Efficient Ports

Digitalization, Automation of Processes and equipment's

Intermodal AFRICA 2020, Tanzania

Buhle Yengwa

Siemens Cranes

History: 1891 First Siemens Crane delivered Based on ROI

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Over 129 years of experience

Siemens Cranes

Port Efficiency, a demand for economic growth

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Vessel owners

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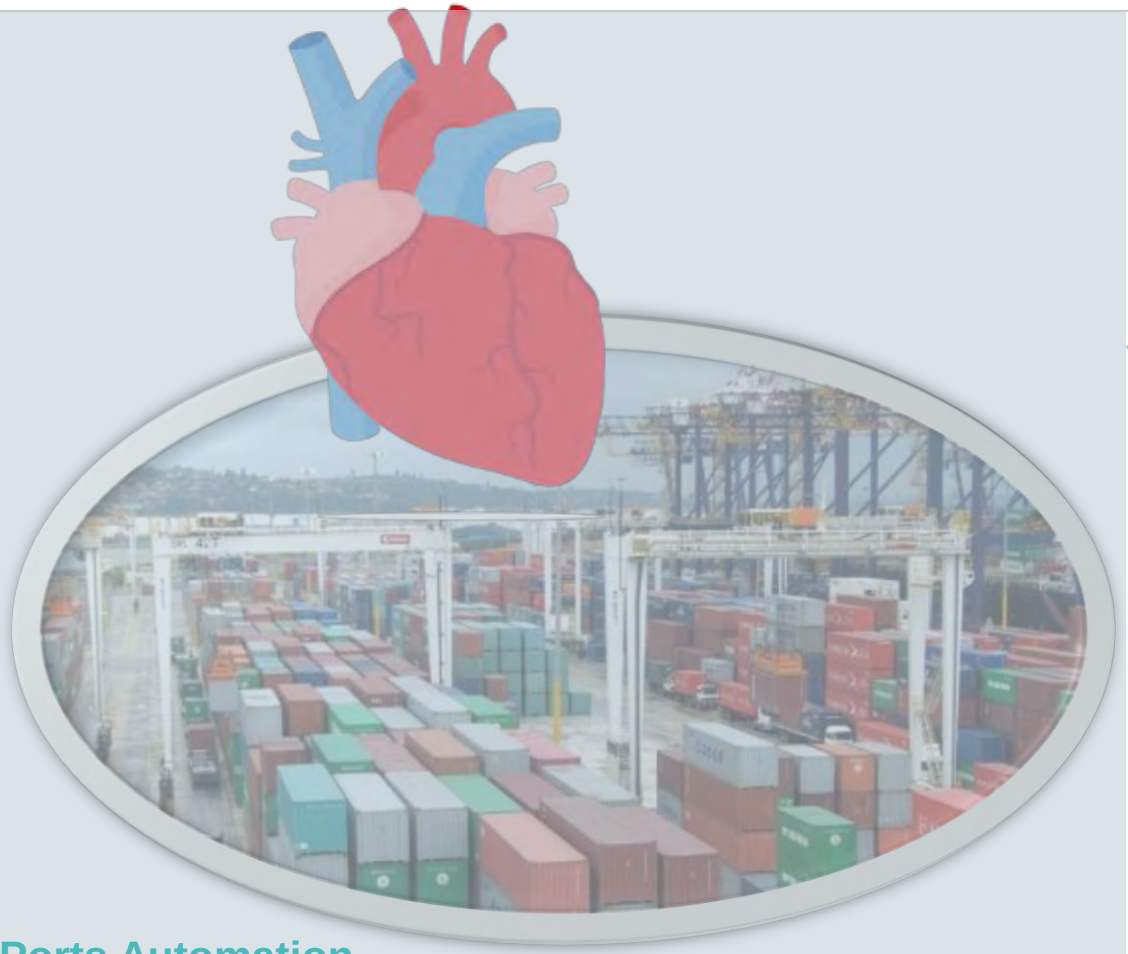
Solution: Ports Automation



Traffic congestions

Truck owners demand Port efficiency

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Processes: Information sharing

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Processes: Terminal Supervisor System

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- Controlling operation status
- Efficiency with smart data

In the 3D environment, cranes, trucks and containers are displayed. The position of the containers follows from the TOS system. Adequate supervision for top performance.

