



NEUVIX SMART & DIGITAL SOLUTIONS
FOR
MARITIMES

JUNE 2024



AGENDA

01 About Neuvix

02 Neuvix Smart Platform

03 Neuvix Smart Port
With Digital Twin

04 Neuvix Smart Ship

05 Neuvix AI
Algorithm Platform

06 Green Port Case
Studies



01

About Neuvix

About Neuvix

Neuvix is an innovative provider of digital intelligence solutions for the transportation industry, our company conducts independent R&D for all products. Our proprietary **NEX-Core** artificial intelligence and **NEX-Meta** digital twin technologies have achieved multiple breakthrough applications with leading clients in the sector, including Tianjin Port, Shanghai Port, and Shanghai Jiushi Group etc.



Public Transportation

China's leading AI application of road inspection based on Edge Computing.

Shipping

China's first multi-sensor fusion ship navigation and collision avoidance system, with a digital cockpit product and deployment in over 50 ferries.

Port & Terminal

China's first integrated management platform for mega-sized container terminals with digital twin.

About Neuvix



Mr. Jason Yu, CEO

NEUVIX 辛玮智能 Experienced Maritime Technology and Innovation Leader

Graduated from Harbin Institute of Technology, with over 15 years of experience in port informatization, marketing, and R&D management. Previously worked for Shanghai Port Group and MSC Cruises.

Former manager of Fansheng Technology and head of the electrical measurement business department. Led the financing, cultivation, and establishment of new business departments, as well as the development of core customers.



上港集團



About Neuvix

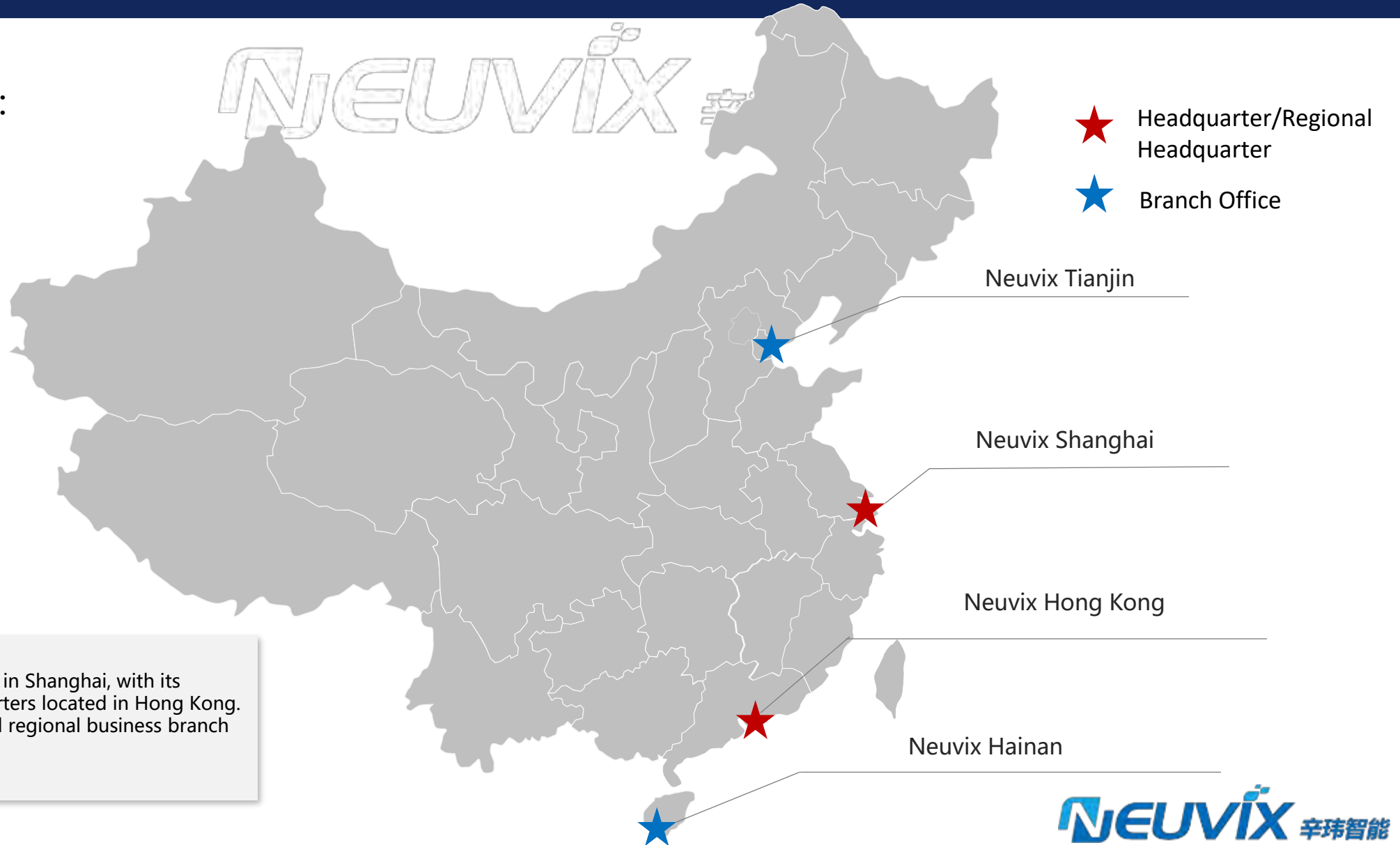
Strategic Investor:

inspur 浪潮

TusStar
启迪之星

NEUVIX 辛玮智能
Neuvix Group

Neuvix Group is headquartered in Shanghai, with its international business headquarters located in Hong Kong. The company also has R&D and regional business branch offices in Tianjin and Hainan.



About Inspur

Founded in 1945s, China's Leading Cloud Computing, Big Data Service and ICT Solution Provider

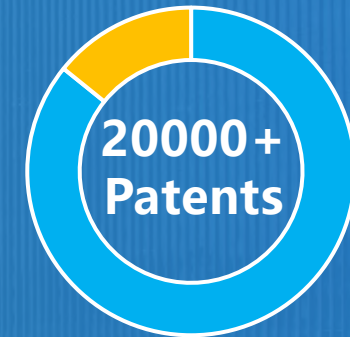
Hardware Equipment



- Cloud infrastructure
- Communication
- Smart Terminal

Revenue
US\$16 Billion

Staff
34,000+



84% are Innovation Patents

Cloud Service



- IaaS
- PaaS
- SaaS

Software



- Smart Enterprise
- Smart Industry
- Smart City

Listed Companies

- Inspur Software (600756) SH
- Inspur Information (000977) SZ
- Inspur Digital Enterprise (596.HK) HK



About Inspur

■ Cloud infrastructure

Inspur's server market share ranked second globally, with a narrowing gap with the first-ranked brand from 5% in 2022 to 1% in 2023, while maintaining its leading position in China.

