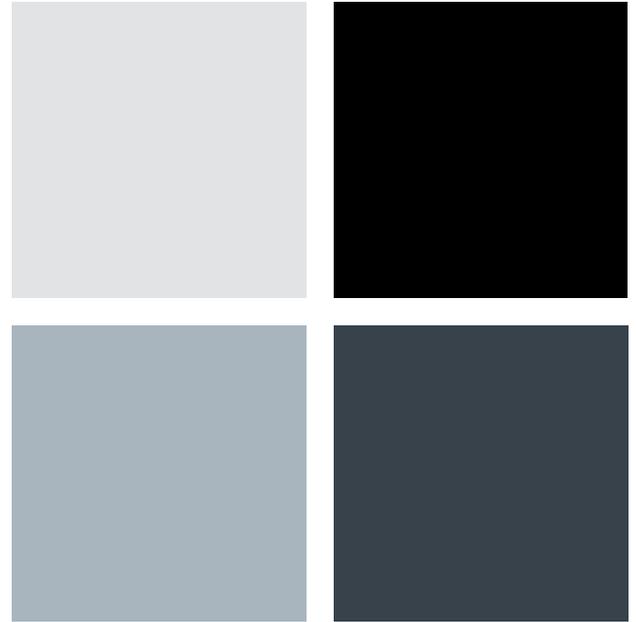


# Structural drivers support Kalmar's long term profitable growth

**Site visit 21.11.2016**

Dr. Antti Kaunonen



# Structural drivers support Kalmar's long term profitable growth focusing on automated container ports



Introduction



Kalmar in brief



Market drivers



Kalmar strategy with the focus on automated container ports



Summary

# Introduction

We are  
shaping  
the  
industry



- Great long-term possibilities in automation and in software solutions, only a question of timing
- Kalmar has established PMO to support services growth
- Profitability to improve also by growth in services

Our industry is over ten years behind other industries using automation (and IT) as a competitive advantage

# Structural drivers support Kalmar's long term profitable growth focusing on automated container ports

- Introduction
- Kalmar in brief
- Market drivers
- Kalmar strategy with the focus on automated container ports
- Summary

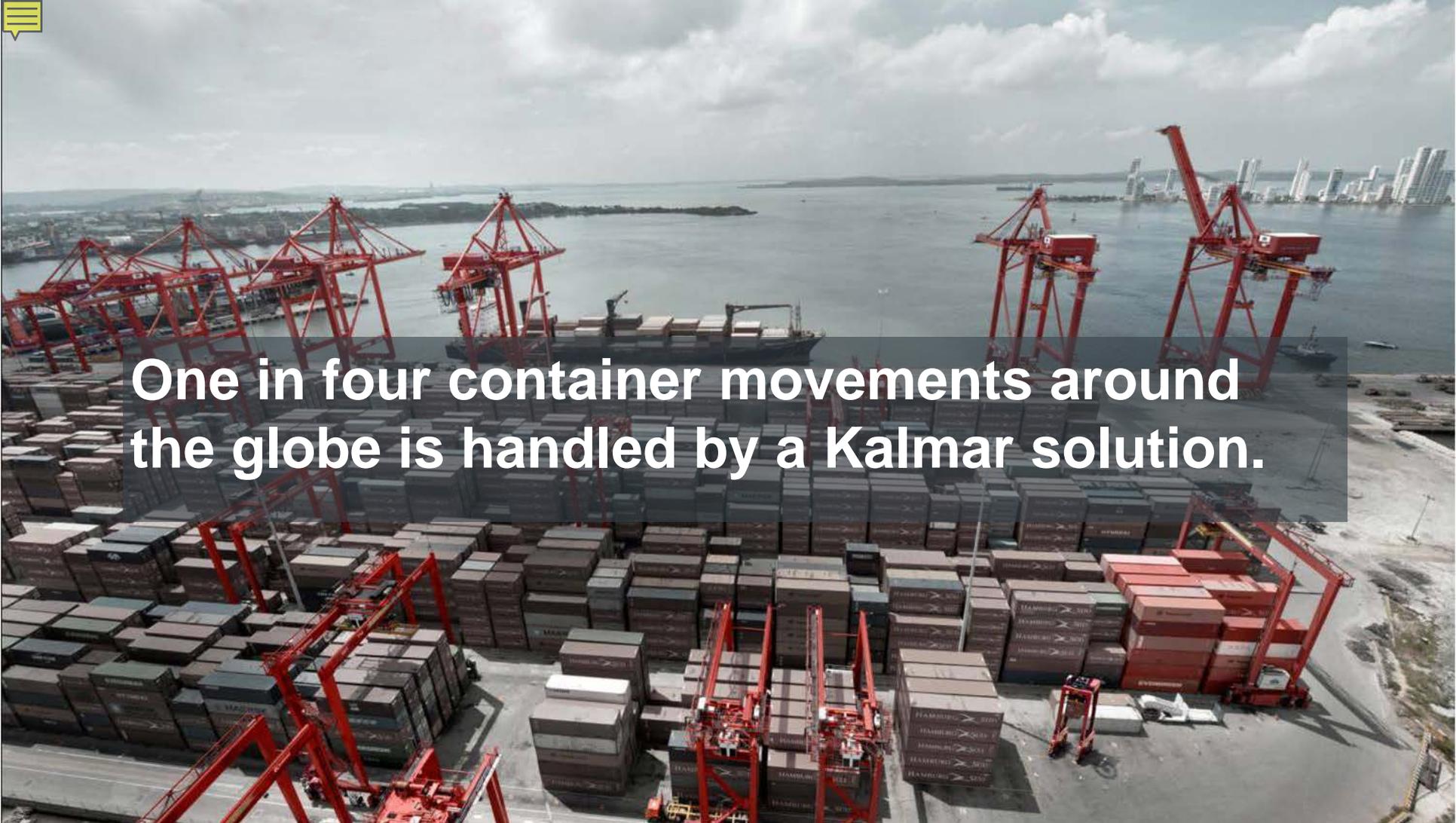
# Kalmar in brief

- Kalmar is the market leader in container handling equipment, port automation and services.
- Our customers include port and terminal operators, distribution centres and industry.
- Kalmar is part of Cargotec Oyj





**One in four container movements around the globe is handled by a Kalmar solution.**





TOS coordinates and optimises the planning and management of container and equipment moves in complex business environments.

Navis provides also maritime shipping solutions:

- Stowage planning
- Vessel monitoring
- Loading computer
- Route planning
- Stowman
- MACS3
- Blue Tracker



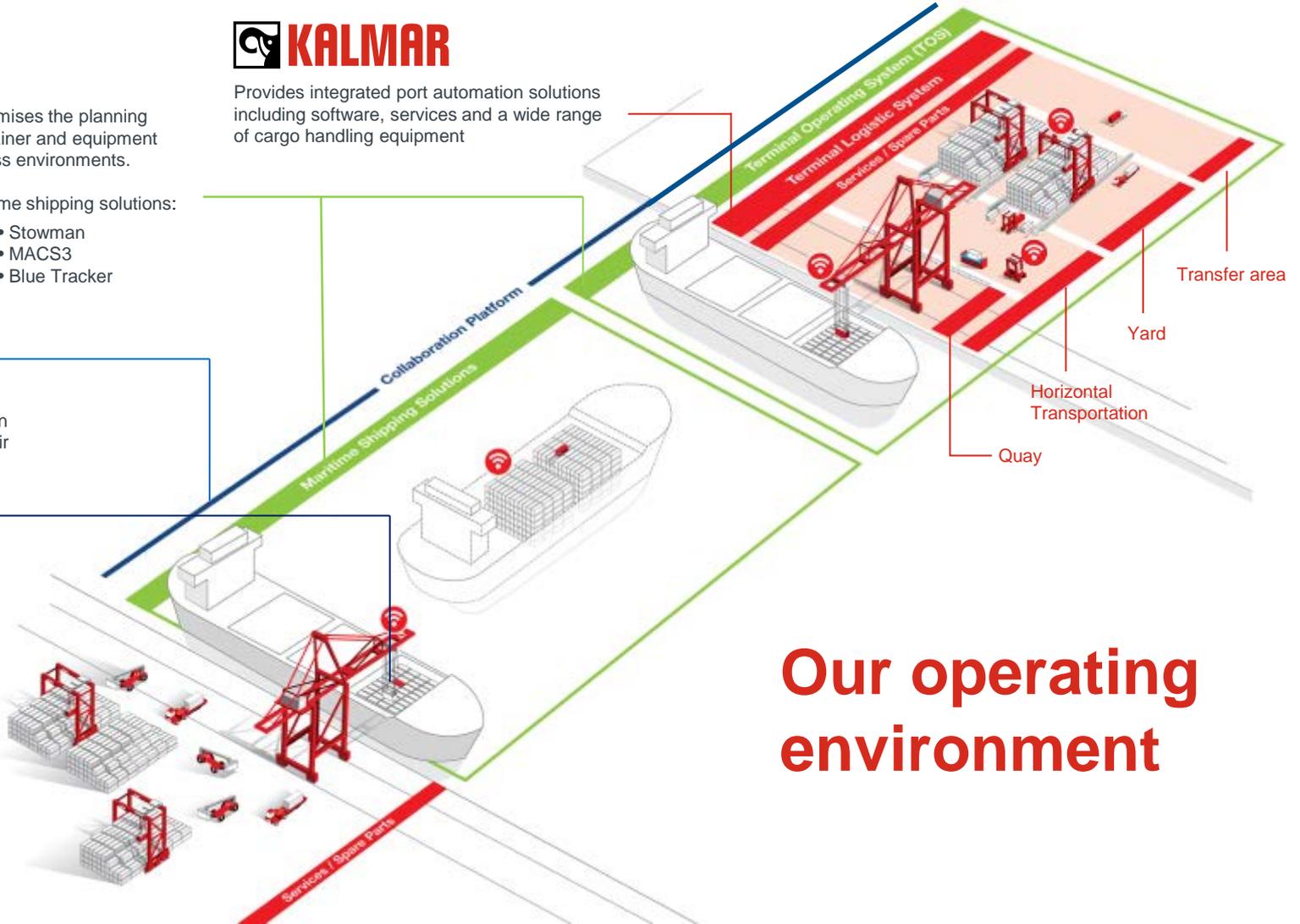
The collaboration platform serving the needs of ocean carriers, terminals and their shipping partners



Industry leading spreader manufacturer



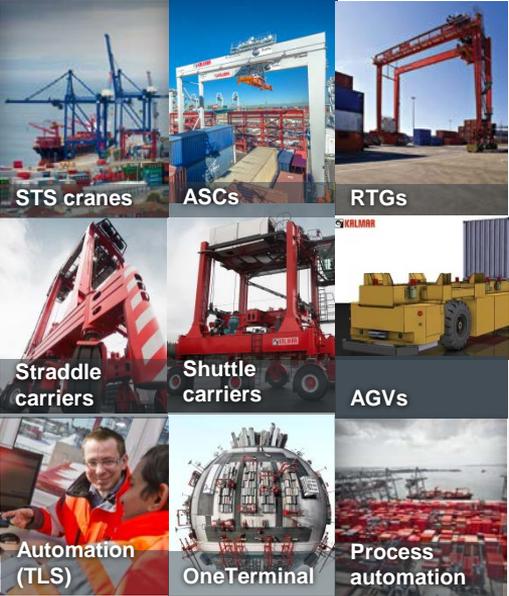
Provides integrated port automation solutions including software, services and a wide range of cargo handling equipment



