GATE MANAGEMENT SYSTEMS

Increasing productivity, safety and security by Automation

Trans Middle East

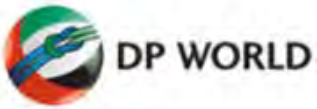
Tehran 25-January-2017

CAMCO TECHNOLOGIES

Agenda

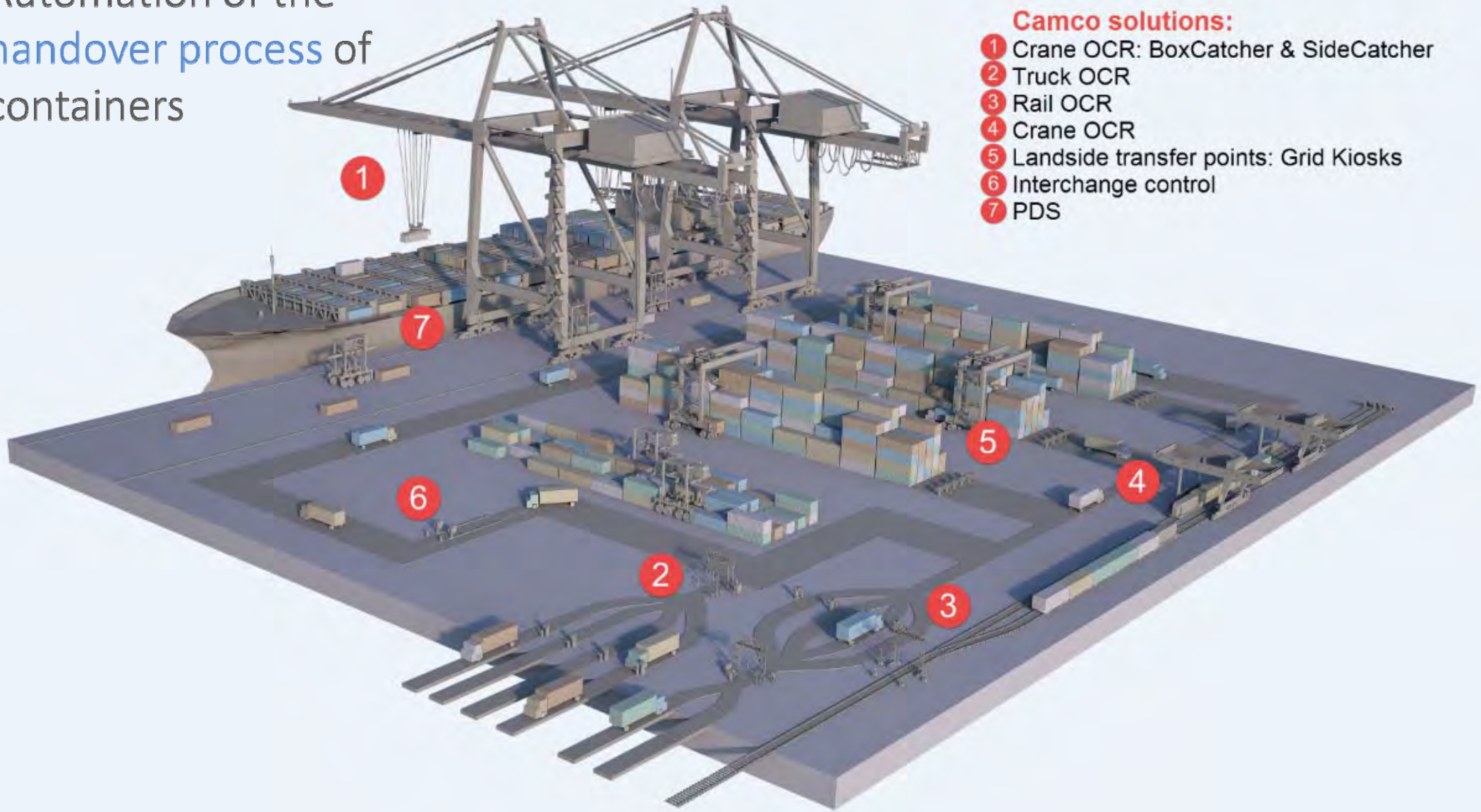
- Introduction
- What is Gate Management?
- Gate Management Systems
  - Manual
  - Fully Automated
- Conclusion

Camco Technologies – www.camco.be



Prime partner to container, ro-ro & rail terminals for process automation solutions based on visual and micro-location technologies

