

MEDITERRANEAN PORTS AND LOGISTICS 2025



Mediterranean Ports and Logistics 2025

May 2025

SIEMENS

Agenda & Presenter

Agenda:

- Automation References
- Simocrane modules
- Automation architecture
- Equipment logistical system ELS



Luís Cabrita

1993-1999	Instituto Superior Técnico, Lisboa Mechanical Engineering, Automation
2000-2008	ABB SA Portugal Project Management & Engineering
2008-2012	Siemens SA Portugal BU Manager, Drive Technologies
2012- 2020	Siemens AG Germany Regional Manager Cranes
2020-	Global Account Manager

**Automation is present at all major new projects:
Technology for technology or solving problems?**

Evergreen Kaohsiung – 19 RC STS and 56 CARMG

Project information	• Integrated automation, drive and control systems for 75 cranes • Engineering, integration and optimization 22 ARMG + 6 STS by June 2022 18 ARMG + 5 STS by June 2023 16 ARMG + 8 STS by Jan 2024
Customer challenge	• High level of automation and digitalization • Integration to in-house TOS • “Future proofing” via modular and open concept • Commissioning under Covid-19 impact (virtual commissioning)
Siemens solution	• Digital twinning in every aspect/phase of the project • Remote Control Operating System and Remote Control Training Simulator • Siemens Equipment Logistic System with TOS integration • Simocrane modules: ARMG: RCOS, LCPS, FLS, SPMS, TPS, CLPS STS: RCOS, Sway Control, Vessel Profile Scanning, SPMS, TPS
Customer benefits	• State of the art automation technology • Optimal equipment utilization • Maximized availability



DPW Jeddah - 17 ZPMC ARTG

- Load Collision Prevention System LCPS
- Final Landing System FS
- Network Video Recorder
- Prime Mover Recognition System “Truck ID”
- Truck Positioning System TPS
- Gantry Anti-collision
- Truck Lift Prevention
- Cabin Position Detection
- Area Surveillance Truck Operation



70 ASC APMT Tangier - Morocco

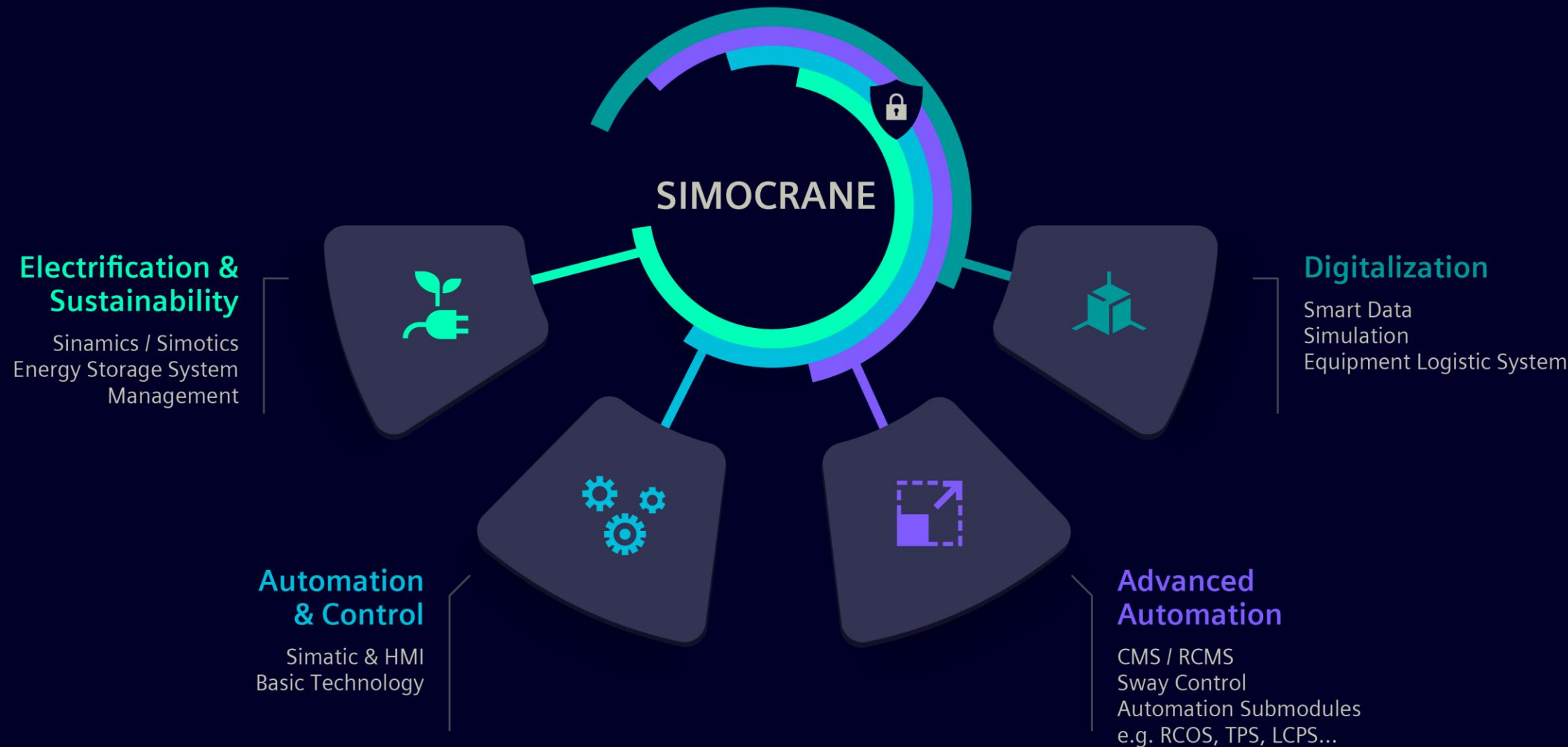
Künz ARMG (portal type)

