

An aerial photograph of a port terminal, likely Hamburg, showing a large area filled with shipping containers and industrial buildings. A network of white lines connects various points across the scene, with several glowing blue nodes, suggesting a digital or automated infrastructure. The background shows a river and a cityscape under a sunset sky.

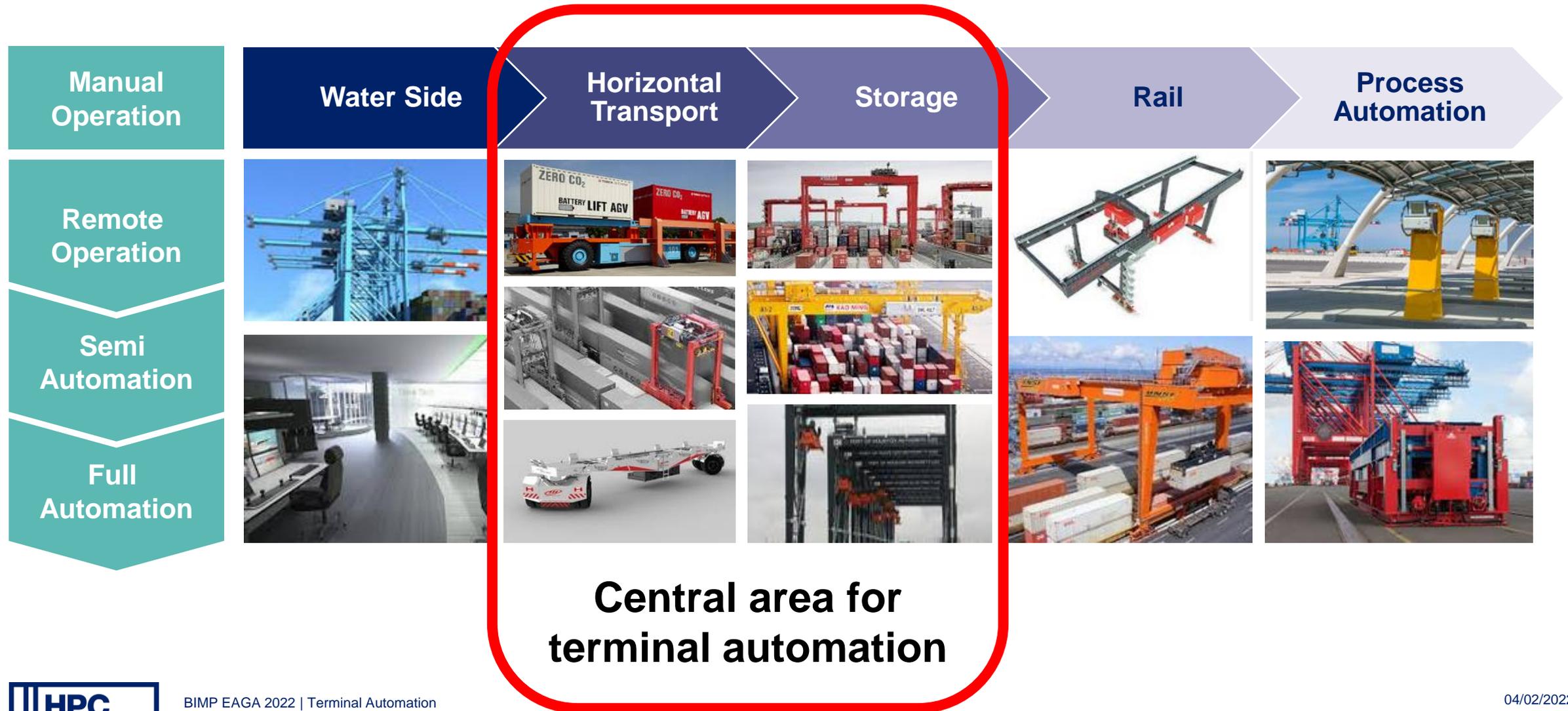
Gamechangers in Automation

The impact of autonomous trucks and disruptive concepts on terminal automation

4 August 2022 | Dr. Nils Kemme, HPC Hamburg Port Consulting

What is the right level, area and technology for automation?

