



# Kalmar Proximity System improves safety and productivity at ports and terminals



**11<sup>th</sup> Trans Middle East 2015 Exhibition and Conference**

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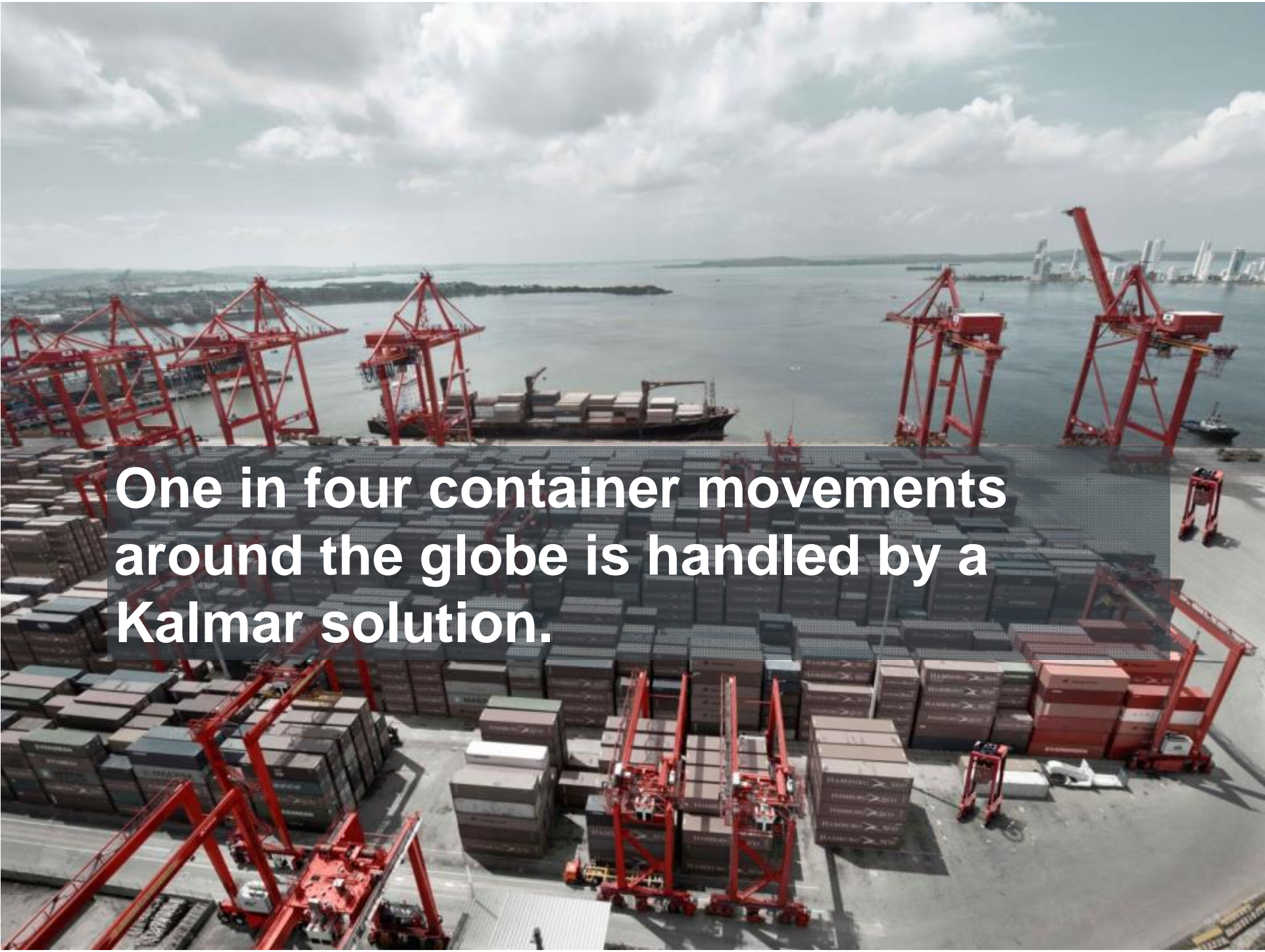


# Kalmar in brief

- 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's sales totalled EUR 1.5 billion in 2014 and we employ 5,200 people globally.
- Kalmar is part of Cargotec. Cargotec's sales in 2014 were EUR 3.4 billion and it had approximately 11,000 employees.