Server

Cloud Computing Node Server

4U4P



NF8480

4U2P



NF5466



NF5476



NF5486

2U4P



NF8260

2U2P



NF5260



NF5280



NF5266



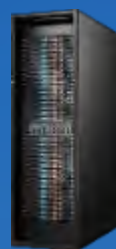
NF5180

1U2P



NF3120

1U1P



Rack Scale Server

Mission Critical Server



TS860



K1 Power E980



K1 Power E950

High Density Server



i48



i24

AI Computing Acceleration Server



AGX-2



NF5488



NF5468

Edge Computing Server



NE5260

Storage

High-end



HF18000

AS18000



AS6800

Mass storage



AS13000

Middle-end



AS5800



AS5600



AS5500

Entry-level



AS2600



AS2200



AS2150

Switch



FS8500



FS8600



FS8900



FS6700



FS6800

Data Center



MDC2000



CDC2000



SDC2000

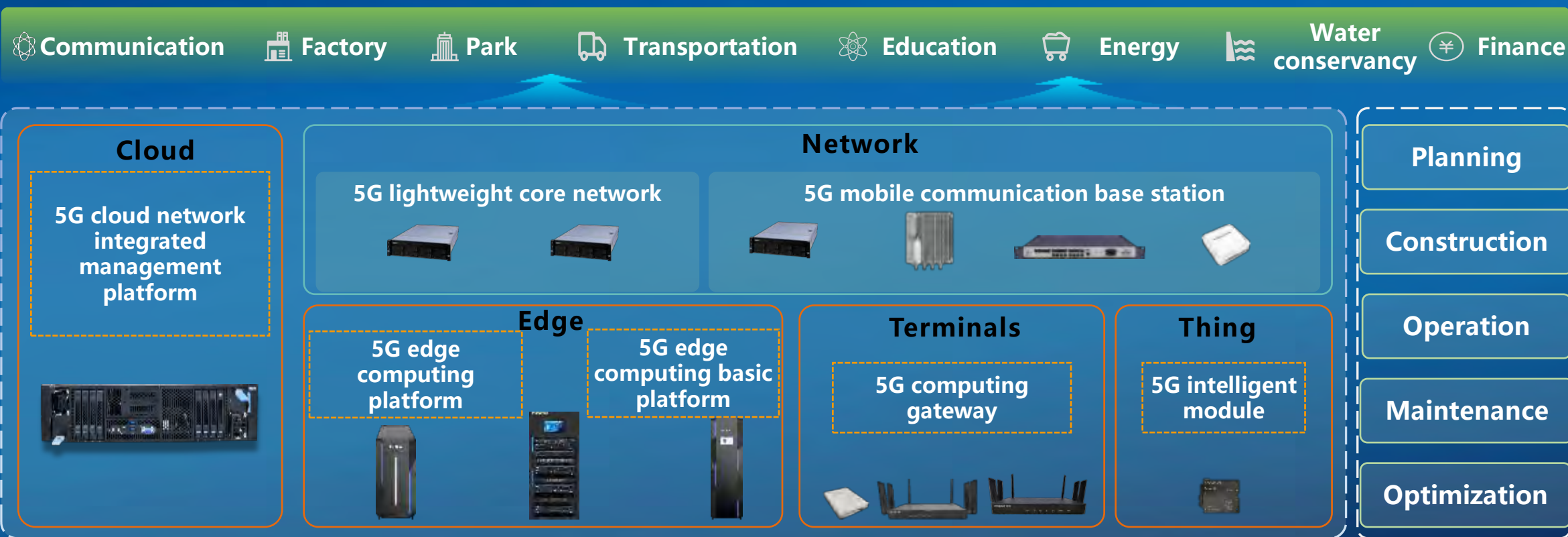


RDC2000

About Inspur

■ Communication

Inspur has a 5G emerging manufacturers and could provide support for the digital transformation of economy and society.



About Inspur

Smart Hardwares

12 application scenarios: smart command centers, commercial cultural and tourism blocks, digital cultural venues, new scenarios of consumer information, urban emergency broadcasting, smart service halls, smart transportation hubs, WITMED services, zero-carbon smart parks, digital commercial retail, smart RV campsites, and integrated media broadcasting and control centers



UHD interactive display terminal | Digital home terminal | Smart service terminal | Smart healthcare terminal | IoT intelligent terminal | Zero-carbon intelligent terminal

Six core capabilities

Technical R&D

Supply chain

Manufacturing

Marketing

Delivery

Eco-cooperation



02

Neuvix **Smart** Platform Introduction

Neuvix Smart Platform

Neuvix's AI high-performance edge computing product series offers up to 30TOPS of processing power. Combined with the company's proprietary software and algorithm platform, these solutions are widely deployed in marine ADAS, DMS, and other edge AI application scenarios.



NEX-Core

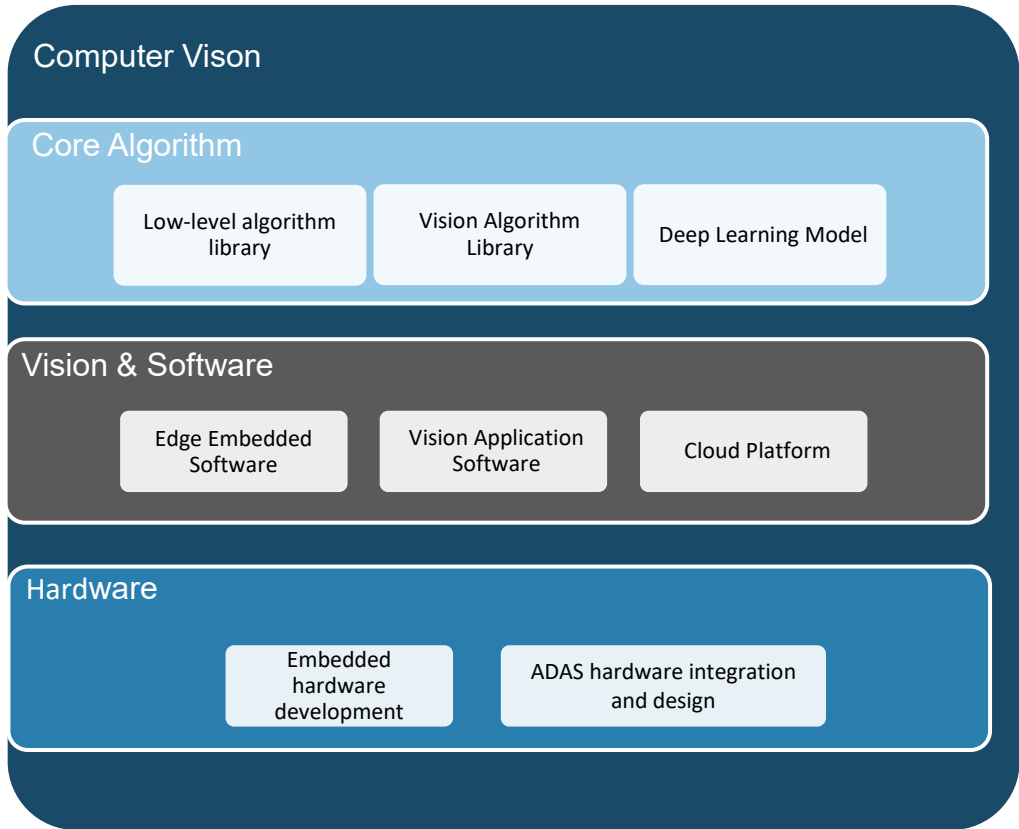
NEX

NEX-Meta

Neuvix's digital twin platform with domestic core engines offers rendering capabilities of millions of polygons per second. Flexible deployment in client-server or web-based configurations, serving applications in ports, water transportation, ship digital cockpits, etc. The platform has seen successful deployments across diverse scenarios.



