



ACT One-Stop Solution



Continue the conversation online



#TOCEurope @TOCWorldwide



TOC Events Worldwide

1993 **1st** Automated Terminal

2012 **15** Automated Terminals

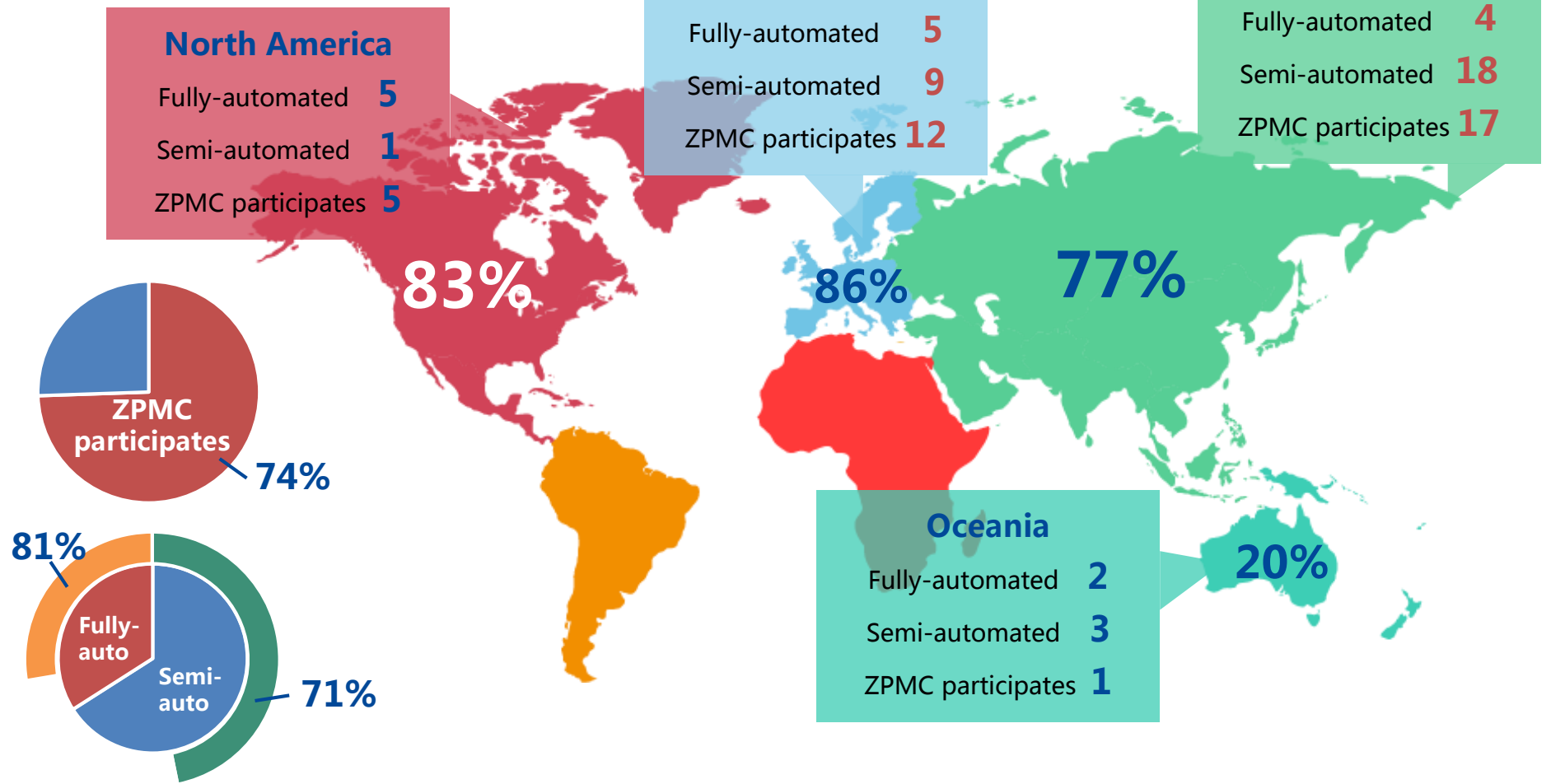
2016 **35** Automated Terminals

.....

2020 expected to be **over 100**



Smart Port



ACT a complex systems engineering



So many different systems and equipments
Large mount of resources and capital

Traditional method

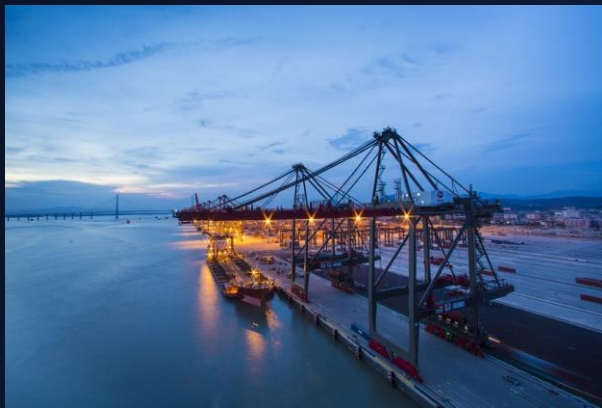


VS

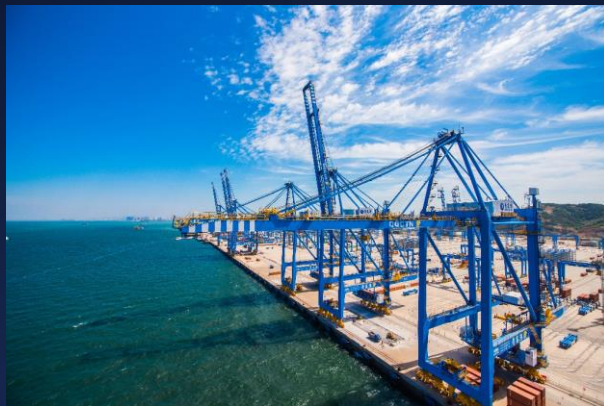
One-stop solution



Automated Terminal Using ZPMC Solution



XIAMEN XOCT



QINGDAO
QQCTN



SHANGHAI
YANGSHAN IV

QingDao QQCTN ACT Project



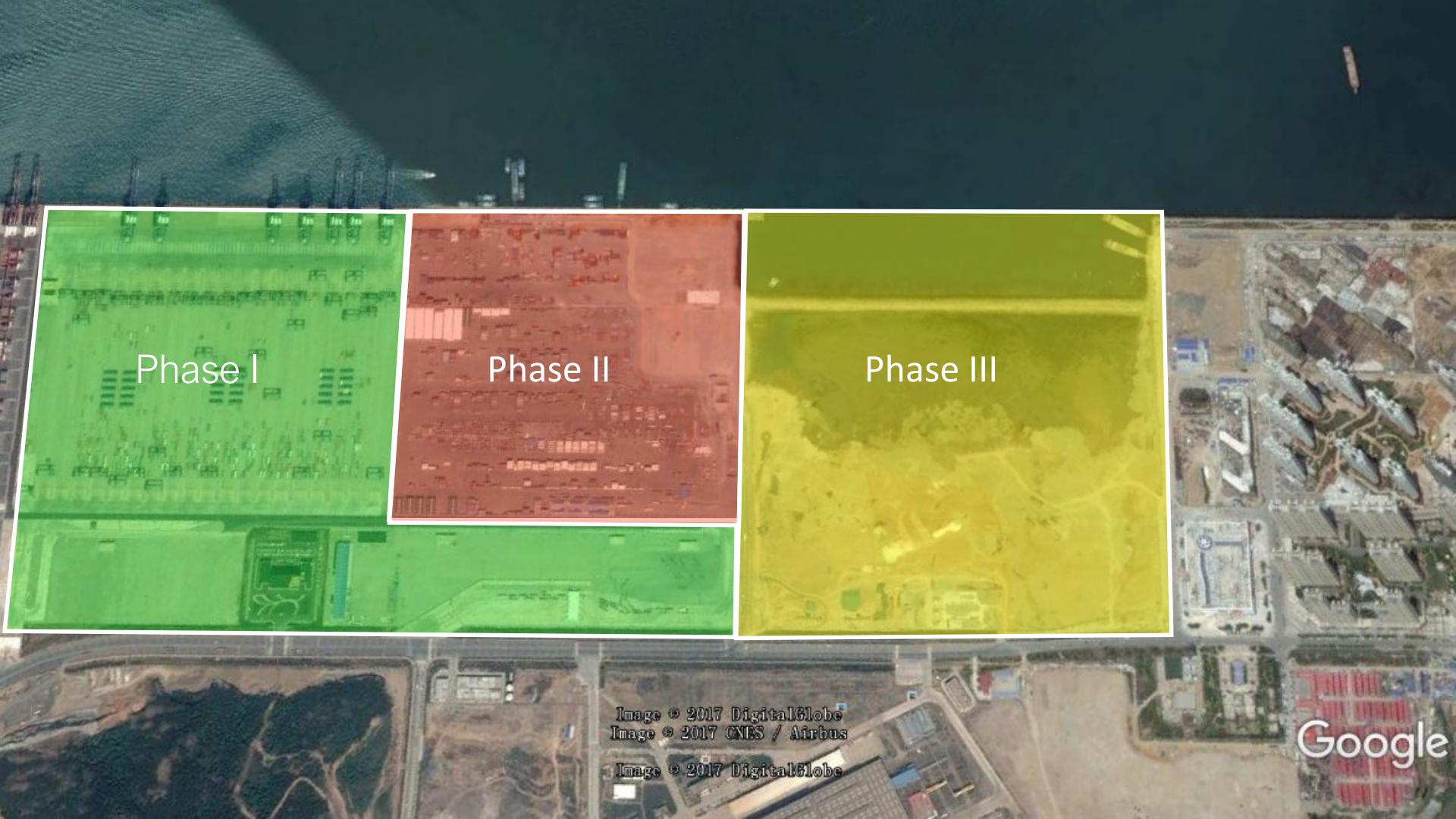
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Phase I

