Productivity improvement by ELS layer

BALTIC AND BLACK SEA 2023

BC Lee
18th. May 2023

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References for ARMG / ATMG

PSA PPT
56 ARMG
Singapore

APMT Tangier Med 2
32+10+14 ARMG
Morocco

Evergreen CT7
40 ARMG
Kaohsiung

Port of Felixstowe
8 ARTG
United Kingdom

DPW Jeddah
17 ARTG
Saudi Arabia

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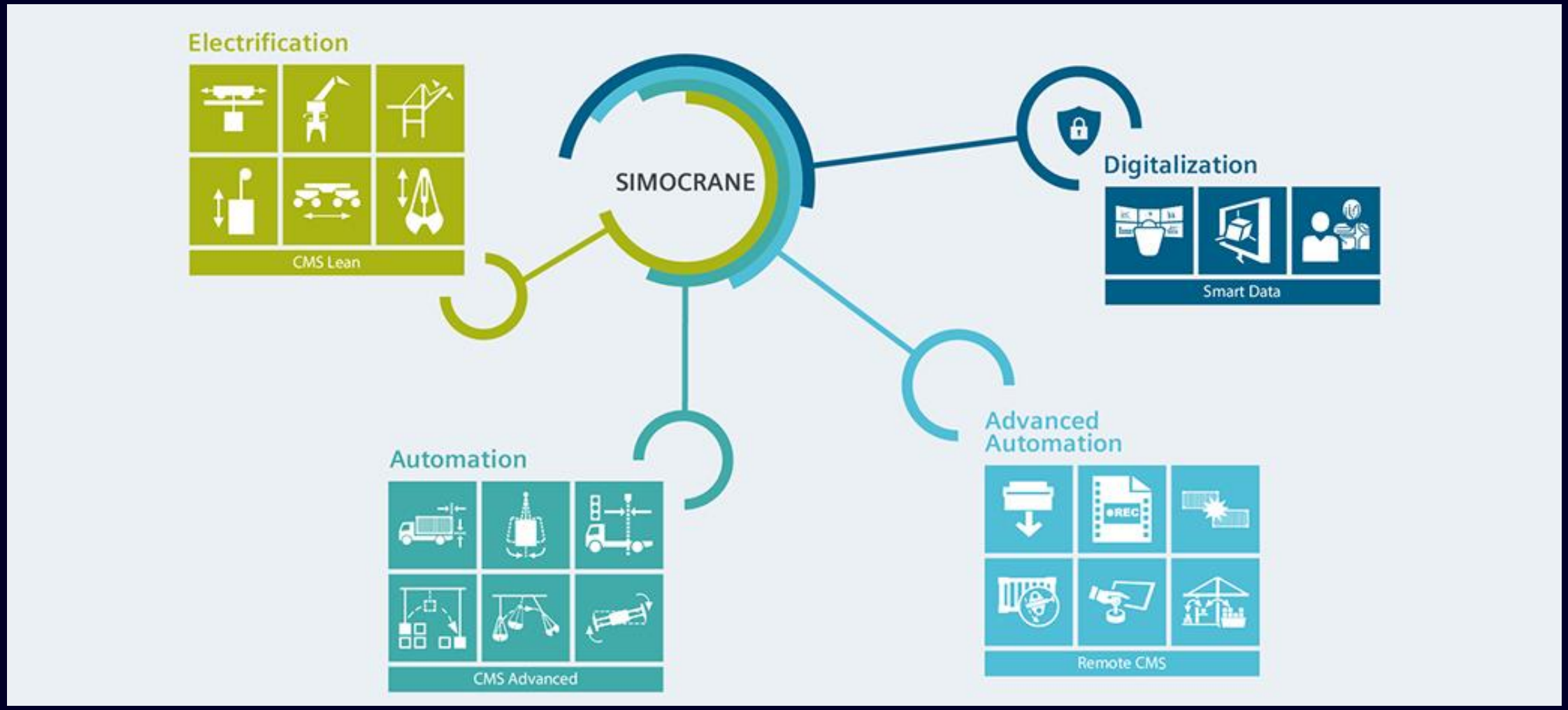
Modular Automation SIMOCRANE Trends