Neuvix Smart Platform



NV9002 product

High-performance edge computing platform, mainly used in the ADAS automatic collision avoidance system for ships

NV9001 product

Flexible deployment of edge computing product platform, used in intelligent security, intelligent operation and various visual recognition edge scenarios

Developed on the Nvidia Jetson core platform. The maximum computing power can reach more than 200TOPS, meeting the needs of ADAS and L3 autonomous driving

Neuvix Smart Platform



Digital Twin Port



Digital Twin Ship



Digital Twin City

Powerful engine

Provides real-time rendering and scene capabilities for areas exceeding 1,000 square kilometers and handling over 100 million triangles.

Independent IOT data center

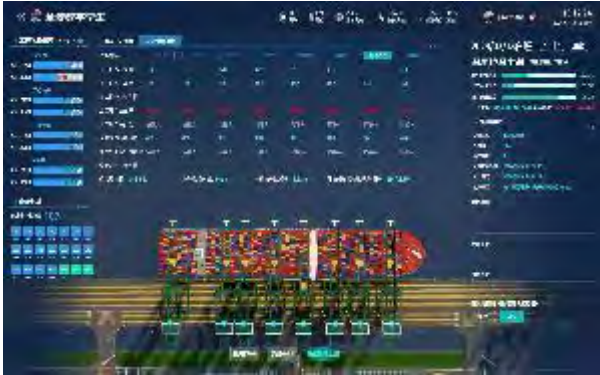
Features powerful multi-heterogeneous data integration supporting diverse IoT protocol and real-time data processing.

Multi-dimensional deployment

Supports a range of deployment modes - from 10K resolution command centers to desktop cloud configurations, as well as lightweight deployments on ships and vehicles.



Neuvix Smart Platform



Digital Twin Platform

Neuvix's digital twin and AI-powered platform integrates cross-departmental, multi-dimensional business data, enabling the convergence of port operations, equipment, security, energy, and more.

A digital twin system for serving port daily operation scenarios



Smart Ship System

Neuvix's Smart Ship System is a fully digital cockpit product built on the lightweight engine of the company's shipborne digital twin platform. The system features a powerful onboard computing system that supports a wide range of functional applications. The primary function utilizes millimeter-wave radar and visual fusion sensors, coupled with advanced ADAS algorithms, to identify and alert on vessels within a 2km range.

The industry's first integrated digital cockpit and AI system solution.



AI Algorithm Platform

Neuvix's AI algorithm platform is designed to be open and compatible with mainstream models and hardware. This enables a flexible and open deployment mode for algorithm development and customer applications. The platform is lightweight, distributed, and optimized for edge productization, allowing for easy replication and scalable deployment.

A flexible and open cross-industry AI application platform.



Security and ESG Management System

Neuvix's safety management platform leverages big data analysis and AI algorithms to automatically identify potential safety risks in production processes. It grades these risks by severity and integrates them into a comprehensive safety management platform. The goal is to provide enterprises across industries with an efficient, scientific, and actionable safety production solution that accurately implements safety policies and protocols.

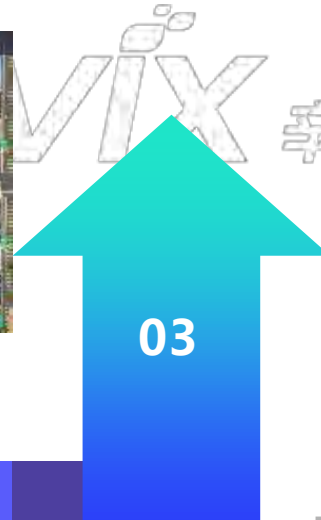
Industry-compliant security management system



03

Neuvix Smart Port With Digital Twin Platform

Technology Trend

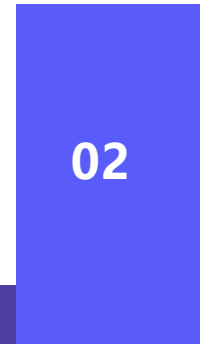


03

辛玮智能

AI Disruptive Challenges and opportunities

- Traditional experience-based thinking is being transformed into systematic, standardized logical algorithms for automatic decision-making.
- Traditional independent software systems are becoming highly integrated to improve management efficiency.



02

Digital Transformation & Management

- Automatic perception and image recognition by front-end devices is replacing manual labor.
- This is transforming business management from two-dimensional to multi-dimensional.



01

Technology Trend of Global Port & Shipping Industry

- Intelligent automation is driving transformation in the port and shipping industry.
- Digital twin technologies integrated with advanced analytics and AI are enabling enhanced visibility, optimization, and autonomous control across maritime operations.

Neuvxi Digital-Twin



Neuvxi Smart Port with Digital Twin Platform

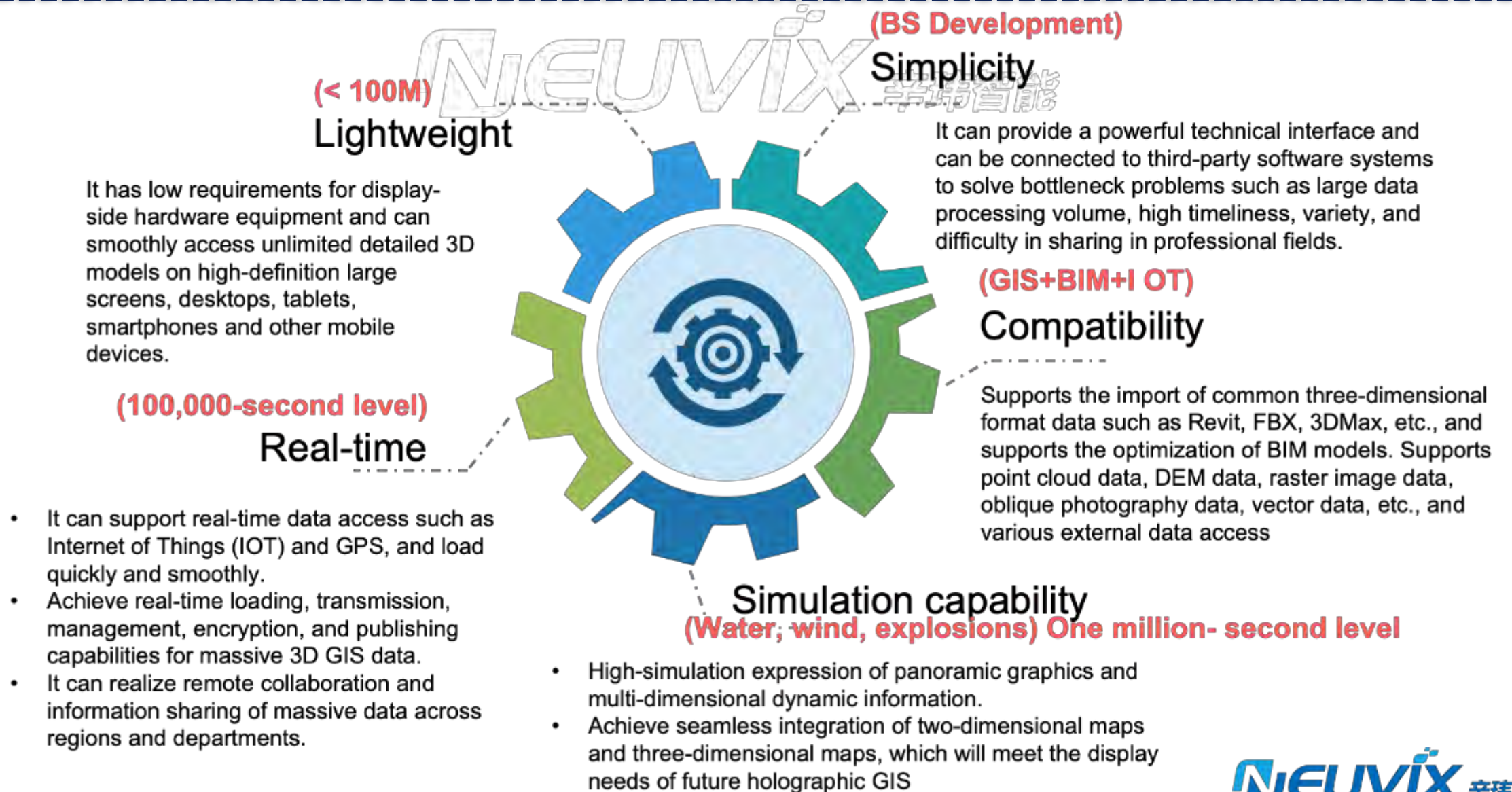
Digital twin and AI technologies are used to integrate multi-dimensional port operations, including equipment maintenance, safety control, and energy monitoring. Our developed digital twin engine has become the foundation of R&D for smart port and shipping.

