



Industrial Automation for Port Equipment

Managing Equipment Lifecycle Costs, 12 May 2021



About HPC Hamburg Port Consulting

Global experience, operational innovation and down-to-earth attitude

History & Experience

- Founded in 1976 as subsidiary of HHLA Hamburger Hafen und Logistik AG, the leading German port operator
- Around 100 experts from different disciplines
- Reputation as one of the world's leading consultants in the port and transport sector
- Since 1976 1,600+ port and transport-related projects in more than 120+ countries on 6 continents, both in the private and public sector



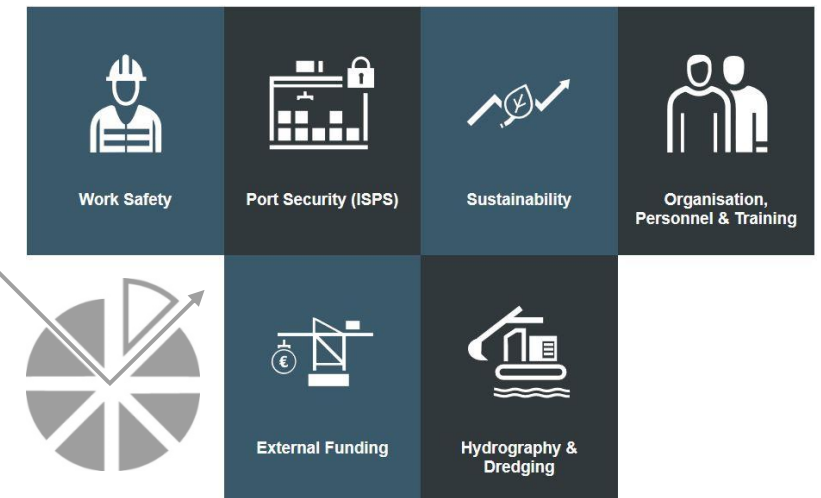
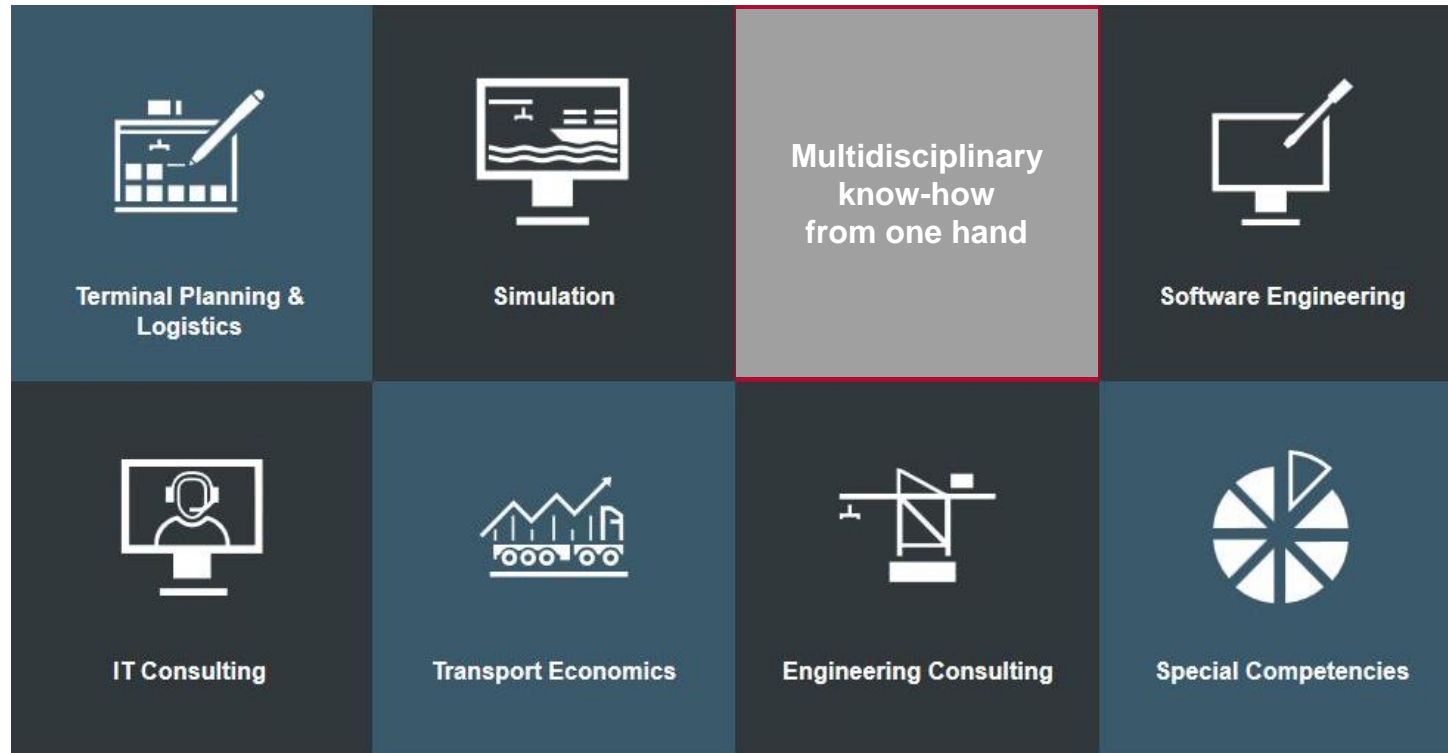
Operator Focus

