

9th Mediterranean Ports and Shipping 2022 Exhibition and Conference, Slovenia,
Tuesday 24 to Thursday 26 May 2022

Operation of Automated Equipment Intermodal Terminals in Europe

A Journey in 5 Steps

Mikko Mononen & Camilo Torres

The Journey:

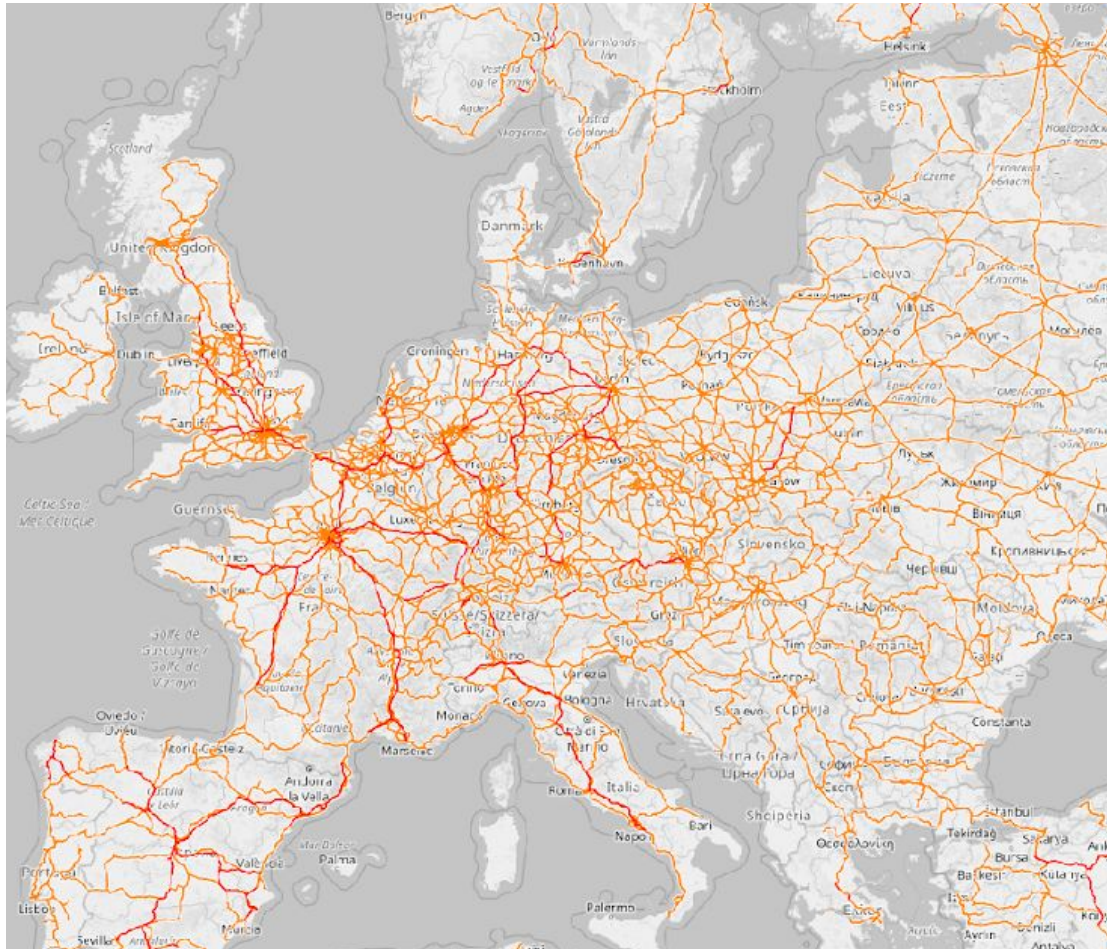
Steps to automate Intermodal Terminals in Europe

STEP 1

Understand the market demand and potential for expanding the level of automation.