An application platform that supports specific port operation scenarios and port business needs

An application platform developed and built in a fully controllable software and hardware platform

An application platform that has undergone three years of continuous iteration and in-depth development

QMAP Engine Features



Iterative Platform Upgrades



V 3.0
(M a t u r i t y)

- Deeply intelligent and autonomous: advanced AI integration, autonomous learning algorithms, decision-making automated operations, highly self-optimizing, predictive maintenance.
- Comprehensive Interconnection: 5G, IoT deep integration, edge computing, low latency, real-time processing and feedback, everything is more closely interconnected.
- Sustainability: Green operation, environmental monitoring, energy management, carbon footprint analysis, circular economy, promoting sustainable development of green ports.
- User experience: personalized service, highly customized, user participation, experience first, comprehensive optimization, improve satisfaction.



V 2.0
(D e v e l o p m e n t)

- Intelligent Enhancement: Introducing AI and big data analysis, real-time processing of large amounts of data, predictive maintenance, intelligent decision support.
- Interactivity: Provide immersive training, multi-terminal joint operation mode, optimize operation and usage experience.
- Integration optimization: cross-system integration, broader enhancement, deeper data mining, formation of ecosystems, and more flexible services.



V 1.0
(F o u n d a t i o n)

- Proof of concept: preliminary mapping of the physical world to the digital world, construction of a basic digital model, preliminary simulation.
- Data integration: preliminary integration of Internet of Things (IoT) technology to realize data collection, but with limited data volume and processing capability.
- Functional basic application: basic monitoring and management functions, preliminary analysis, to provide some support for decision-making.

Highlighted Features

Close-Loop Port Operations Support

1.

Integrating TOS system, CCTV, cargo stowage and other data to achieve visualization and intelligent management of **Quayside operation monitoring and control**.



2.

Integrating TOS system, CCTV, Yard Crane data and other data to achieve visualization and intelligent management of **Yard operation monitoring and control**.



3.

Integrating TOS system, CCTV, GOS and other data to achieve visualization and intelligent management of **Gate operation monitoring and control**.



4.

Integrating GIS system, CCTV, Video streaming system, support **Camera visualization and intelligent management**.



