

READY to accelerate
DIGITALIZATION
for sustainable operation

A wireframe illustration of a crane structure, showing the lattice framework and the hook mechanism, rendered in a light blue color.

Digitalization and Automation of Cranes

as accelerator for operations

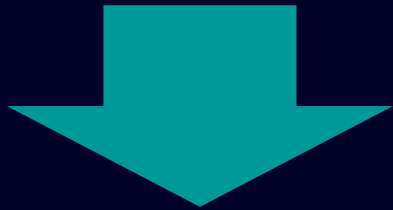
ASEAN Ports and Shipping 2022

SIEMENS

Potential of Digitalization

Smart Data usage

- Combined data
- Multi Source Data



Optimized operations

- Active process adaption
- Process insights

Crane type	Sub-type	Automation Degree	Status
 STS	Single trolley		LS - Trolley-mounted sensor critical WS – under development
	Double trolley		LS – several units in commercial operation WS - development
 RMG	Portal (ASC)		Ca. 1000 units in commercial operation Most ASC with AGV, strad and truck Truck driver present in cabin
	Cantilever (ARMG)		
 RTG	16-wheel		First units in commercial operation 16-wheel more stable than 8-wheel Truck under RTG in truck lane Unresolved „personnel safety“
	8-wheel		
 Strad			First units in commercial operation



Semi-automated with limited driver assistance



Semi-automated with extensive driver assistance



Fully automated with manual intervention

Focus Topics

- Crane remote control
- Automation for different type of cranes
- Digital twins
- Automated terminal sub-system interconnection
- Cyber-security

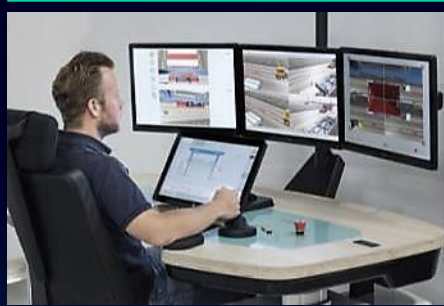
SIMOCRANE Solutions Strategy and offering



Zero Harm

Increase of **Safety** and productivity by higher safety level

Certified and state of the art **Cyber Security** solutions for all levels of the automation



Cost Savings

Integration & Standardization & Usability allow reduction of hardware costs and shorter commissioning time

Energy saving & CO2 footprint reduction by ECO solutions



Faster Execution & Optimized Logistics

Logistic Simulation allows an early optimization of performance and material flow control