Phase II

Phase III

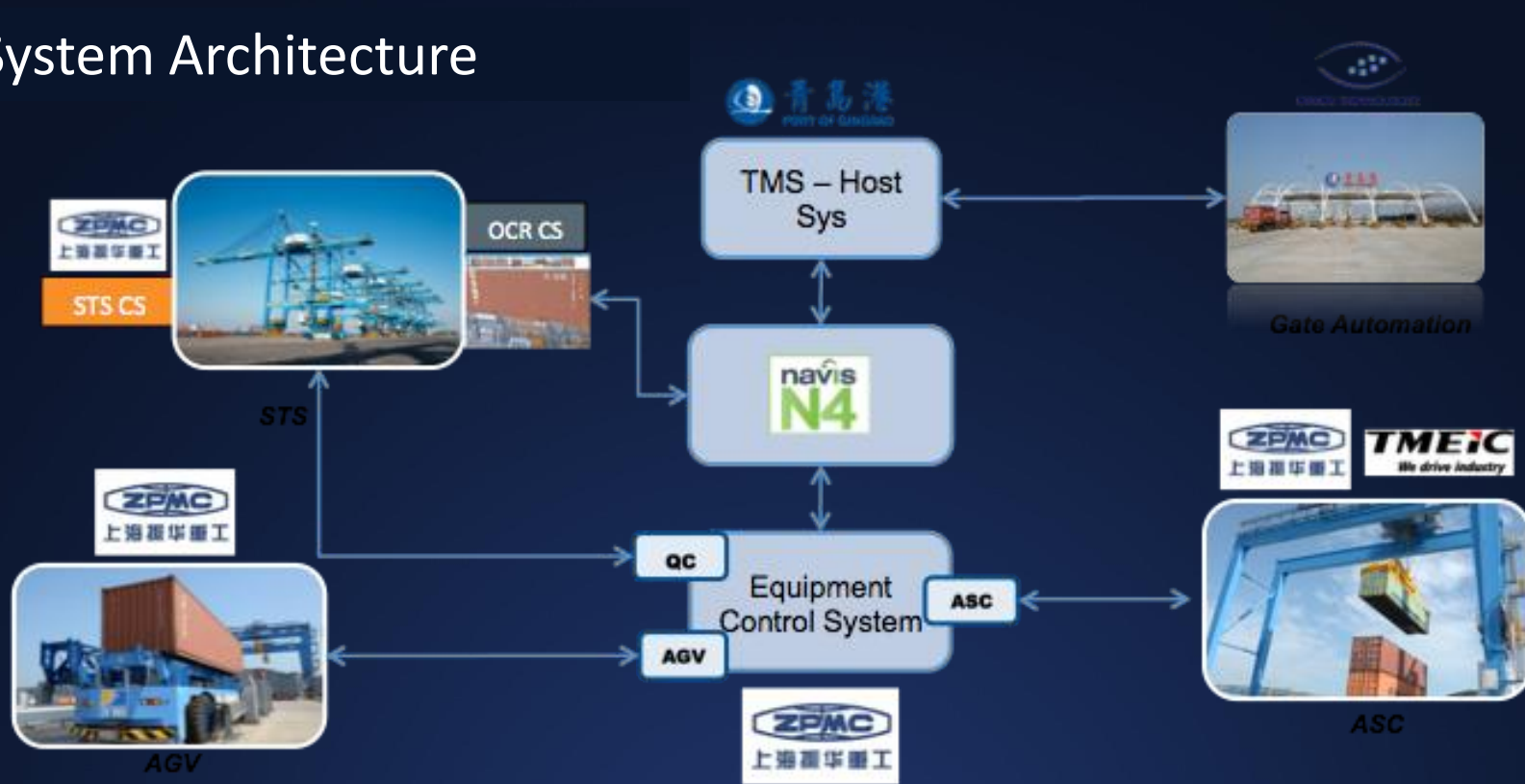
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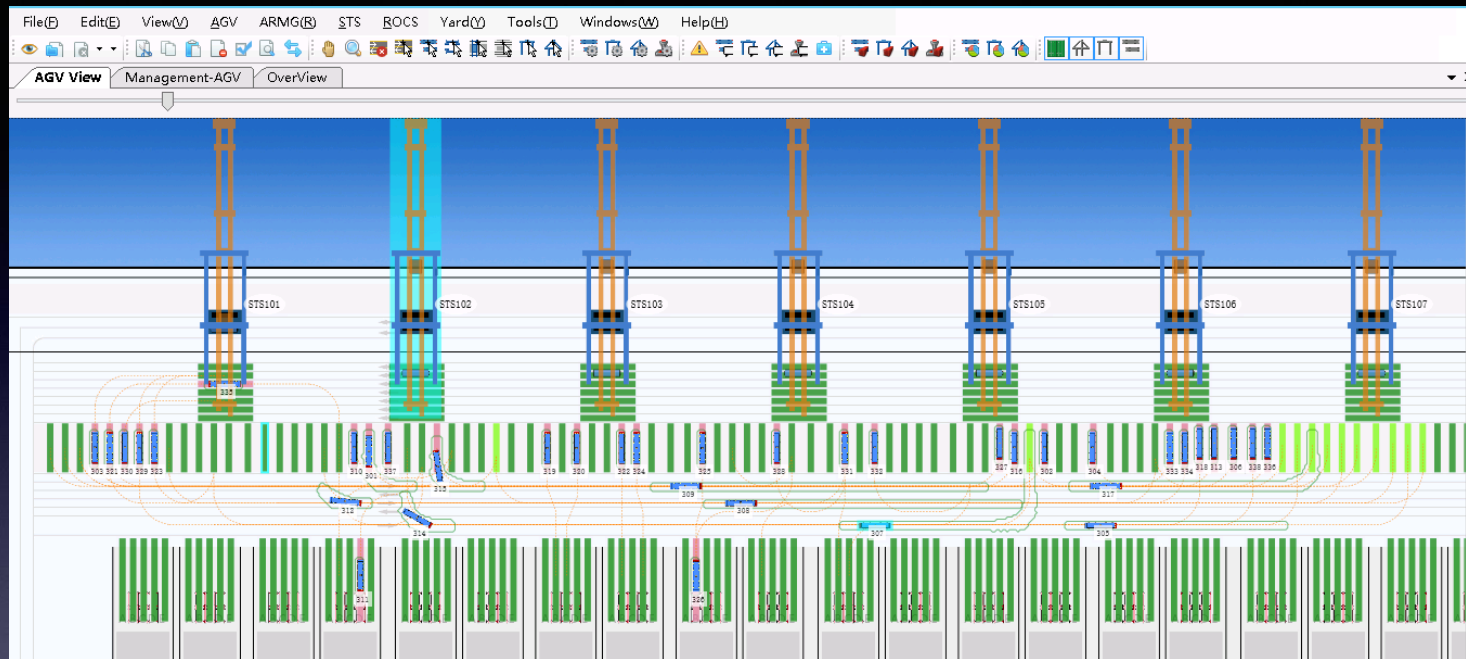