**Our operating environment**

# Kalmar business area solutions

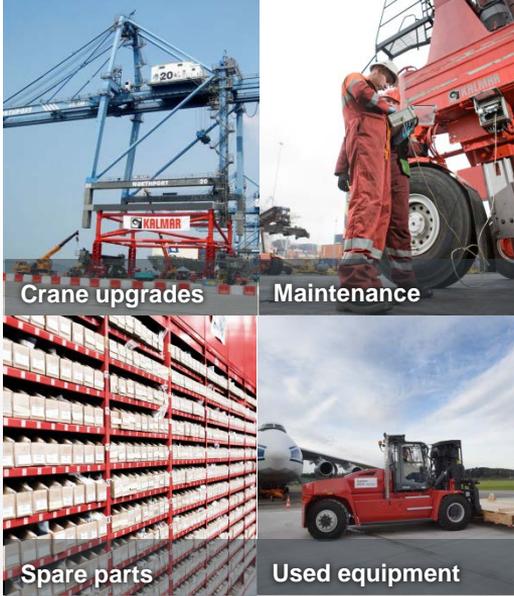
## Automation and Projects (APD)



## Mobile Equipment



## Services



# Kalmar business area solutions



navis™

BROMMA

 KALMAR

# Example of an automated terminal project

## Horizontal transport

- AutoShuttles

## Quay

- Automated Lashing Platform (ALP)

## Container yard

- Automated Stacking Cranes (ASCs)

## Operations

- TOS
- TLS
- M&S

## Services

- Spare parts, maintenance contracts
- 24/7 on-call and remote diagnostics

## Process automation

- SmartFleet,
- SmartTrucks,
- SmartLanes

# Kalmar has a true one-stop shop capability

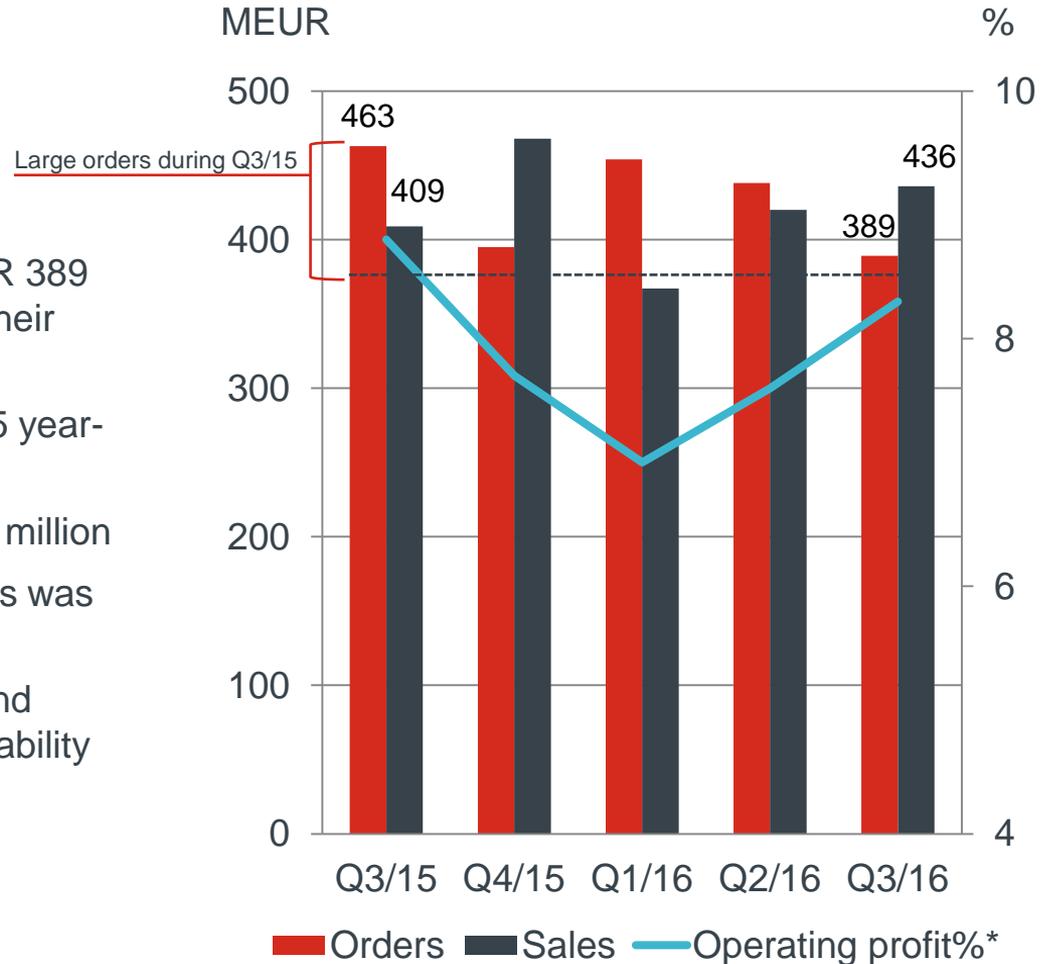
Konecranes-Terex merger slightly to change the picture

Suppliers Solutions	Kalmar	ZPMC	Konecranes	Terex	Liebherr	Künz	Mitsui	Sany	ABB	TMEIC	Taylor	Hyster	Terberg	Capacity	Other
STS	(✓)	✓	✓	✓	✓		✓	✓							
MHC				✓	✓										
RMG	(✓)	✓	✓	✓	✓	✓	✓	✓							
ASC	✓	✓	✓	✓		✓									
RTG	✓	✓	✓	✓	✓	✓	✓	✓							
SCS	✓		✓	✓	✓										
SHC	✓	(✓)	✓	✓											
AGV	✓	✓		✓											
Autom.	✓	✓	✓	✓					✓	✓					
TOS	✓			(✓)											
Consulting	✓			✓											
RS	✓	✓	✓					✓			✓	✓			
ECH	✓	✓	✓					✓							✓
FLT	✓			✓				✓			✓	✓			✓
TT	✓			✓				✓					✓	✓	✓

Competitors with automation background

# Kalmar Q3 – satisfactory development

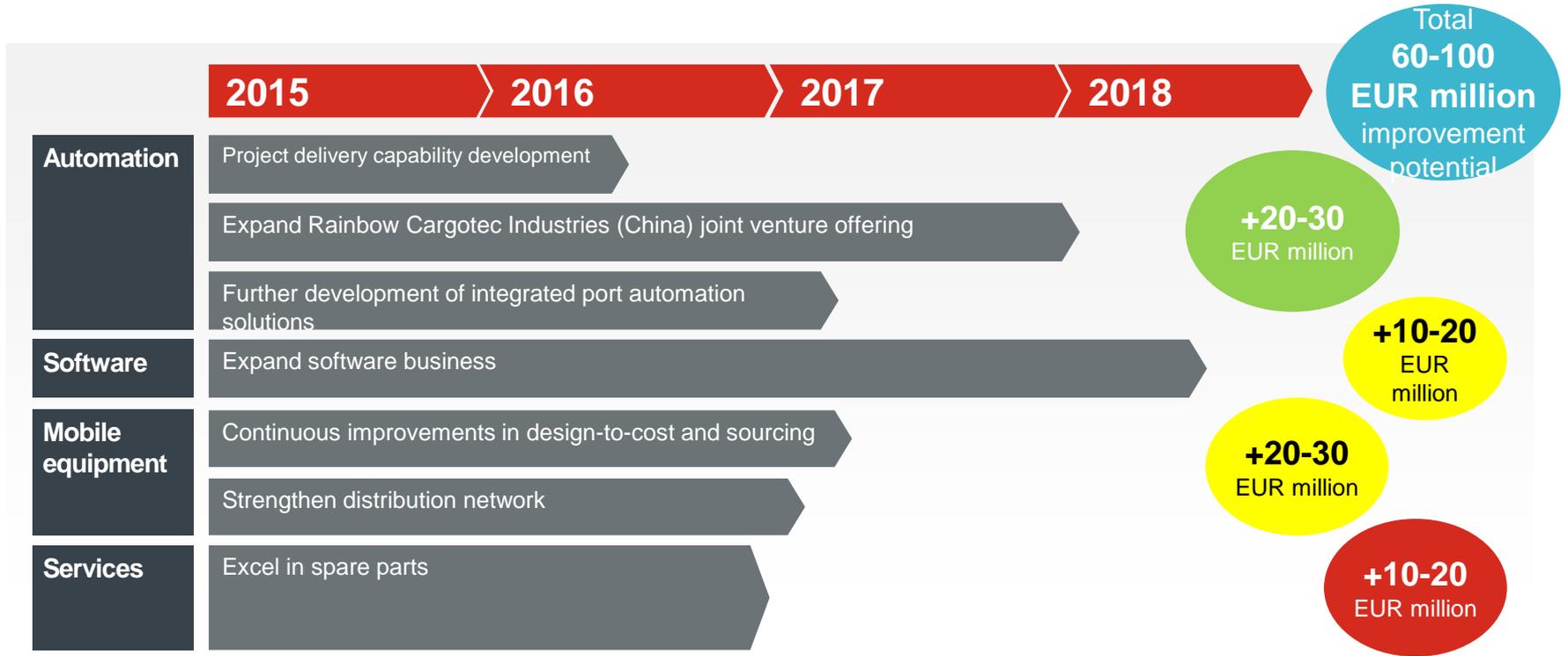
- Order intake declined 16% y-o-y to EUR 389 (463) million as customers postponed their bigger investment decisions
- Order book strengthened 5% from 2015 year-end level to EUR 922 million
- Sales grew 6% y-o-y to EUR 436 (409) million
- Profitability excluding restructuring costs was 8.3% (8.8%)
- Increased investments in automation and software development decreased profitability
- Sales mix had a negative impact on profitability



\*excluding restructuring costs



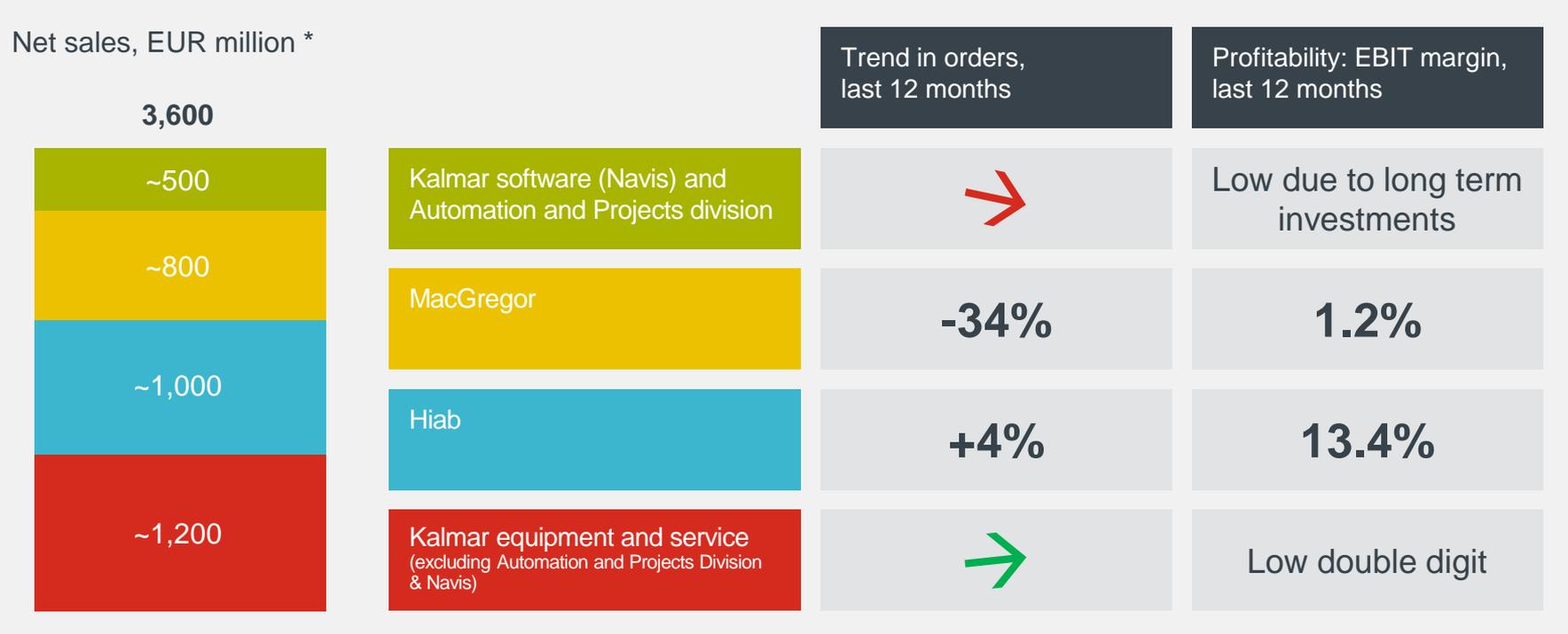
# Kalmar's profit improvement potential 2016-2018