Automation of the handover process of containers



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

Solutions

Gate automation

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

OCR-assisted rail handeling

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

Crane OCR

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

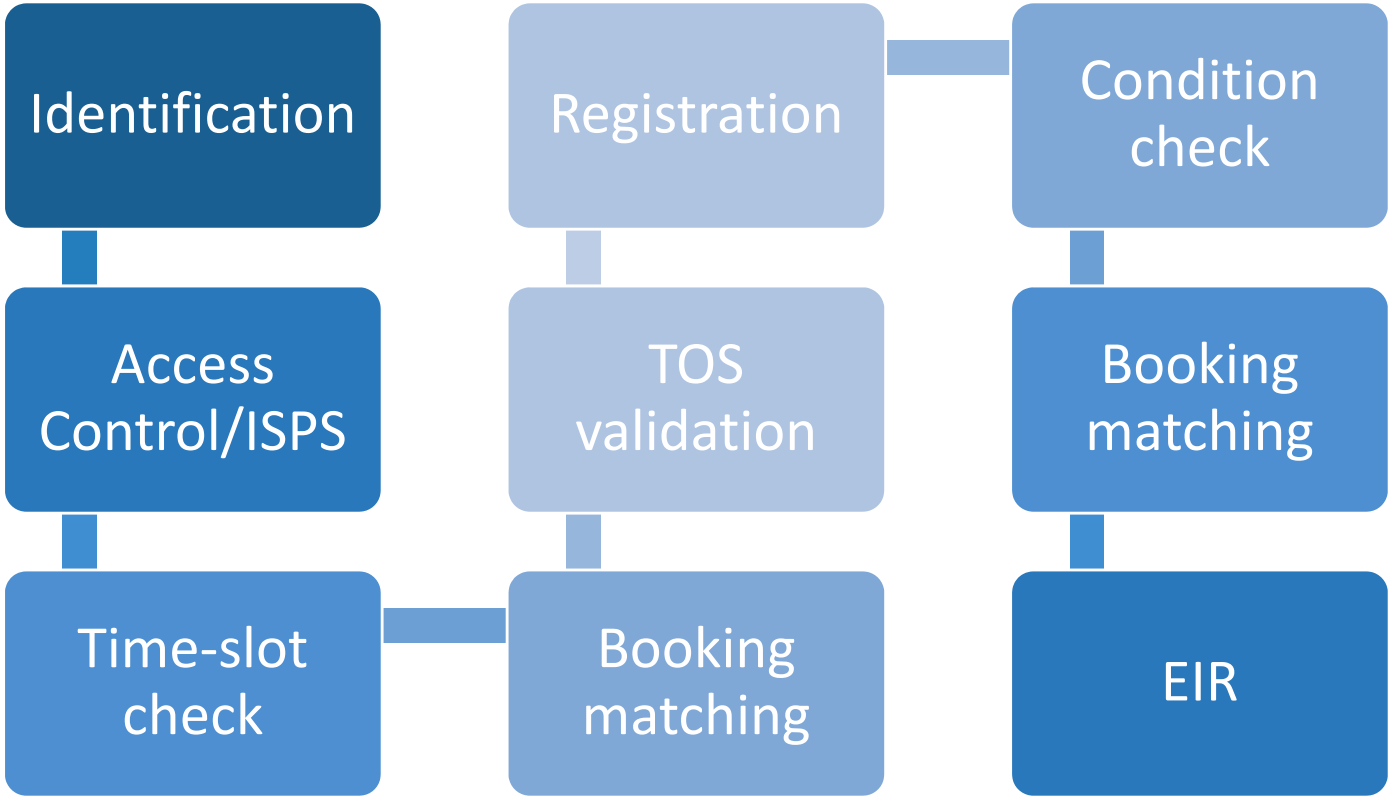
PDS/RTLS Solutions

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

Gate Management

JT1

Gate Management



JT1 Equipment Interchange Receipt (EIR)

A document transferring a container from one carrier to another, or to/from a terminal.

Julien Theys, 12/10/2016

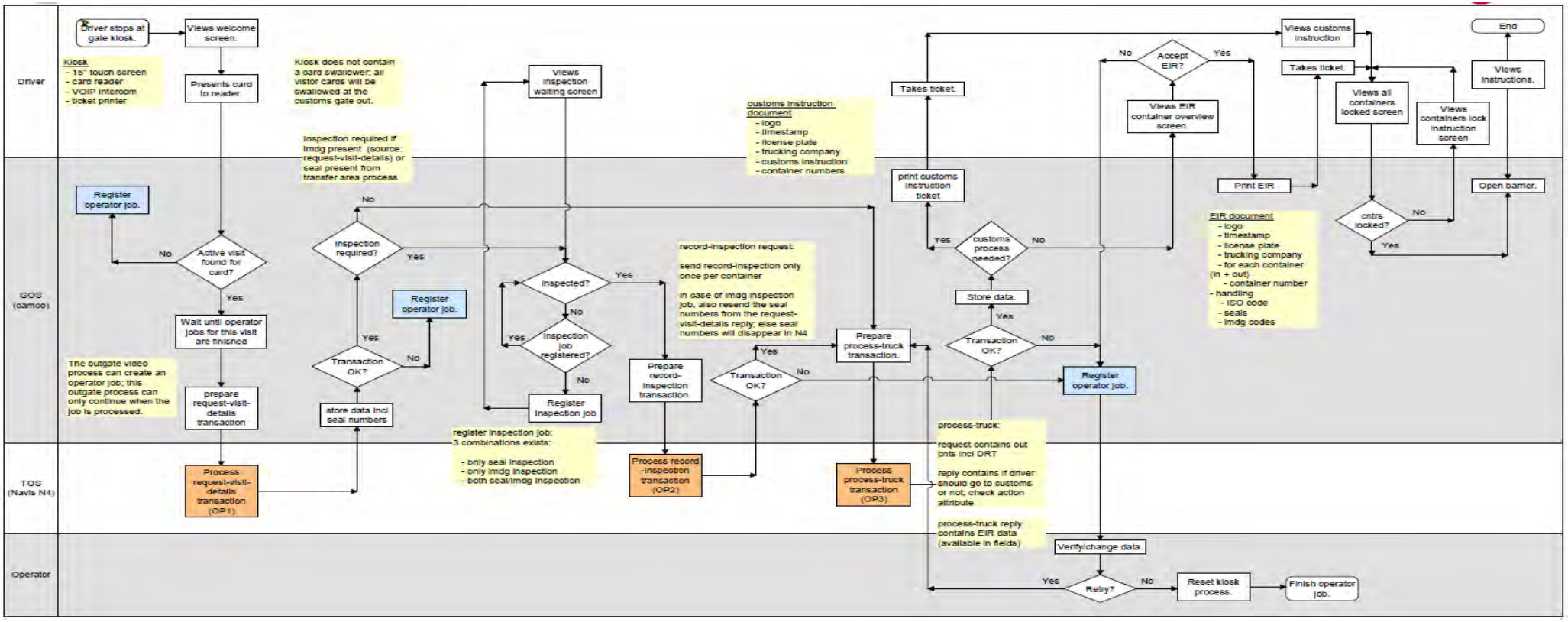
Gate Management System

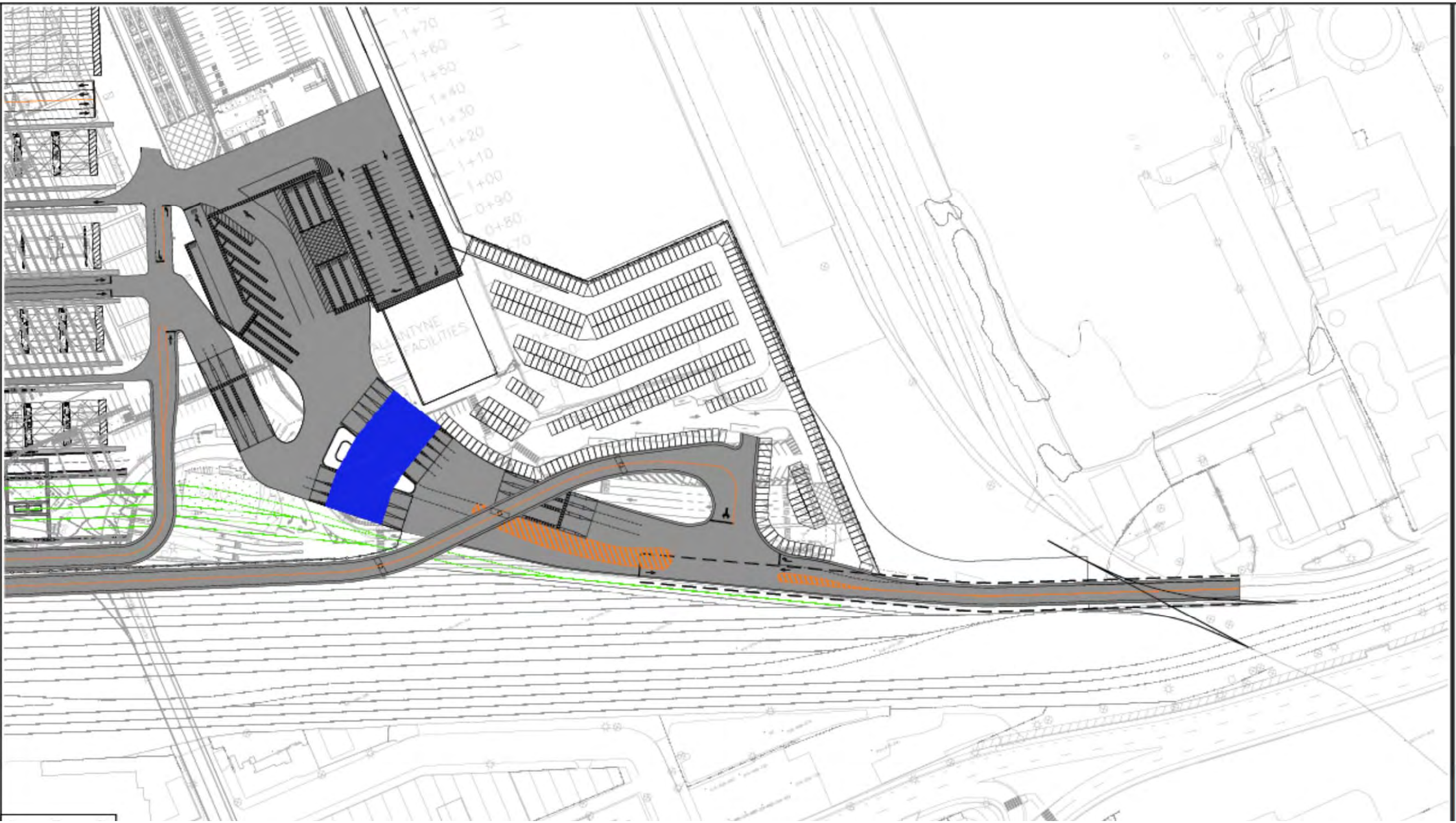
Gate Mgmt System – How to start?