System Architecture





2015.6.27





2016.4.11



0



4



9.5





2016.7.14



0



4



9.5



12.5





2016.10.2



0



4



9.5



12.5



15



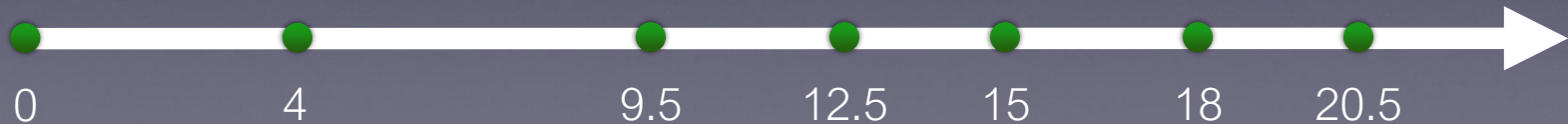


2016.12.31





2017.3.15





2017.5.11



22.5 Months

25.9 box/h

5 months after opening:

Average 32 box/h

Highest 39.6 box/h



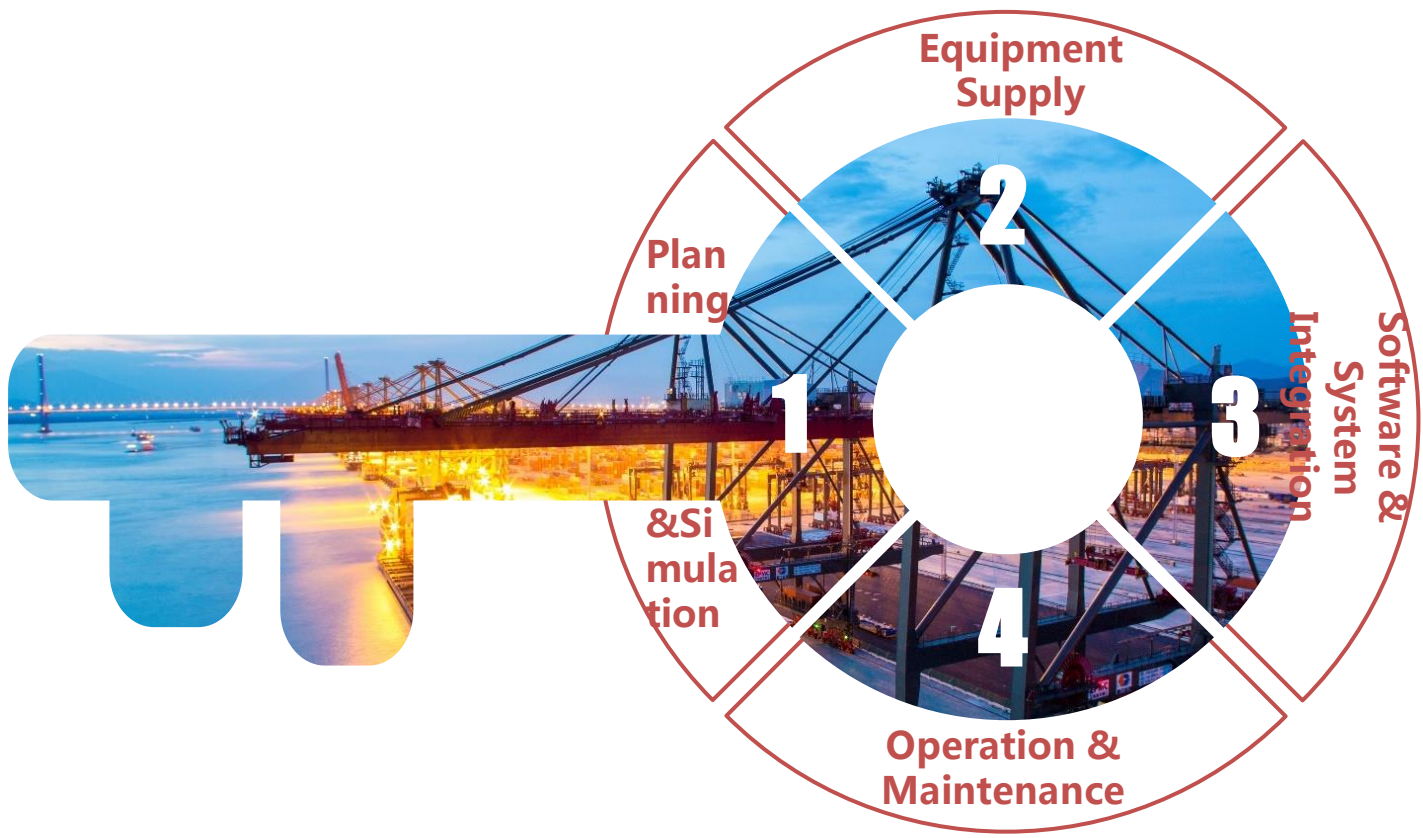
2017/03/15 08:11:12

- World largest automatic container terminal.
- 7 berths+61 automatic blocks, designed for 6.3 million TEU per year.