Highlights | Quayside Closed-loop Management Processes



Planners Set Key Indicators



Central Control Personnel Command Operations

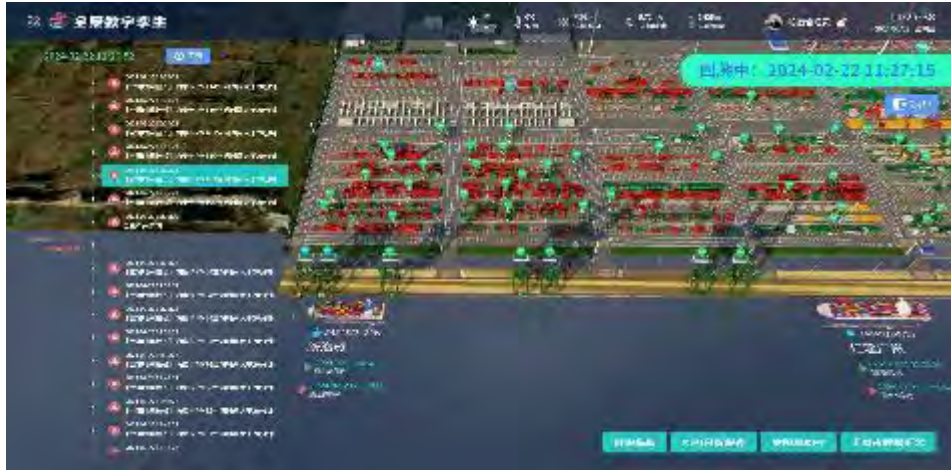


KPIs for Central Control Personnel



Shift change

Innovative Functionality Explanation | Back in Time



Full scene time traceback



Single ship operation traceback



Review of key events



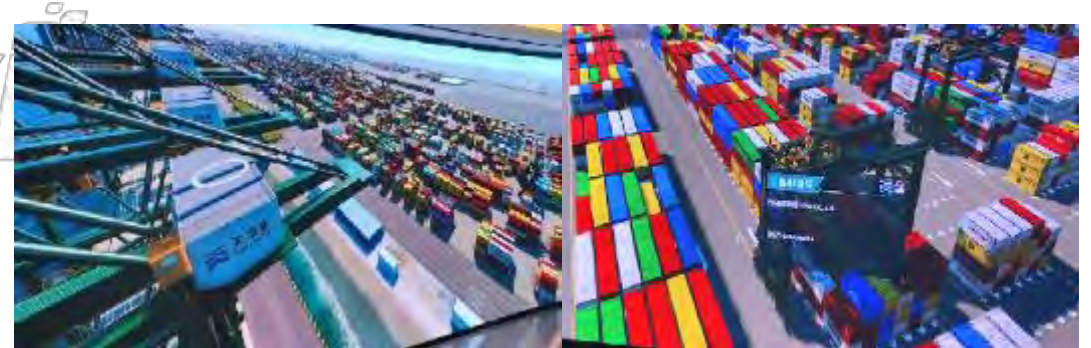
Ship operations review

Innovative Functionality | Ship Self-Generating Model



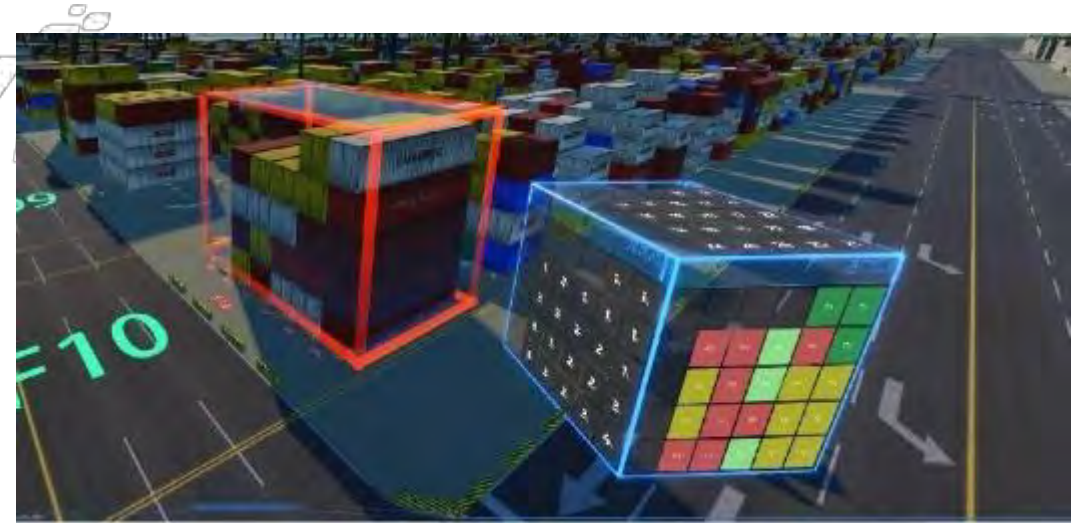
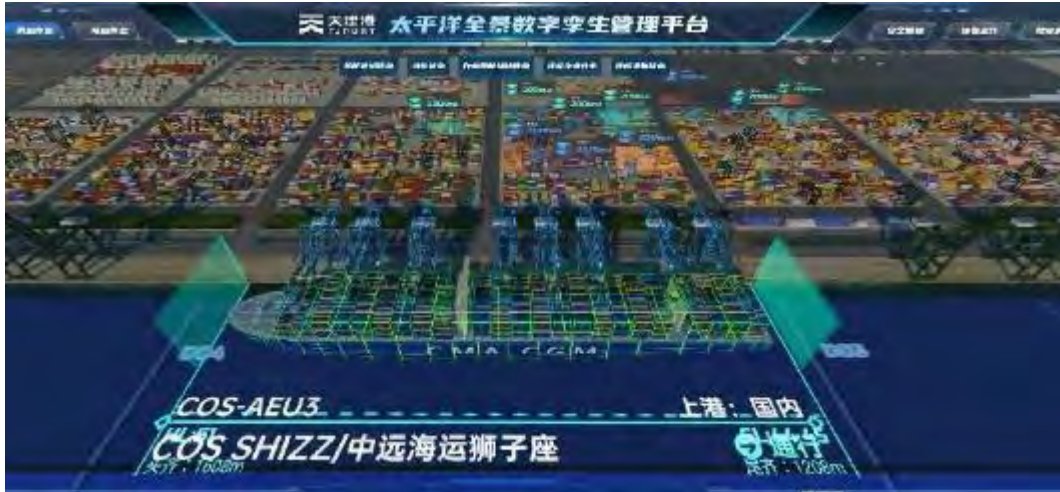
- Automatically Generates Ship Database from Diagrams
- Automatically Generates Accurate Ship Models using AI Algorithms & Ship Data
- Automatically Generates Ship Positions from Ship Database and Models

Tianjin Port Pacific International Digital Twin Platform (Phase I)



- Completed Full 3D Modeling of 2.2 km² Terminal:
 - Includes topography, containers, yard infrastructure, cranes, ships, trucks, and communication towers
 - Achieves a comprehensive digital twin representation of the terminal
- Key Monitoring and Analytics Capabilities:
 - 600 field monitoring channels
 - 60+ AI algorithm channels
 - 12 real-time analysis algorithms

Tianjin Port Pacific International Digital Twin Platform (Phase II)



- The real-time data docking of the model has been completed, and the background data is used to drive the automatic generation of heavy containers, container ships, yard bridges, quay cranes, and container trucks in the scene.
- The operation data of containers, bridges, and ships has been connected, and three-dimensional visual query and display have been realized.
- Construction of four major management **application scenario modules: production, safety, equipment, and energy.**

Jiuzhi Tourism “One River, One River” Digital Twin Base and Demonstration Application Project



One River Digital Base Basic Terrain (Key Terrain and Infrastructure Modeling):

- 3D terrain generation for 2 sq km around One River (Huangpu and Suzhou Rivers)
- 3D terrain modeling within Shanghai's inner ring road
- 3D modeling of key bridges (Nanpu, Yangpu, Lupu, Xupu, Minpu) and Lujiazui buildings

Shanghai Maritime Department DT System

NEUVIX 辛玮智能

2024-05-23 星期四

船舶管理

上海海事局三维电子巡航系统

场景设置

开始实时监控

开始巡航

浦万5



Jiuzhi Tourism “One River, One River” Digital Twin Base and Demonstration Application Project



Live Virtual Simulation Emergency Drill System:

- Leverages mobile internet, virtual reality and other technologies to virtualize emergency response for different scenarios and roles
- Includes an emergency drill system and emergency drill management system
- Builds drill cases based on actual emergency response plans
- Provides functions for: Drill organization, Simulation drills (training and assessment modes), Drill plan management, Drill record management, Statistical ranking and reporting

Emergency Drill System:

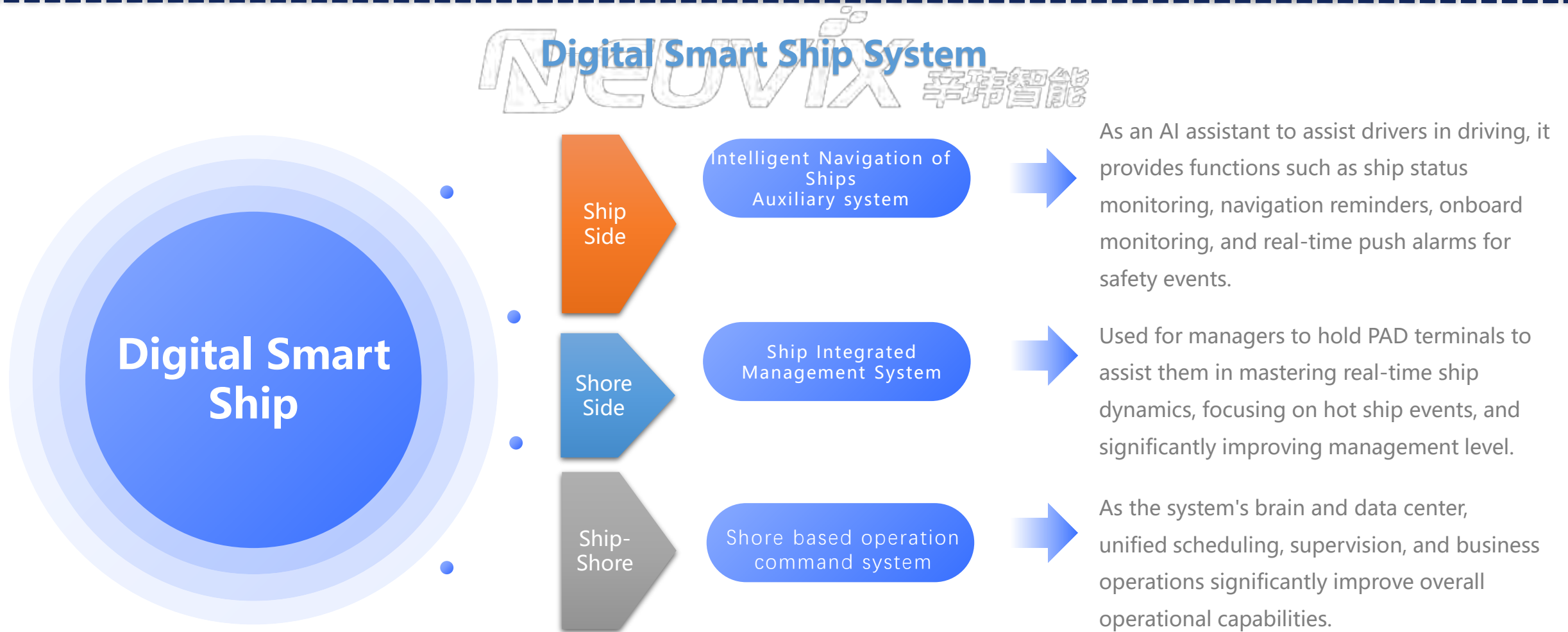
- Enables mobile, online collaboration for drill organization
- Digitizes drill cases for easier management
- Reduces costs through simpler drill organization
- Enhances effectiveness with evidence-based evaluation
- Supports multi-person synchronous simulation across learning, practice, performance, examination, and evaluation stages
- Improves training efficiency and emergency response/rescue capabilities
- Facilitates testing of emergency plans and team readiness