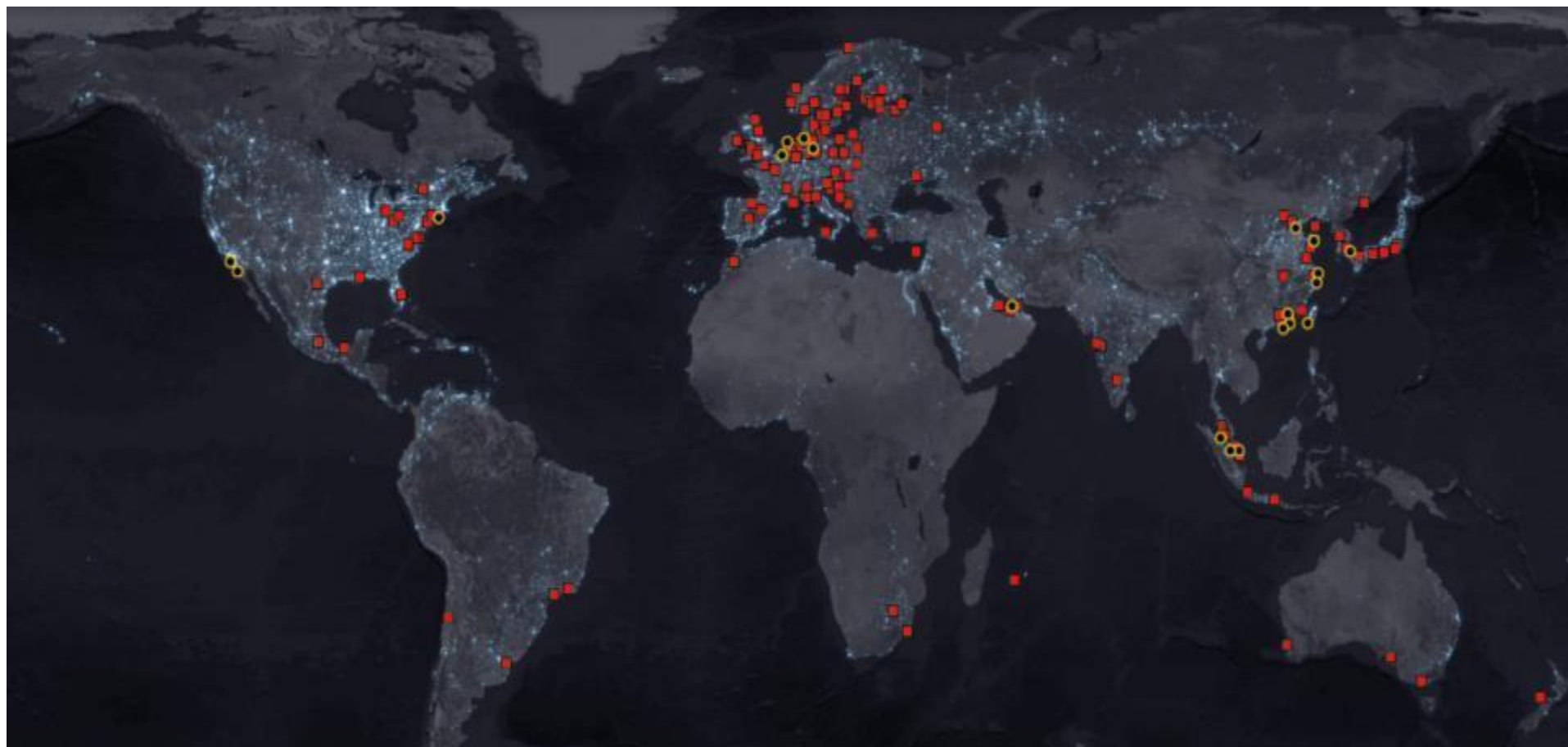




An aerial photograph of a large container port. In the foreground and middle ground, there are extensive stacks of shipping containers in various colors, including dark blue, brown, and red. Several large red gantry cranes are positioned along the waterfront, some with their booms extended over the water. A large container ship is docked at the pier. In the background, the port extends into the sea, with a city skyline visible on the horizon under a cloudy sky. A semi-transparent text box is overlaid on the center of the image.