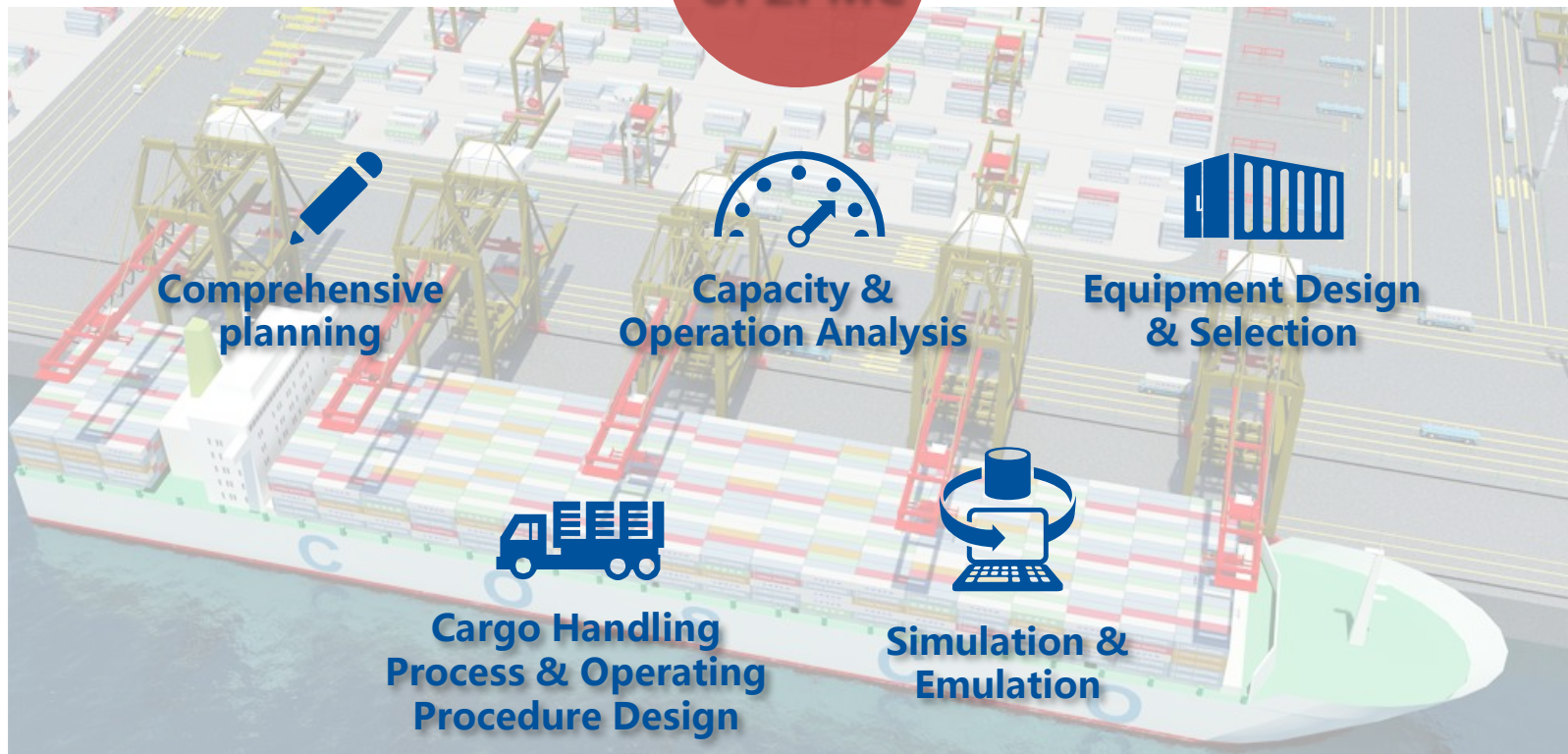




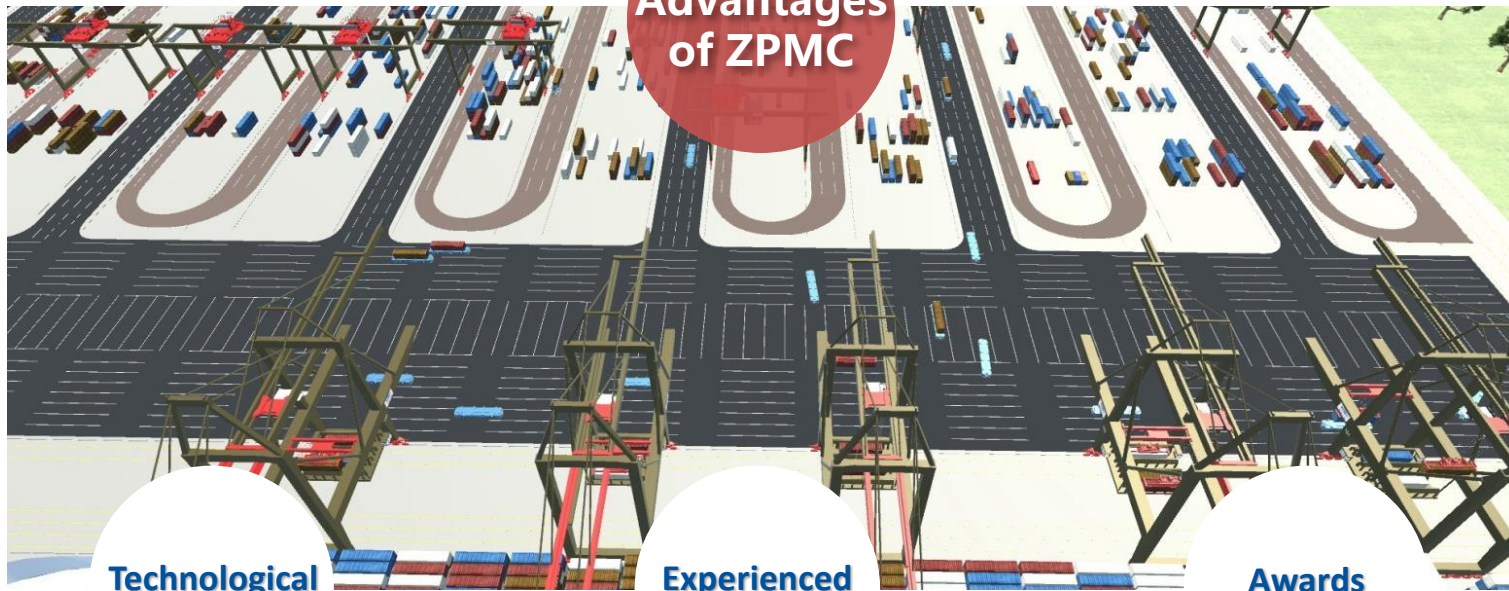
ACT One-Stop Solution



Capability of ZPMC



Advantages of ZPMC



Technological

- Has rich experience in designing stand-alone equipment
- Knows movement features of individual equipment well
- Can apply to multiple stage of terminal construction

Experienced

- Xiamen XOCT, Qingdao QQCTN, Yangshan IV
- Hong Kong MTL
- India Adani

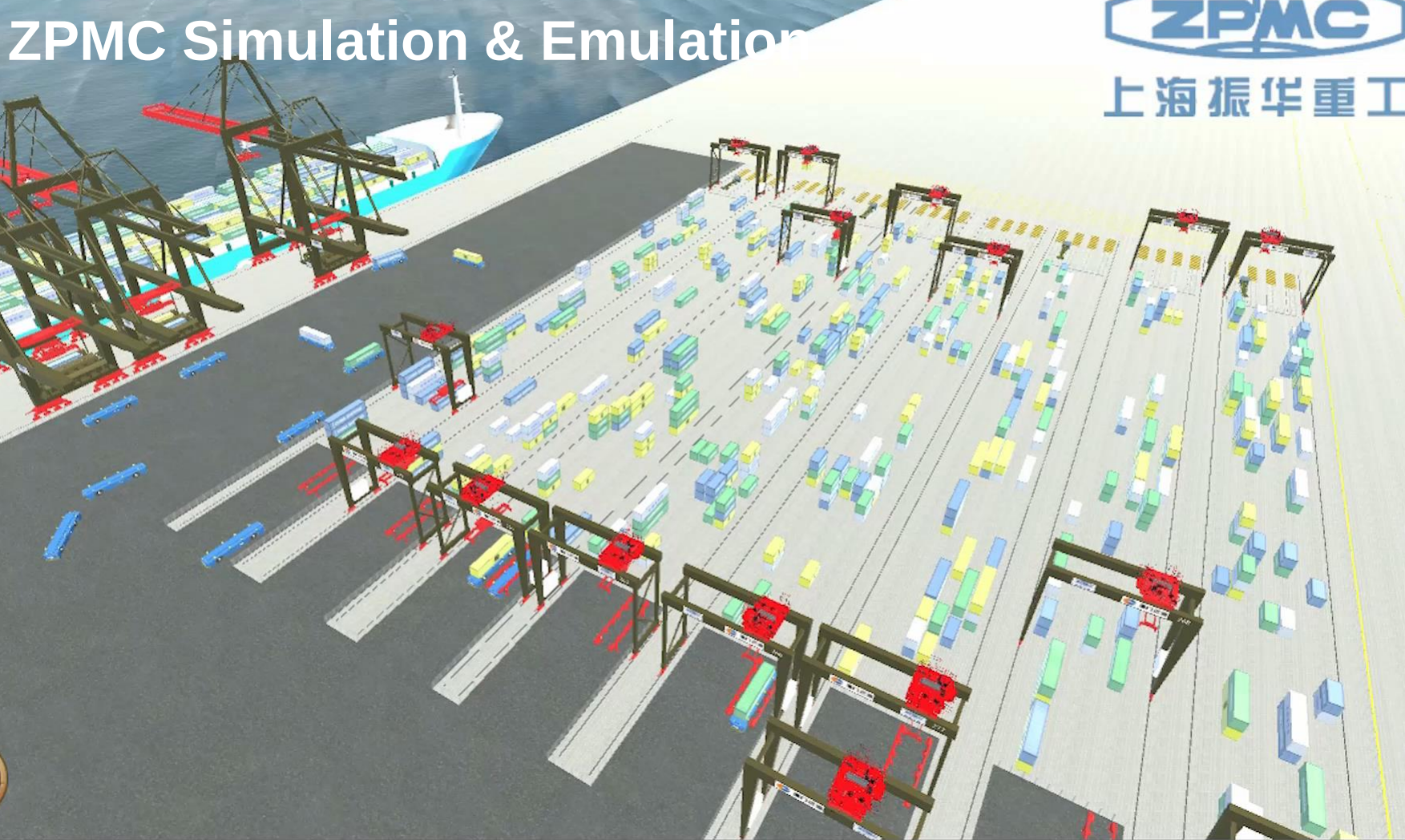
Awards

- Gold Award of Singapore International Maritime Awards
- Silver Award of China Outstanding design