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Remote Control Operating System

- Safety
- Productivity
- Usability
- Ergonomics

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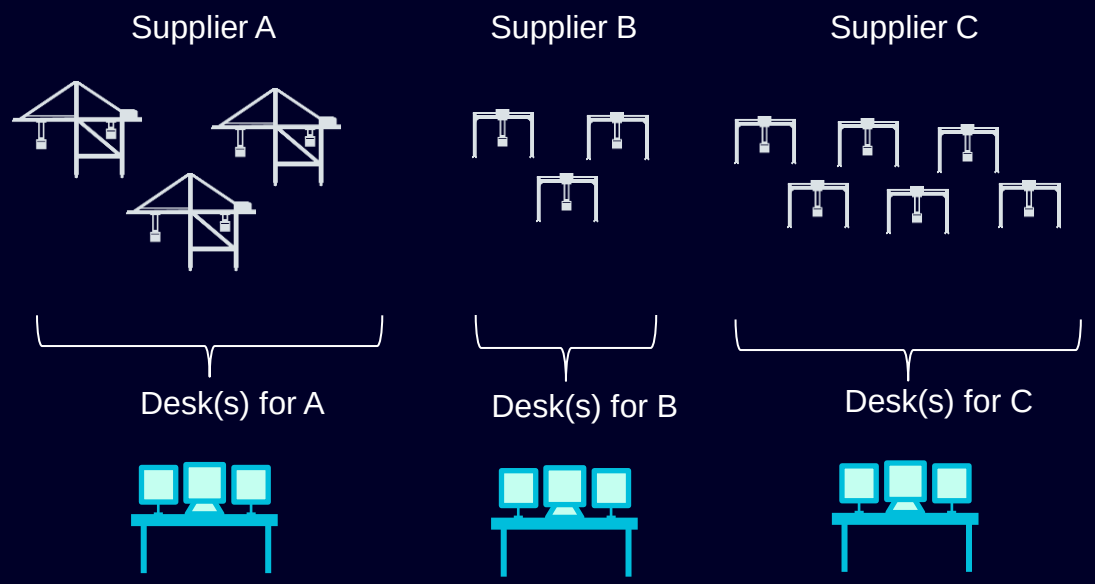
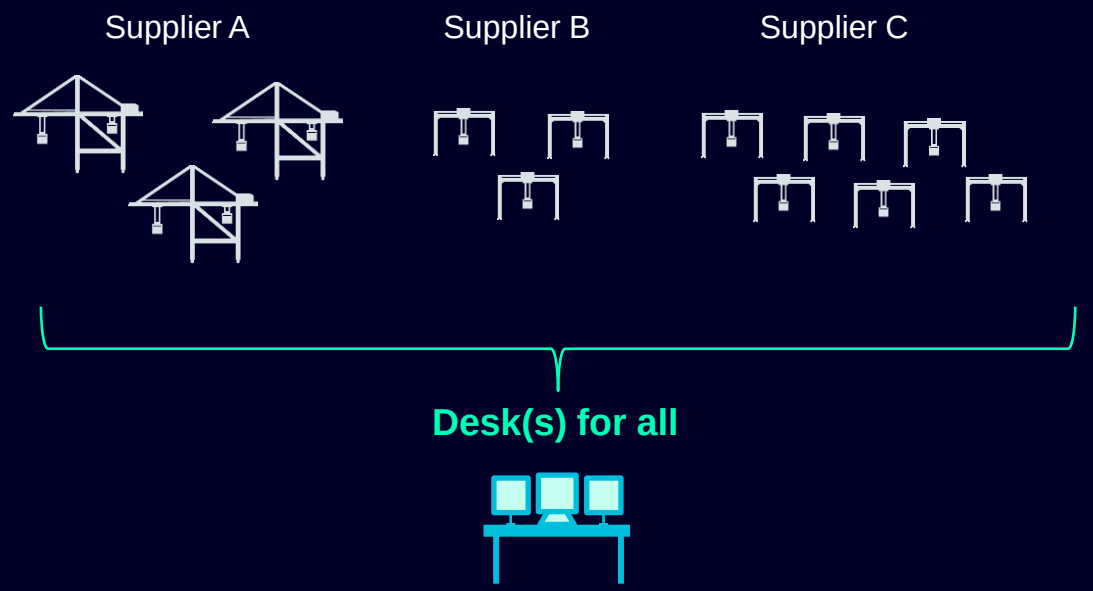
Agnostic to Crane supplier
Remote Control Concept