# Kalmar has strong position in attractive segments

	Market position	Market size
 Automation & Projects	#1-2	EUR 7.5 billion
 Mobile equipment	#1	
 Bromma	#1	
 Navis	#1	
 Services	#1	

# Cargotec's portfolio



\* Figures rounded to closes 100 million

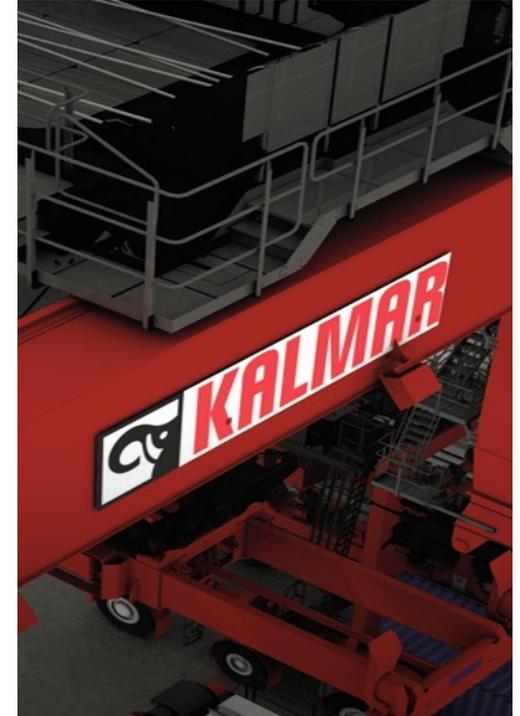
# Perception of our current situation

## Strengths

- Our strategy is good
- The market is there for long term
- Asset-light
- Kalmar brand
- Dedicated employees

## Improvement opportunities

- Service growth
- Seamless integration of automation and IT offering
- Safety consciousness
- Profitability improvements



# Structural drivers support Kalmar's long term profitable growth focusing on automated container ports

→ Introduction

→ Kalmar in brief

→ **Market drivers**

→ Kalmar strategy with the focus on automated container ports

→ Summary

# Major trends affecting Container Shipping

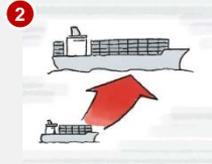
## Capacity

Continued demand growth



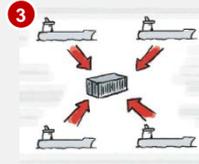
1  
Container shipping expected to grow more slowly at 2% per year until 2020 compared with historical growth of 6%

Increasingly larger vessels



2  
Increasing operational complexity in stowage, berth and yard capacity management

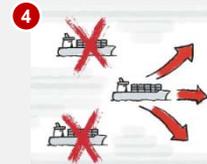
Capacity oversupply



3  
Increase in short term spot market buying and last minute booking (14-21 days vs. approx. 5 days) leads to poor capacity management

## Shipping

Shipping line consolidation



4  
Creates opportunities for IT investment through the review of existing processes and consolidation of operational IT systems

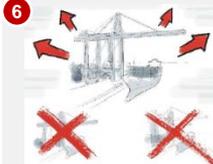
Broadening of alliances



5  
Increases operational complexity at network, vessel and terminal level

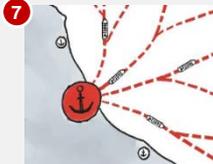
## Terminals

Terminal consolidation



6  
Top-10 terminal operators seeking to simplify and standardize their IT landscape

Increasing hub-and-spoke networks



7  
Increases the number of container moves in the supply chain and the complexity of planning

## Automation

Terminal automation



8  
Terminal operators look for automation opportunities to improve efficiency and throughput, while reducing labor costs

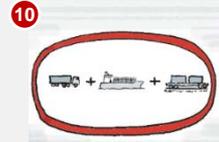
## Other

Bunker prices



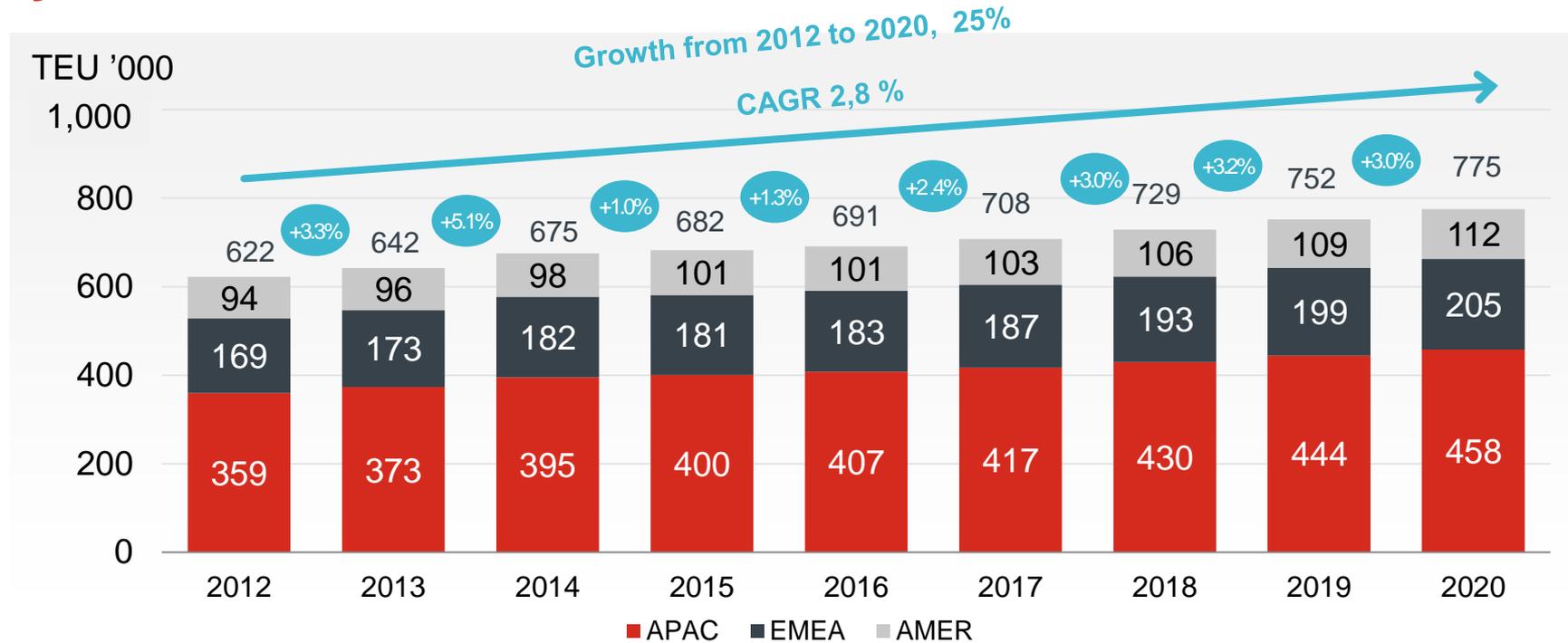
9  
Fuel costs represent significant percentage of operating costs. This requires efficiency improvements by optimizing trim, ballast, speed and route

Shift to forwarders



10  
Information flow is increasingly important for shipping partners to manage their supply chain

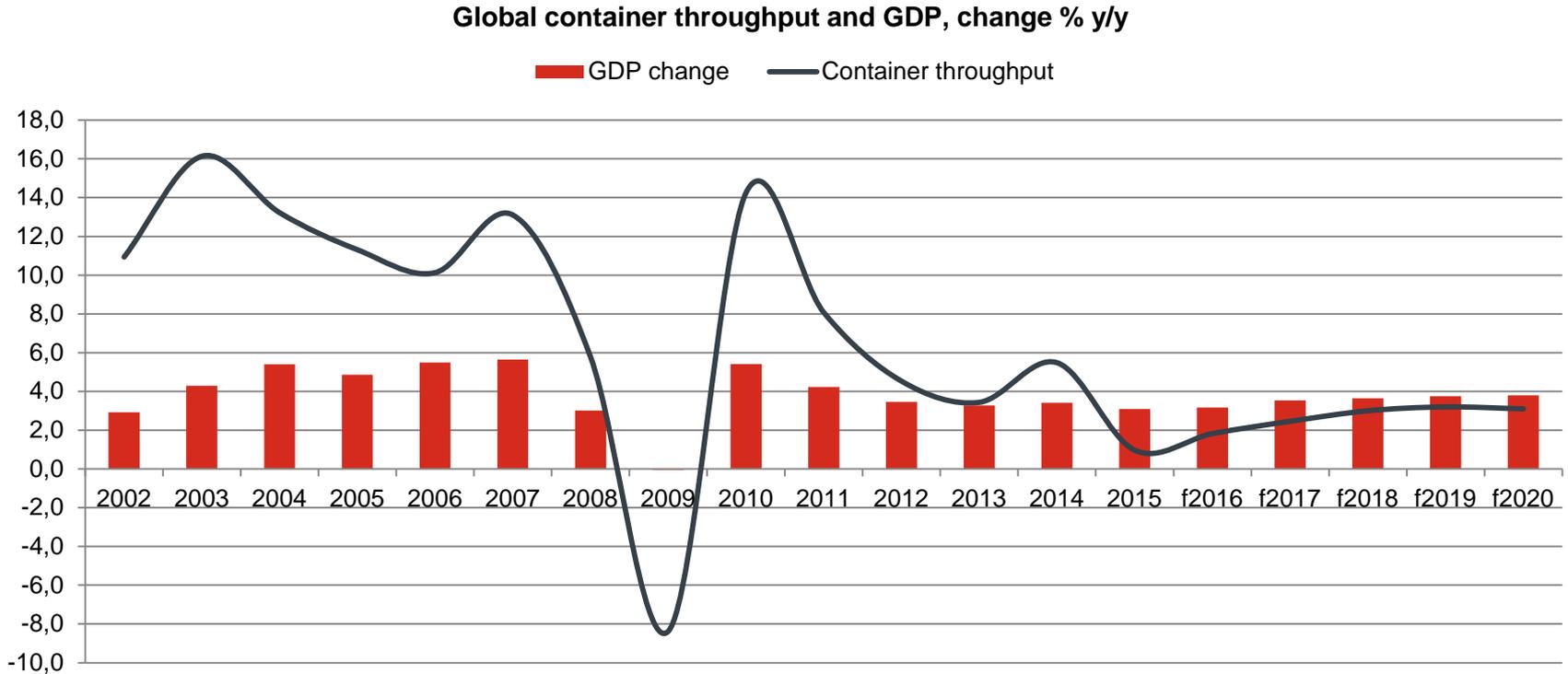
# Container throughput still forecasted to grow year on year