Communication System
The desk is equipped with a directional sound system to ensure radio communication with all cranes and operators without disturbance to others.

Integrated Systems
The system allows access to several Terminal Operator Systems, Maintenance Planning Systems and Fleet Management Systems.

Asset location tracking
Equipment and persons can be located and shown on the screens via positioning of cameras at any place. A 3D view vessel can be visualized indicating the exact docking location.

Ergonomics and health
An electrical split-level desktop with the ability to adjust both parts of the desk in height, independently. The adjustable table allows each operator to choose an individual work position, e.g sitting or standing.

Access to all cameras
The supervisor can switch from 3D to 2D view mode at any time. The cameras are freely configurable from any position on the terminal. It is possible to replay previous activities at adjustable speeds.

Freely configurable screens
The screens on the video wall are freely configurable. Changing screens is done by selecting the content and swiping it to any other screen. Preconfigured scenarios enable a quick setup.

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Digitalization: Simulation Solutions

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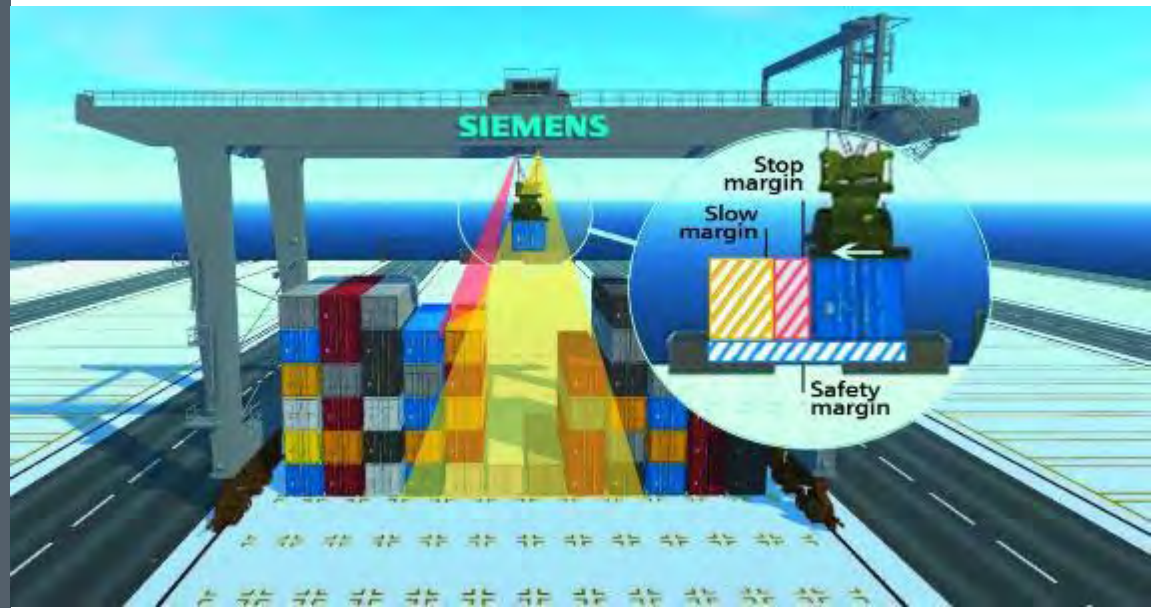
Creating a digital twin for in-depth simulation

Test and optimize the performance of crane equipment and subsystems before commissioning



Greater efficiency by merging the real and virtual worlds

Automate functions and optimize processes by utilizing the possibilities of the digital twin as well as consistent data models. Advanced algorithms, high-powered computing and cloud storage all facilitate the emergence of smart systems.