- Firsthand port and operations experience from HHLA
- We draw the plan, deliver the plan, and improve and adjust
- Developed HPC Ukraina (now CTO) as terminal operator in Odessa (Ukraine)
- Accredited with all major development organizations and banks (World Bank, IFC, ADB, KfW, etc.)
- World-wide experience in HR development and port related training



HPC Hamburg Port Consulting – Our Expertise

Wide range of services from one competent provider



Industrial Automation – Managing Equipment Lifecycle Costs

The swing towards predictive and condition-based maintenance

What is it about?

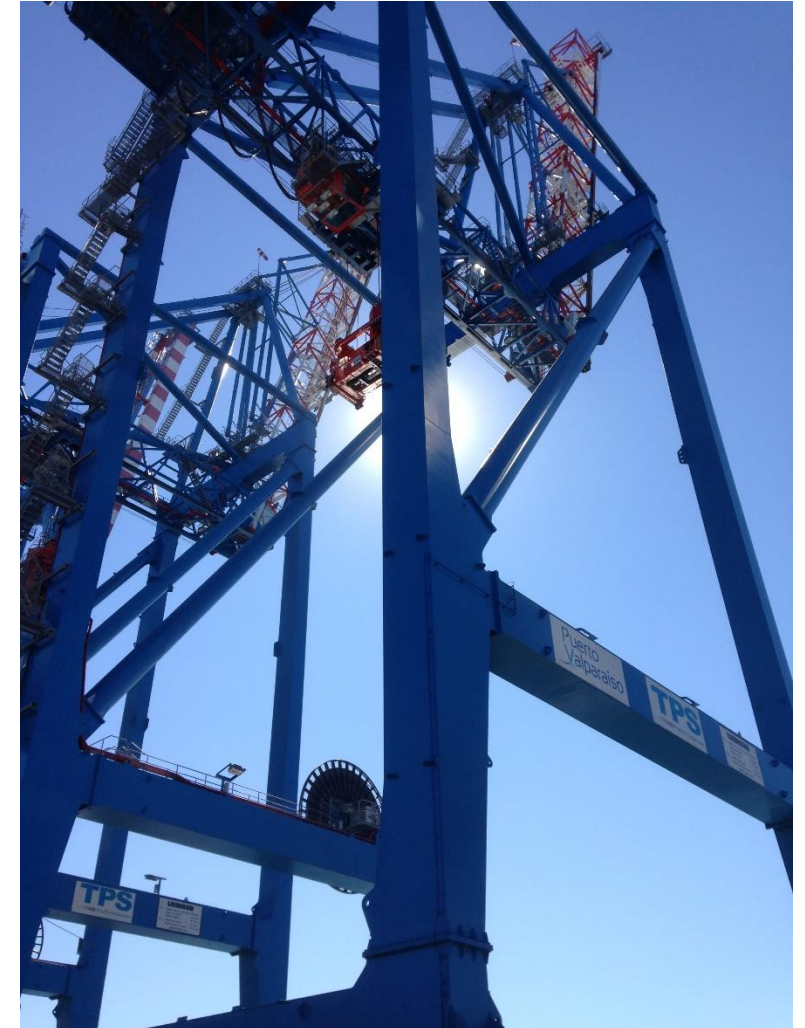
- It is about collecting data, transferring and collating data, analysing data and take action accordingly

What does a Concept for Industrial Automation aims for?

- Measurement and capture of equipment data which is related to its current technical condition and data exchange with terminal IT systems
- (Further) development of Corrective and Preventive Maintenance strategies towards Predictive and Condition-Based Maintenance