GATE MANAGEMENT SYSTEM = COMPLEX COMBINATION

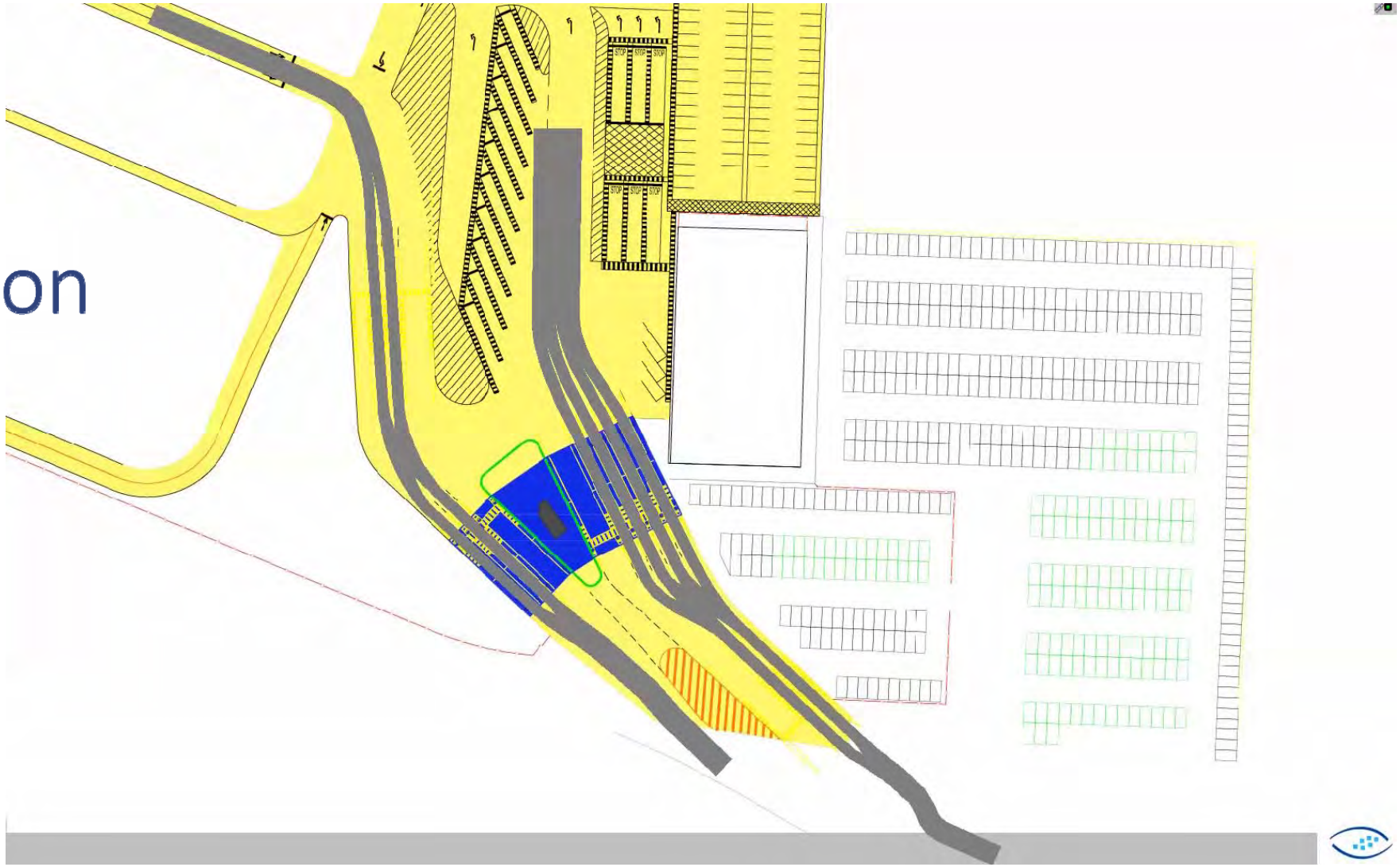
- Process flows
  - P-check
  - A-check
- Interfaces with Host systems
  - Access Control
  - TOS
  - Customs
- Lay-out of gate area
  - Space constraints
  - Green field vs Brown field
- Local regulations, norms, habits