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Digitalization: Container Number Recognition System (CNRS)

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Optimize resources with CNRS

Replacing manual identification of containers

Less errors

Reduced manual labour that caused bottle necks due to incorrect readings.

Increased efficiency

Effective management and operations at gate, yard, and loading and unloading of containers

Higher throughput

Enhance time utilization and data management efficiency

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Electrification: Automation and Drives

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RCMS and CMS

Smart technologies

SIMOCRANE Crane Management System (CMS) is the centerpiece visual representation for cranes. Siemens' CMS combines the best technology available for crane operators, maintenance crew and managers to collect and disclose important information at the right time.

Sinamics S120

SINAMICS S120

The modular SINAMICS S120 drive is the modular system for high-performance motion control applications in industrial plant and machinery construction. Customized solutions can be implemented based on a wide range of components and functions that are optimally coordinated with one another. For instance, high-performance single-motor drives and coordinated drives (multi-axis applications) with vector or servo functionality. Users of the SINAMICS S120 drive will benefit from a system that offers higher performance, enhanced productivity and improved flexibility.

S7 1500 PLC

SIMATIC S7-1500 – probably the fastest controller worldwide

Using the SIMATIC S7-1500 controller gives you top performance and built-in viability into the future. You can turn the most sophisticated machine designs into reality thanks to the modular structure of the controller, which provides reliable assistance as you work your way through the digital transformation.

Siemens CP

Powerful machines and plants need powerful push buttons, switches, indicators circuit breakers and contactors

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SIMOCRANE: Modular Software Architecture (Harbor and Industry Cranes)

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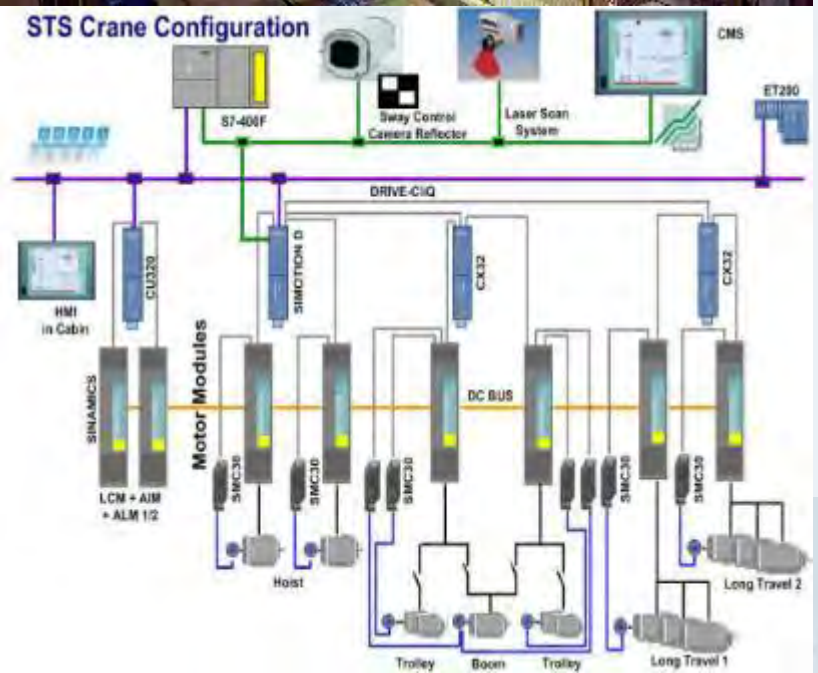

