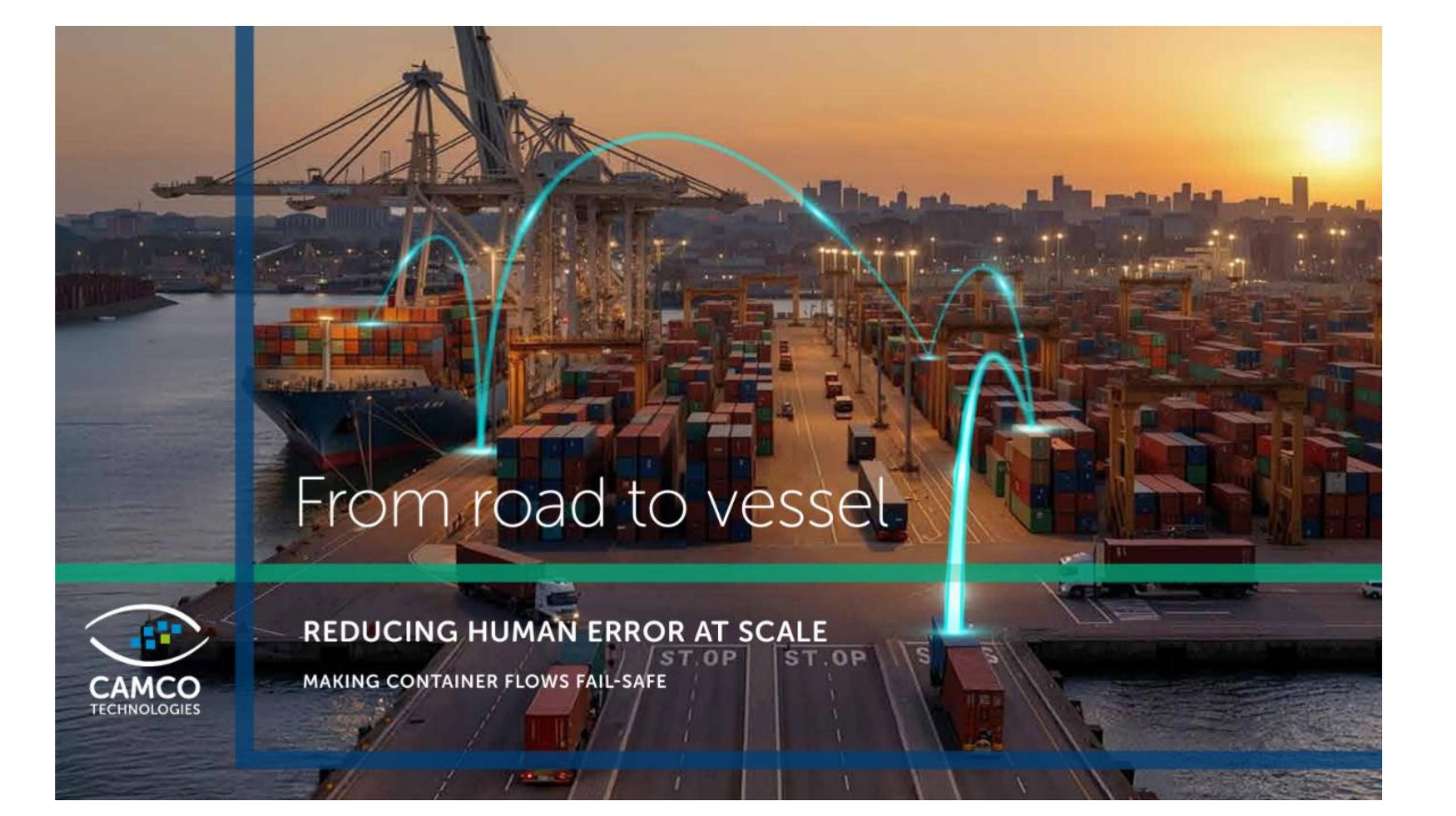
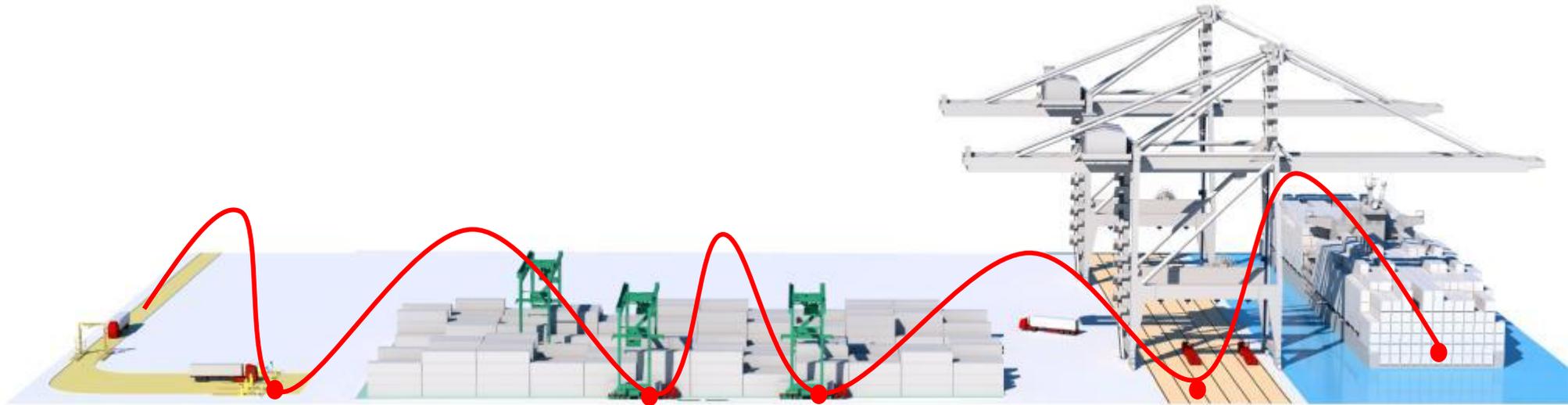# From road to vessel