04

Neuvix Smart Ship

Overview



System Architecture

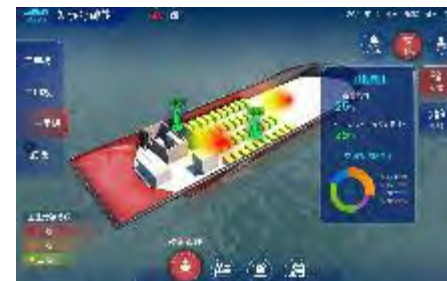


◆ Perception system

- Digital camera
- Digital video recorder
- Network equipments

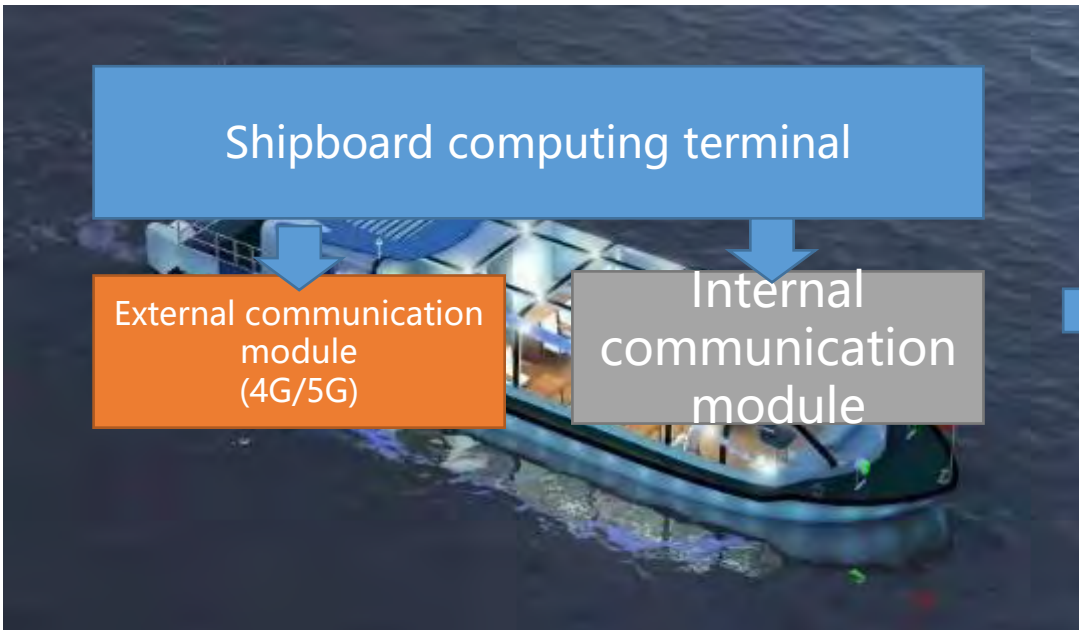


- Integrated display and control machine
- AIS equipment
- Shipborne Integrated Digital Cockpit Software System



◆ IOT System

- IoT Data Integration Center
- Environment aware hardware
- Service Publishing System



Digital Cockpit Module

Comprehensive Data Interface

Real time monitoring and reminder of ship's main power, navigation, and surrounding environmental data

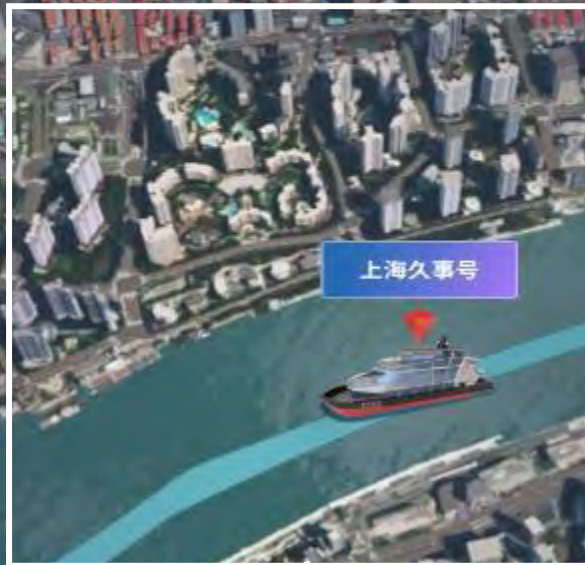
数据概览



实时水深数据



上海久事号



船舶监测情况

0 艘 <100m	1 艘 100~200m
1 艘 200~300m	4 艘 >300m

实时报警事件

 报警时间: 02/27 15:42:36 报警区域: 右侧围栏	 报警时间: 03/12 19:41:59 报警区域: 左侧围栏
--	--

Main Control

Select specific functional modules that can be used in conjunction with tactile devices for non-contact control operations