- Aerodynamic girder
- Patented 8-rope system
- Stacking 1 over 5, 10 wide
- Siemens integration with RCOS, LCPS, FLS, CNRS
- Automatic handling transfer zones
- Block control system (access control)
- Equipment logistical system ELS to optimize work orders from TOS Navis N4

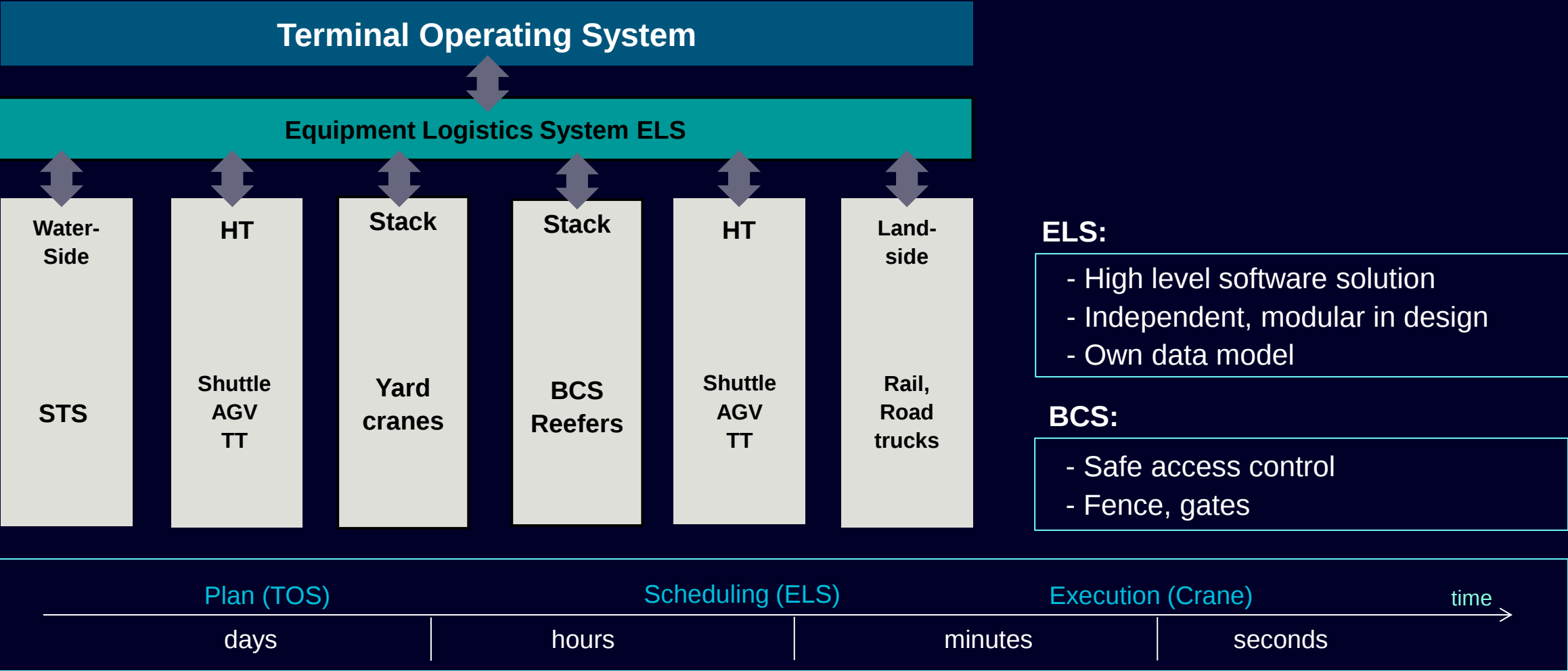
2016 order for 32 units
2019 order for 10 units
2021 order for 14 units
2022 order for 14 units