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

**A global reach with personnel in 30 countries  
and sales and service in 100 countries**

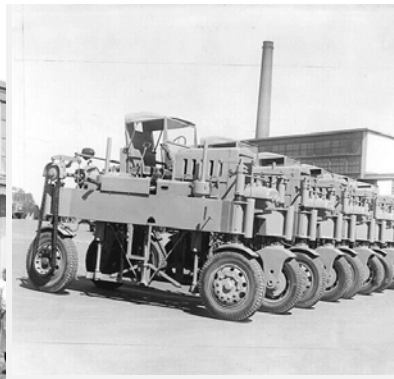




# Long heritage in innovation



1930s



1940s



1950s

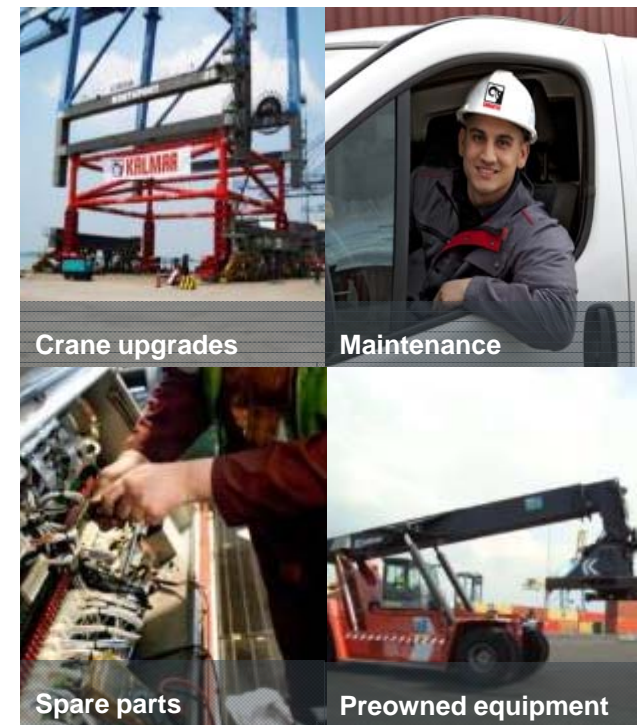
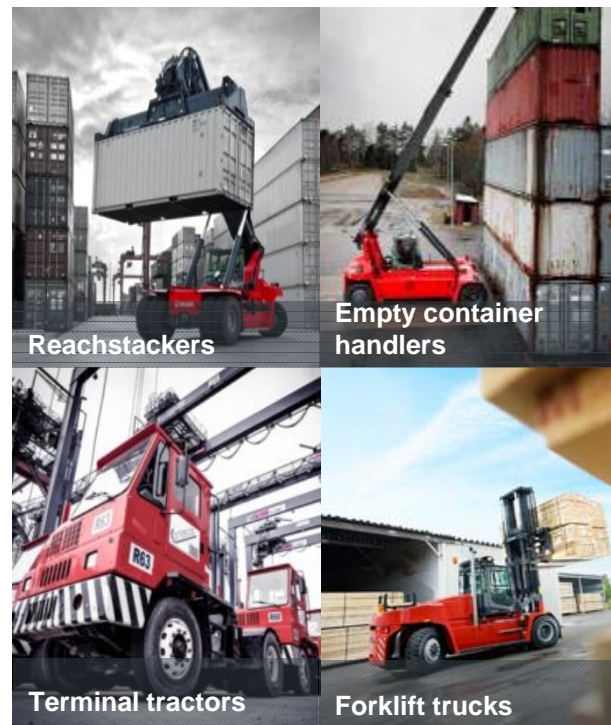
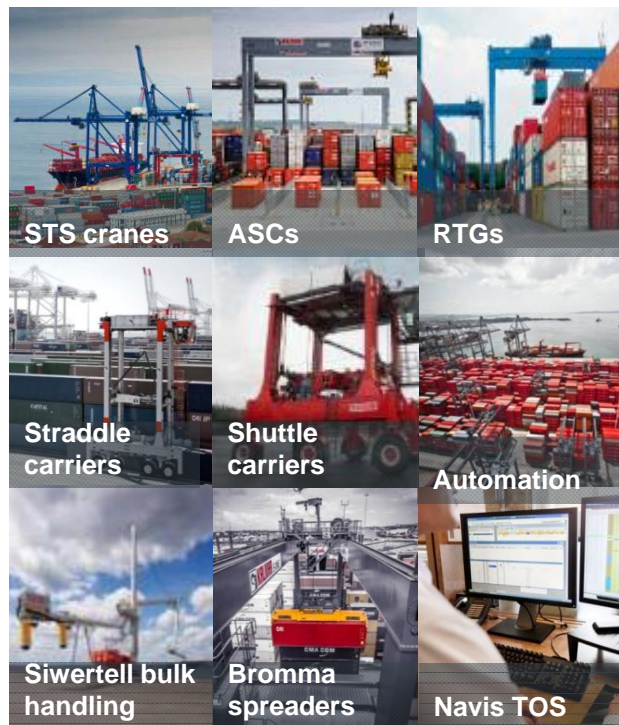