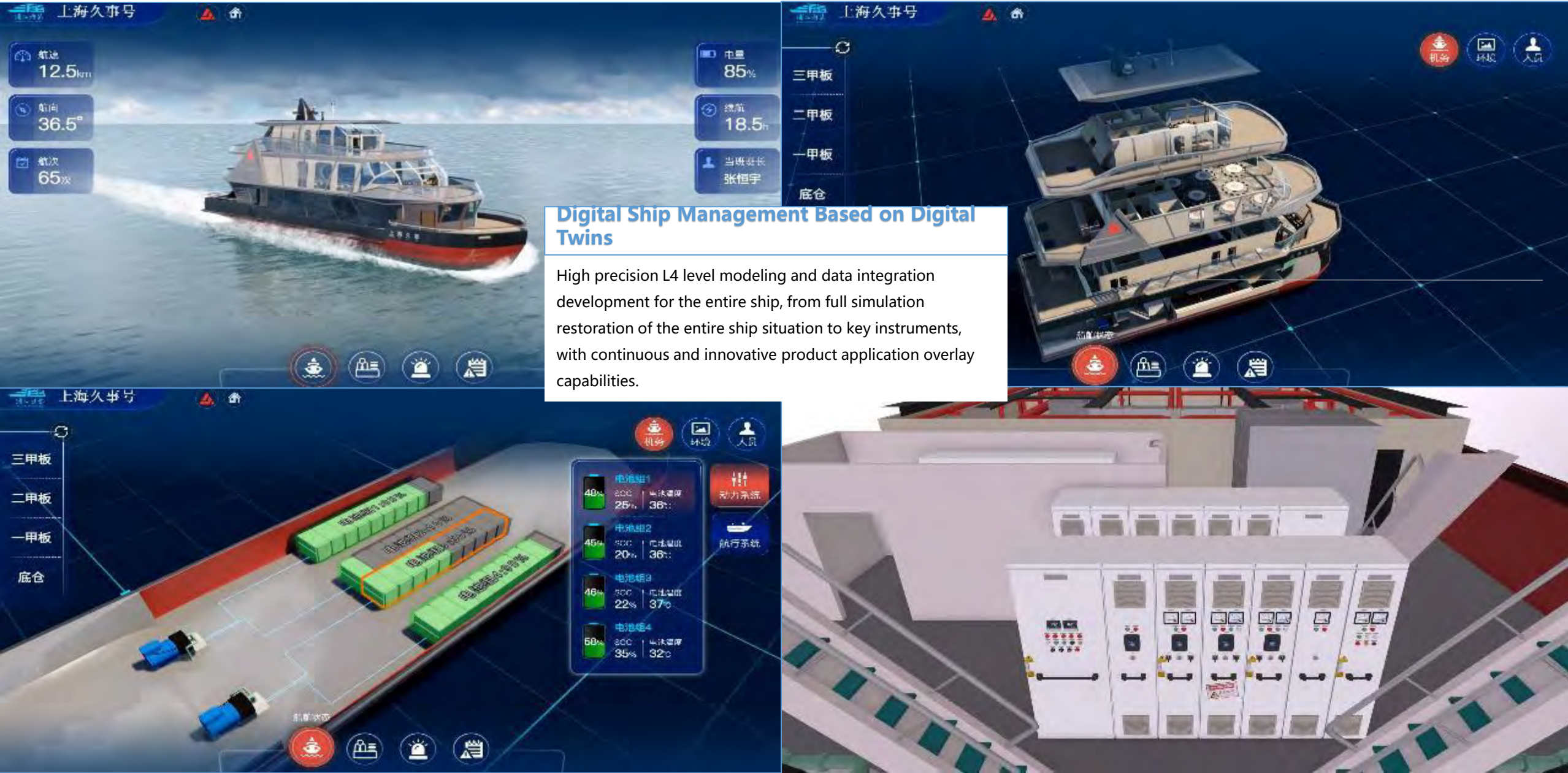
Navigation

Automatic matching of 3D terrain data, allowing for free switching between various application perspectives such as bird's-eye view, driving, and more

Information Interface

Generate real-time data for surrounding ship detection and push real-time alarm data

Ship Management Module



Video Enhancement Module

2022年4月15日 周五 11:02 晴

第一人称

第三人称

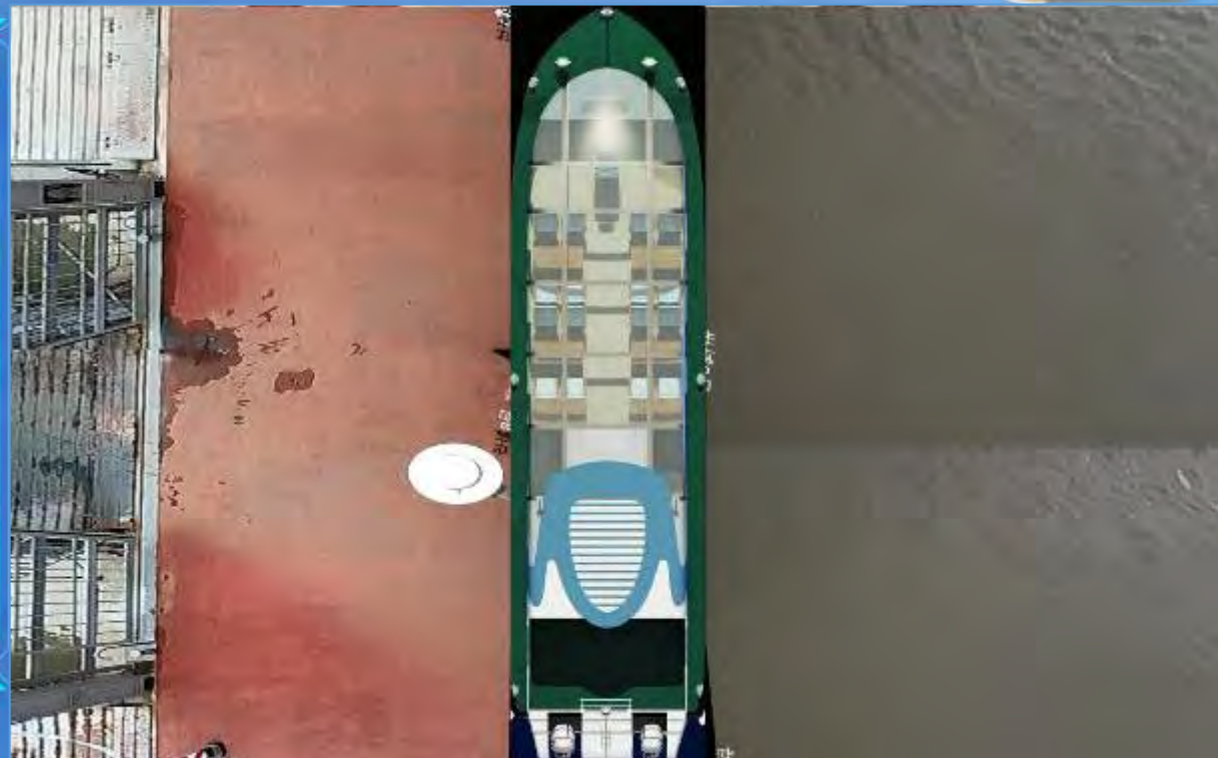


船外监控

船内监控

360° electronic lookout enhancement system

Digital monitoring of ships can be accessed at will, and 360° electronic observation function can be switched freely through three perspectives. Two camera algorithms are spliced and fused on each side to achieve 180° electronic enhancement (Forward 180°, backward 180°, with a top view angle of 360° for berthing assistance).