Automation – Modular and Open



Automated Terminal Architecture

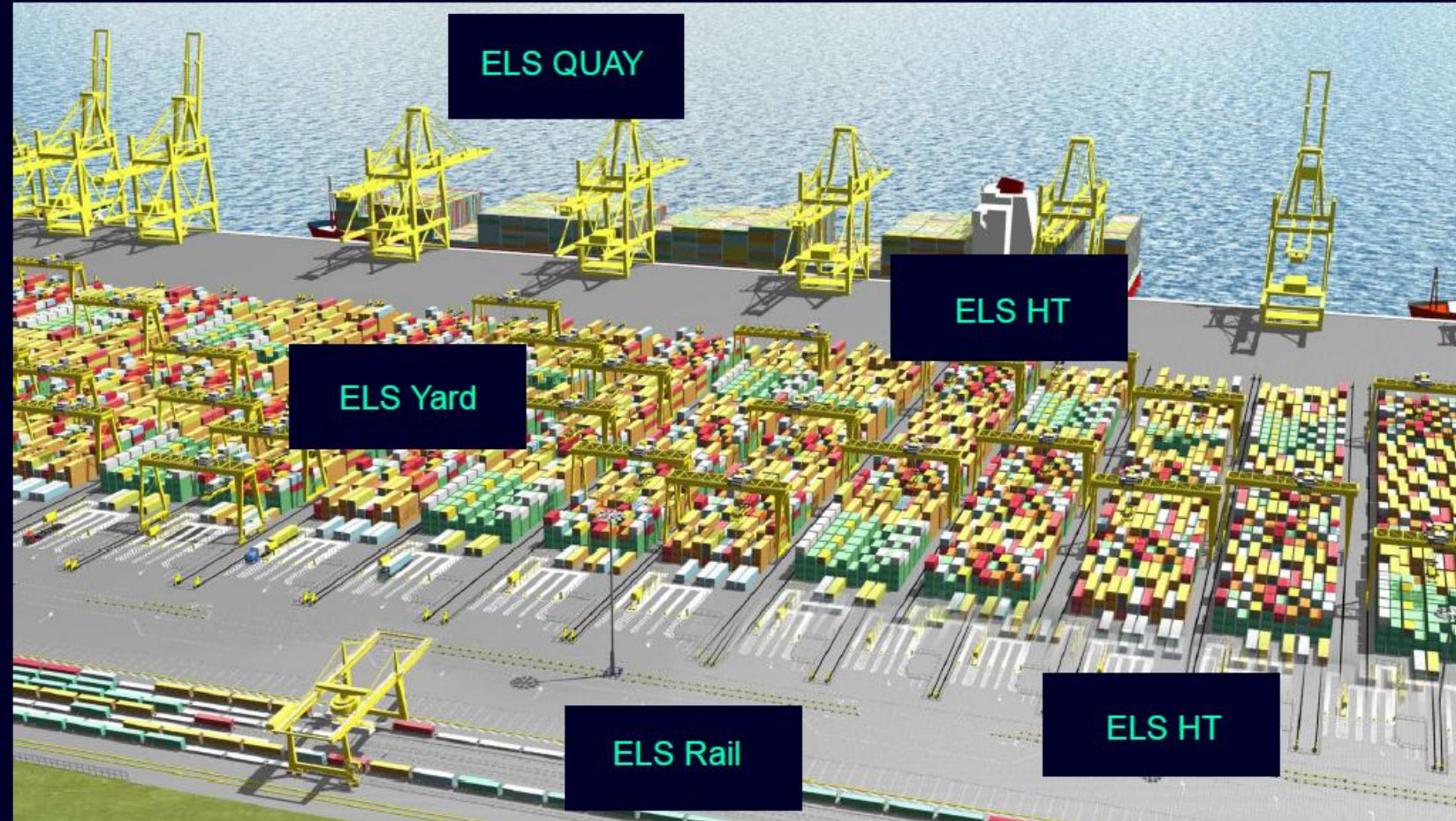


Equipment Logistical System ELS

Intelligent solution for integration in automated terminals

ELS Modules