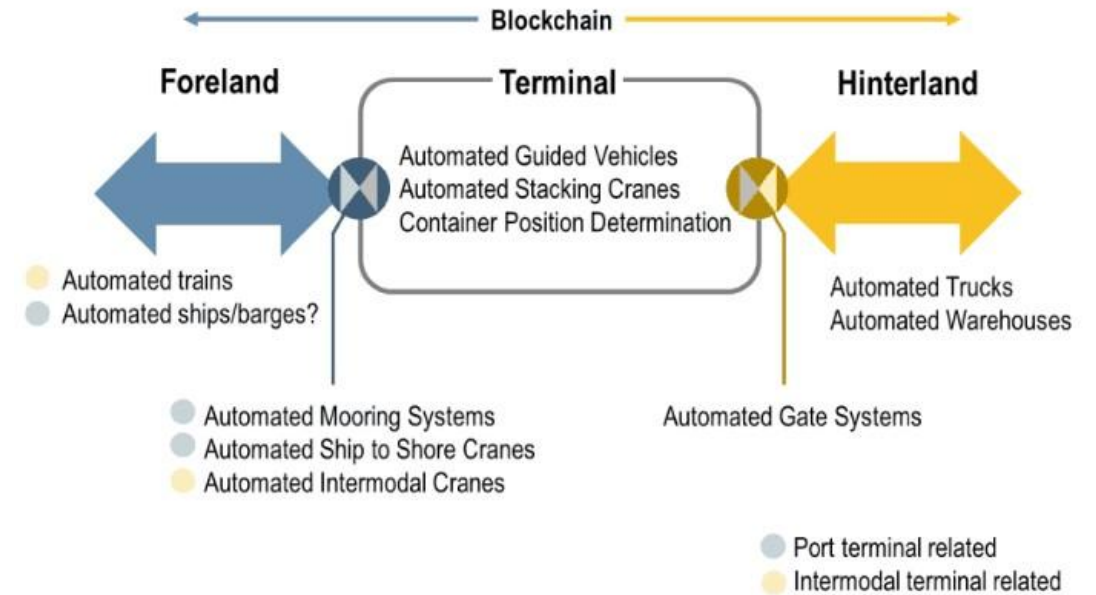


STEP 1: MARKET - Network and Automation



European Railroad System Length:
218.783 km (US:240.000 km)
12.000 Cargo yards in 30 European countries

Freight Terminal Automation



Freight Terminal Automation

Key drivers for operation

Less CO2
emissions

Lower
noise
emissions

Lower fuel
consumption

Less
engine
hours

Less
maintenance

Less
interruptions



The Journey:

Steps to automate Intermodal Terminals in Europe

STEP 1

Understand the market demand and potential for expanding the level of automation.

STEP 2

Identify future terminal needs.

Identify future terminal needs

Safe
Loss of life and LTI rate



Efficient
Productive, low handling
unit cost



Eco-efficient
CO2 emission taxation



Flexible, scalable
Possibly to adapt to changes
in business environment



The right solution for you depends on your specific situation.