Source: Drewry: Container forecaster Q3 2016

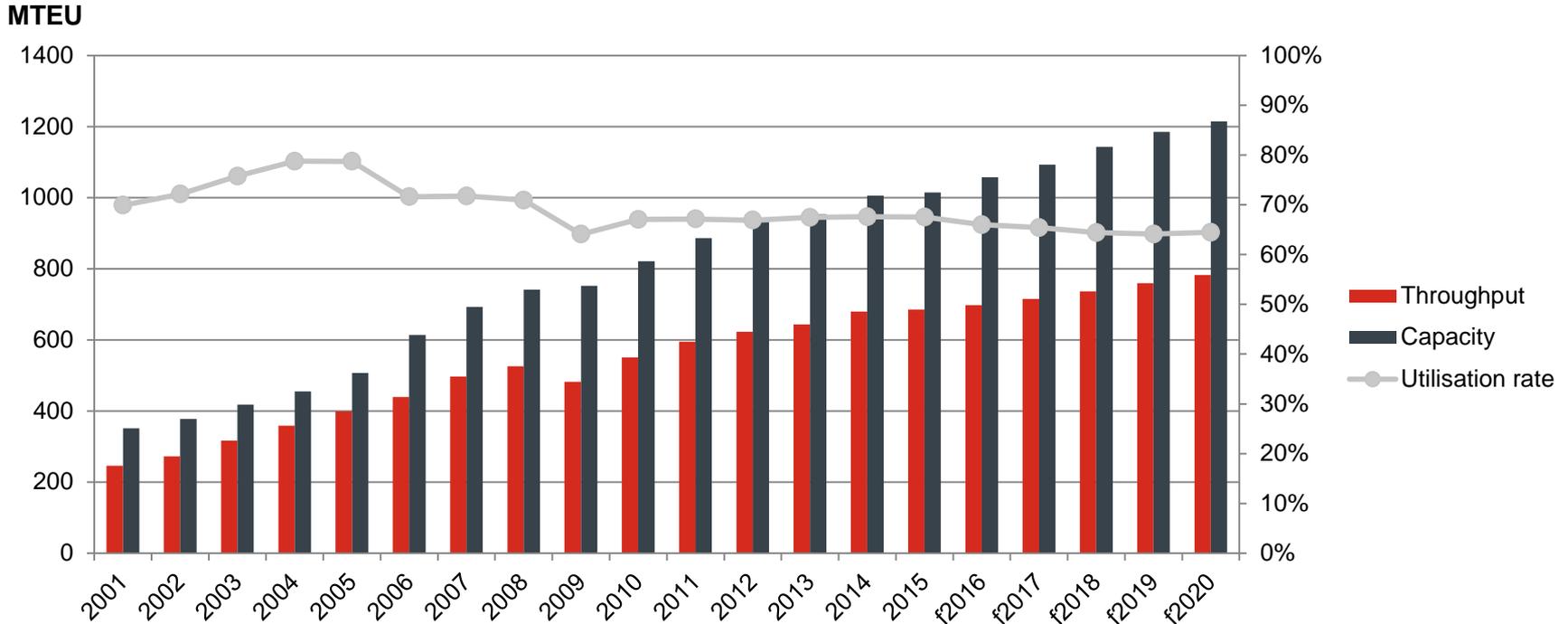
# Global container throughput development

Growth stabilising in the short-mid term



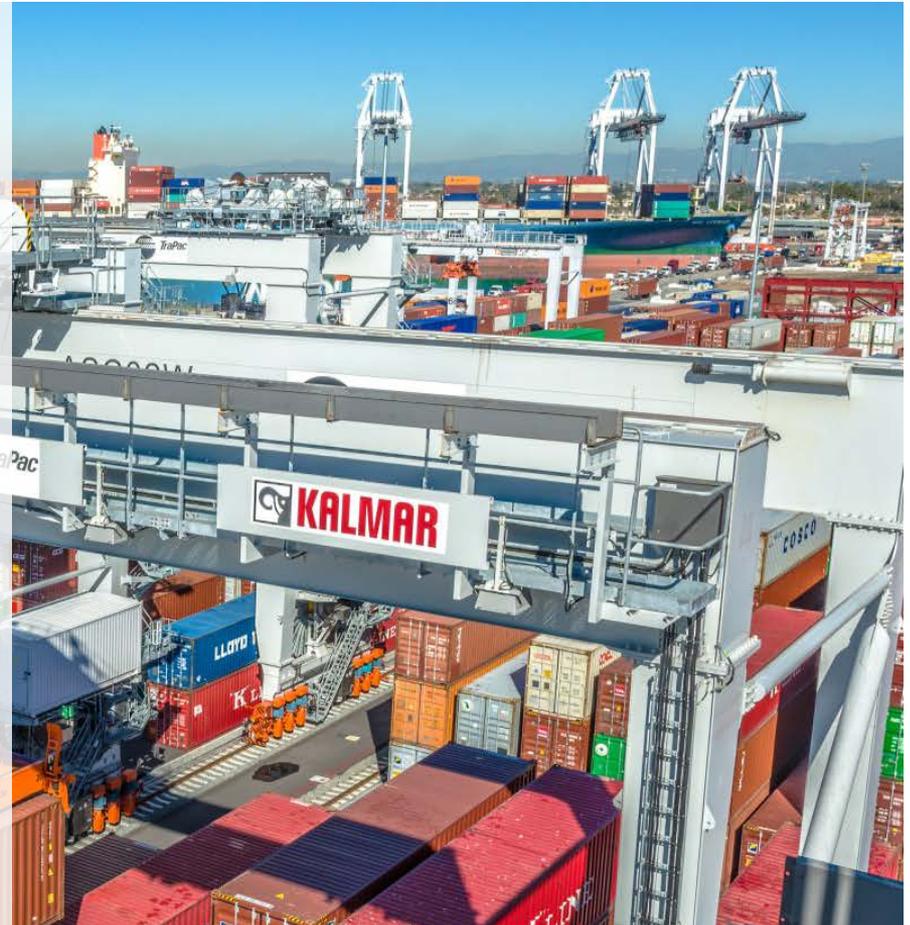
Source: IMF July 2016, Drewry August 2016

# Global Container terminal volume and Capacity Development



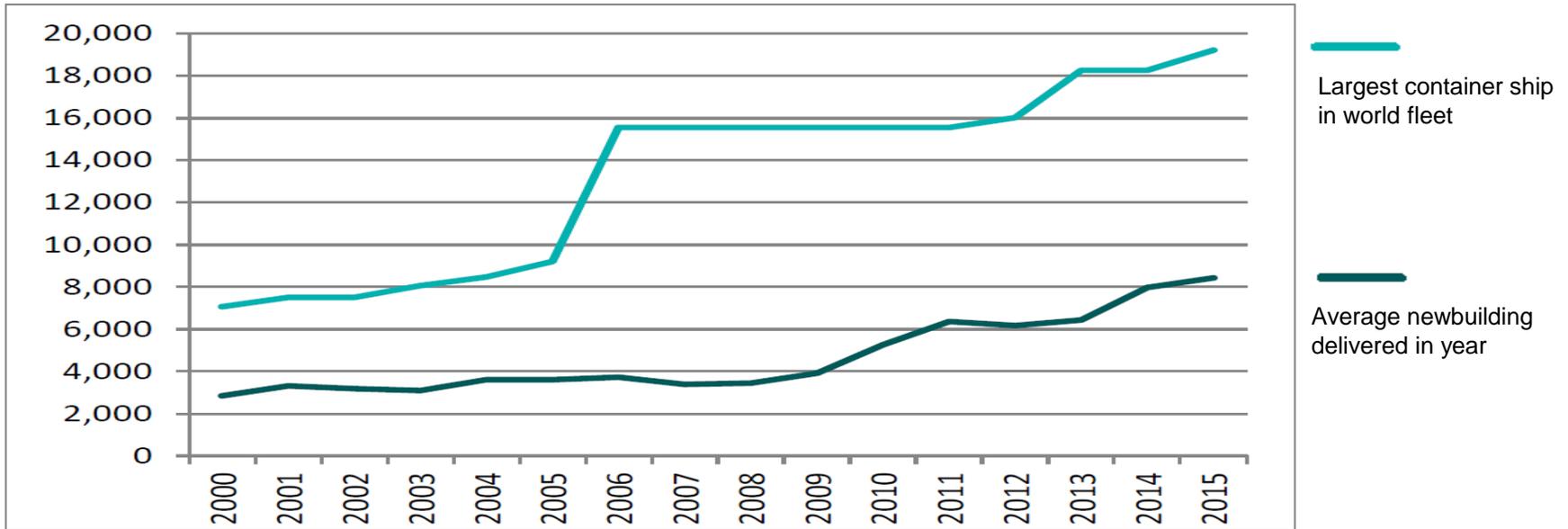
# Macro indicators and industry trends support growth in automation

- Ships are becoming bigger and the time in port needs to be shorter
- Optimum efficiency, space utilization and reduction of costs are increasingly important
- Safety in the terminal yard has become even more of a focus for operators
- Importance of sustainable operations is growing
- Shortage and cost of trained and skilled labor pushes terminals to automation



# Ship sizes increasing dramatically

- The largest containership in the fleet has nearly tripled since 2000.
- The average size of new builds doubles between 2009 and 2014



# Ships are becoming bigger...

- Larger container ships have generated cost savings for carriers, decreased maritime transport costs and as such facilitated global trade in the past.
- Larger ships require adaptations of infrastructure, equipment and cause larger peaks in container traffic in ports, with wide-ranging impacts.

Shipping line	Name	TEU capacity	Since
Maersk	Triple E series	18,100	2013
China Shipping	CSCL Globe series	19,100	2014
MSC	Oscar, Oliver	19,200	2015
MOL	n.a	20,000	2017 (expected)
CMA*CGM	n.a	20,600	2017 (expected)
OOCL	n.a	21,100	2017 (expected)



Maersk Triple E series ship

List



MSC Oscar

# Main barriers in ports for Mega Ships

## Need for longer and stronger quays

- Mega-carriers are putting increasing pressures on existing terminals, which, in most cases, have not been built with the assumption that ship size would grow so fast so quickly. In many ports quay walls need to be heightened, strengthened and lengthened.