Business Process Modelling





Simulation



Simulation

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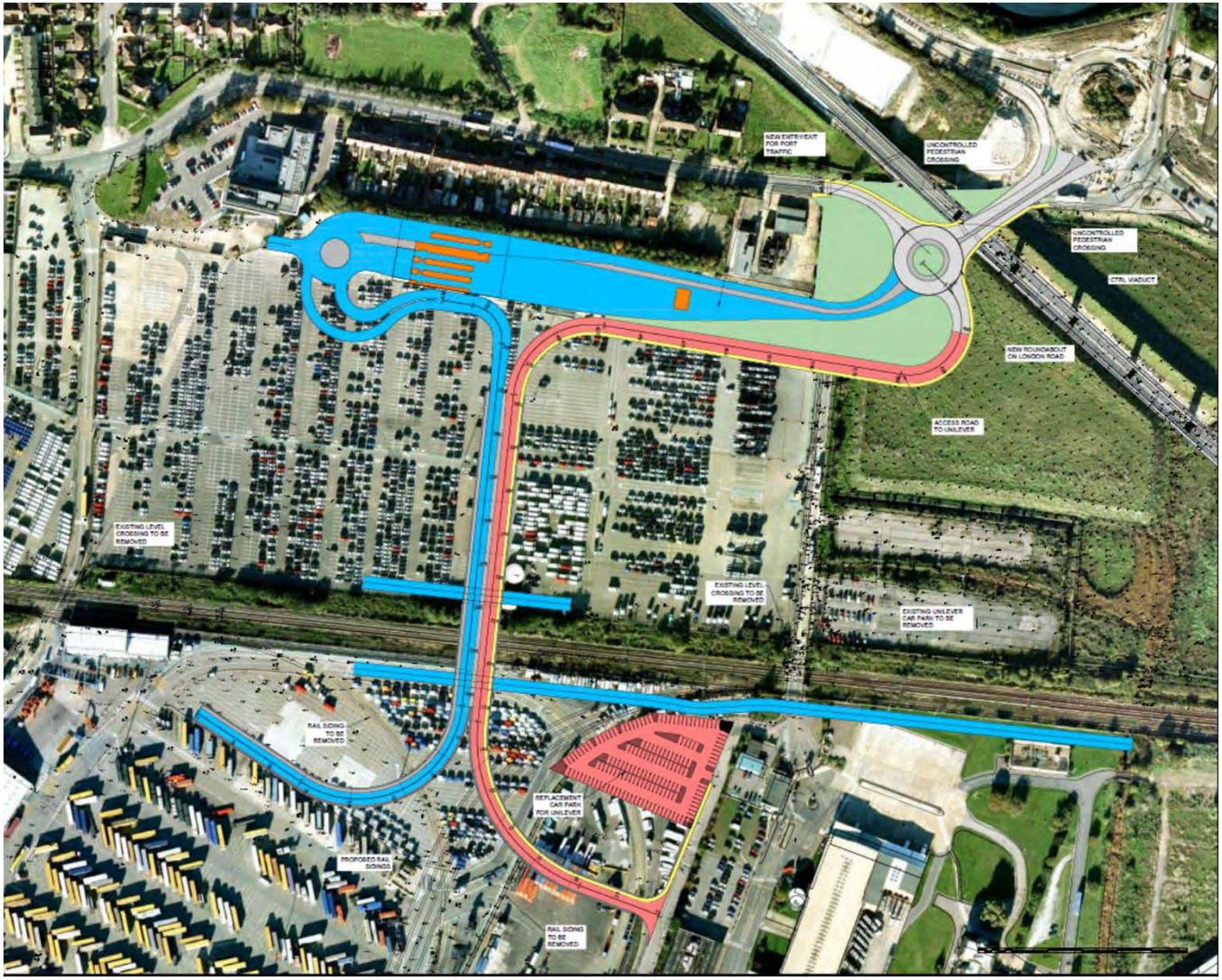
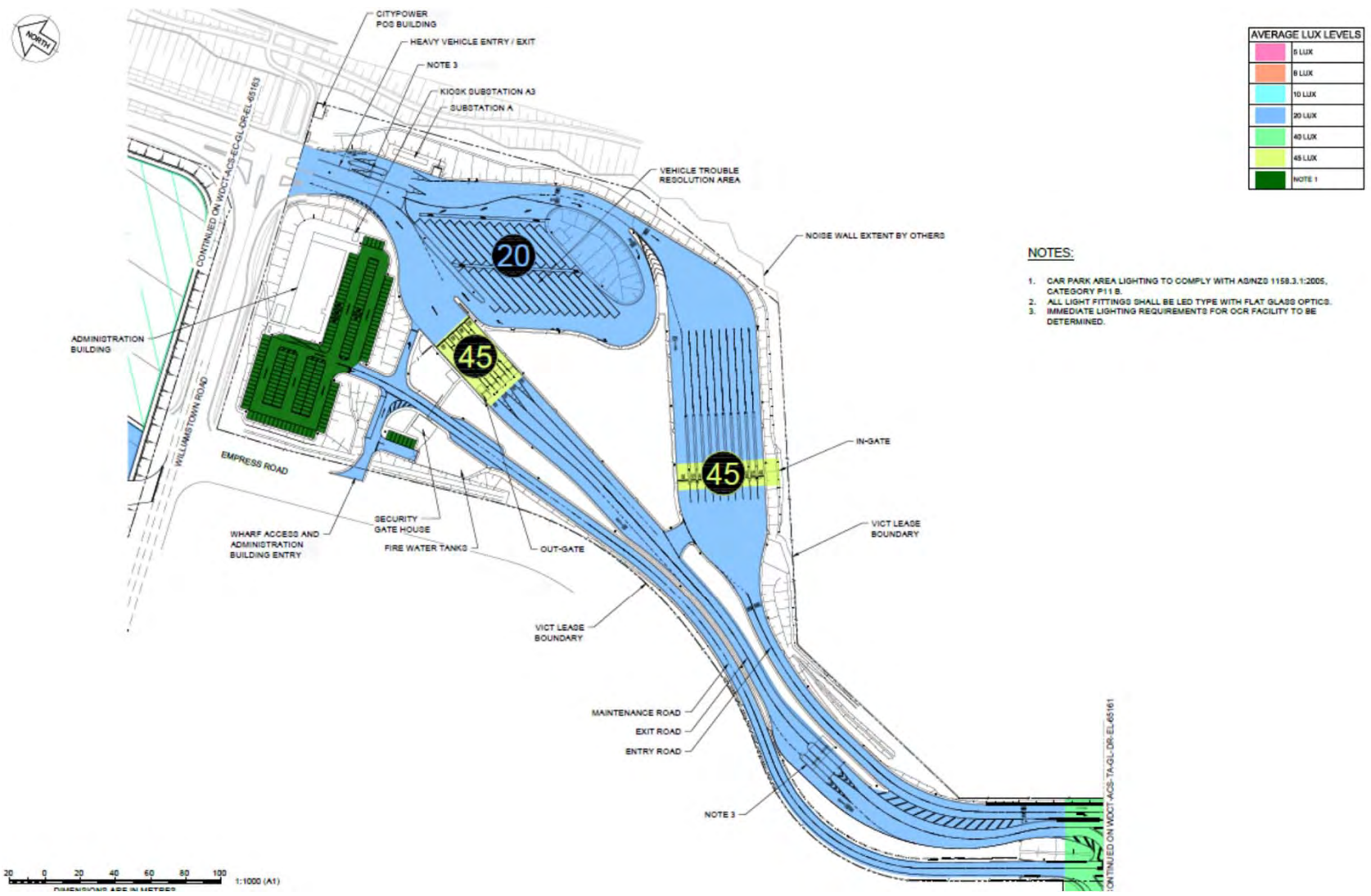
Innovate your Terminal
2011
Camco Technologies


NEW ENTRY/EXIT FOR PORT TRAFFIC
UNCONTROLLED PEDESTRIAN CROSSING
UNCONTROLLED PEDESTRIAN CROSSING
CTRL VIADUCT
NEW ROUNDABOUT ON LONDON ROAD
ACCESS ROAD TO UNILEVER
EXISTING LEVEL CROSSING TO BE REMOVED
EXISTING LEVEL CROSSING TO BE REMOVED
EXISTING UNILEVER CAR PARK TO BE REMOVED
RAIL SIDING TO BE REMOVED
REPLACEMENT CAR PARK FOR UNILEVER
PROPOSED RAIL SIDINGS
RAIL SIDING TO BE REMOVED