Conventional solution



Crane supplier agnostic solution



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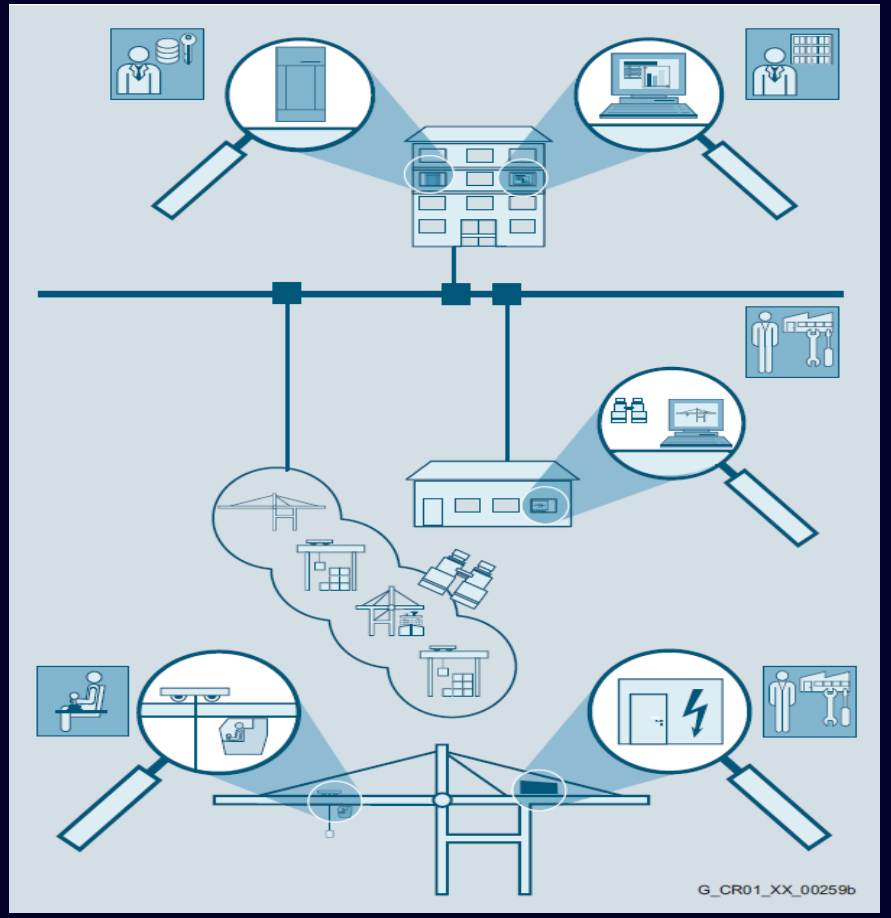
Crane Management System
Managing of information

Alarm Logging	Performance Data	Replay Functionality	Condition Monitoring
Alarm message system	**Relevant performance data generation** for further KPI calculation;	**Record all performed operations**	**Fast recording** **-** analog signals - binary signals
Diagnosis **-** Fault diagnosis - Root cause analysis	**Operational excellence key figures**	**Alarm message system**	**Detect time-critical switching states**