REDUCING HUMAN ERROR AT SCALE

MAKING CONTAINER FLOWS FAIL-SAFE

CAMCO
TECHNOLOGIES

Road to Vessel Journey
5 single moves from road to vessel

CAMCO TECHNOLOGIES

Crane operator

Tally-men

Crane operator

① Gate clerks

② Gate-in

③ Yarding-in
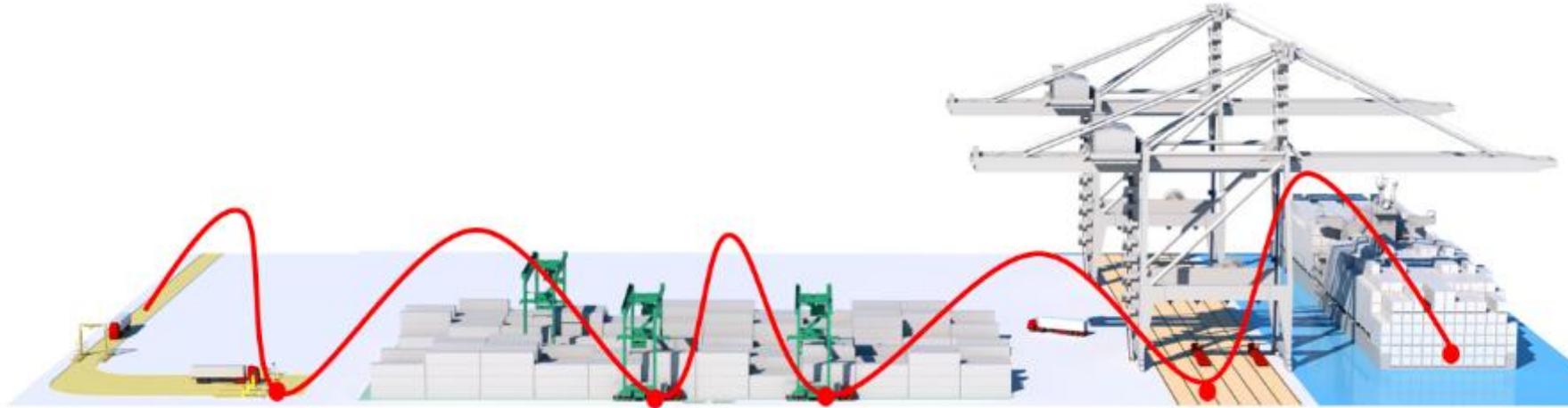
④ Re-handling

⑤ Yarding-out

Quay clerck

⑥ Quay transfer

⑦ Stowage

Road to Vessel Journey