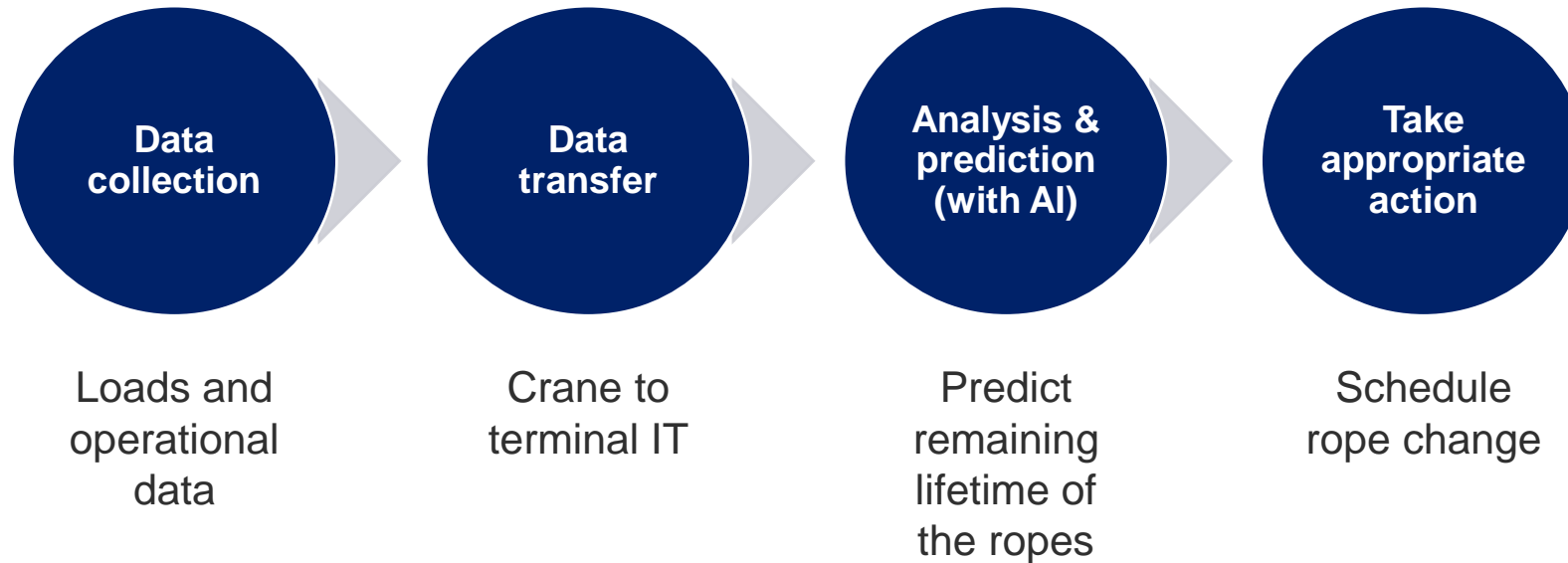
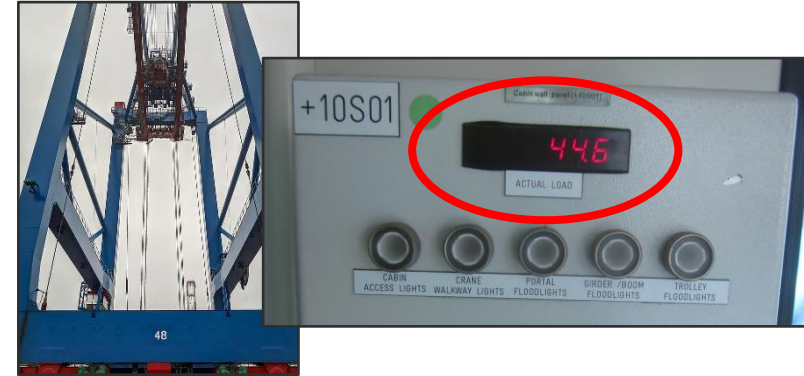
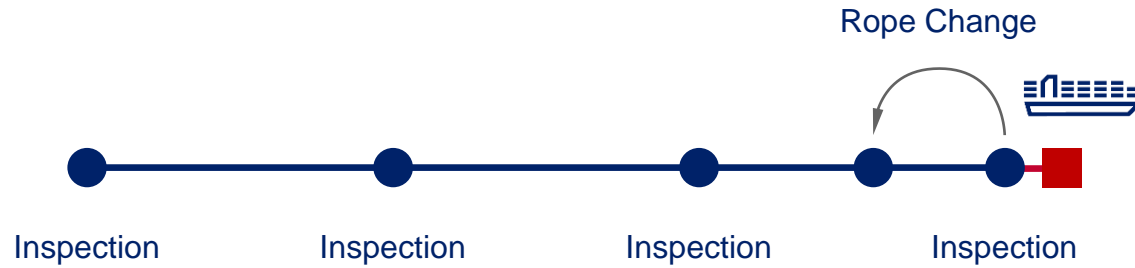
What are the Opportunities?

- To **save money**, e.g. by decreasing total cost of ownership
- To **better serve the customers**, e.g. by increasing terminal performance and efficiency
- To **make life easier**, e.g. by improving predictability of processes and events



Wire Rope Change Prediction


A simple use case – successfully implemented at one of our terminals




Optimise the time slot to change the wire ropes

Benefits and Opportunities

The journey has just started

- 
- **Benefit from technical potentials of IoT, AI and Industry 4.0**
 - **Increase transparency with regard to current condition of the technical equipment and enable real-time decision-making**
 - **Tap the full potential – operationally and commercially**

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- **Establish state-of-the-art M&R strategy and procedures**
 - **Higher operational availability and less downtime coming along with minimised maintenance costs**
 - **Manage Equipment Lifecycle Costs**

Digital Twins

Holistic concept for condition-based maintenance



Quay crane(s) on a container terminal

- High productivity needed during loading and unloading
- Sudden breakdowns can have a direct financial impact (e.g. penalties)
- Idle times between vessel calls or times with low berth occupancies



Digital twin at technical department

- Real-time mirror of the crane's status
- Enabling optimal scheduling of maintenance orders, particularly if works are time intensive
- Basis for a state-of-the-art maintenance strategy → predictive and condition-based maintenance

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