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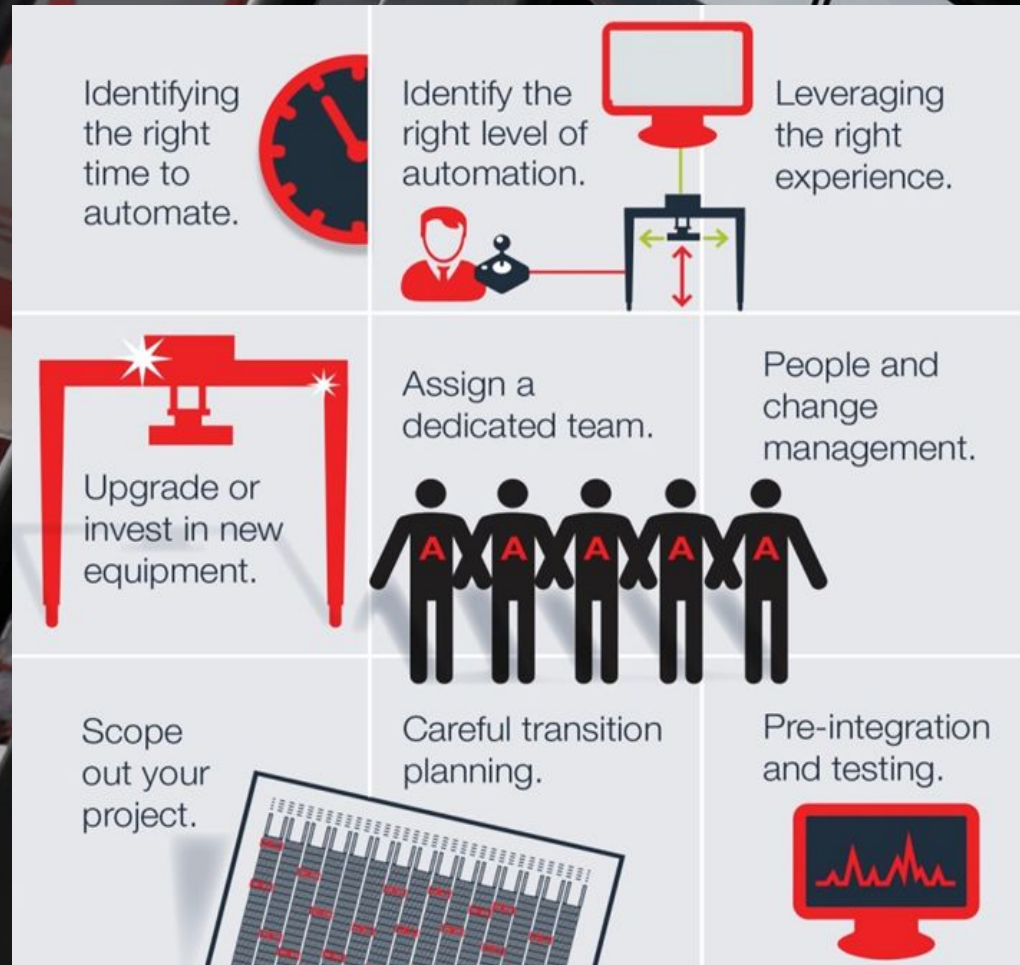
STEP 2

Identify future terminal needs.