ZPMC Simulation & Emulation



上海振华重工



Equipment Supply

Quay
Crane



Yard
Crane



Horizontal Transport

Equipment

- AGV
- Straddle Carrier
- Stacker/Forklift
- Reach Stacker



Aux. Device

- Spreader
- Gate
- Entrance Guard
- Transfer Zone



Products Design & Manufacture



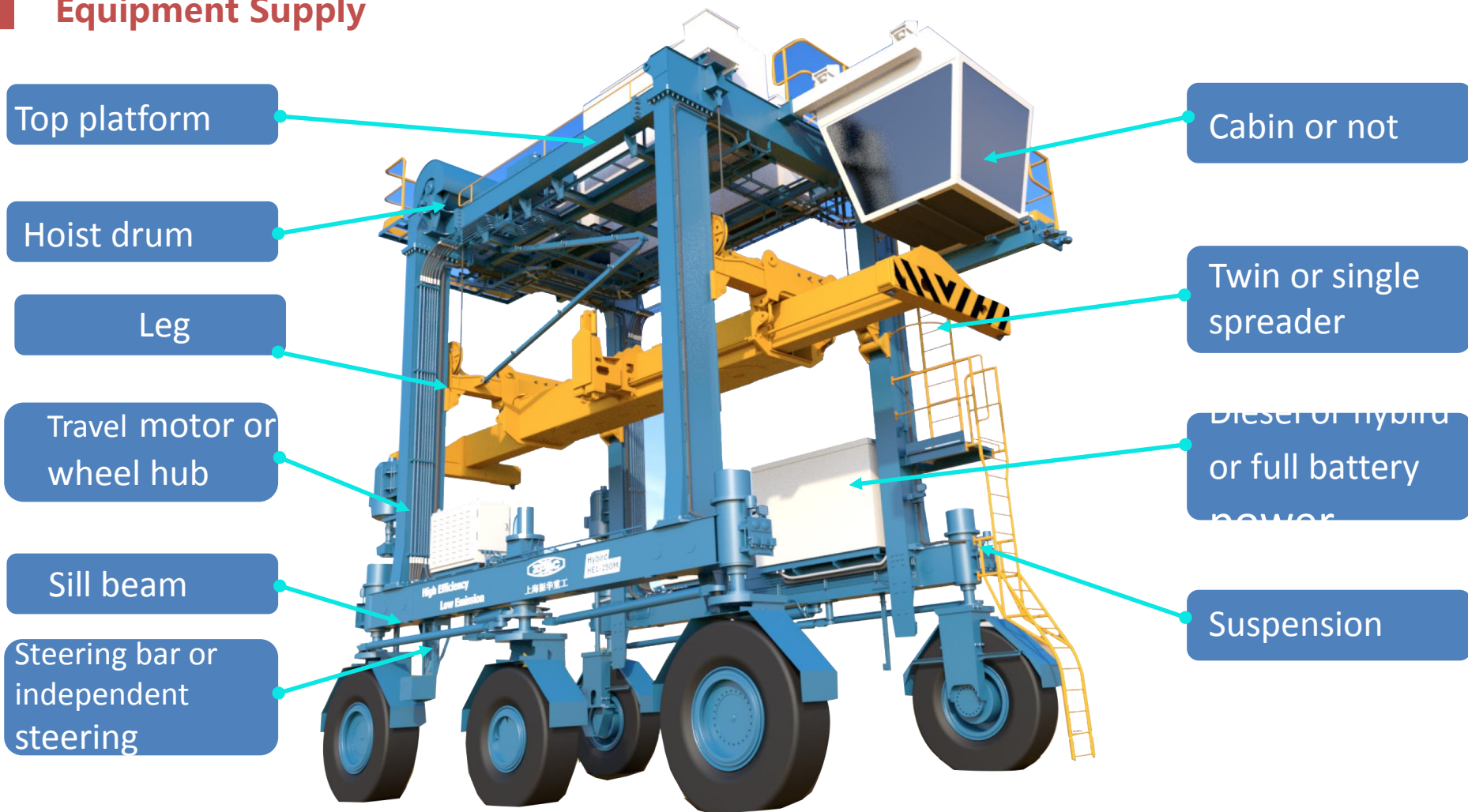




ZPMC

AGV机会充电
AGV Opportunity Charging

Equipment Supply



×1.0

3.16

Current Speed

FORWARD

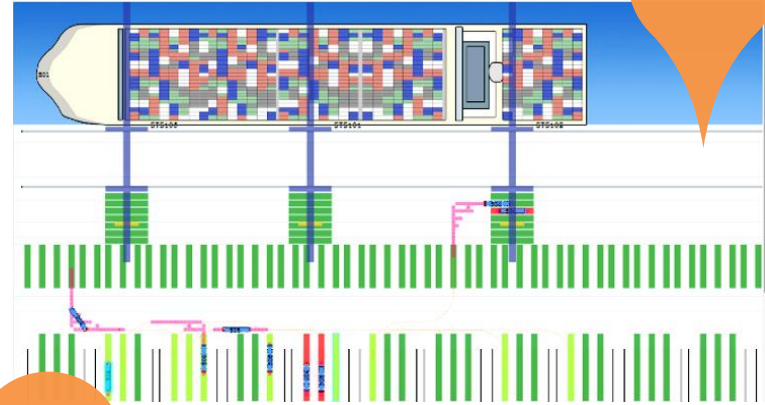


System Integration

Equipment



Software



Assistant System



Project Management



Software

Plan Level

TOS(Terminal Operation System)

ECS(Equipment Control System)