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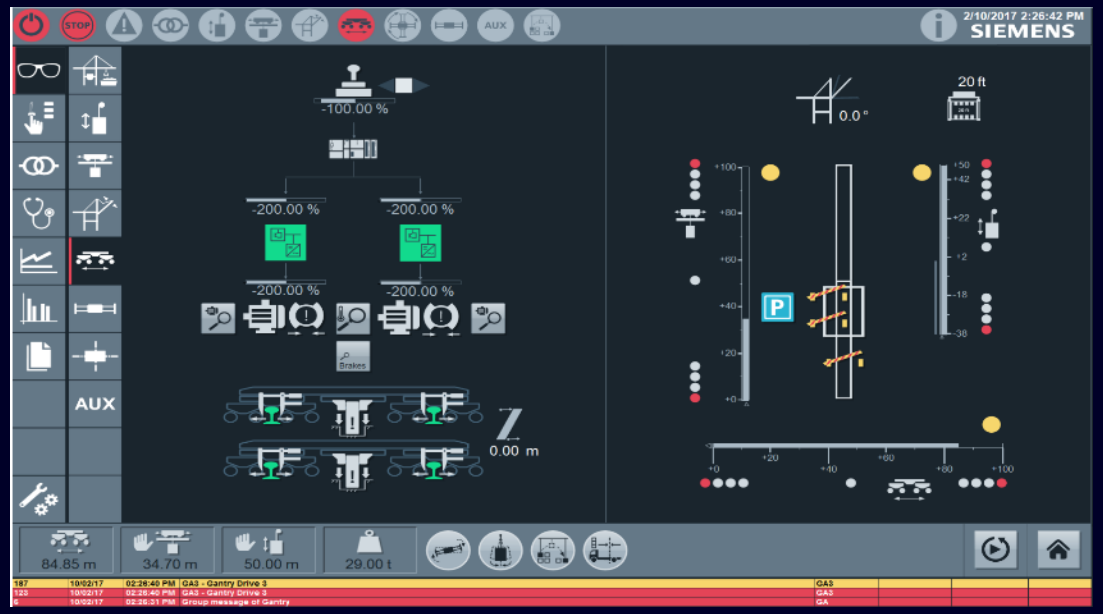
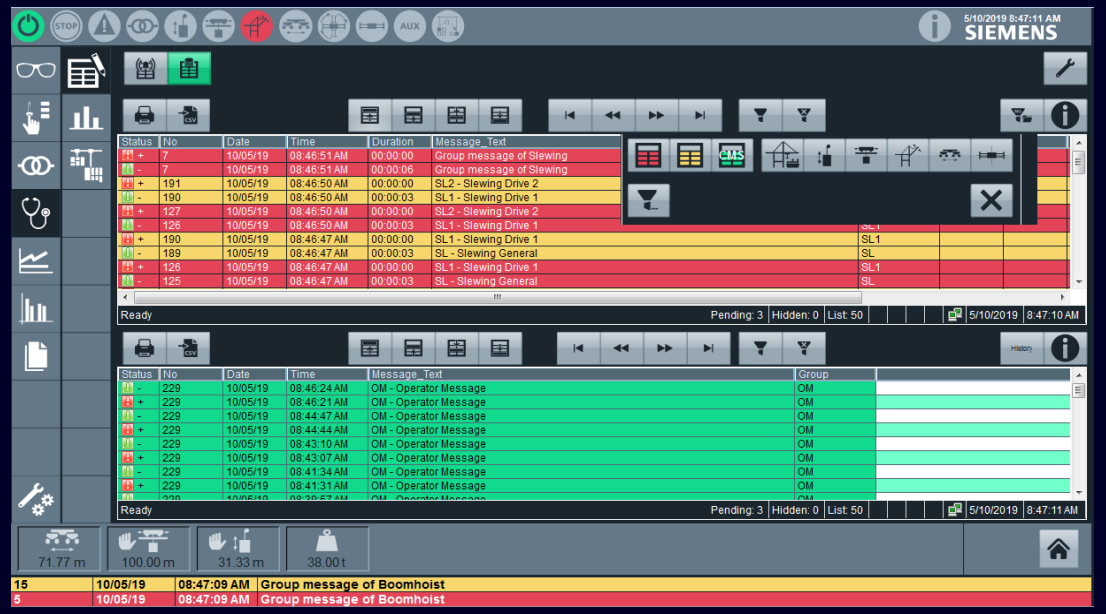
SIMOCRANE CMS
Highlights

Operator



- Virtual crane movement
- Actual Position of motions
- Spreader diagnosis
- Drive diagnosis
- Speed of all motions
- User authorization
- Replay (Playback function)
- Condition monitoring – Fast trace