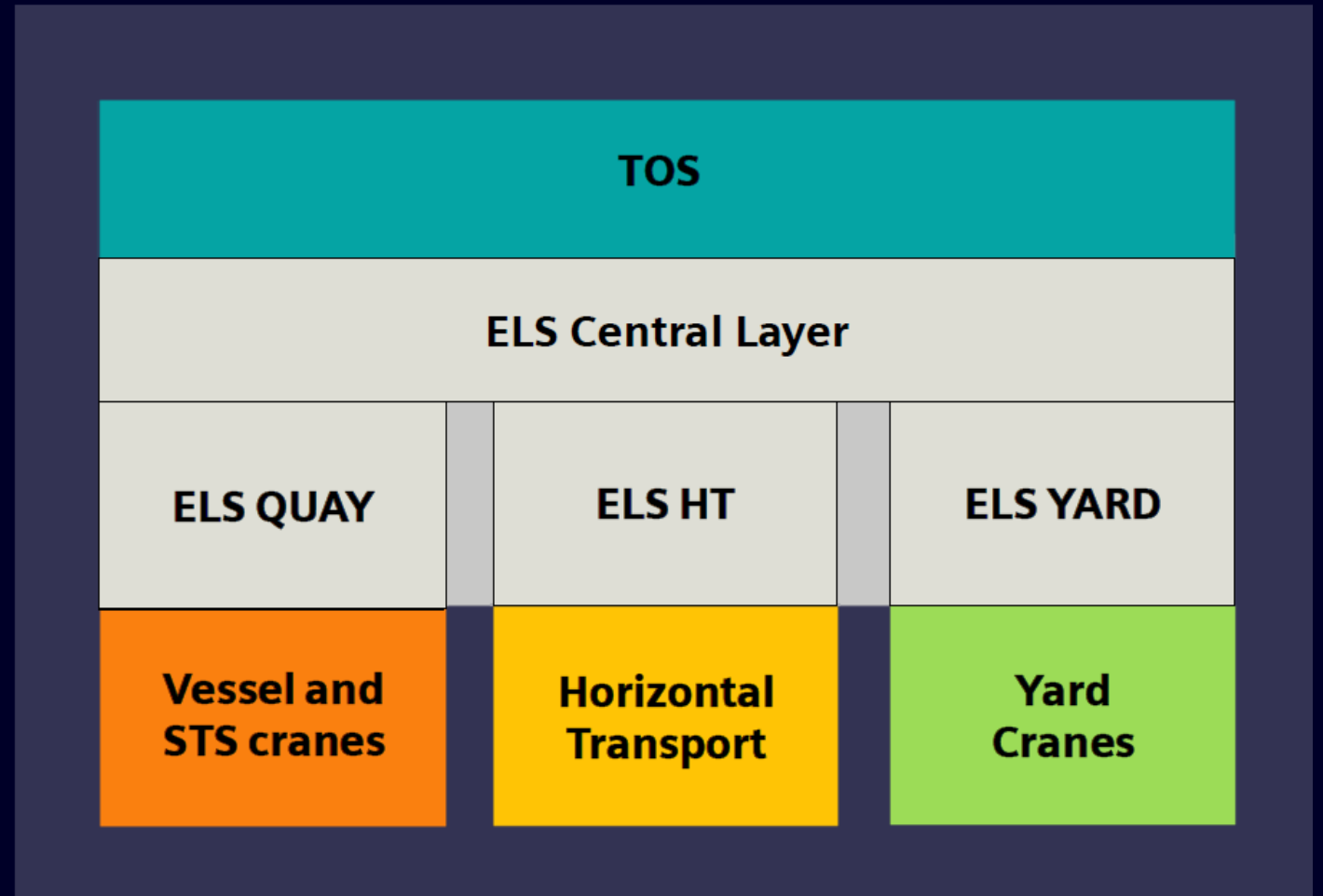
- **ELS Yard** (for ARTGs and ARMGs)
- **ELS Quay** (STS management for vessels)
- **ELS Rail/Intermodal** (including manual areas)
- **ELS HT** (horizontal transport)