1960-70s



1980-90s

# The market's widest product portfolio





# Leading position in port automation

- First fully automated straddle carrier terminal in Australia in 2005
- Strategic acquisitions
- Technology and Competence Centre in Tampere, Finland
- Ongoing mega terminal projects
- Kalmar's market share is estimated to be 30–50% in automated terminals
- More than 100 SmartPort process automation deployments
- Navis' share approximately 80% in commercial automated terminal software





# A global network of crane upgrades competence centres

- Best of the industry know-how and methods
- Excellent track record
- Brand neutral
- Mareiport acquisition





# Modular services products to support growth

**Kalmar Care**  
service contracts  
to provide  
customer specific  
solutions:

- Support Care
- Essential Care
- Complete Care
- Optimal Care



# Kalmar is the only complete ports and terminal solutions provider



## Equipment

Complete set of equipment  
for container and cargo  
handling



## Services

Global service network  
Rebuilds and upgrades  
Service contracting  
Terminal development



## Systems & Automation

Terminal operating systems  
Automated equipment  
Process automation



# Kalmar Reachstackers

**The market's most complete  
range of cargo handlers**





**Container**



**Barge**



**Intermodal**



**Industrial**





# Super Gloria

The World's Biggest Reachstacker

>100  
Tonnes







**Super Gloria:  
Tool Carrier + Slab Grab**



**Super Gloria:  
Tool Carrier + Magnet**





**Kalmar Gloria reachstackers (10 to >100 tonnes)**

**DRG100 & 420-450**

**5th generation of Productivity**

**30 years = 10.000 units**



# New Safety Developments

Kalmar proximity system

# Kalmar Personal Proximity System

Increasing safety for port personnel

- Ports business is about moving containers
- Close proximity work = constant collision risk
- Injuries are often serious
- Every aspect of the business affected
- High indirect costs and lost time





# Proximity Technology challenges

## Detection technologies tested:

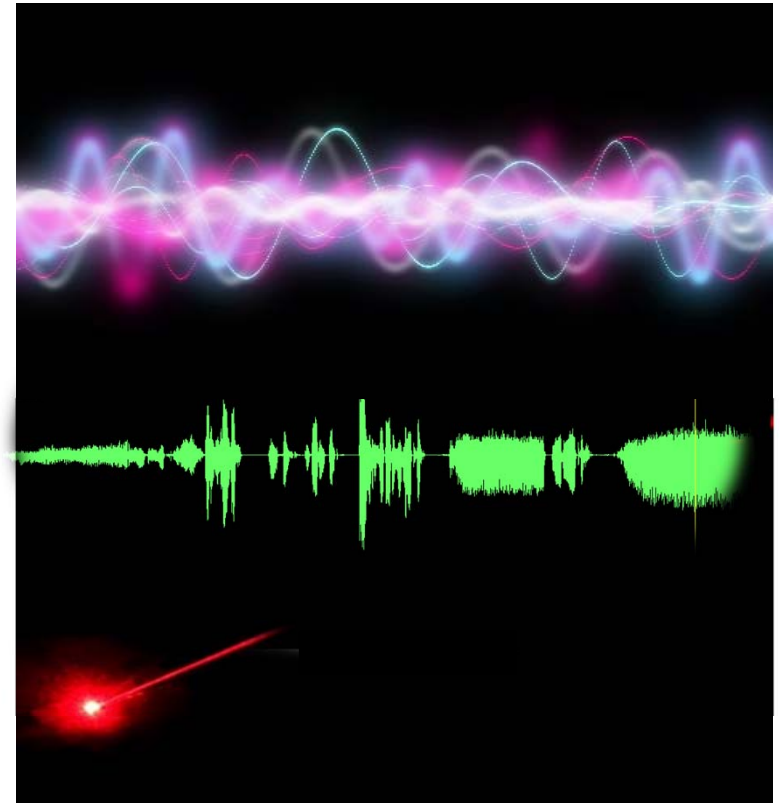
- Radar, ultrasonic, “Time of Flight”;
- Laser, infrared and camera technologies;
- RFID, RSSI, UHF and WiFi;
- GPS Positioning Systems

## Performance limiting factors:

- Line-of-sight requirement
- Unreliable radio signal strength
- Environmental conditions.