Types of Automation: Terminal Automation includes various Options and Areas



Who we are – pioneers in automation

About HPC



1,730
Projects in
133 COUNTRIES



1976
Founded as subsidiary
of Germany's leading
port operator

**PIONEERING
TERMINAL
AUTOMATION**

Developed and realized
the blueprint for
terminal
automation
globally



100
ENTHUSIASTS



With background
from port and
terminal operations
and software

180+
PORTS

And terminals
planned and
optimised



**TERMINAL
AUTOMATION**

Planning &
Realisation



80+

OPTIMISATION
Improved operational
excellence and
reduced costs



1st BROWNFIELD CONVERSION

For terminal of relevant size double capacity on given footprint, while automating the yard during continuous operations.



Developed *HPC Ukraina* (now HHLA CTO) as terminal operator in Odessa

What we do – consulting the maritime supply chain

Our Service Portfolio



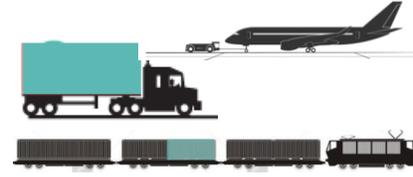
SHIPPING



PORTS



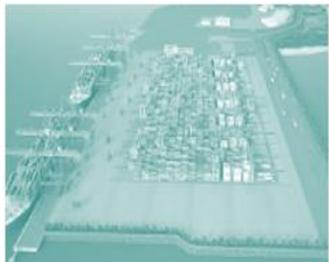
TERMINALS



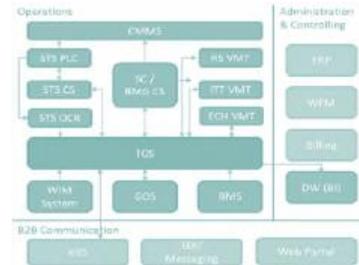
HINTERLAND



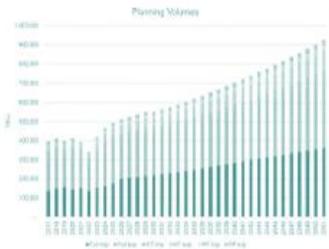
STORAGE



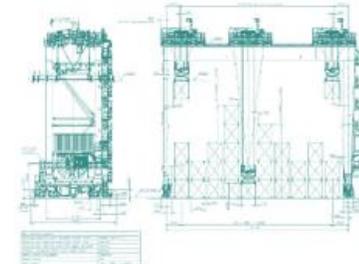
Planning & Simulation
Optimisation
Project Delivery



IT and Innovation Strategies
TOS Implementation
IT and automation integration



Market Forecast
Business Plans
Due Diligence



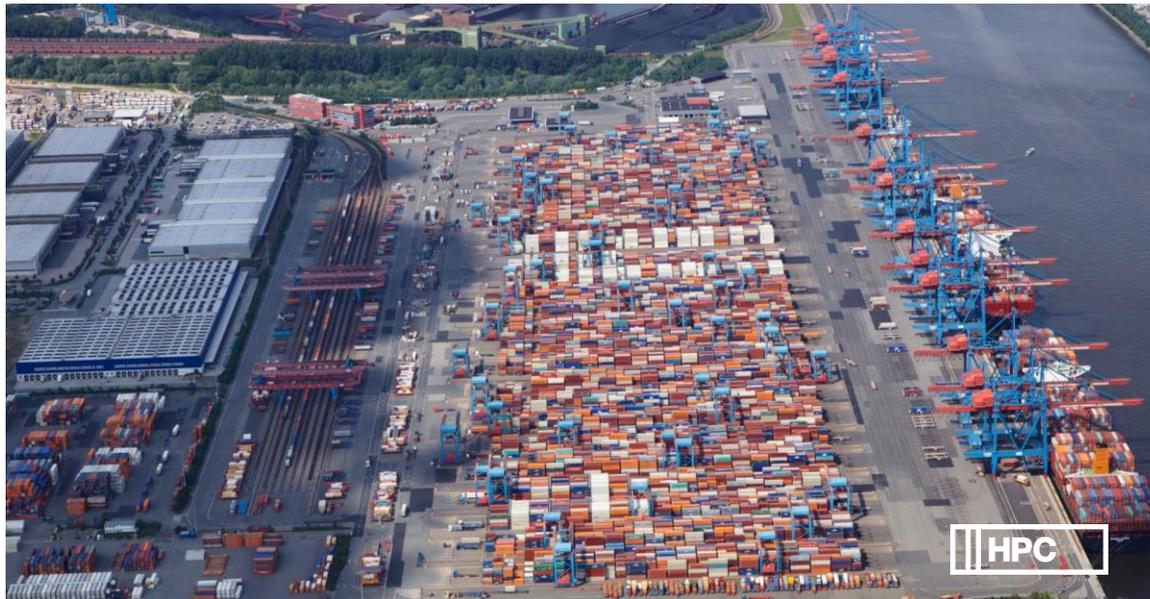
Engineering
Construction Supervision
Procurement Assistance