Fault Diagnosic



- Event of Fault/Alarm
- Timestamp for alarm
- Frequency of fault/alaram
- Maintenance instruction to eng.
- Export to CSV of the alarm list
- Jumping to circuit digram & manual
- Direct navigation to PLC program

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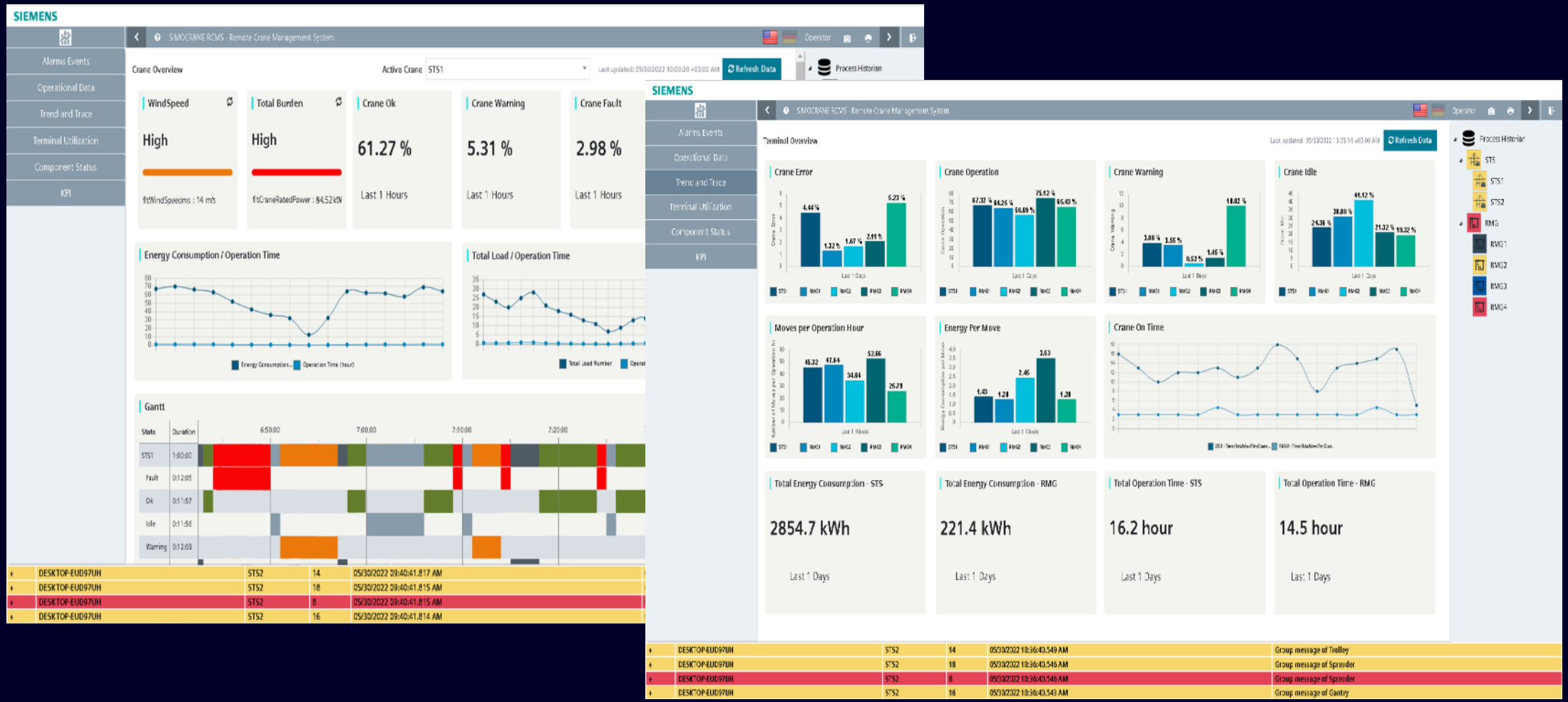
SIMOCRANE RCMS
Extensions on Dashboarding and Data Analytics



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ELS: Equipment Logistic System

Terminal Operating System

*picture from Gdansk2023 CA

ELS

- Standardized
- Compatibiltity
- Scalability
- Data Sync.