Digital Twins shortens the design and development time



Higher Availability

Digital Services empower reduction of down times

Predictive maintenance reduces the probability of down times



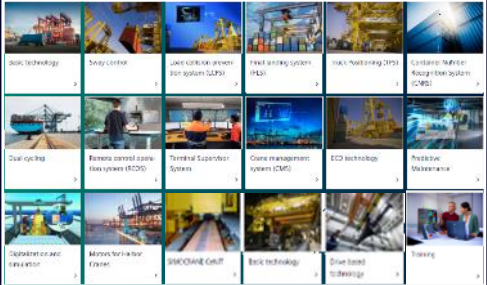
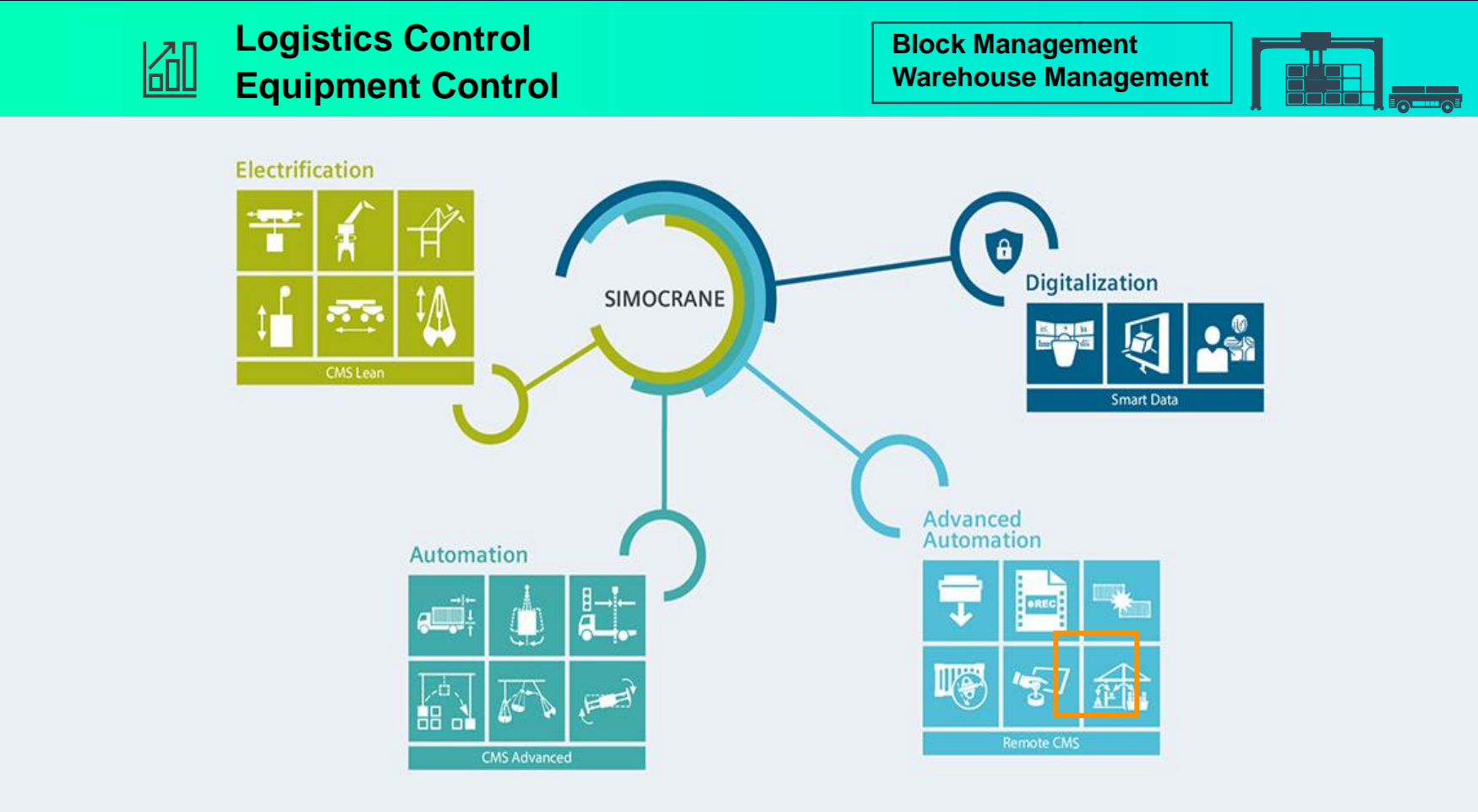
Performance

Cutting-Edge technologies empower new business models and automation applications

The usage of advanced **Artificial Intelligence** technology leads to high performance pattern recognition systems

Modular Automation SIMOCRANE Trends

Fully Modular Automation Solution for Terminals



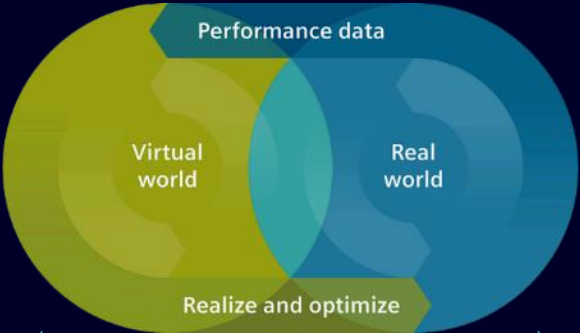
Fully **Modular** Automation Portfolio for Terminals

- Industry and Harbor cranes
- Ready to run & configurable
- Standardized and tested
- Comprehensive documentation
- Open and documented Interfaces

SIMOCRANE portfolio presents **modular Toolbox**



Digital Twin for Operators: Simulation & Emulation



Automation steps

Yard Crane

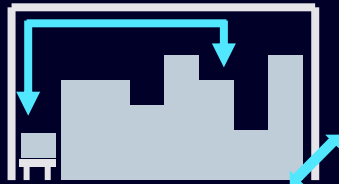
Operator/RTG



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Operator
Full Control

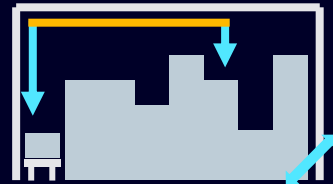
1. Manual



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Operator with
Assisted Control

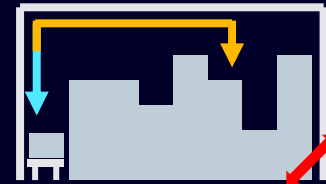
2. Basic Auto



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Operator for
Truck Lane

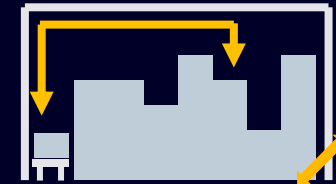
3. Semi Auto



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Exceptions

4. Fully Auto



- Operator
- Supervised
- Automated

Level of automation

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