Control Level

BMS

VMS

QCMS

ACCS

NS

ACCS

Equipment Level

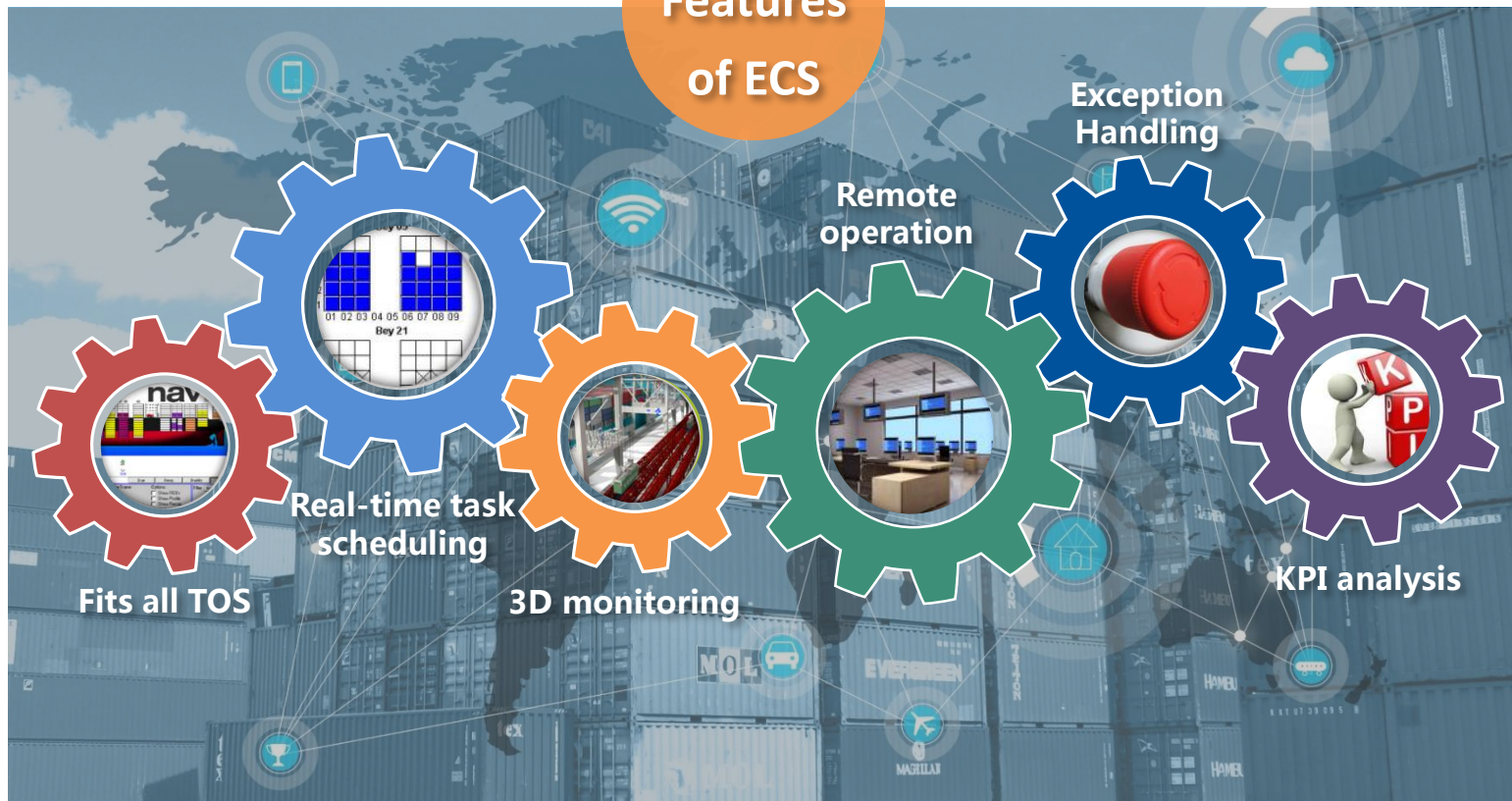
PLC

Controller

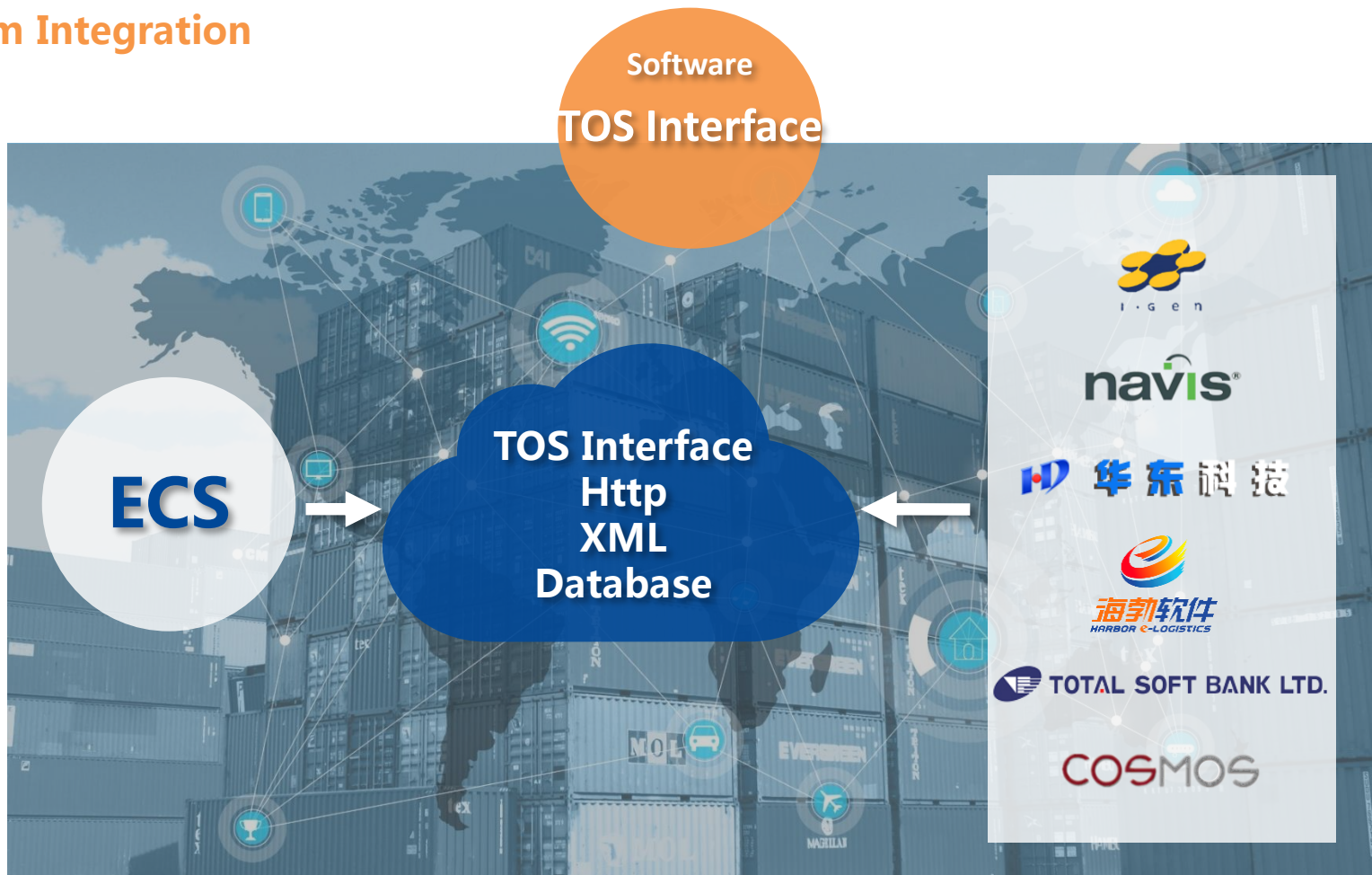
PLC

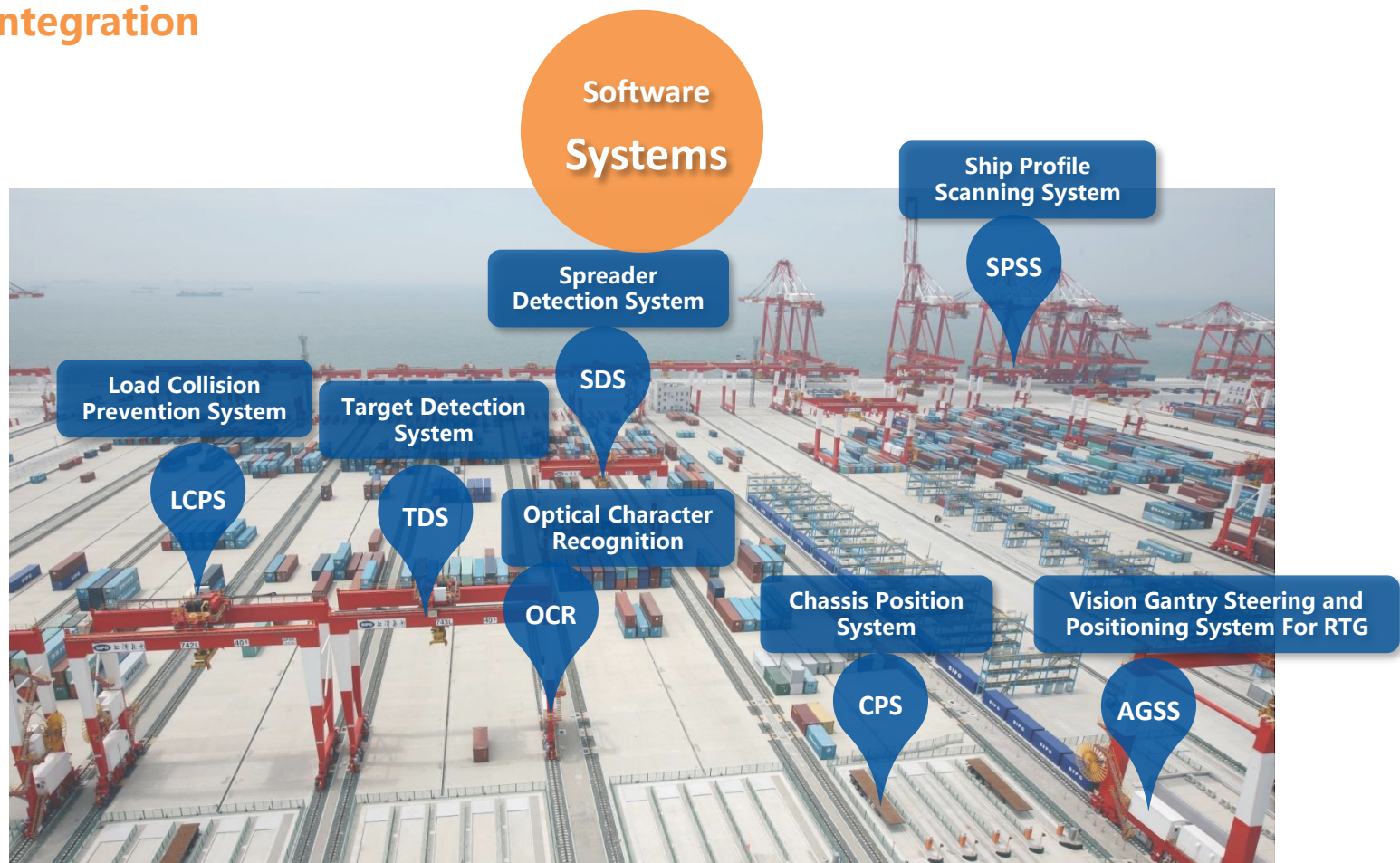


Software Features of ECS



System Integration





System Integration

Auxiliary System

Remote Operation
Control System(ROCS)