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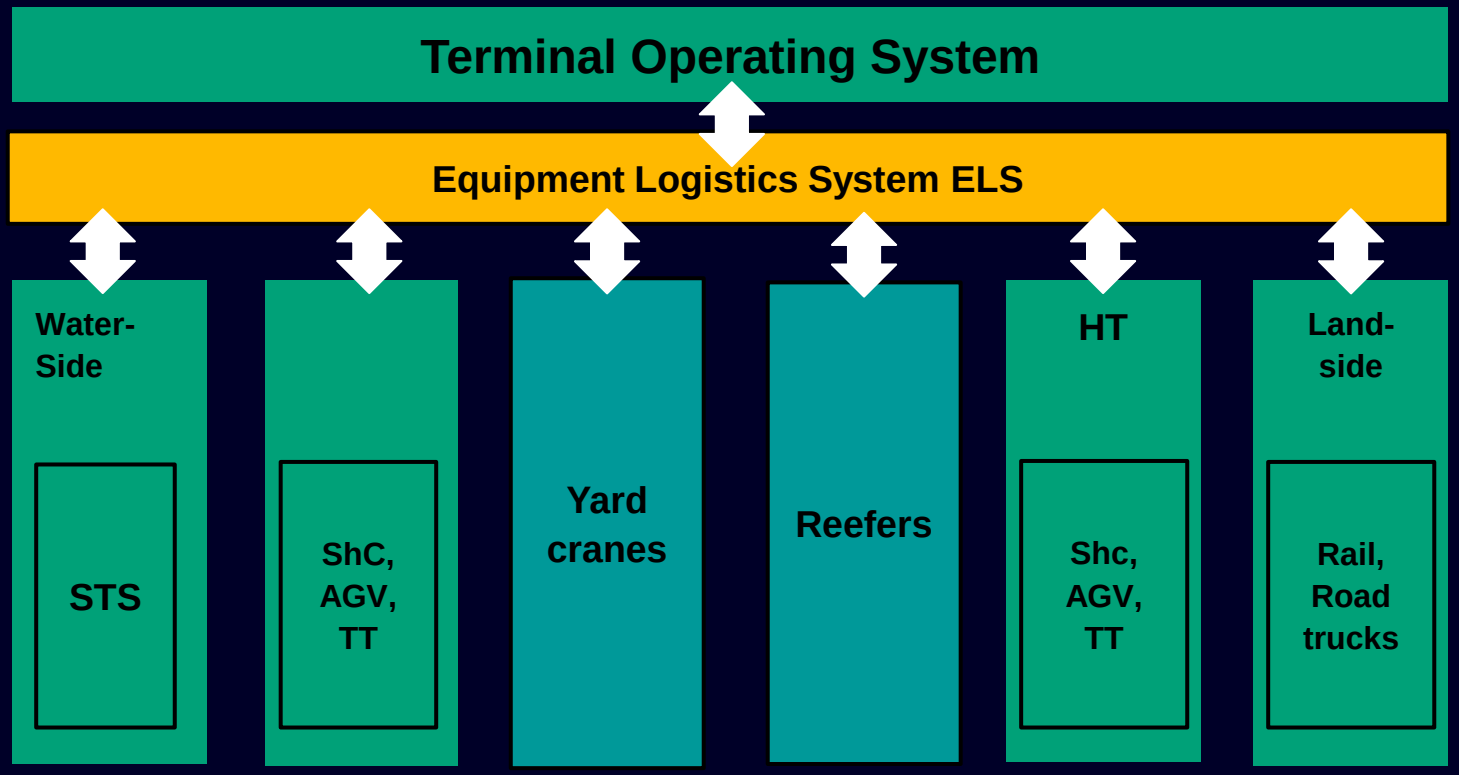
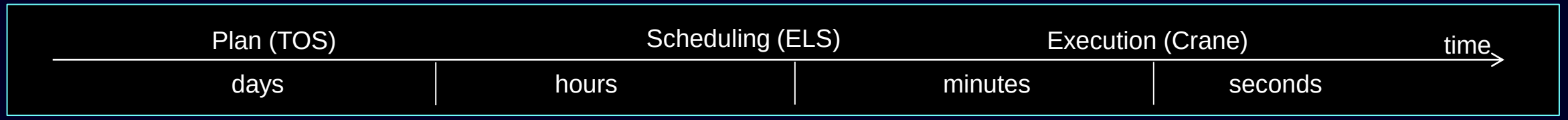
Automated Terminal Architecture