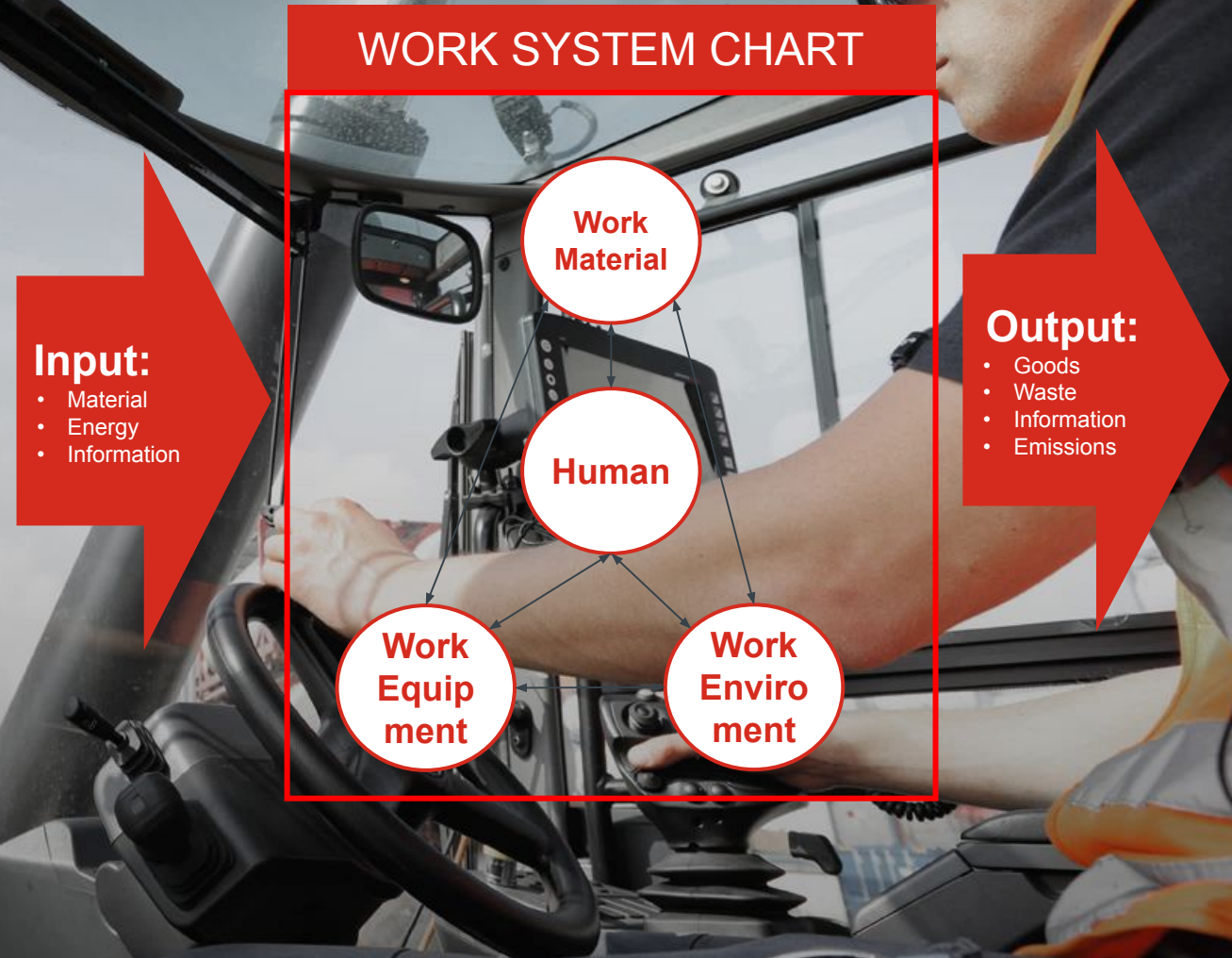
STEP 3

Manage changes to the entire work system.

Automation possibilities and your entire work system



WORK SYSTEM CHART



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STEP 4

Automation or process automation - what is the difference?

Process Automation

&

Automated Equipment

Process Automation

- Review lift equipment utilisation rates
- Automate existing manual processes
- Remove bottlenecks and congestion
- Improve the flow of containers around your terminal or yard
- Know where your equipment and road trucks are in your terminal or yard at all times
- Reduce errors, increase speed, productivity and safety

Process Automation provides a timely ROI with significantly less investment

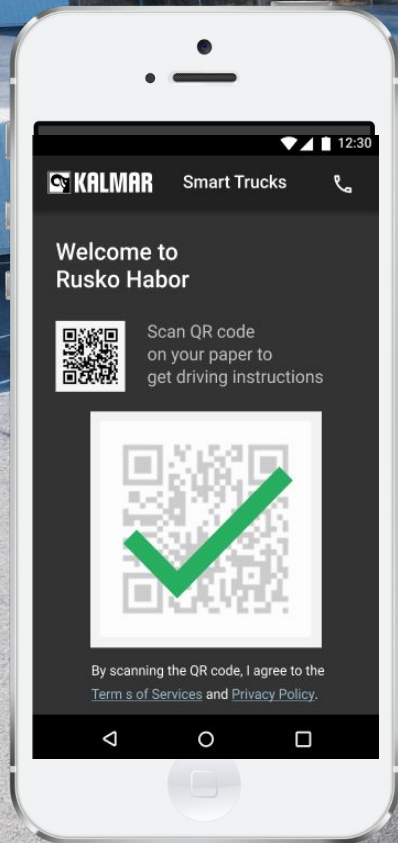


Automated Equipment

Enables the full potential a terminal needs in the future. With driverless and automated equipment in combination with Kalmar ONE Terminal Automation software a seamless overall automated operation can be realized.