Brown field


NORTH
CITYPOWER POS BUILDING
HEAVY VEHICLE ENTRY / EXIT
NOTE 3
KIOSK SUBSTATION A3
SUBSTATION A
VEHICLE TROUBLE RESOLUTION AREA
NOISE WALL EXTENT BY OTHERS
CONTINUED ON WDCT-ACS-EC-GL-DR-EL-65163
ADMINISTRATION BUILDING
WILLIAMSTOWN ROAD
EMPRESS ROAD
20
45
45
IN-GATE
VICT LEASE BOUNDARY
SECURITY GATE HOUSE
WHARF ACCESS AND ADMINISTRATION BUILDING ENTRY
FIRE WATER TANKS
OUT-GATE
VICT LEASE BOUNDARY
MAINTENANCE ROAD
EXIT ROAD
ENTRY ROAD
NOTE 3
CONTINUED ON WDCT-ACS-TA-GL-DR-EL-65161
AVERAGE LUX LEVELS
5 LUX
8 LUX
10 LUX
20 LUX
40 LUX
45 LUX
NOTE 1
NOTES:
1. CAR PARK AREA LIGHTING TO COMPLY WITH AS/NZS 1158.3.1:2005, CATEGORY P11 B.
2. ALL LIGHT FITTINGS SHALL BE LED TYPE WITH FLAT GLASS OPTICS.
3. IMMEDIATE LIGHTING REQUIREMENTS FOR OCR FACILITY TO BE DETERMINED.
20 0 20 40 60 80 100
1:1000 (A1)

Gate Management Systems

Manual

Gate Management Systems - 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

HYUNDAI

CMA CGM
KEEP

Gate Management Systems

Automated

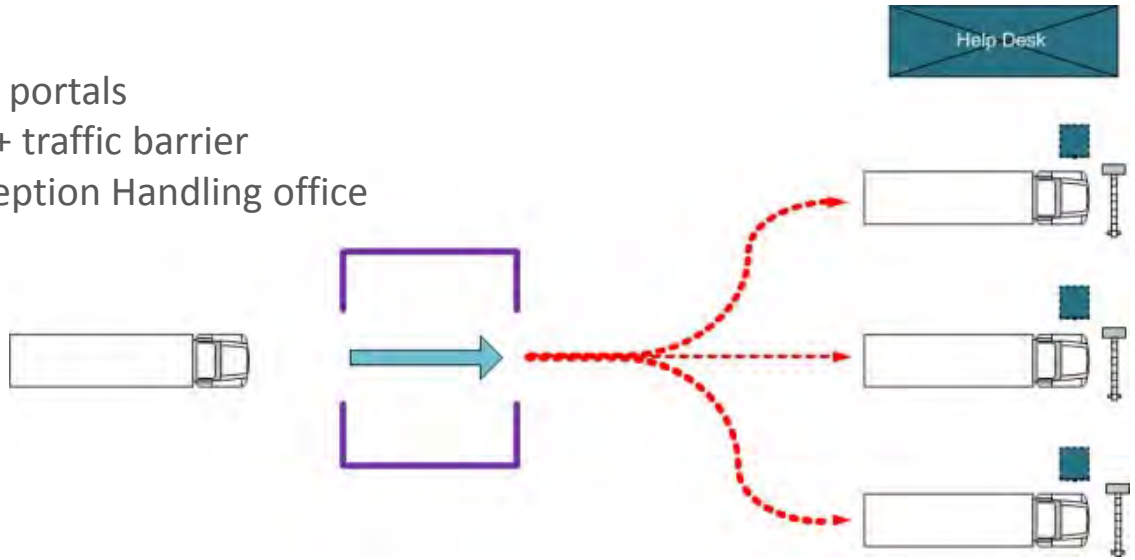
Gate Management System – Data

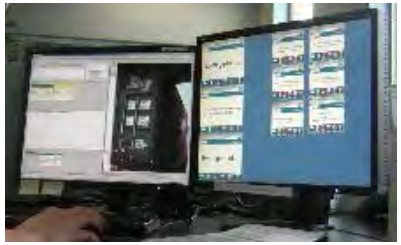
Automatic Identification	• Container number • ISO code • License plate number • Dangerous Goods Labels classification
Automatic Detection	• Container location (front, mid, back) • Door direction • Seal Presence • Reefer detection
Condition recording	• Condition Checking • Storage for later retrieval • Damage Claims management

Automated Gate – OCR portal system

Typical set-up:

- Limited # dynamic OCR portals
- Gate lanes with kiosks + traffic barrier
- Remote Help Desk/Exception Handling office