Equipment Logistical System ELS

Solution for integration in automated terminals

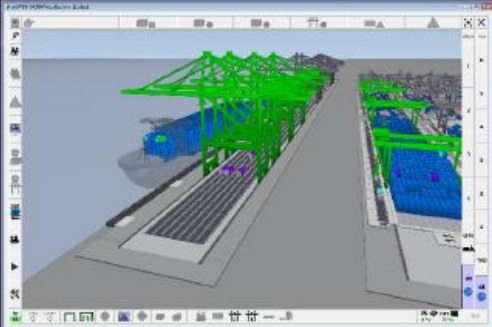
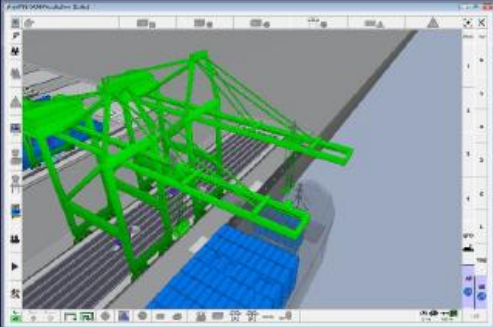
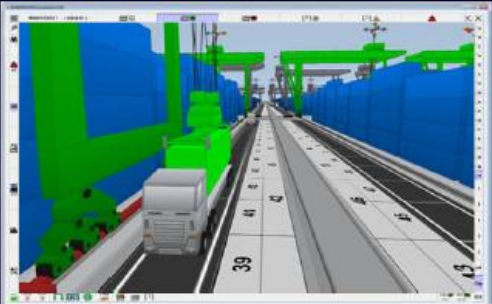
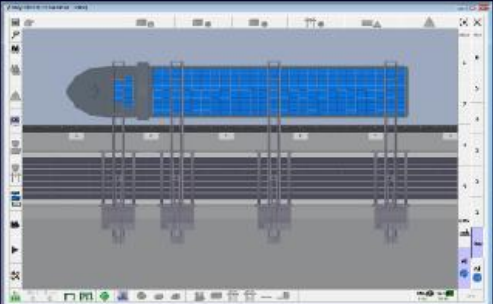
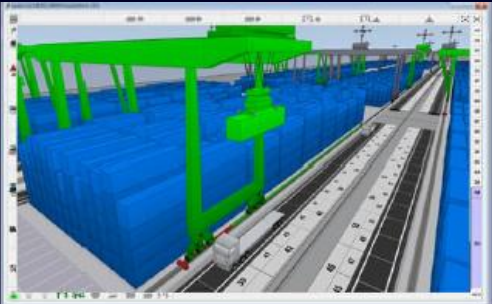
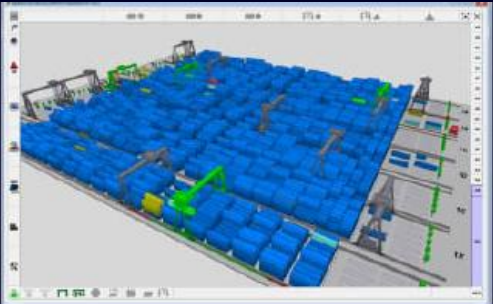
- Intelligent middleware for decoupling TOS and equipment
- Move instruction from TOS
- Central layer for transport and routing management
- Scheduling and dispatch in central layer and in each ELS module
- ELS modules send transport execution jobs to equipment
- ELS has a central database and an individual GUI incl 3D-visualization