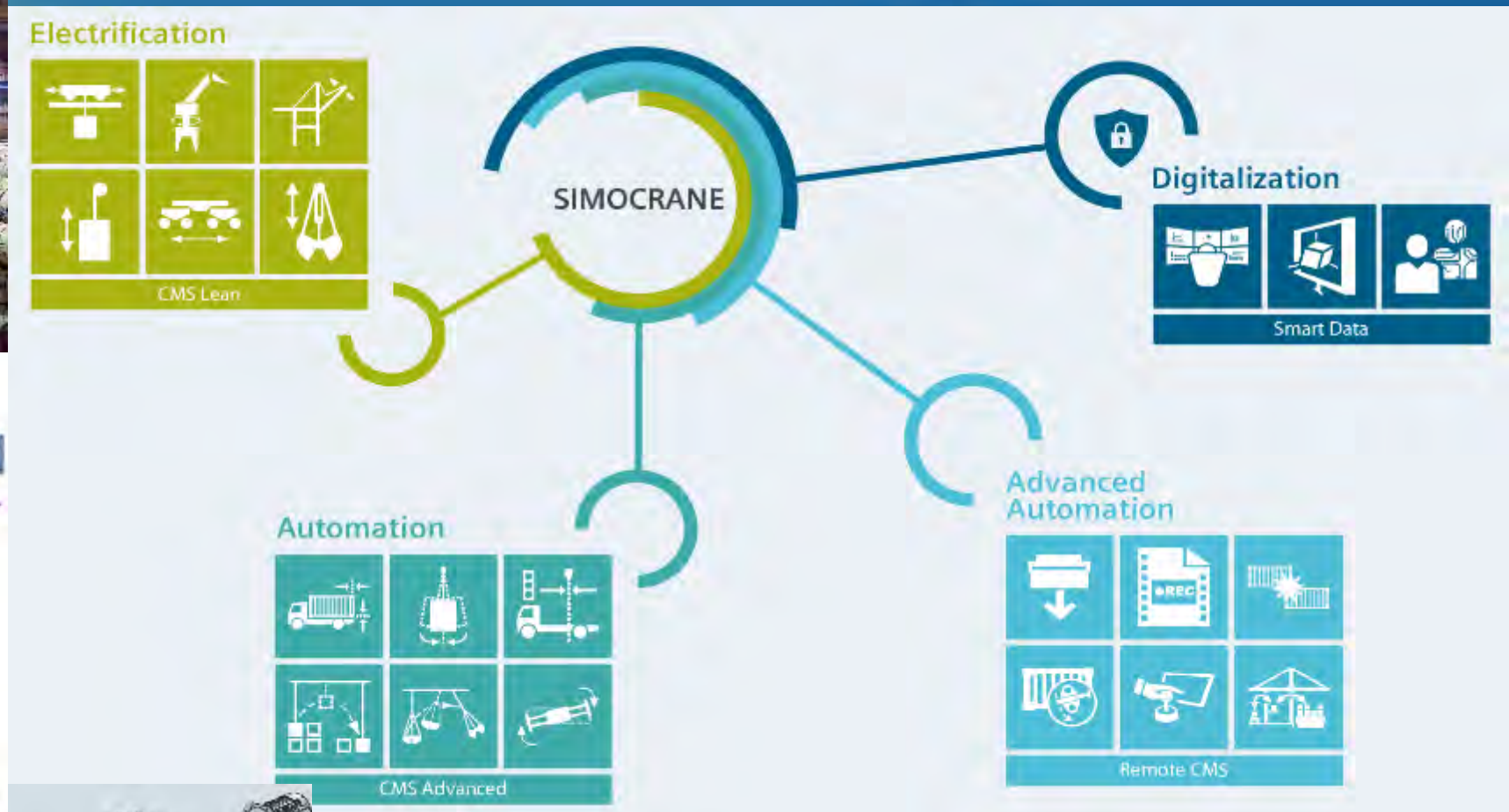

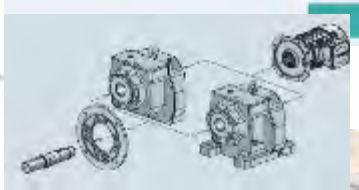

✓ Geared Motors up to 1600NM

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SIMOCRANE: Automation of Cranes