## Consequences

- Weaker signals = longer distances.
- Unreliability and false alarms:
  - = Operator frustration
  - = Mistrust
  - = Ignoring alarms



# Kalmar Proximity System Components



**Personal Tag**



**Kalmar Gloria User Interface OR Vehicle User Interface**



**Controller Unit**



**LF Proximity Field Transmitter**



# Personnel Proximity Detection Solution

## The Solution

- Controller
- Display panel
- Encoded transmitter
- Personnel Proximity Tag
  - Visual
  - Audible
  - Vibration
- Defined proximity boundaries:
  - Warning zone
  - Danger zone
  - Safe zone



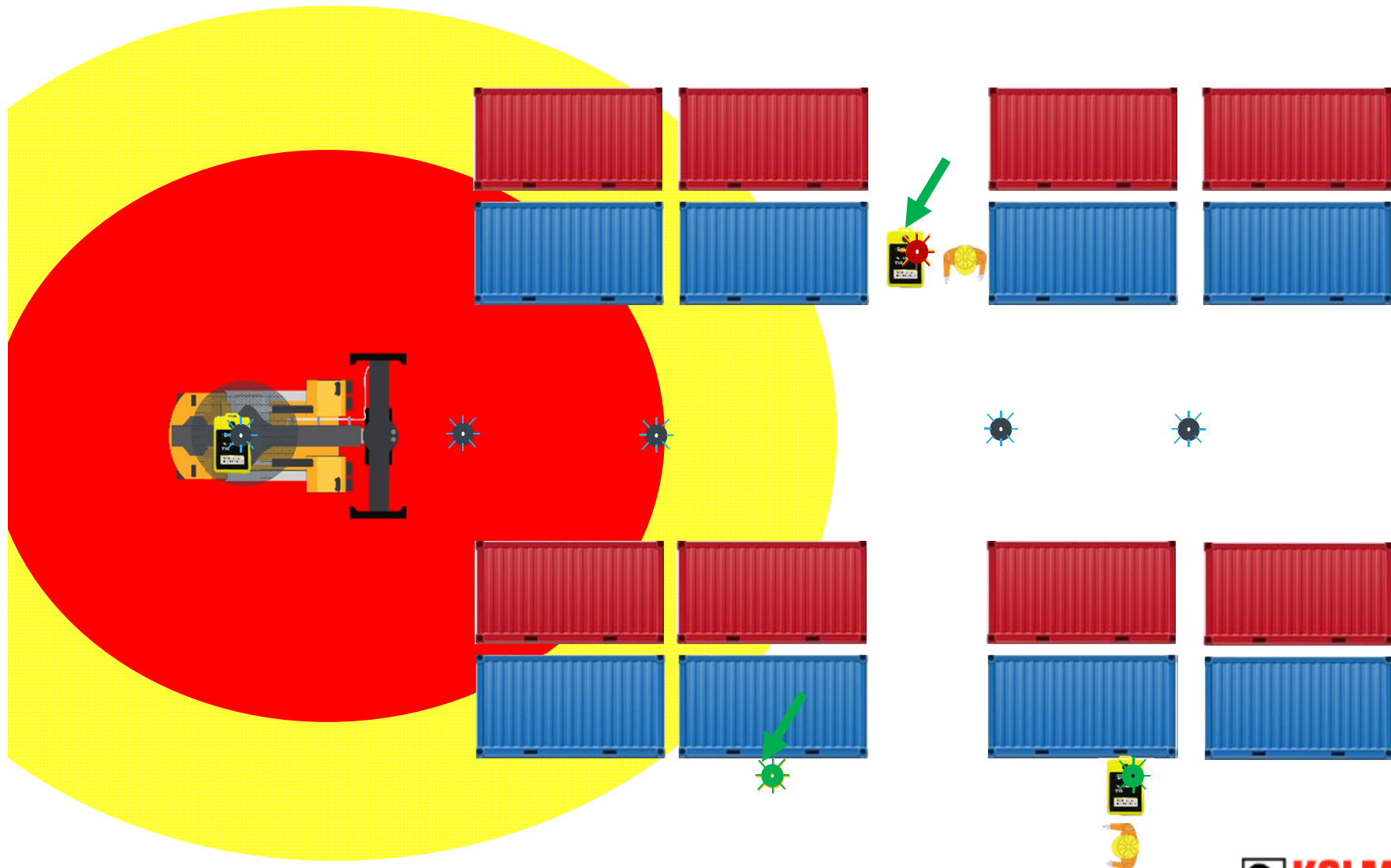
- Alarms for personnel and operators

08 May 2015

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## Example of Operation