Equipment Logistic System ELS

Main Software Functions

Inventory control, data model and persistence	Routing, scheduling and dispatching for equipment
Equipment management (ARMGs, ARTGs, AGVs, STS-Cranes, ...)	KPI dashboard and data warehouse integration
New! AI Copilot	Real time 2D/3D visualization



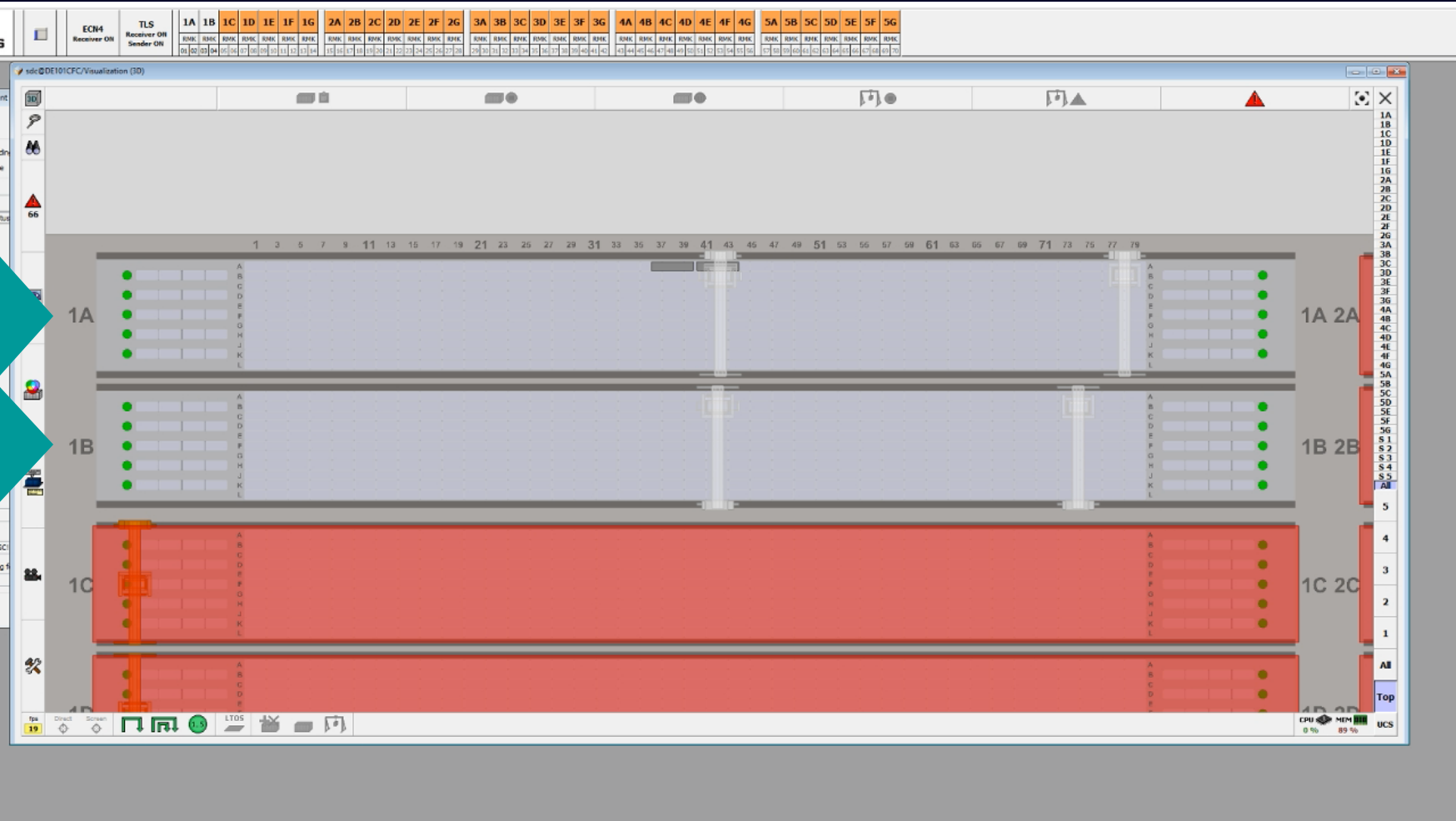
Equipment Logistical System ELS

Early Crane Movement

Block 1A, with ELS

Block 1B, w/o ELS

- placed container
- ready for pick-up
- target position