## Cranes

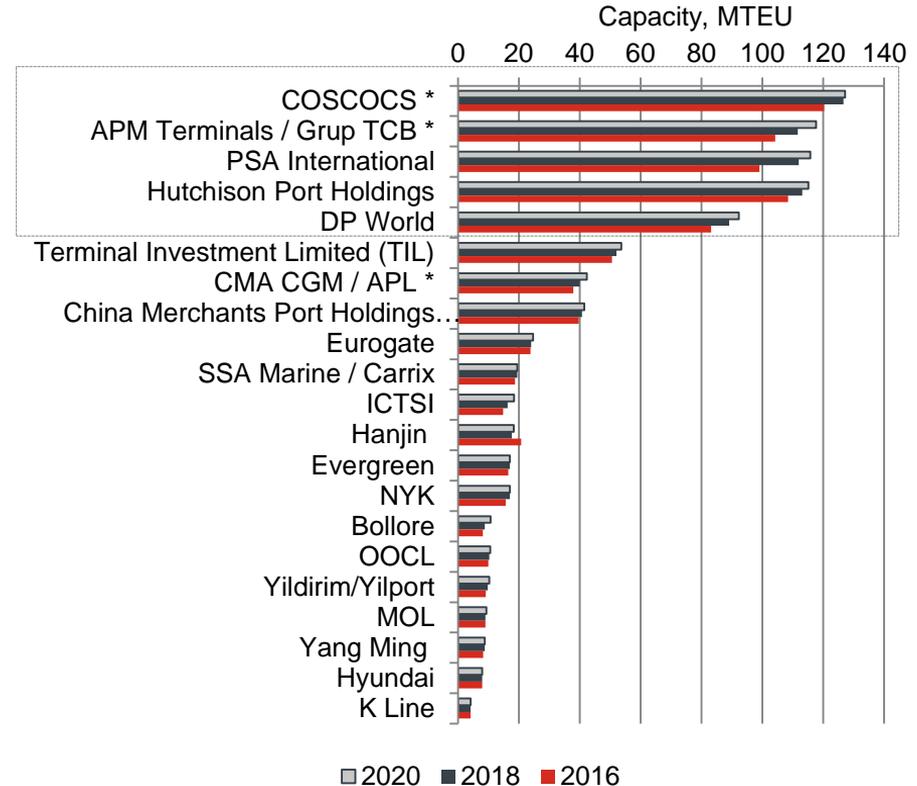
- Larger ships pose challenges to cranes in terms of outreach and height. The newest mega-ships require a crane width that allows for handling 23 container rows. One of the increases in TEU capacity in comparison with the first Triple E-ships is stacking one row higher (11 high instead of 10), which means that various container terminals would need to be higher as well.

## Insufficient landside connections

- Landside connections in existing terminals may become bottlenecks during greater cargo peaks caused by mega-carriers.

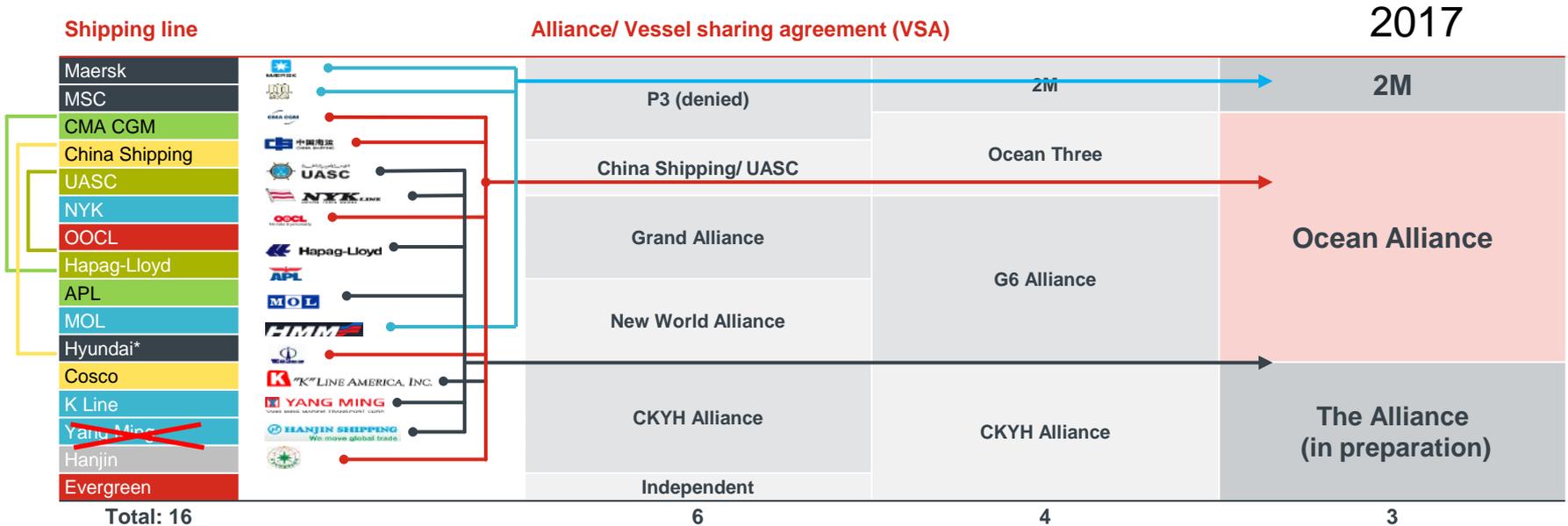
# Consolidation leading to five dominant container terminal operators in 2020

- 24 Global Terminal Operators' total forecasted capacity increase 2015-2020 is 125 Mteu, increasing 3,1 % p.a to 892 Mteu by 2020
- Terminal operators consolidating, recent M&A activity:
  - COSCO and China Shipping merged
  - APMT bought Group TCB
  - CMA CGM bought APL
  - Yildirim bought Portugese Tertir group and the company is also eyeing Ports America



Source: Drewry

# Three Alliances represent about 80% of global container fleet capacity

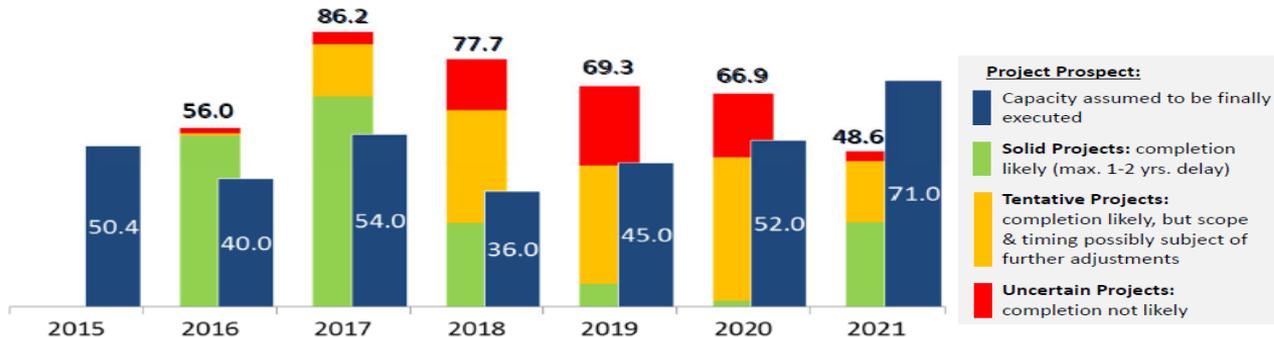


# DS Research: 298 Mteu new capacity to be added 2016-2021 which could trigger US\$bn 37 investments for container handling equipment

- According to DS Research, the project pipeline of all upcoming container terminal projects consists of 405 TEUM additional capacity scheduled for completion until 2021. 298 TEUM new capacity is expected to be finally executed until 2021, assuming that further project postponements are required to adjust to the weakening demand. This would trigger roughly US\$bn 146 investment.
- Depending on the type of project, different cost have been assumed for quay construction, container handling equipment, yard construction, dredging & land reclamation and other cost. Overall, DS Research has estimated that investments for container terminal projects 2016-'21 include about US\$bn 37 for container handling equipment.

## Capacity Additions

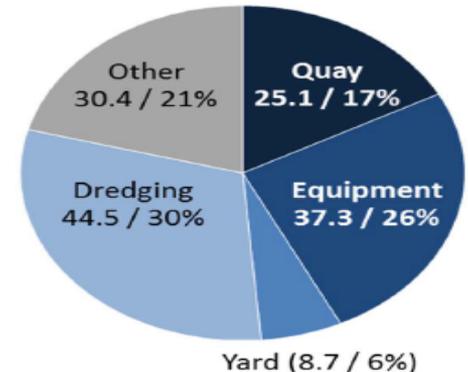
(in TEUM p.a.)



Source: Market Report CT Project Pipeline 2016

## Investment 2016-'21

(Σ US\$bn 146; in %)

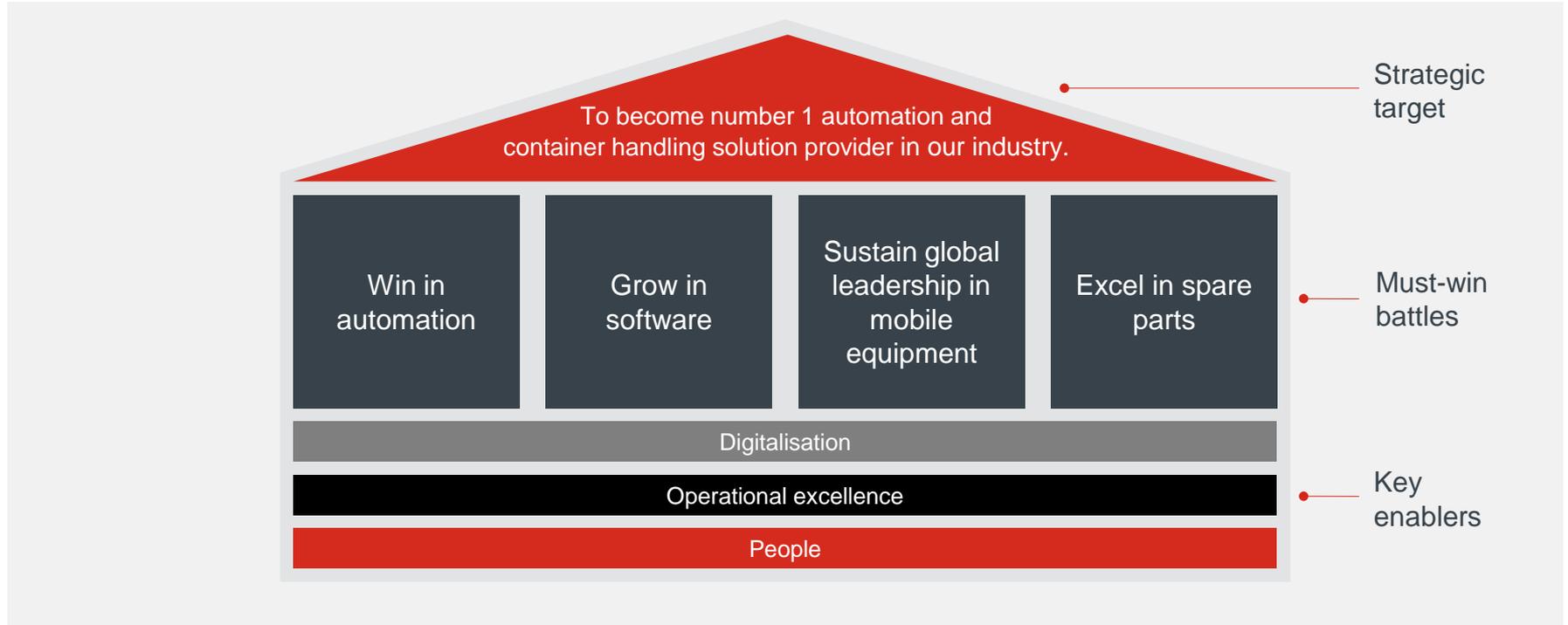


# Structural drivers support Kalmar's long term profitable growth focusing on automated container ports

- Introduction
- Kalmar in brief
- Market drivers
- **Kalmar strategy with the focus on automated container ports**
- Summary