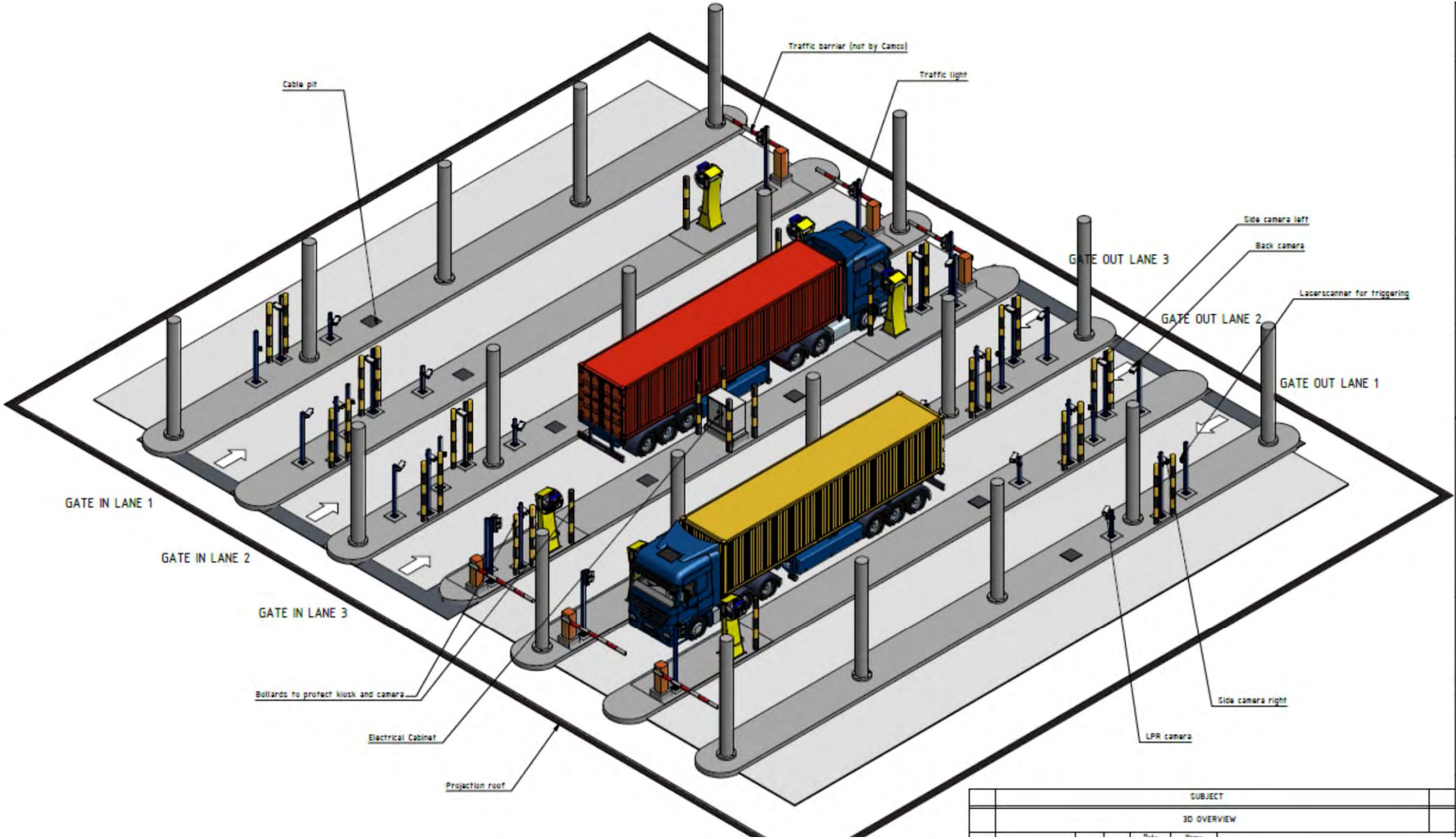


Inbound OCR portals
In-Gate lanes
Exit-Gate lanes
Outbound OCR portals
Nagura Container Terminal, Port Elizabeth, South Africa

Automated Gate – In-lane OCR system

Each gate lane is equipped with OCR camera system

- High Maintenance & Support costs
- Needs lots of space
- Lock system required: only one truck can enter gate lane
- Expensive & Mediocre results



SUBJECT	
3D OVERVIEW	

TTI LB Camera Viewer Ver 1.14 2/3/12
Yard 49
Rear
Chassis
Driver
Yard
Yard 49

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Automated Gate System - Components

WHAT MAKES A GATE AUTOMATION PROJECT SUCCESSFUL?

Gate Automation

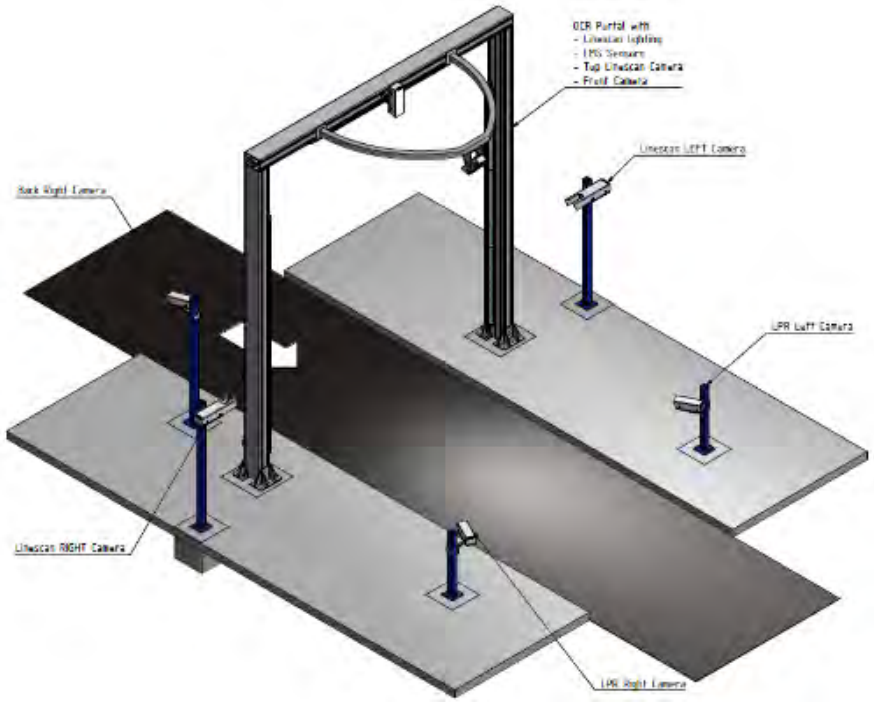
- Vehicle Booking System
  - pre-booking
  - pre-announement
- OCR Camera systems
  - visual proof of exact condition
  - automatic identification
  - automatic detection
- Driver Kiosk systems
  - identification of driver
    - ID Card system
  - registration & validation
    - matching booking
  - seal check
    - entry of seal number
  - TID & EIR ticket

Gate System - Components

OCR CAMERA PORTAL

- Condition recording
- Identification:
  - Truck
    - License plate number
  - Container(s)
    - Container number
    - ISO code
    - IMDG Label classification
    - Container location
    - Door direction
    - Seal Presence