Twist lock
handling system



Remote Monitoring
& Diagnosis System



Smart Gate
System



Network
Communication System



Yard Entrance
Guard System



Automatic battery
changing system



Reefer monitoring
system



**Project
Management**

**High
Quality**

Low Cost

**Short
Construction
Period**



Progress

Project
Management

Safety

Quality

- Regional commissioning and isolation management
- Strengthen institutional development
- Design system multi-layer security
- Network security standard implementation for automated container terminal

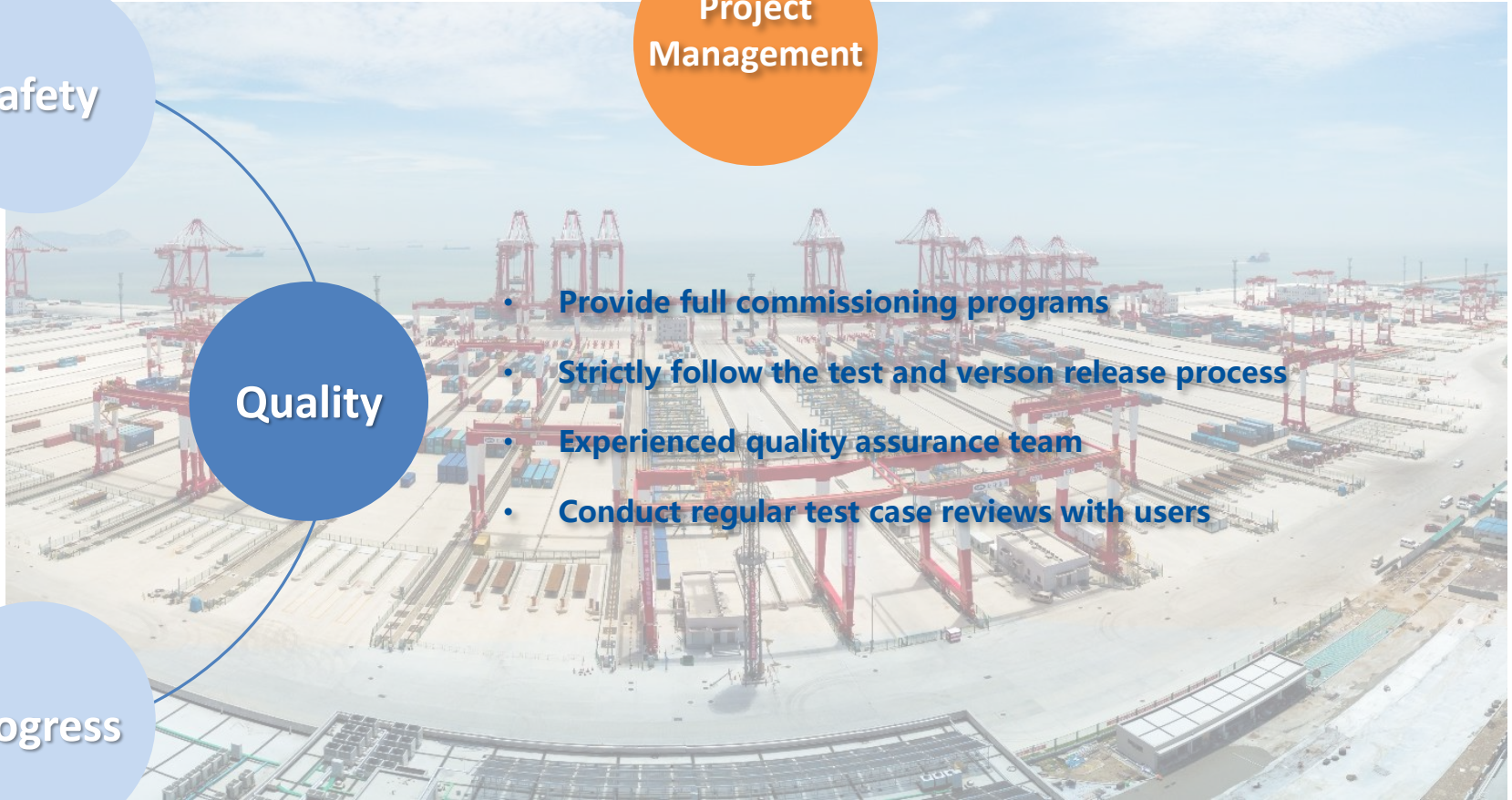
Project
Management

Safety

Quality

- Provide full commissioning programs
- Strictly follow the test and version release process
- Experienced quality assurance team
- Conduct regular test case reviews with users