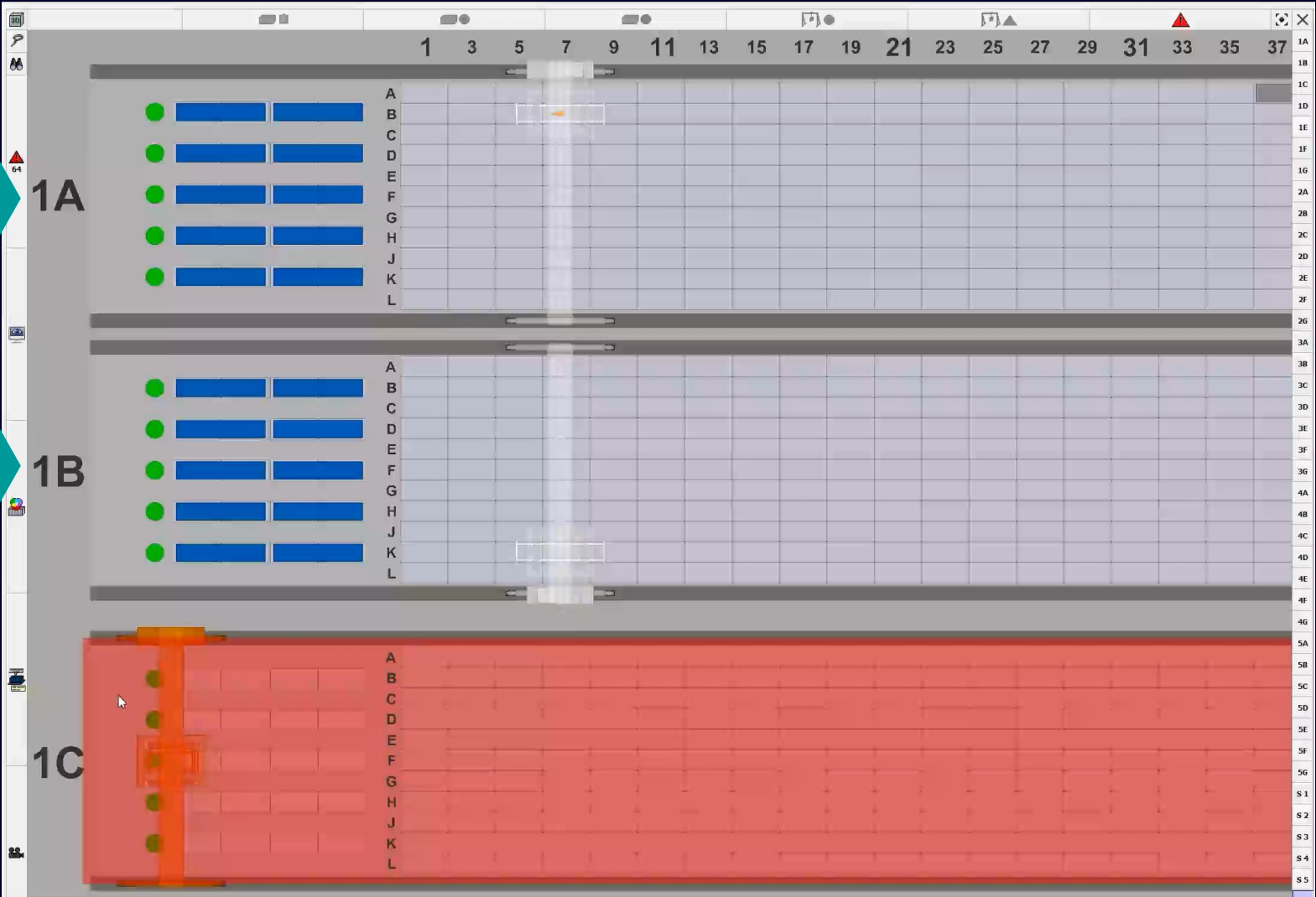


Equipment Logistical System ELS Quick Dump

Block 1A, with ELS

Block 1B, w/o ELS

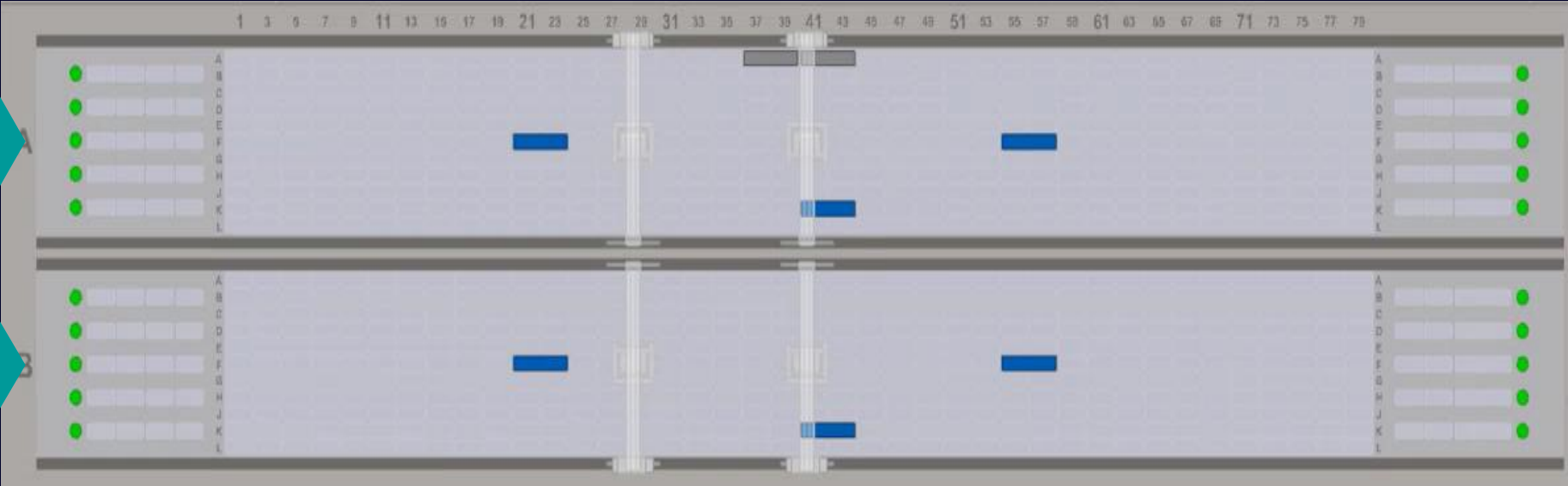
- placed container
- ready for pick-up
- target position



Equipment Logistical System ELS Overwriting Dodge Move

Block 1A, with ELS

Block 1B, w/o ELS

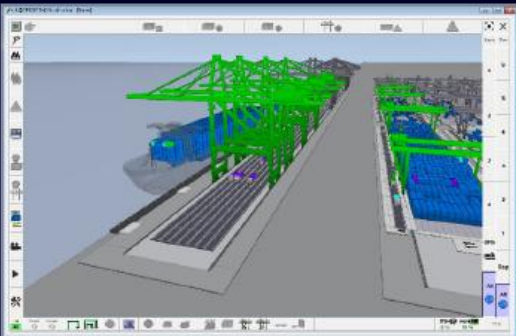


- placed container
- ready for pick-up
- target position

Equipment Logistical System ELS

Transparency

- Full overview by GUI and 3D-visualization
- Real time view of all movements and activities
- Monitoring of cranes and other equipment



Productivity

- Optimization per ELS module
- Optimization in terminal via ELS layer
- Increase productivity >10% (observed range is 5 – 20 %)

1. Analysis
2. Improvement per device/area
3. Advanced terminal flows

Optimization

- Data hub for monitoring and optimizing flow
- Forecasting
- Optimization in terminal via ELS layer
- AI copilot in preparation



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