Gate System – OCR Camera Portal



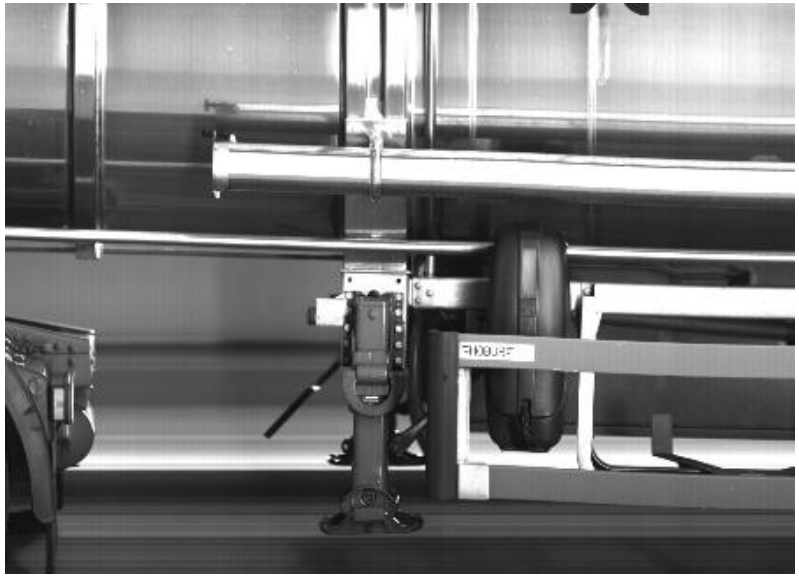
MAERSK
SEALAND
MAERSK

中国海运集团
CHINA SHIPPING

DE RIJKE
DE RIJKE
80
1814

TRIFLEET
LEASING
TRIFLEET
LEASING
TRANSANT BVBA

High Resolution Images – Trailer

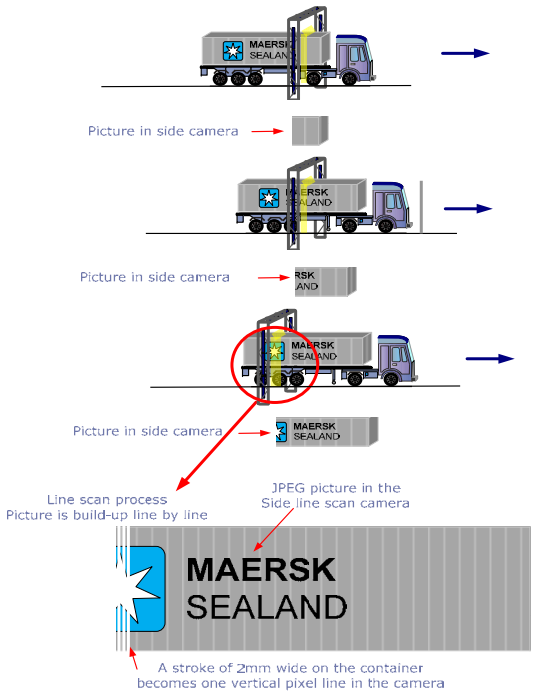


High Resolution Images - Rear

Making the Images

2D Stitching

Line scan Camera technology

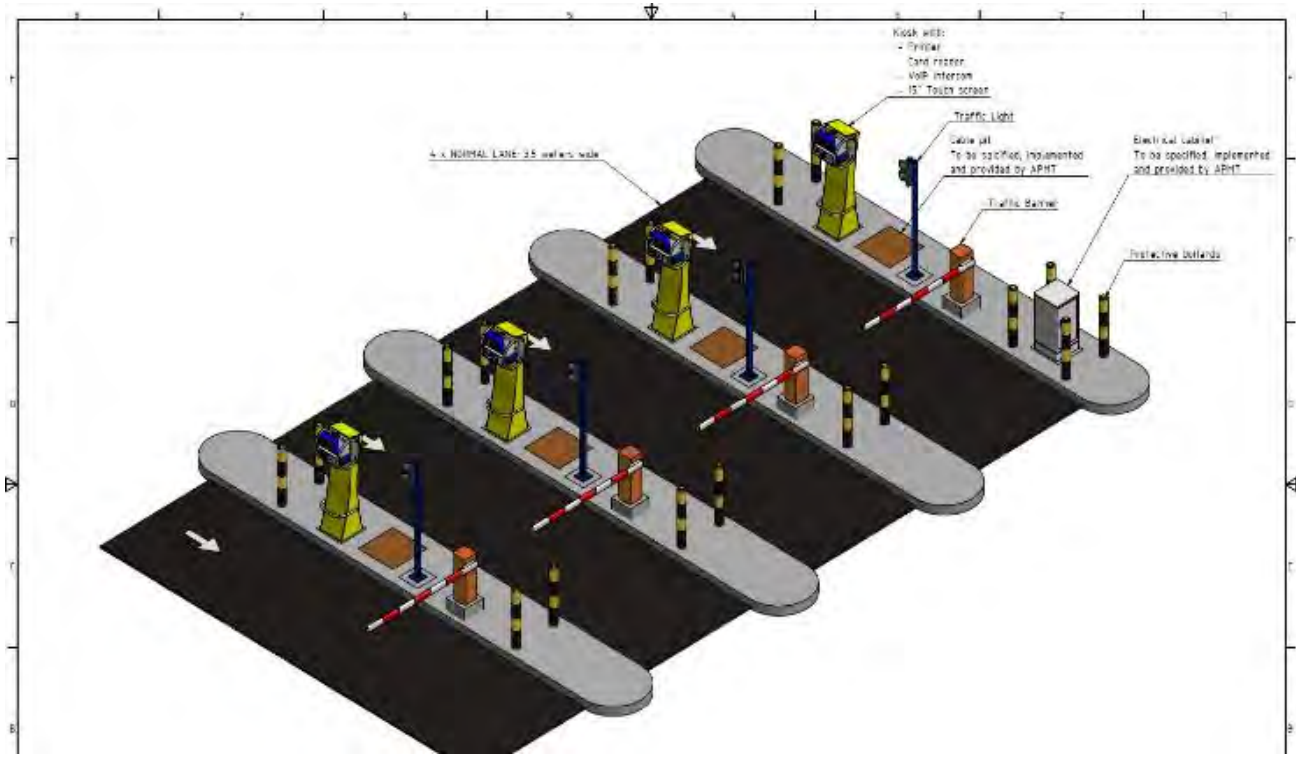


Gate System - Components

KIOSK/PEDESTAL SYSTEMS

- Drivers process own registration

Gate System – Kiosk system



Gate System – Kiosk system

Gate kiosk Systems

KIOSK SYSTEMS

- Modular
- Flexible
- Easy to maintain & support
- Ergonomic

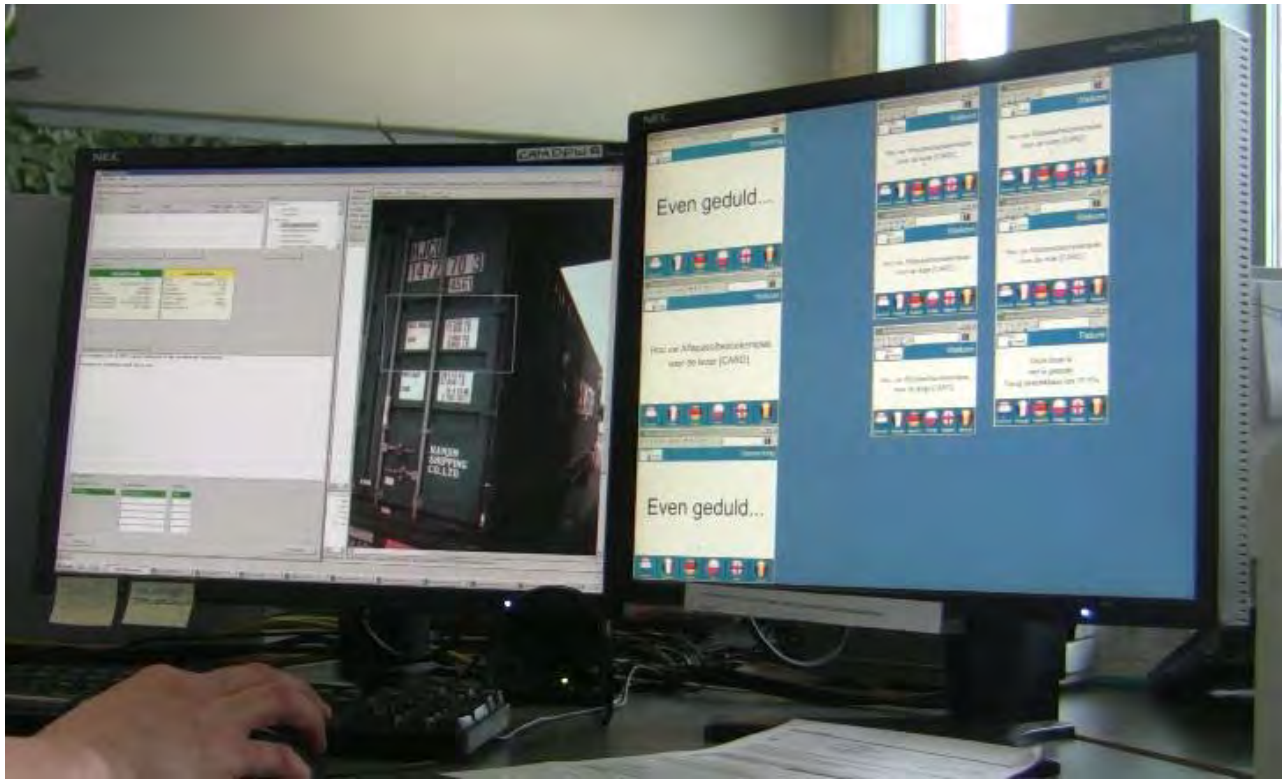
Gate System - Components

GATE OPERATING SYSTEM GOS

- Gate control
- Data capture
- Interaction with driver
- Interaction with ISPS

- TOS integration
  - Data validation
  - Yard & equipment management
  - EDI interfacing

Gate System - Components



GATE OPERATING SYSTEM GOS

- Exception handling
  - OCR corrections
  - Booking mismatches
  - Help Desk for drivers

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

OCR Accuracy rates → Exception jobs

	Truck OCR Portal
Container number	>98%
ISO Code	>98%
IMO Placards - presence	>92%
IMO Placards – Class (OPTION)	>90%
License Plate number - Tractor	95%+