The full potential of automated operation can be enabled. A more predictable operation with less manual interaction results in a planned good performance and allows continuous measureable KPI improvement

Process Automation



SmartLanes



SmartRail



SmartTruck
NEW



SmartTrack



SmartLift



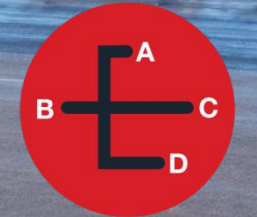
SmartFleet



SmartStack



SmartProfile



SmartPath



SmartWeight



SmartMap

Improved Operational
Visibility

Better Asset
Utilization

Improved Safety

Increased Information
Accuracy

Eliminated Delays



Stepwise automation approach for Intermodal

Minimize technical and safety risks

LEVEL 1 Remote Controlled

Manually

- Auto Gantry Steering
- Electrified

1.1 Remote Controlled

- Driver located to the office
- Optionally TOS integration

1.2 Supervised

- Automated supervised gantry, trolley and certain hoist moves to the target location
- TOS integration

LEVEL 2 Automated

2.1 Semi-Automated

- Automated pick & ground in stack area with supervised gantry movements
- RC operated truck lane and exception handling

2.2 Automated

- Automated pick & ground in stack area
- Automated gantry movements
- RC operated truck lane and exception handling
- Optionally housekeeping

LEVEL 3 Fully Automated

- (Future development)
- Automatic truck lane handling
- RC operation only for exception handling

Standardized and Scalable Software solution



Standardised

Standardised offering blueprint for cranes

Same proven automation and software products and modules for all application types

Standardised integration processes



Scalable

Support for terminals of all sizes

Assets (AutoStrads) can be relocated

Gradual deployment support in brownfield conversions

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Automation or process automation - what is the difference?

STEP 5

Choose the right partner

STEP 5:

Kalmar with strong heritage of innovation & experience



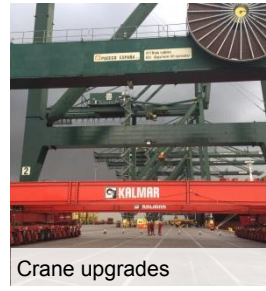
Automation



Reachstackers



Empty container handlers



Crane upgrades



Maintenance



Bromma spreaders



Straddle & Shuttle carriers



Terminal tractors



Forklift trucks



Spare parts



Used equipment

Automation
Solutions

Mobile
Solutions

Services

Bromma



**Smarter cargo flow
for a better everyday**

Qube Moorebank Logistic Park, Australia

Terminal setup

- Greenfield, intermodal
- A state-of-the-art, fully automated intermodal terminal solution

Equipment & software

- 4 Kalmar ASCs
- 8 Kalmar AutoRMGs
- 8 Hybrid Kalmar FastCharge(TM) AutoShuttles(TM) and charging stations
- Kalmar One
- (Navis N4 TOS)

Comment

Qube is one of Australia's largest providers of integrated import and export logistics services, targeting freight moving to and from ports. At 243-hectares the MLP development will be the largest intermodal freight precinct in the country.

The MLP project aims to achieve a considerable ecological impact in the community by reducing carbon dioxide emissions at the terminal through using electrical container handling, but also by reducing diesel truck traffic significantly around Sydney.



Kalmar's capabilities and product portfolio in terminal automation are second to none, so we are looking forward to taking our next steps with the help of their end-to-end solution. This highly complex project will deliver a state-of-the-art automation system that breaks new ground in the intermodal container handling business, and in our opinion Kalmar and Navis are the only partners who can deliver a system of this type and complexity.

Maurice James
Managing Director, Qube.

Thank you!

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Making your every move count.