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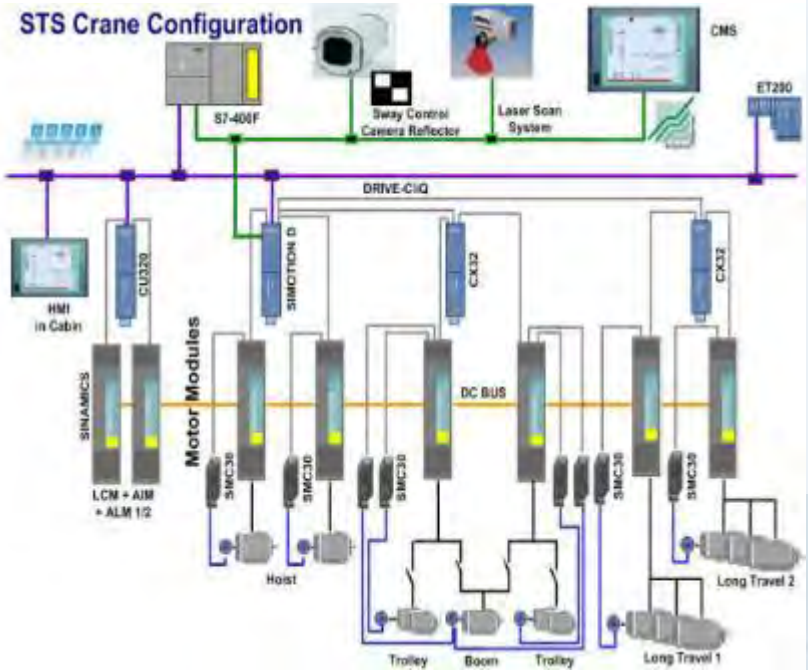
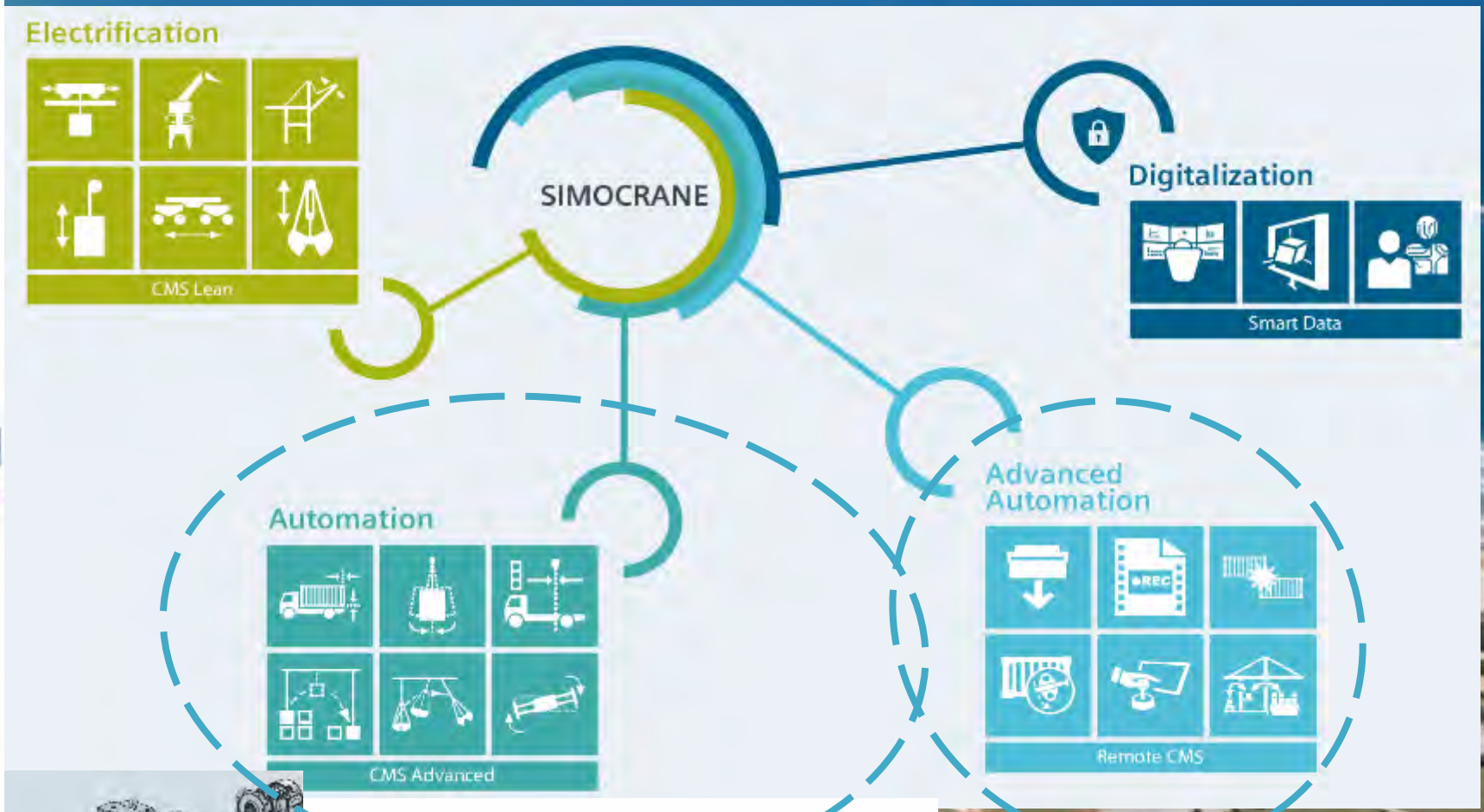
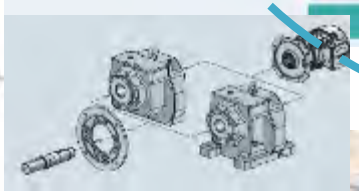
- ✓ Electrification
- ✓ Automation
- ✓ Advanced Automation
- ✓ Digitalization