# Kalmar strategy: Focusing on profitable growth

Increasing the speed of execution of our strategy gives us a competitive advantage

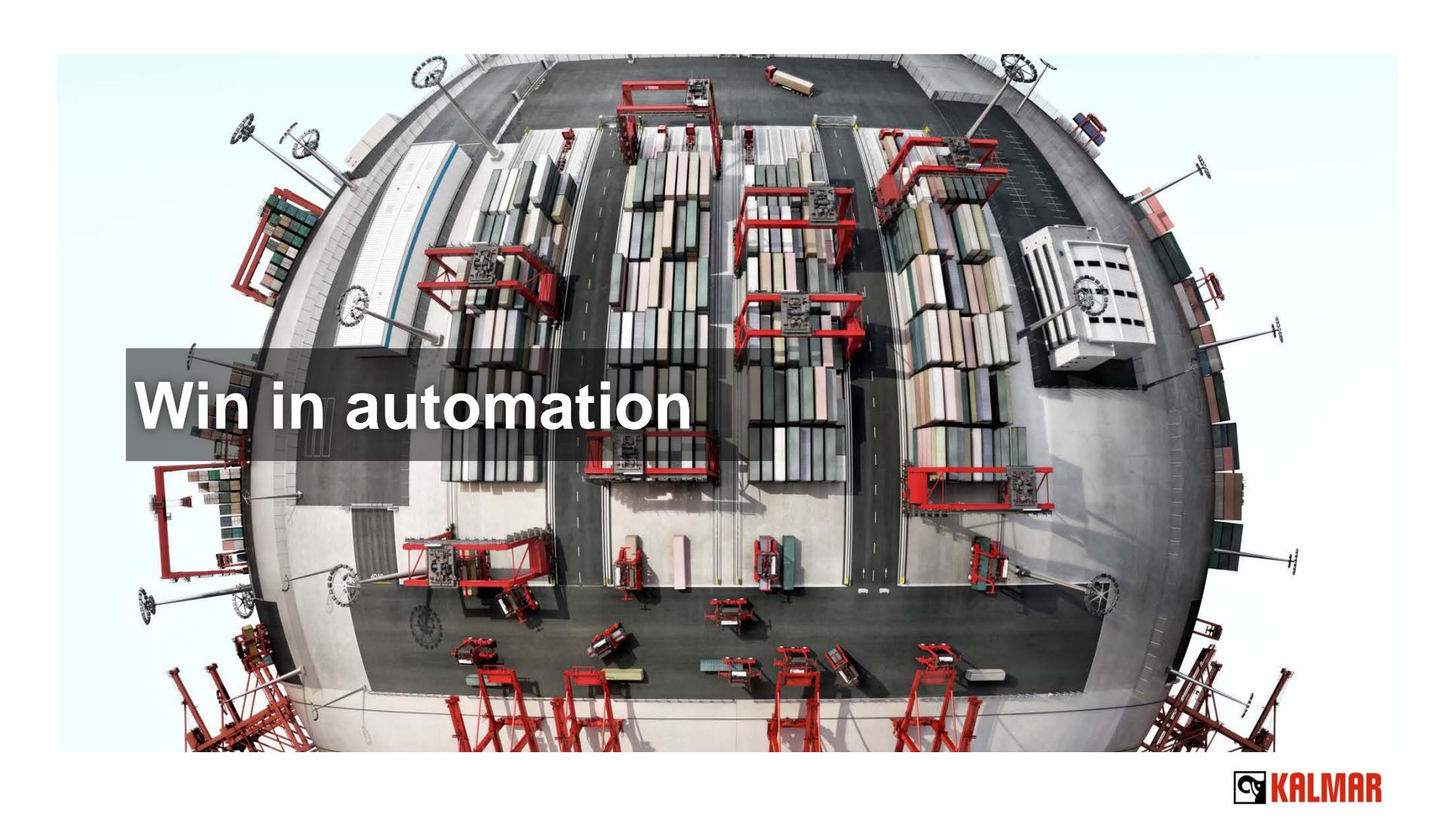


# Strategy update – focus still on speed and execution

- Kalmar's strategy still valid
- The execution has not progressed fast enough in all areas
- Measures taken to speed up the development
- Main focus areas for improvement: Services related actions in all divisions and regions and cost control

Must-win battle	Status
<b>Win in automation:</b> No new automation or mega project orders received	Yellow
<b>Grow in software:</b> Roadmap proceeding according to plan	Green
<b>Sustain leadership in Mobile Equipment:</b> Global market share of reachstackers	Green
<b>Excel in spare parts:</b> Global monthly parts sales	Red



An aerial, wide-angle photograph of a large, circular automated container terminal. The terminal is filled with rows of stacked shipping containers in various colors (blue, green, red, white). Numerous red automated guided vehicles (AGVs) are positioned throughout the facility, some carrying stacks of containers. The terminal is surrounded by a concrete wall with several large, circular openings. The sky is clear and blue. A semi-transparent dark grey rectangular box is overlaid in the center of the image, containing the text "Win in automation" in white, bold, sans-serif font.

**Win in automation**

# Automating terminals

Technology development has made it possible



Safer working environment



Industry trends support growth in automation



Improved operations



# Massive Robots Keep Docks Shipshape

## Wall Street Journal March 2016

<http://on.wsj.com/1XX0TFy>

### YouTube videos

Kalmar ASC system in operation at Trapac

<https://www.youtube.com/watch?v=0CdkS9rq5ik>

Trapac Los Angeles 2015

<https://www.youtube.com/watch?v=ICtpvdtz134>

Kalmar automated horizontal transport system at Trapac

<https://www.youtube.com/watch?v=cVw5Tlq6GDo>

Kalmar automated straddle carriers at Trapac (*no audio*)

<https://www.youtube.com/watch?v=lpmqllKyBSQ>

## What is the Kalmar state of the art? Sydney Morning Herald June 2015

<http://www.smh.com.au/nsw/sydneys-patrick-terminal-goes-automated-with-fewer-staff-but-dancing-robots-20150617-ghqc24.html>

## Our Vision:

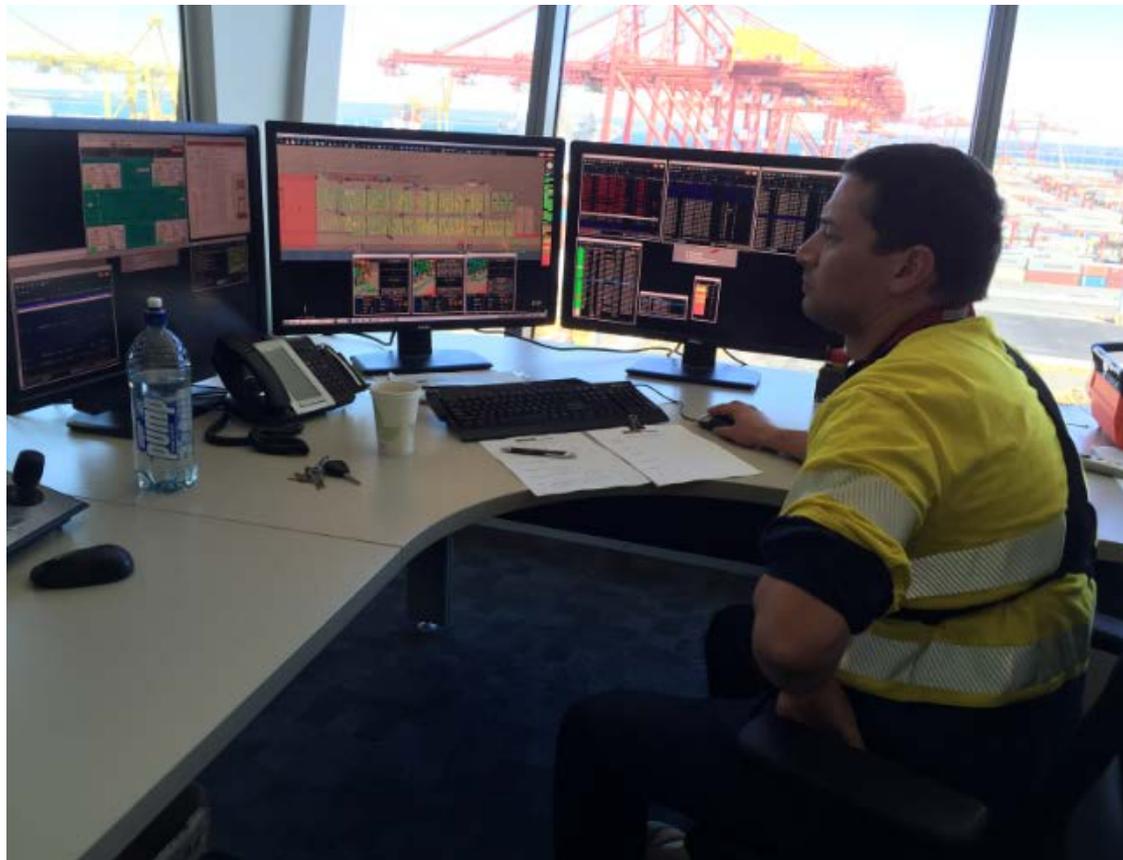
**Future container terminal with high automation level**



**The container terminal of the future will have two employees:  
a man and a dog.**

**The man will be there to feed the dog, and the dog will  
be there to keep the man from touching anything!**

**We are not so far away from the vision...**



# Automating terminals

Technology development has made it possible



Safer working environment



Industry trends support growth in automation



Improved operations

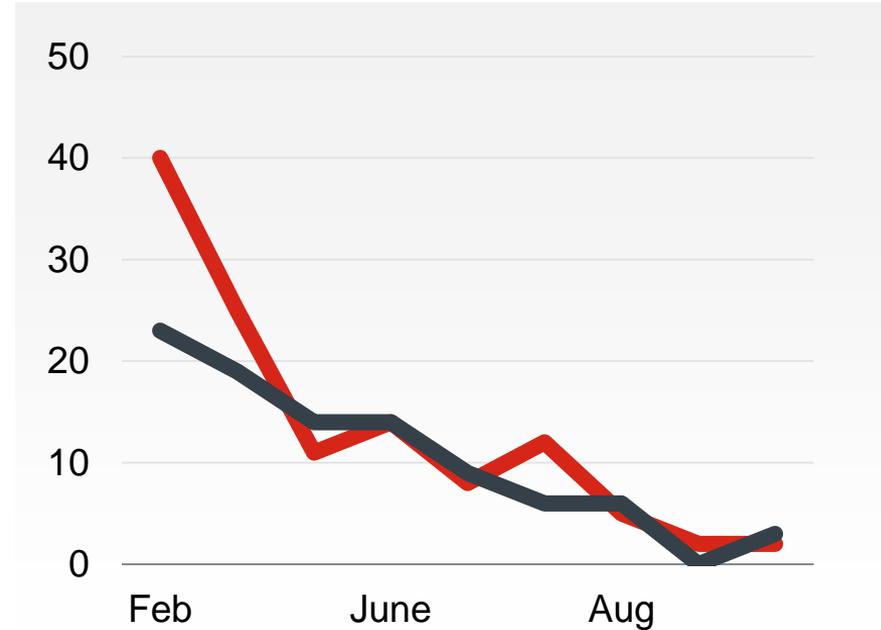


**The main reason for the improved safety is the fence!!!**



## Safety performance

“In the first year of automation at our Brisbane AutoStrad™ Terminal, we achieved a 75% reduction in safety incidents, increasing to a reduction of 90% in following years. It is only logical that we look to replicate this success at our biggest container terminal at Port Botany.” (John Mullen, MD & CEO Asciano Ltd, 22/8/2012)