Automation as we know it

In most traditional full automated terminals yard cranes perform horizontal transport to maintain separation

The standard setup – 20+ years and counting



- Perpendicular yard setup enabling automated horizontal transport
- Transshipment terminal often with Cantilever ASC
- Significant efforts to make the interfaces work and return productive operations

VICT, Melbourne



- Planned and designed with added levels of automation
- Following the same separation concept
- Evolution of technology

Key automation gamechangers and their impact

Autonomous trucks



1. No traffic area separation
2. Realignment of terminal components
3. Compact layout
4. Retrofit of established terminals becomes easier

Digital solutions



1. Process automation
2. AI-supported decision making
3. Integration beyond terminal boundaries

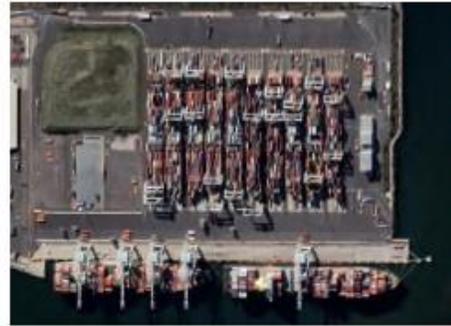
Vertical Yard



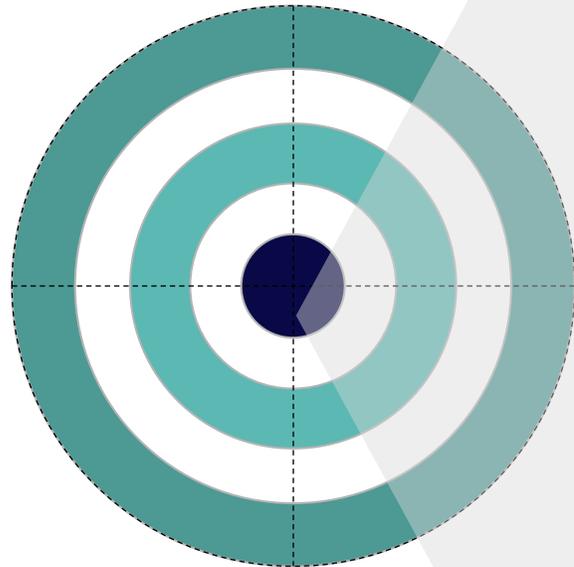
1. Densification
2. Horizontal transport and external traffic integration
3. Applicable regulations

Design implications – we are likely to go parallel again

Automation opportunities to be re-assessed for those who put them off previously



Key takeaways



- 1 Automation solution change**
Parallel yard layout becomes applicable for full automation
- 2 Automation can become viable for terminals that have discarded it**
Brownfield automation becomes a lot easier for a range of terminal
- 3 Testing, integration and implementation approaches remain valid**
Detailed planning and testing of components and staff training remain critical
- 4 Open API strategy will drive automation modularity**
Enabling standardised automation implementation decreases implementation risks



Dr Nils Kemme

Managing Director and Partner

HPC Hamburg Port Consulting GmbH

Am Ballinkai 1
21129 Hamburg



📞 +49 (0) 40 74008-0
✉️ n.kemme@hpc-hamburg.de
🌐 www.hpc-hamburg.de