For every single container move, two essential checks must be completed to validate the move

Road to Vessel Journey

Is this the right container being pickup up?

Reading container number
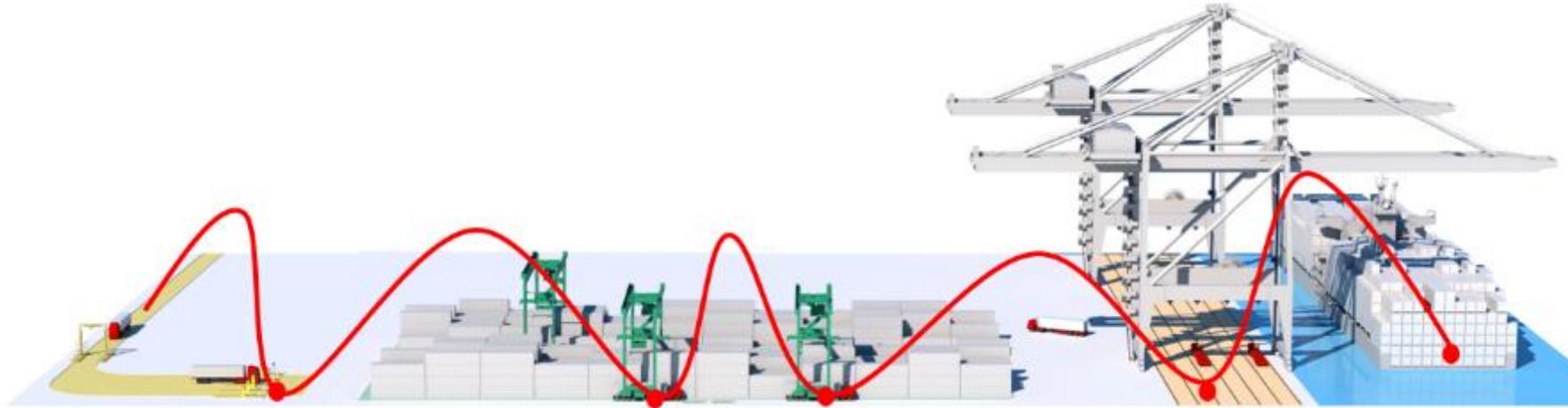Reading via truck-ID (license plate/tag/roof)

Is this the right pickup or drop location?
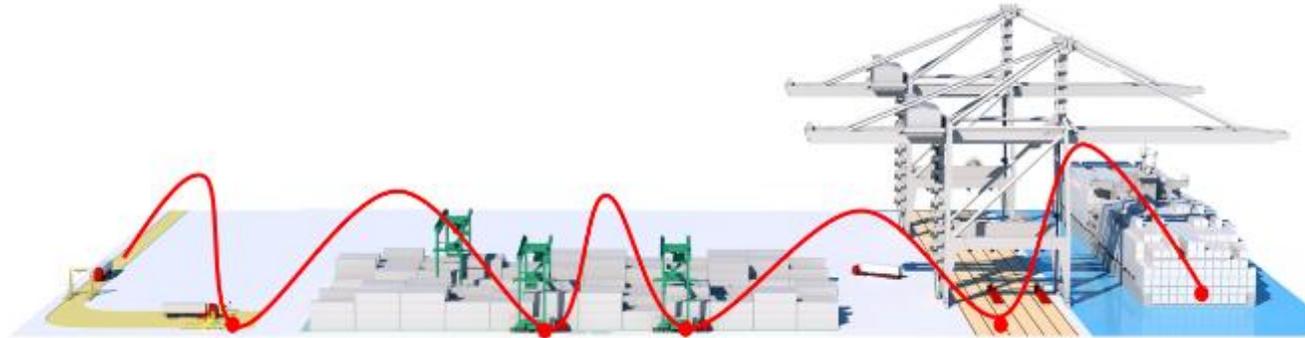
RTG (Stack locations)
STS (lane location)
Vessel (bay/row/tier location)