# Automating terminals

Technology development has made it possible



Safer working environment



Industry trends support growth in automation

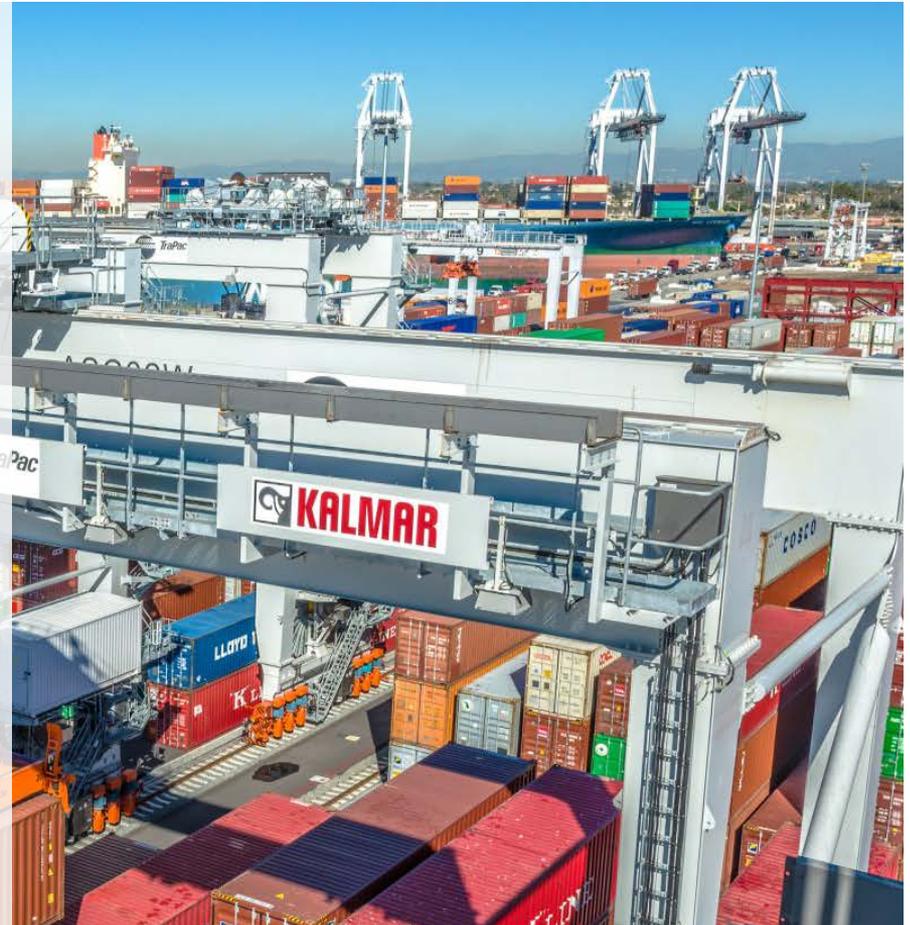


Reduce operational costs



# Macro indicators and industry trends support growth in automation

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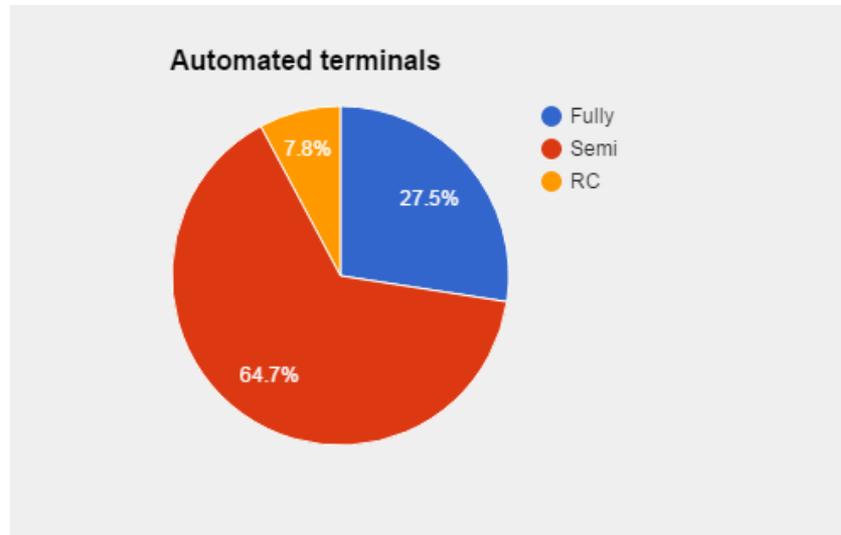
# The number of highly automated terminal will increase fast



# Current operational and ordered terminals

Three main types of automated terminals exist in the market.

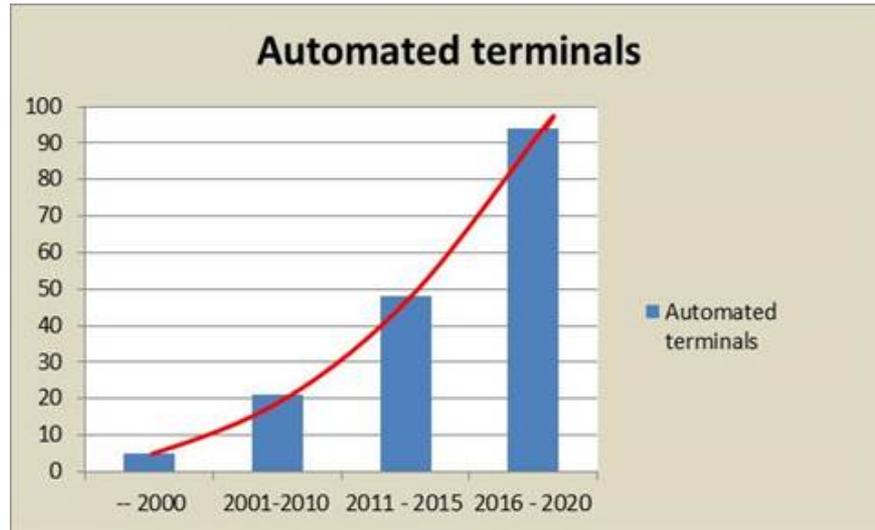
- Semi-automated, typically container stack is automated but horizontal transport is done manually
- Fully automated, both stack and horizontal transport are automated
- Remote controlled desk is used to operate the cranes, typically in used in RMG terminals



Source: Kalmar internal

# Estimated number of automated terminal orders by 2020

- We estimate ASC / ARMG solutions to be more than 70% of the growth and rest would be Auto RTG conversions and AutoStrads terminals.
- Most of these are brownfield projects



Source: Kalmar SalesForce 11/2016

# Automating terminals

Technology development has made it possible



Safer working environment



Industry trends support growth in automation



Improved operations



# Great business case for port automation

Cost saving example in a typical automated terminal

Indexed P&L manual terminal\*

When converted into an automated operation:

<b>Revenue</b>	<b>100</b>			
Labour Cost	40	>>	60% less Labour Costs	16
Maintenance	8	>>	20% less Maintenance	6.5
Power & Fuel	4	>>	25% less Power & Fuel	3
IT	2	>>	50% higher IT	3
Depreciation	10	>>	30% higher Depreciation	13
Other Costs (land, overhead)	18	>>	Assuming same overheads	18
Total costs	82	>>	27% less costs	59.5
<b>Profit</b>	<b>18</b>	>>	<b>125% profit increase</b>	<b>40.5</b>

Additionally, improved safety reduces number of lost working hours, equipment damage costs and insurance premiums

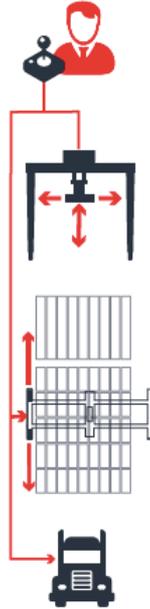
\*) Typical manual operation in Europe

# RTG automation levels for different transition strategies



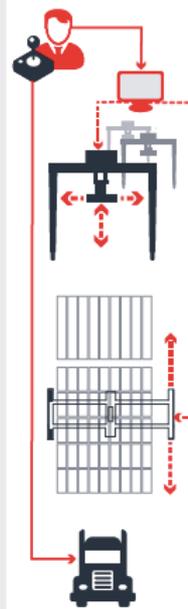
## Remote control.

Operator controls all of the operational moves of the AutoRTG from a central control centre.



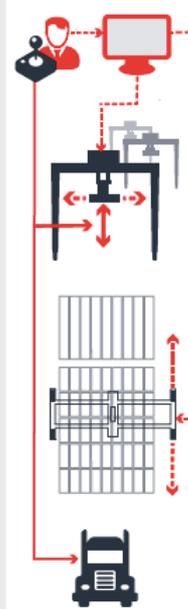
## Assisted automatic moves.

Operator remote operation with assisted automatic gantry, trolley and hoist moves.



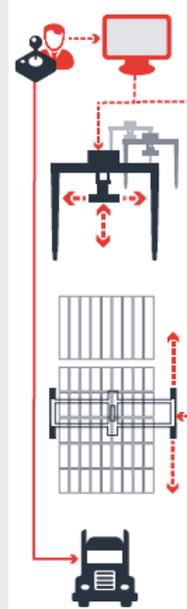
## Automatic gantry and trolley.

Gantry and trolley moves are automated, and the operator remotely controls all the hoist and truck lane movements.



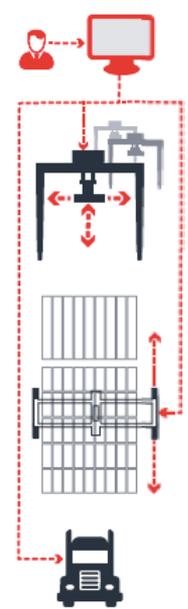
## Automatic pick and place on stack.

Gantry, hoist and trolley moves are fully automated, as well as pick and place on stack and housekeeping. The operator remotely controls all movements in the truck lanes.



## Fully Automated.

Fully automated solution with automated truck handling and automatic horizontal transport. An operator is now only needed for the handling of exceptional circumstances.