- ✓ Geared Motors up to 1600NM

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SIMOCRANE: Automation

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Challenges

- Increased call sizes and peak loads
- Costs reduction
- Shorter handling times
- Safety

Siemens Answers

- ✓ Final Landing
- ✓ Sway Control
- ✓ Truck positioning
- ✓ Route Calc
- ✓ Skew Control

Benefits

- ✓ Accurate Landings
- ✓ Increase productivity in a secure way
- ✓ More safer and precise operations
- ✓ Accurate stacking

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SIMOCRANE: Advanced Automation

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Challenges

Siemens Answers

- ✓ ECO Solutions
- ✓ RCOS
- ✓ LCPS
- ✓ RCMS

Benefits

- ✓ Energy management
- ✓ Smart HD integrated Views
- ✓ Efficient workflow on every circle
- ✓ Record and play back

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Installed Base: African continent

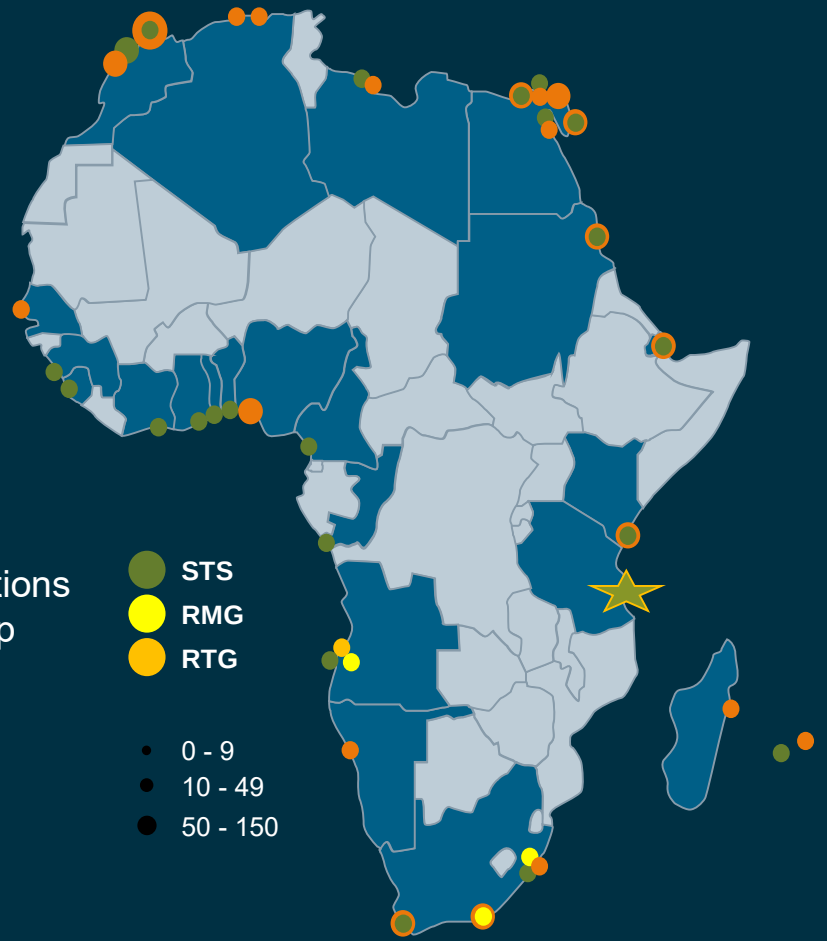
Key facts Africa:

Higher, larger and longer Cranes brought into operation
- Vessel cascading effect

New and modernized terminals are STS operated
- Higher productivity required

Installed Base:
- over 100x Siemens equipped STS handle quay operations
- Harbour Cranes installed base as per locations on map

Half of these Cranes were ordered in the last 5 years
- Local Service presence
- Local know-how and repair capabilities
- Support from the Global Siemens Service Network



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Masterdrives: Farewell Masterdrives

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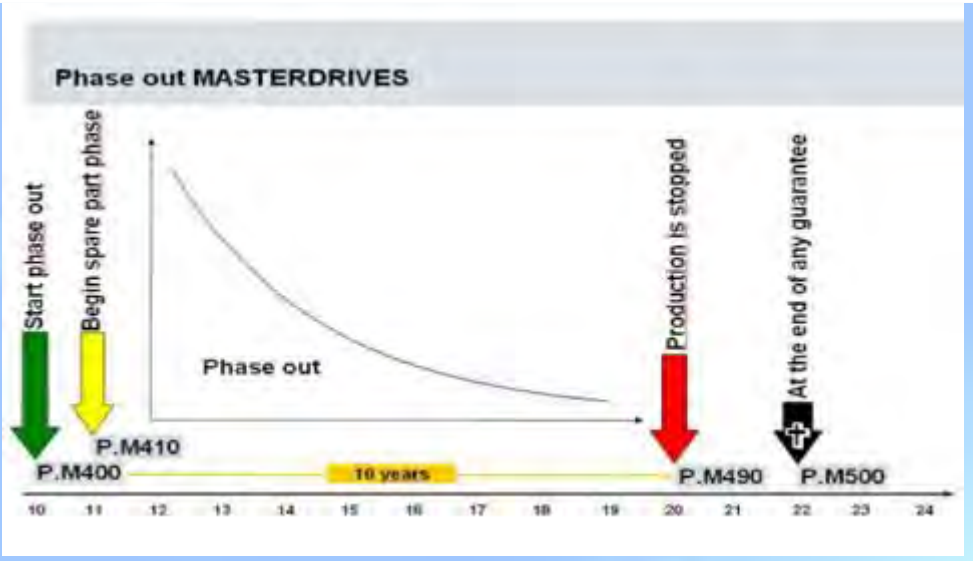

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SITRAIN: Training for Customer and Partners