ELS:

- High level software solution
- One independent instance/block
- Own data model



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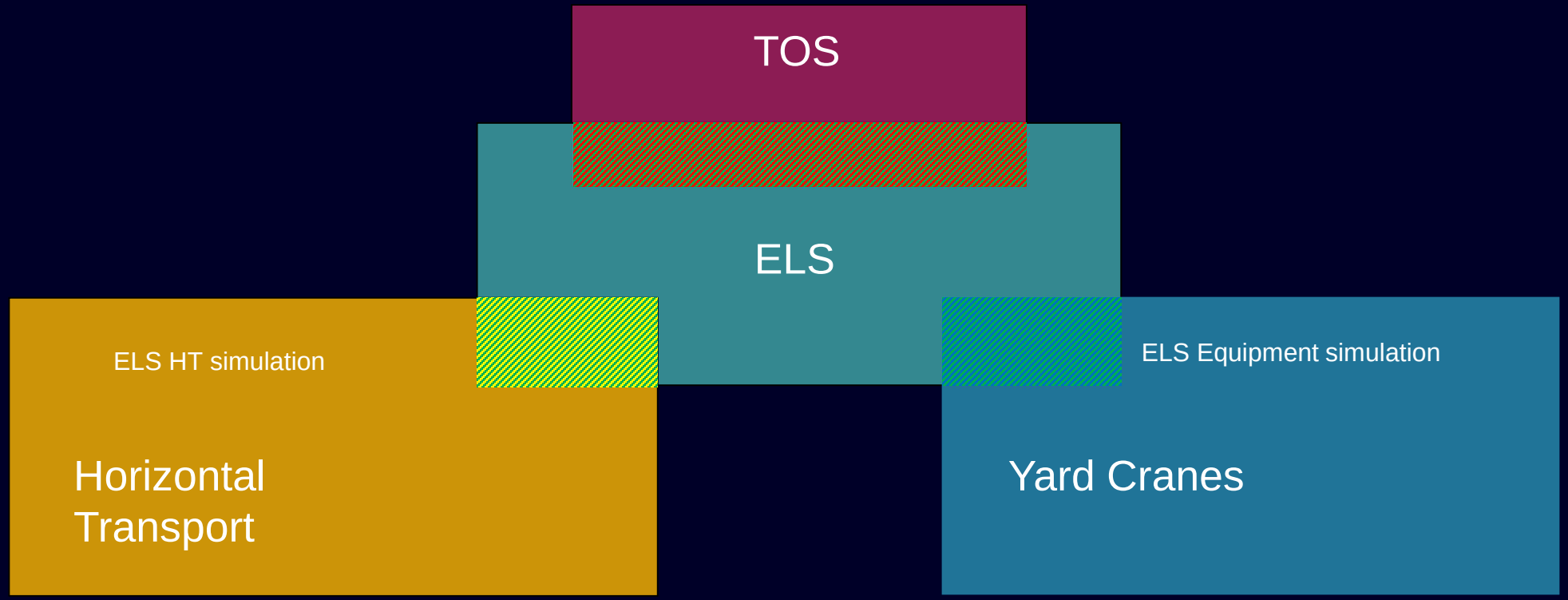
Staged Testing