Road to Vessel Journey

The essential checks, container ID and location checks are all done manualy by clerks and drivers

Road to Vessel Journey

Those container moves are guided by the Terminal Operating System dispatching digitized jobs to clerks and crane operators.
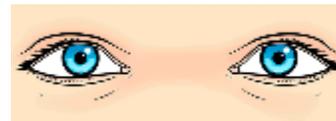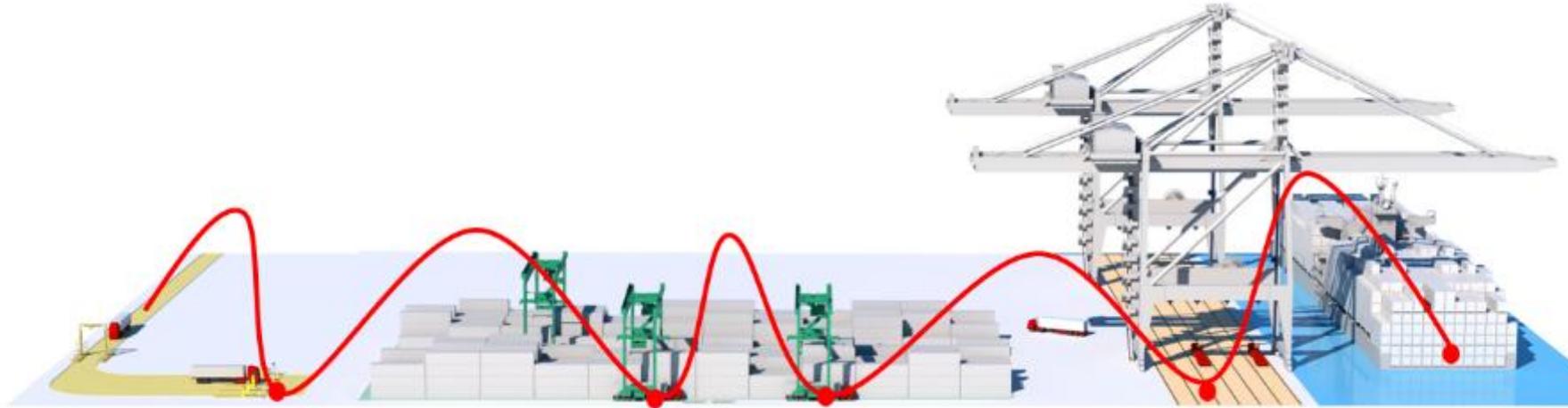
Digitized Jobs

These clerks and crane operators rely solely on visual checks to execute those instructions