Container position	99%
Container door direction	99%
Seal presence (OPTION)	>93%
Empty Chassis	100%

- OCR accuracy rates gives false perception
- What really counts is the number of exception jobs.
- #exception jobs depends of number of attributes (seal, IMDG, door, ISO,..)
- Reports of # exception jobs is automatically generated

Manual vs Automated Gate Systems

MANUAL GATE SYSTEM

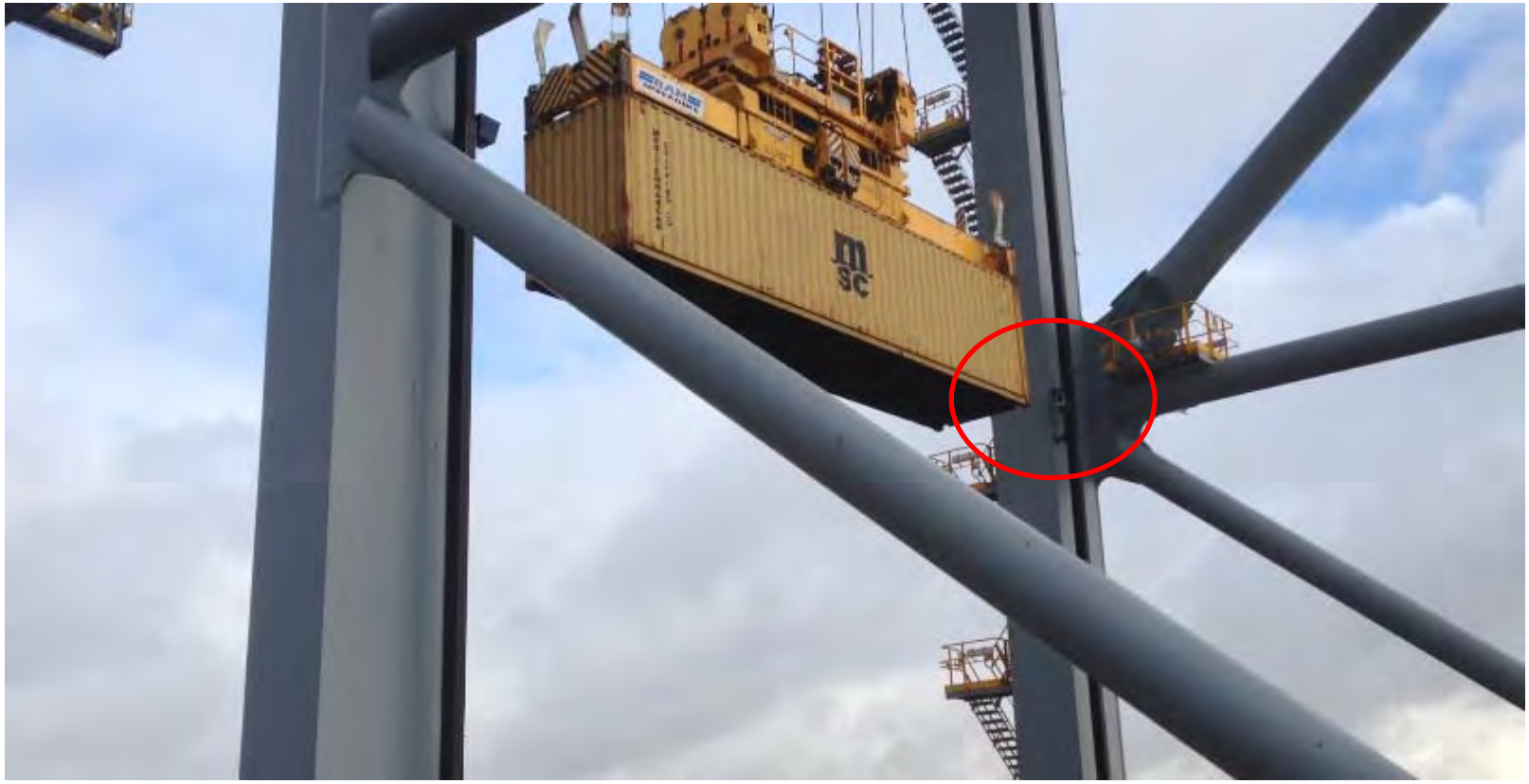
- LIMITED INVESTMENT
  (NO EQUIPMENT REQUIRED)
- HIGH OPERATING COST
- TIME-INTENSIVE
  (ALL DATA NEEDS TO BE ENTERED MANUALLY)
- INACCURATE DATA
- UNSAFE WORK ENVIRONMENT
- LOT OF SPACE REQUIRED

AUTOMATED GATE SYSTEM
OCR PORTAL

- LIMITED INVESTMENT
  (LIMITED # OF PORTALS REQUIRED)
- LOW MAINTENANCE COST
- FAST & EFFICIENT
  (AUTOMATED REGISTRATION & HANDLING)
- HIGH ACCURACY RATE
- SAFE WORK ENVIRONMENT
- LIMITED SPACE REQUIRED

Gate Management Systems: Rail

Gate Management Systems: Crane



Conclusion

- Reduction turnaround time of the trucks
- Smoother traffic flow at the Gate Lanes
- Higher Data accuracy
- Minimum processing time
- Efficient exception handling
- Extensive Integration

Productivity

Safety

Profitability

Security

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THANK YOU

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