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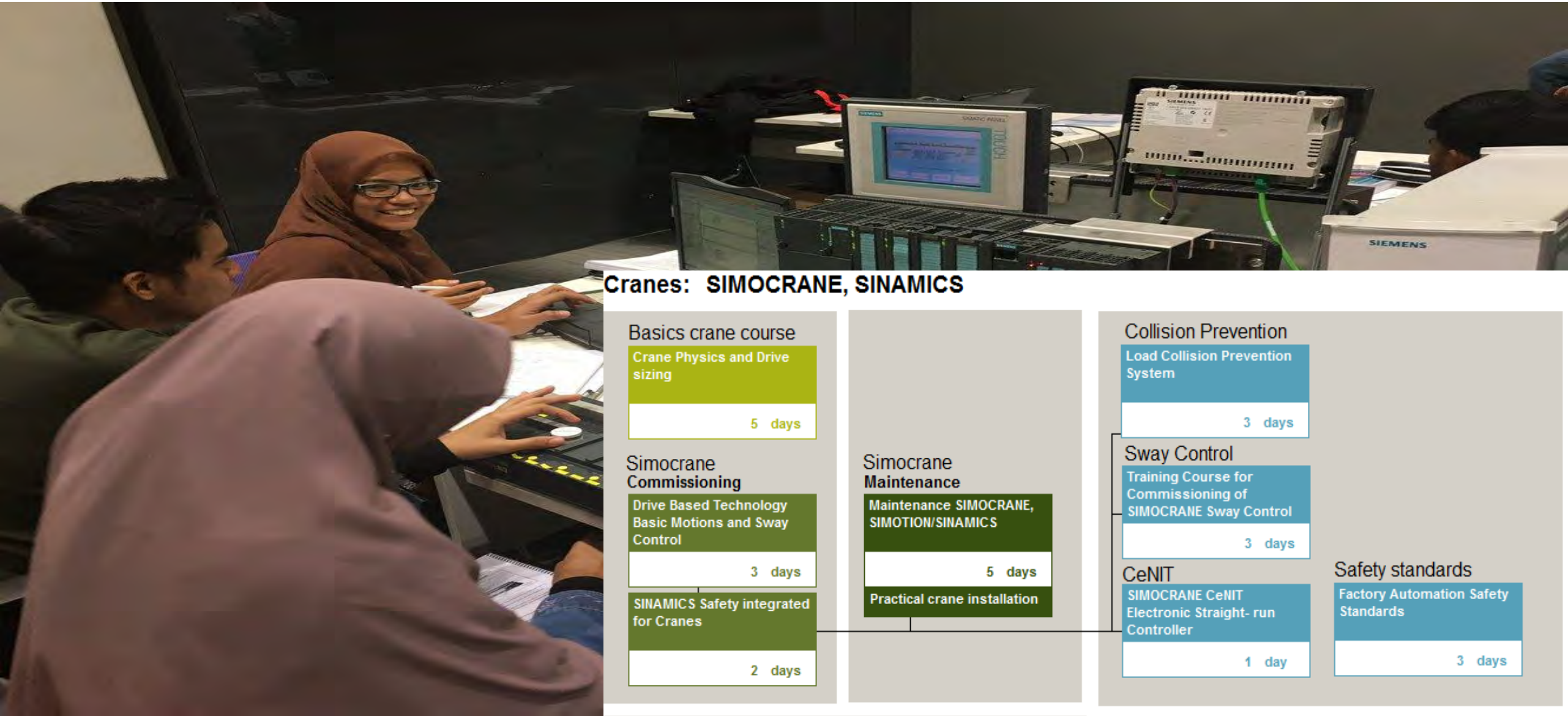

Cranes: SIMOCRANE, SINAMICS

Basics crane course
- Crane Physics and Drive sizing — 5 days

Simocrane **Commissioning**
- Drive Based Technology Basic Motions and Sway Control — 3 days
- SINAMICS Safety integrated for Cranes — 2 days

Simocrane **Maintenance**
- Maintenance SIMOCRANE, SIMOTION/SINAMICS — 5 days
- Practical crane installation

Collision Prevention
- Load Collision Prevention System — 3 days

Sway Control
- Training Course for Commissioning of SIMOCRANE Sway Control — 3 days

CeNIT
- SIMOCRANE CeNIT Electronic Straight- run Controller — 1 day

Safety standards
- Factory Automation Safety Standards — 3 days

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