Human feedback
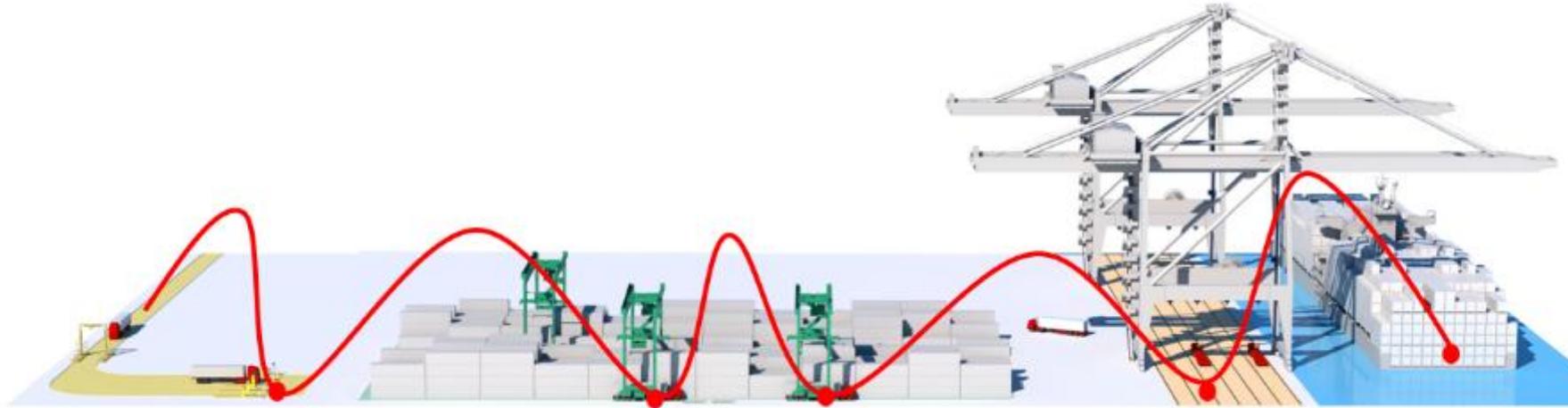
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Road to Vessel Journey

On a manual operated terminal the TOS is blind

Instructions are send out digitaly (handheld) Feedback is « analog », based on the human factor
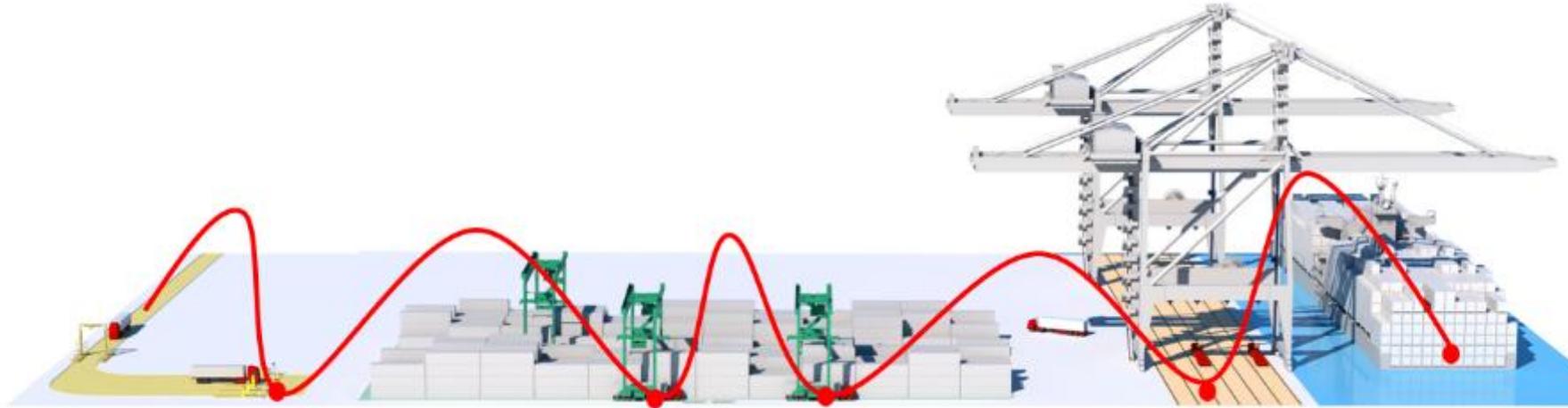
Road to Vessel Journey