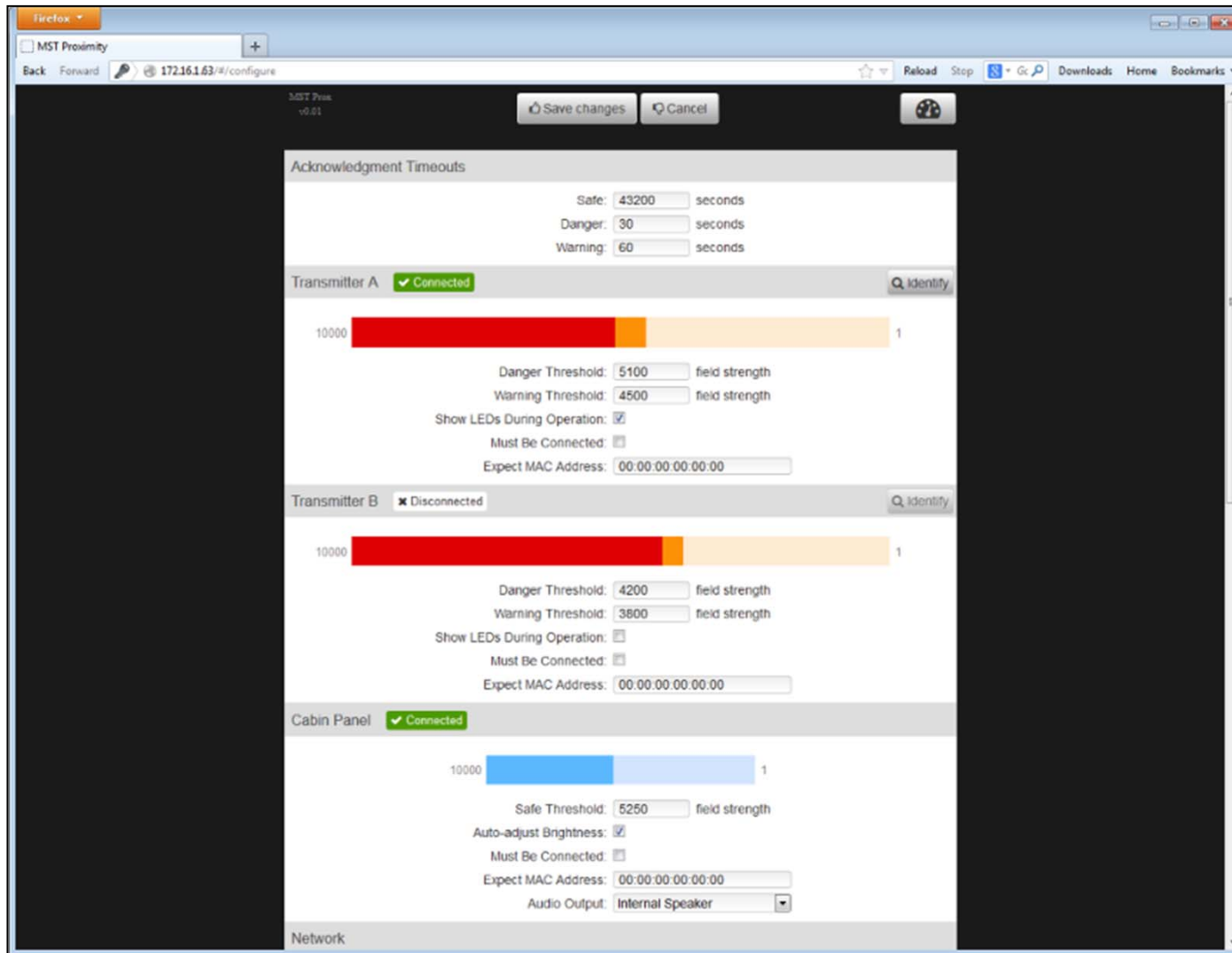
# System Benefits

## Ports Specific considerations

- 360° field of detection
- Can detect personnel behind containers
- 20m+ detection range = more reaction time
- High confidence in alarms
- Multiple proximity tags in the same area
- High integrity and fail-safe tag operation
- Simple, flexible and remote configuration
- No calibration or physical adjustments
- CANbus integration into vehicle and machinery controls
- Customised shaping of detection zones
- “ Very Easy “ to install and maintain- modular design



# Installation and maintenance





# Proximity tested on Kalmar Terminal Tractors



## Operates across all types of Telescopic and Fixed Crane Spreaders and Sizes

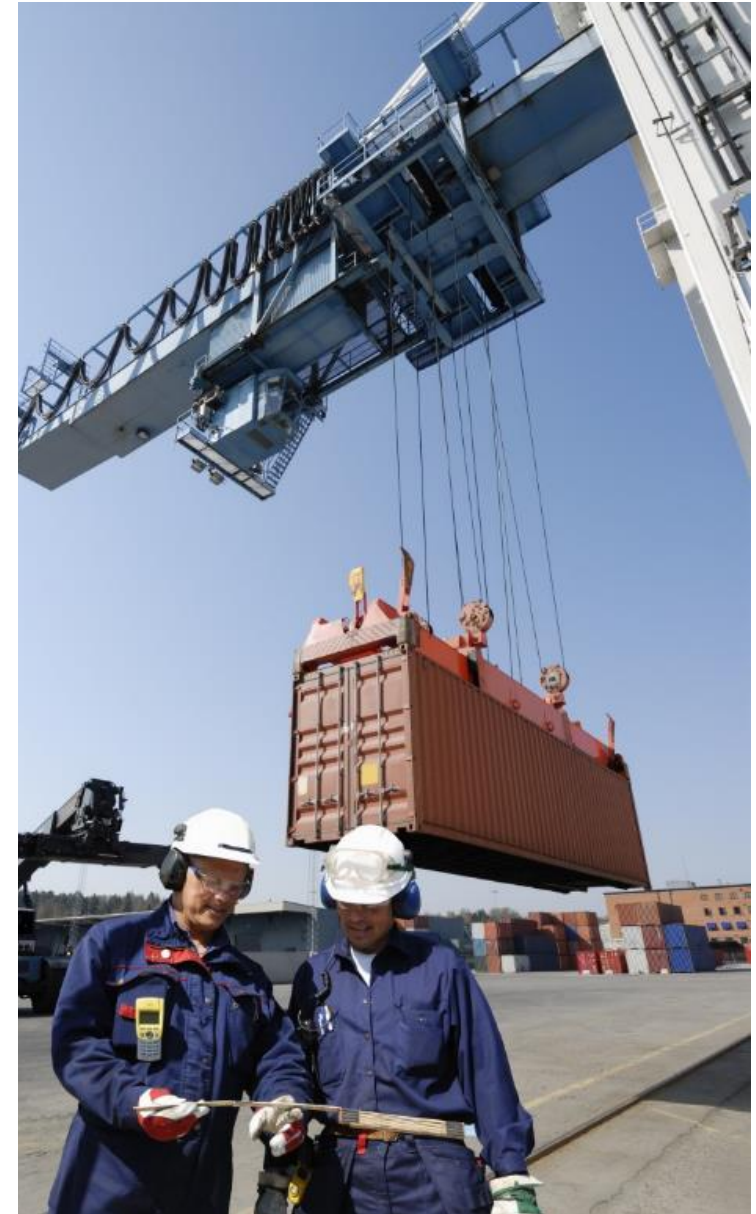


**Applicable for all Straddle Carriers, RTG's, STS etc.**



# Traditional Personnel & Equipment Controls

- Training
- Procedural
- Barricades
- Lighting
- Soft controls
- Proximity Detection provides **Additional Control** to standard safety procedures
- **Awareness** to **Operators** of proximity to people and other plant
- **Awareness** to **Personnel** of vehicles or equipment
- Does not replace **Good Work Practices**, procedures and regular employee training
- Proximity Systems **combined** with good work practices have dramatically reduced incidents



# For More information

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Making your every move count