# Kalmar for automated ports

1. Kalmar is 100 % committed to the industry
  - We prosper and suffer together with our customers
  - We know the industry and understand our customer needs
2. Kalmar has it all from the intelligent equipment to the TOS being able to deliver a total turnkey solution without finger pointing
  - We build our knowhow from the Top and from the Bottom
    - Top = TOS
    - Bottom= Intelligent Equipment
3. Kalmar focuses on CO<sub>2</sub> and NO<sub>x</sub> free solutions
4. Kalmar supports the customers through the life cycle services
5. Kalmar can test its solutions in its premises



**Grow in software**

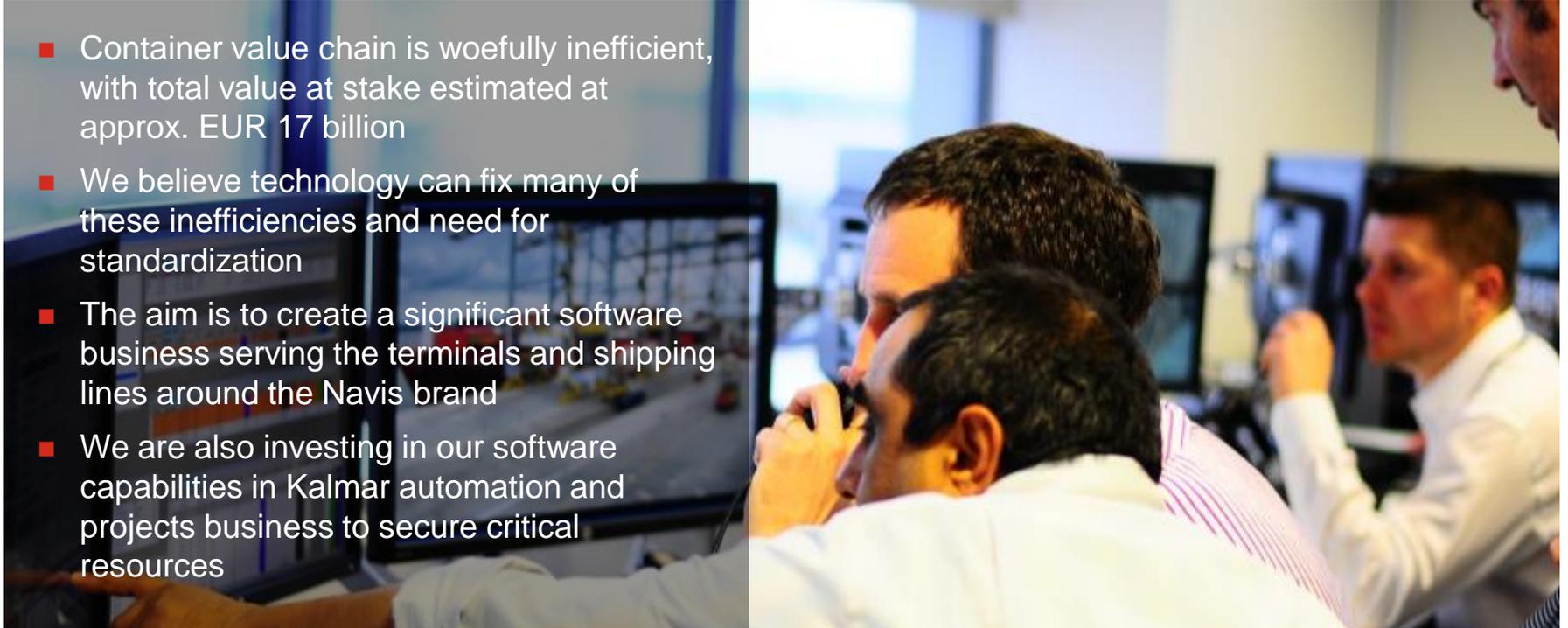




## Grow in software

Software offers significant growth opportunities

- Container value chain is woefully inefficient, with total value at stake estimated at approx. EUR 17 billion
- We believe technology can fix many of these inefficiencies and need for standardization
- The aim is to create a significant software business serving the terminals and shipping lines around the Navis brand
- We are also investing in our software capabilities in Kalmar automation and projects business to secure critical resources



# Making global trade smarter, safer and more sustainable for everyone - 2020

NAVIS

## OPEN COLLABORATION PLATFORM (XVELA) DATA HUB

- #1 TOS for Automated Terminals. Support all equipment types and ECS, expand optimization service, better, intuitive user experience
- Expand further into in-house TOS
- Enterprise TOS that supports remote operations, lowers IT and operational costs, and enterprise BI
- Emulation/Simulation

Value proposition:

Optimize day to day operations of all types of terminals in portfolio and provide high level visibility and insights across the enterprise

TOS

- #1 Automated Stowage Planning solution.
- Expand into vessel capacity management and allocations systems to help improve capacity and vessel utilization
- Berth window availability and management and port to port call visibility
- Vessel performance optimization and monitoring
- Ship's Schedule Hub

Value proposition:

Port to port vessel operation in one integrated centralized platform enabling lean and efficient processes and data driven decision making

Vessel Capacity

- Expand into Shipper solutions
- Connect Shippers to other players in the container value chain
- Add Terminal container events critical to shippers planning intermodal container moves

Value proposition:

Provide Container flow visibility – Shippers can forecast and track container flow from stuffing to delivery to final destination.

Shipper Systems





**Sustain global leadership in  
mobile equipment**

# Sustain global leadership in Mobile Equipment

Focus turning from internal efficiency to market coverage



## Distribution network

- Hybrid model for China
- Strengthen dealers in North America and EMEA

## Competitive Offering Based on Customer Value

- Launch of digital products in TOC 2016
- Remotely connected fleet for services
- TT Europe: Penetrate distribution segment

## Value Chain Excellence

- Material cost reduction of 3% year over
- Active Sourcing Management including spare parts
- Move forklift assembly to Poland and create new site in Ljungby



# Key Kalmar investments into the MAUs



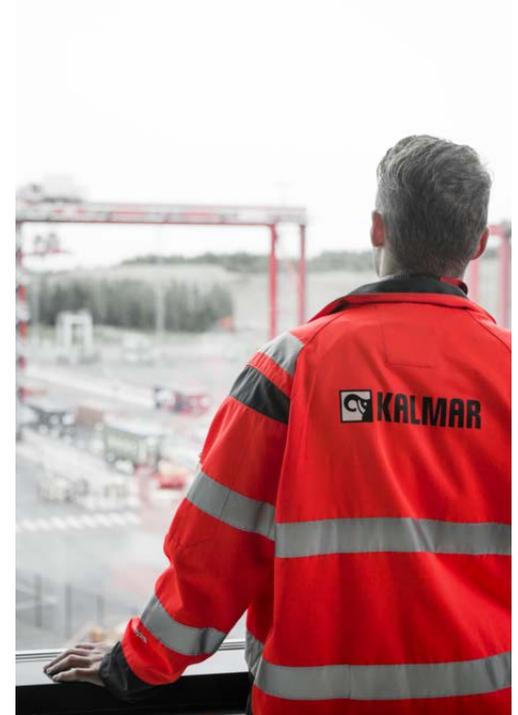


Excel in spare parts

# Why to set up the Service PMO?

Aim is to speed up our growth in Services business by pushing us towards short-term wins but also adding muscle to longer term development actions

- **To enable faster decision making and escalation of issues**
  - Actions to put focus on service sales growth
- **To secure the needed resources and speed up our current Services initiatives**
  - Implementation of new tools and processes
- **To improve the role of Services within Mobile Equipment and Automation & Project businesses**
  - Improve cooperation between different business units
  - Bring more accountability to the divisions for integrating services better into their offering.



# Service sales growth



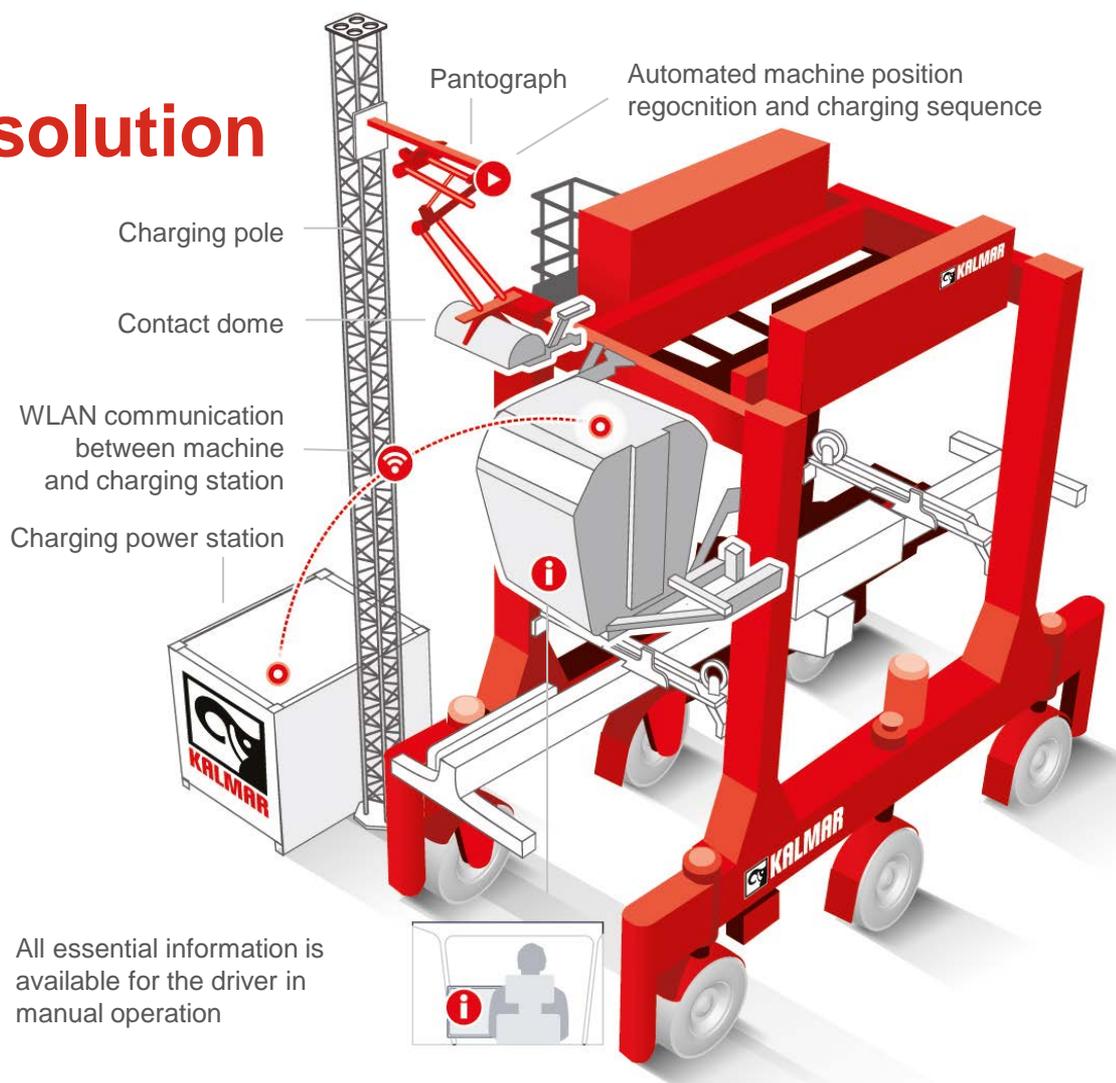
Bi-weekly meetings  
and mid-month  
performance reviews

# New tools and methods





# The solution



Charging type: DC fast charging  
Charging power: 0-600 kW  
Time to full charge: 5 min @ 600 kW  
Typical charging time in one operation:  
30 to 180 sec @ 600 kW

# Kalmar highlights lately

18 **all-electric AGVs**  
to be delivered to PSA  
Singapore

First **Hybrid AutoSC**  
orders by TraPac and  
VICTL

14 Kalmar **T2 terminal tractors**  
to Abu Dhabi Terminals in Dubai

Kalmar  
**FastCharge™**  
technology expanded  
to hybrid straddle  
and shuttle carriers



**SW strategy implementation**  
Navis TOS expansions  
Xvela  
Interschalt acquisition

New **Li-ion battery technology**  
for electric forklift trucks

# Structural drivers support Kalmar's long term profitable growth focusing on automated container ports

- Introduction
- Kalmar in brief
- Market drivers
- Kalmar strategy with the focus on automated container ports
- Summary

# Summary

We are  
shaping  
the  
industry



- Great long-term possibilities in automation and in software solutions, only a question of timing
- Kalmar has established PMO to support services growth
- Profitability to improve also by growth in services

Our industry is over ten years behind other industries using automation (and IT) as a competitive advantage

Making your every move count