Progress



System Integration

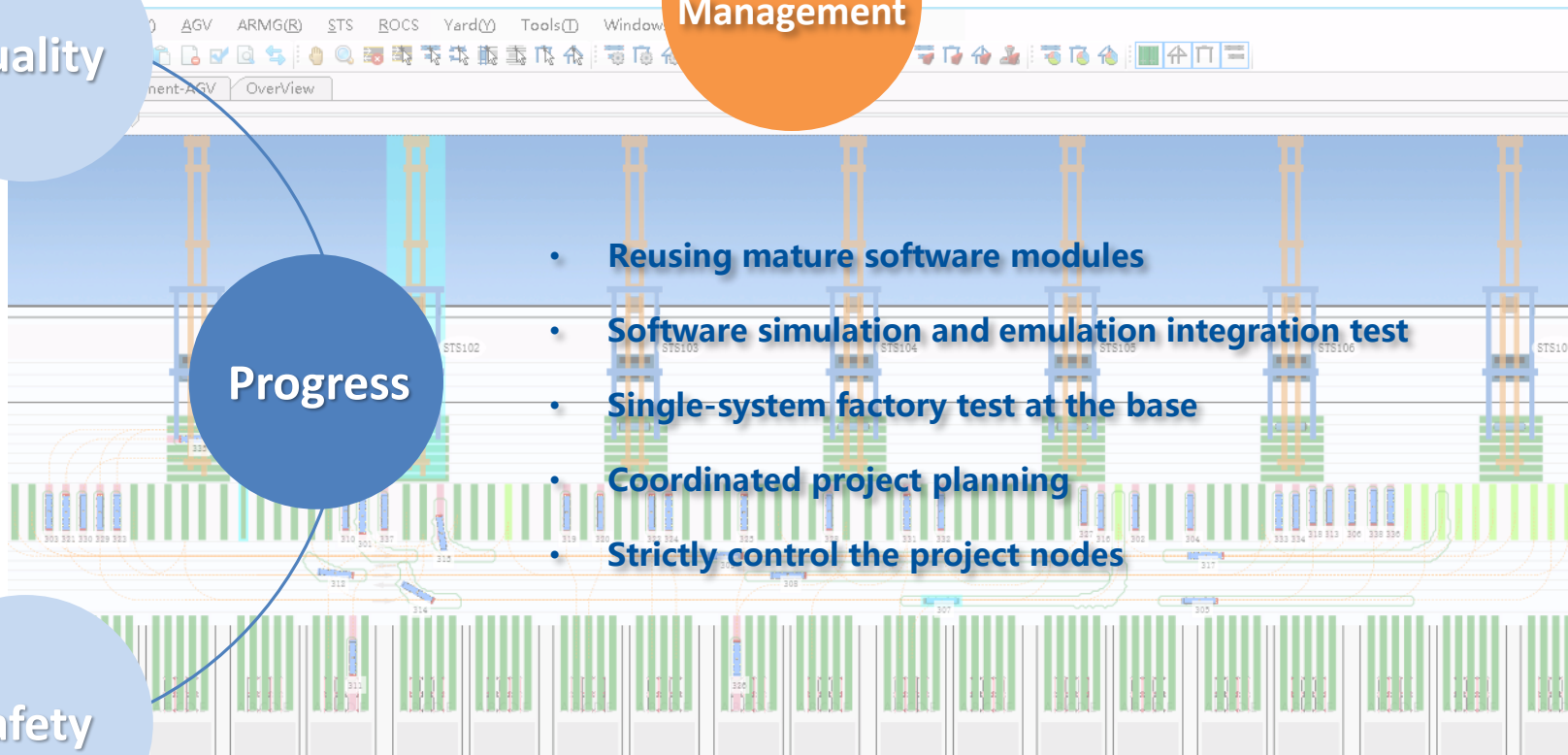
Quality

Project
Management

Progress

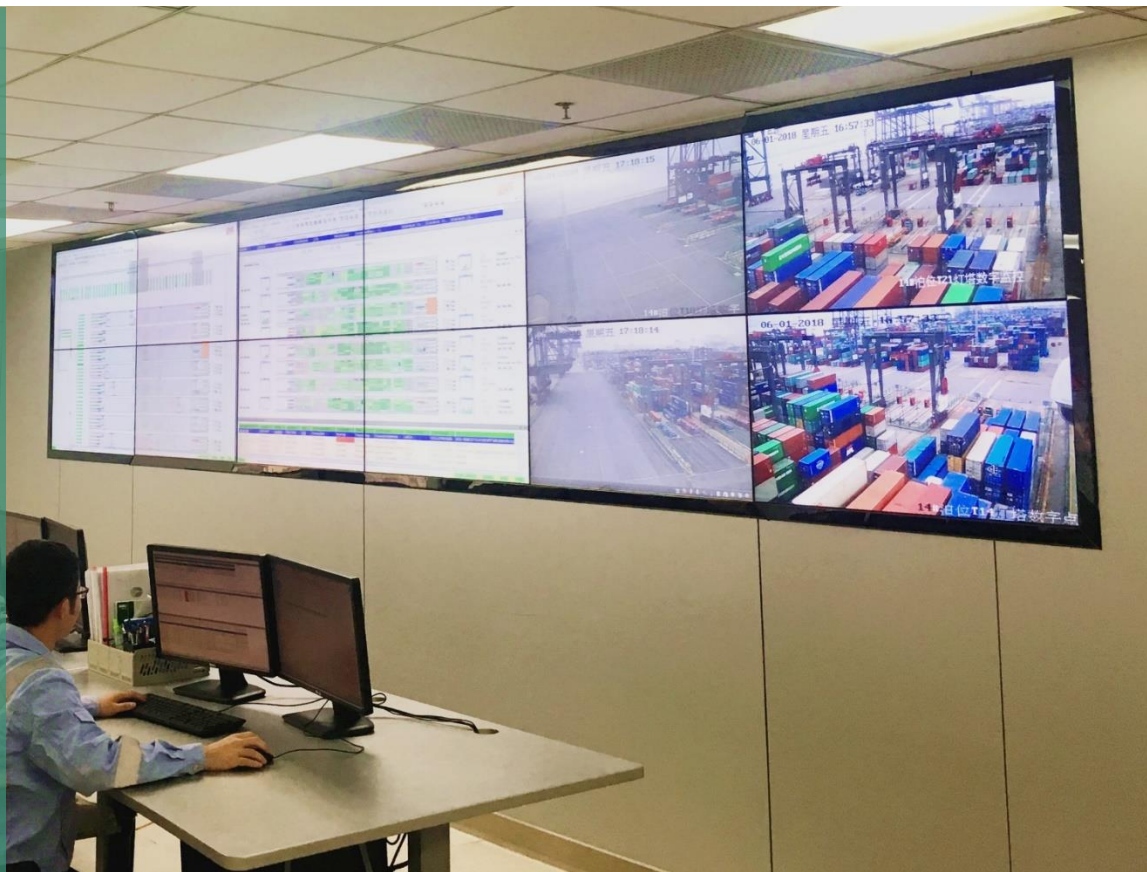
Safety

- Reusing mature software modules
- Software simulation and emulation integration test
- Single-system factory test at the base
- Coordinated project planning
- Strictly control the project nodes



Operation

- ✓ Personnel training
- ✓ Advice providing
- ✓ Operation assistance
- ✓ System optimization
- ✓ Failure fixing





Maintenance —

Remote Monitoring & Diagnosis System



Real-time monitoring



Fault prediction

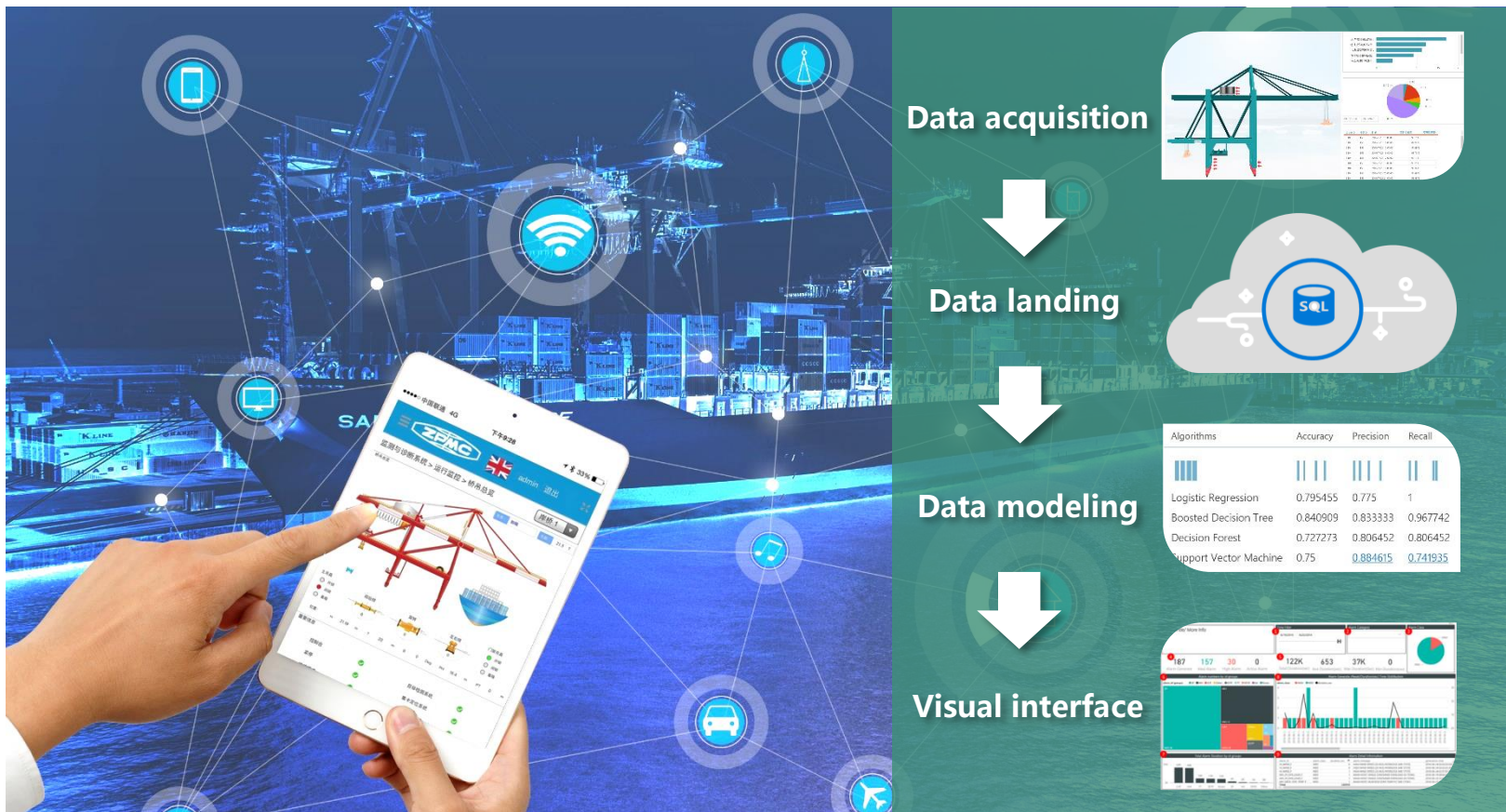


Fault diagnosis



Service life prediction

Operation & Maintenance



Maintenance — Smart O&M System

- ✓ On-line diagnosis
- ✓ Customization
- ✓ Automatic order dispatching



Operation & Maintenance



Terminexus ECO Platform





ZPMC Global Remote Monitoring Center

- ✓ Real-time monitoring of equipment
- ✓ Fault prediction and preventive maintenance based on big data
- ✓ Providing real-time remote support services for global users



Partners

TOS

navis®



TOTAL SOFT BANK LTD.



COSMOS

Scheduling
Module

navis®



Automatic
electronic
control

SIEMENS

TMEiC

ABB

More



独行者步疾，结伴者
行远

If you want to go fast, go alone,
If you want to go far, go together.