To move a container from road to vessel at least

4 container/truck identification checks should be done
7 Location checks

In total 11 visual checks by human interaction

Road to Vessel Journey

If one single visual check has a probability on an mistake of 0,05%, thats 99,95% accuracy

For a complete move, road to vessel, 11 checks, it will be 0,54%

Meaning 5 on 1000 moves goes wrong and needs correction

Road to Vessel Journey

Based on terminal feedback it will be more between 1 and 2%
Most mistakes are corrected during the move leading to inefficiencies
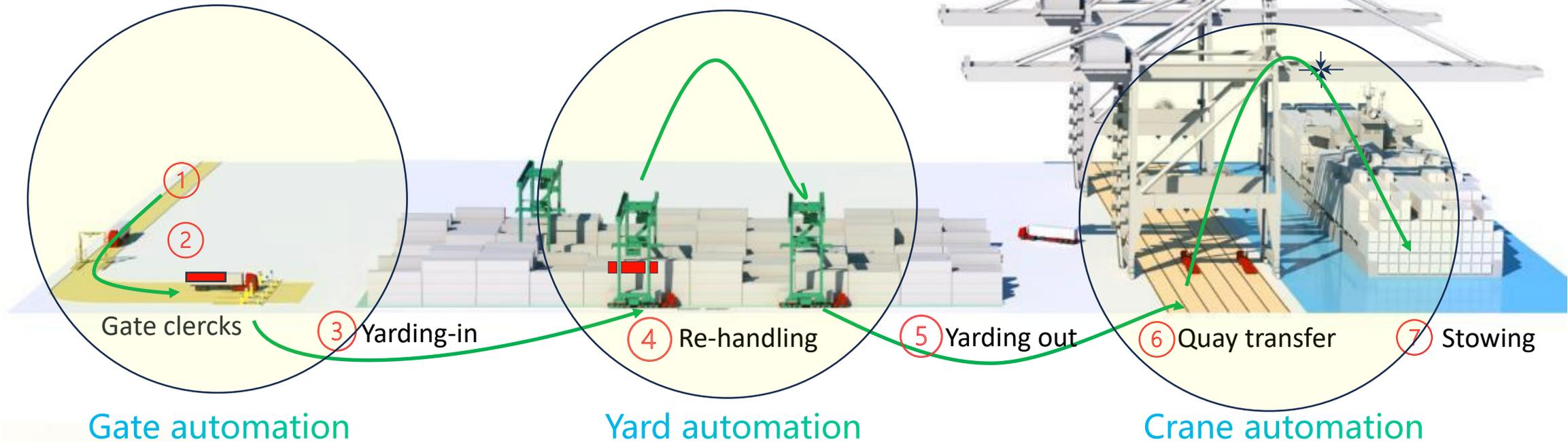
WHEN HUMANS DISRUPT THE FLOW

The 7 stages and 6 moves	Container or truck ID Check	drop/pickup location check
Arrival		
Gate-in	1	1
Yarding-in	1	1
Re-handling/reshuffling		2
Yarding-out	1	1
STS handover	1	1
STS vessel stowage		1
Total visual checks	4	7

FROM MANUAL MISTAKES TO DIGITAL PRECISION

Type of terminal	Estimated error rates
Manual & old terminals	Up to 1 to 2%
Modern semi automated terminals	Between 0,1 to 2%

Road to Vessel Journey
From manual black box operations to fully digitised terminal

CAMCO TECHNOLOGIES

① ②

Gate clercks

③ Yarding-in ④ Re-handling ⑤ Yarding out ⑥ Quay transfer ⑦ Stowing

Gate automation   **Yard automation**   **Crane automation**

- Digitalisation brings high visibility on the terminal processes
- Gate/yard/crane automation generates visual, location and timestamp data by move
- Makes TOS 100% copy of physical situation on the yard/vessel/train
- Higher efficiencies
- Less clerks on the yard, higher safety

Case Study-MPET Antwerp-9millionTEU/year

CAMCO TECHNOLOGIES

CONTAINER T   TOMATION

We automate, you operate.

Thank you!