1st step: Interface TOS to ELS

2nd step: ELS to HT with simulated TOS WO and simulated ARTG

3rd step: ELS to ARTG with simulated TOS WO testing of interface ELS to ARTG

4th step: real TOS to ELS to real HT



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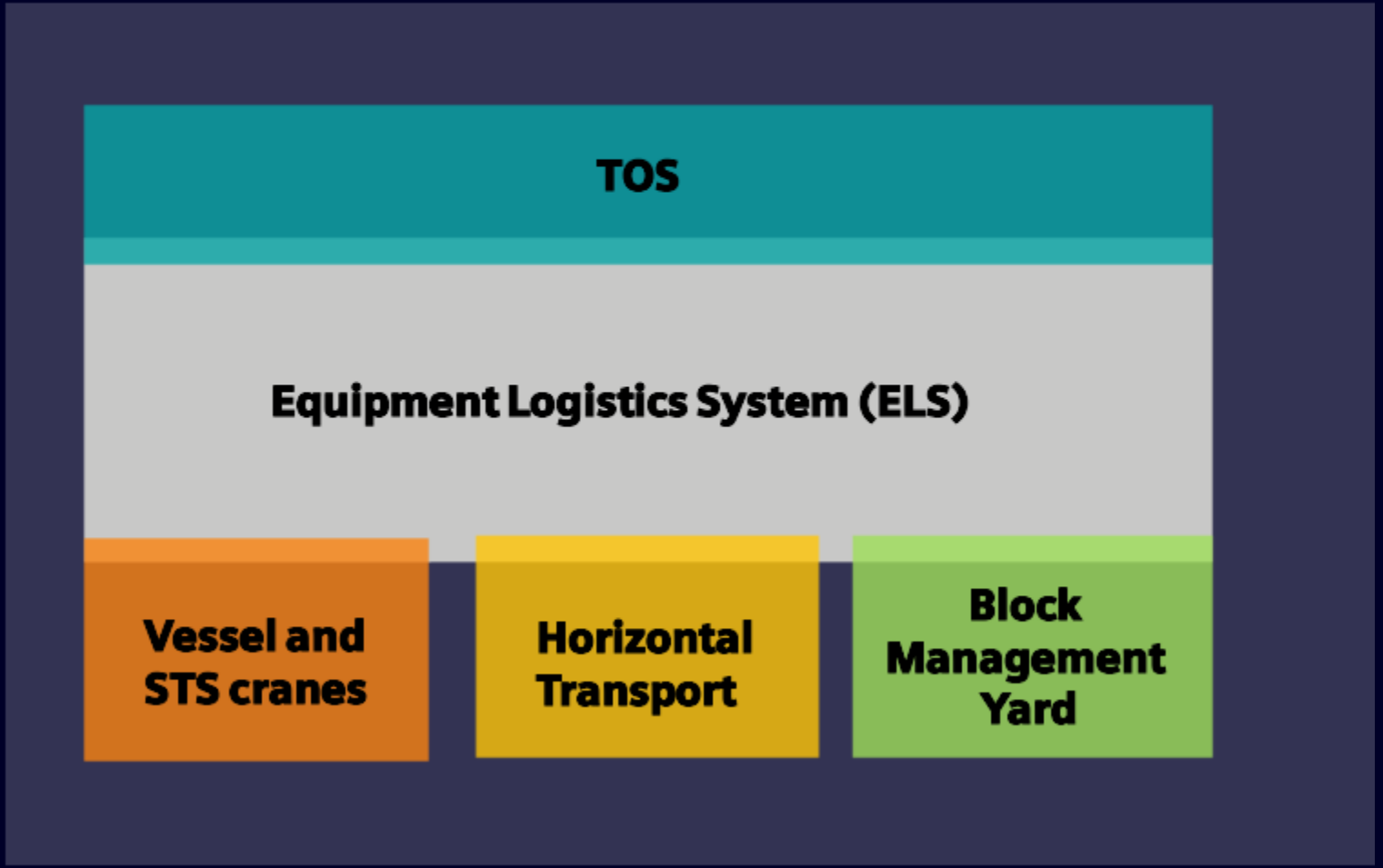
Introduction into ELS

Solution for integration in automated terminals

- Intelligent middleware for decoupling TOS and equipment
- Move instruction from TOS
- Scheduling and dispatch in ELS
- ELS sends transport execution jobs to equipment
- ELS has a database and an individual GUI incl visualization



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Thank you

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