监控系统

智慧模块

左舵

右舵

30.6°

80r/s

100r/s

30.6°



MCU一般过温

MCU严重过温

电机过温降额

Home



船舶状态

导航提醒

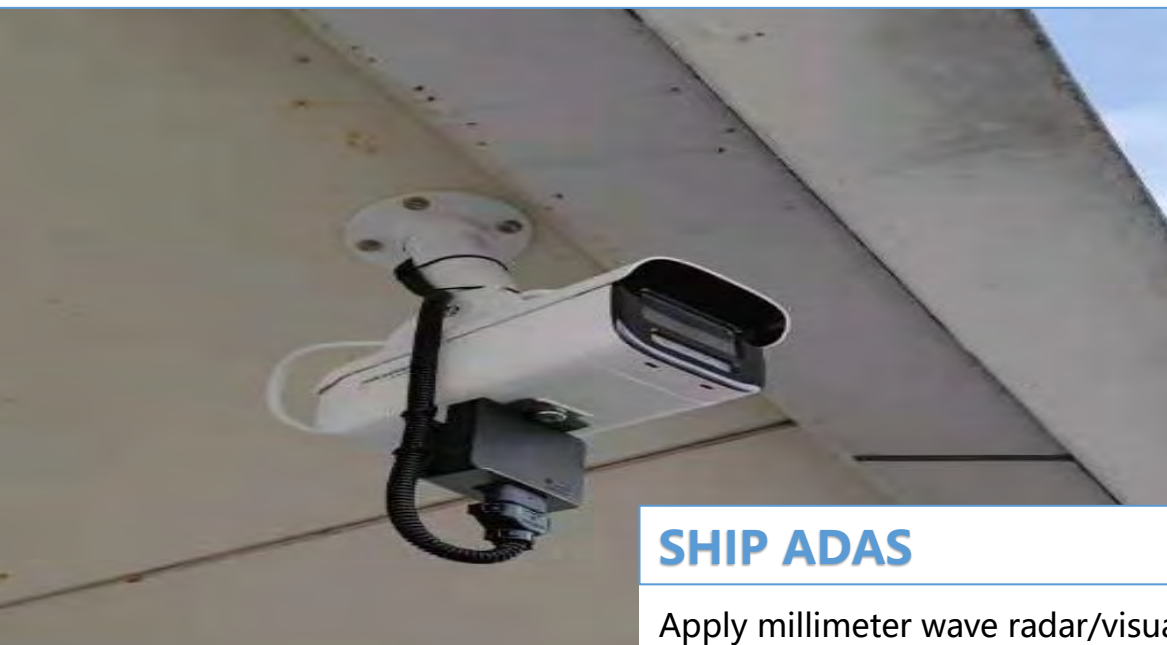


船载监控



事件提醒

AI Enhancement Module

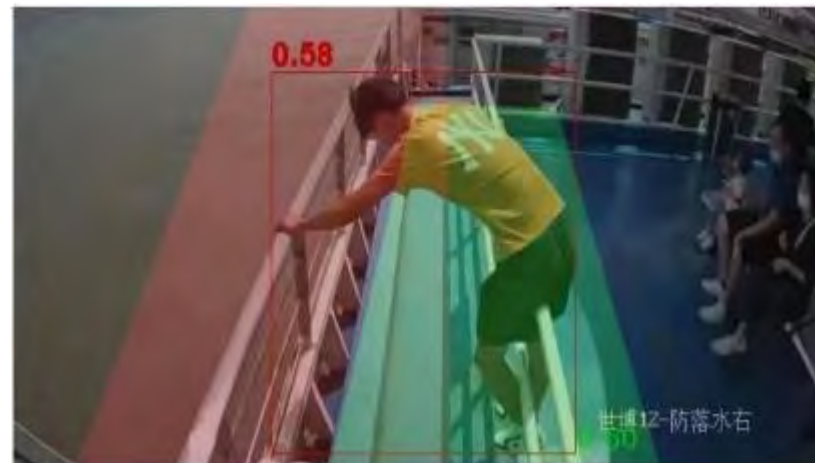


SHIP ADAS

Apply millimeter wave radar/visual fusion sensors and ship ADAS algorithm, with a focus on identifying and alerting ships within 2km



AI Enhancement Module



Digital Monitoring System (DMS):

- 360° digital ship monitoring with perspective switching
- 180° electronic enhancement via camera algorithm fusion
- Forward/backward/top-down views for berthing assistance

Crew & Passenger Behavior Management:

- Monitors and analyzes crew actions
- Identifies potentially dangerous passenger behaviors

Implementation

NEUVIX 辛玮智能





05

Neuvix AI Algorithm Platform

Key Features

Open compatibility

The platform needs to be open and compatible with mainstream algorithm models and hardware devices, enabling open and flexible algorithm development and customer deployment.

For intelligent visual inspection

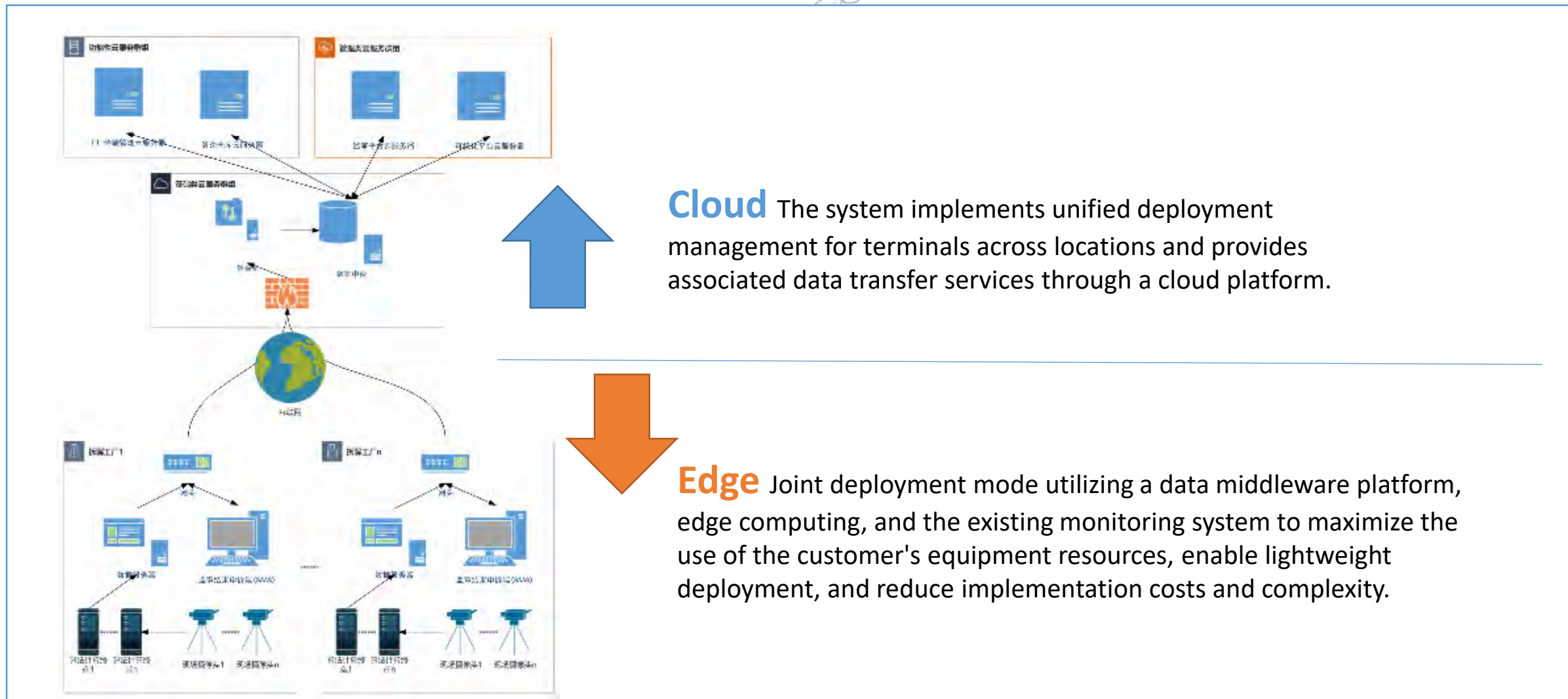
The platform focuses on the compatibility of models, the standardization of public modules, and the flexible scheduling of computing power for disassembly characteristics.



Cloud edge combined deployment

The deployment mode of cloud-based, distributed, and edge-based productization is convenient for rapid replication and promotion

Key Features



Platform Functions

Algorithmic event management

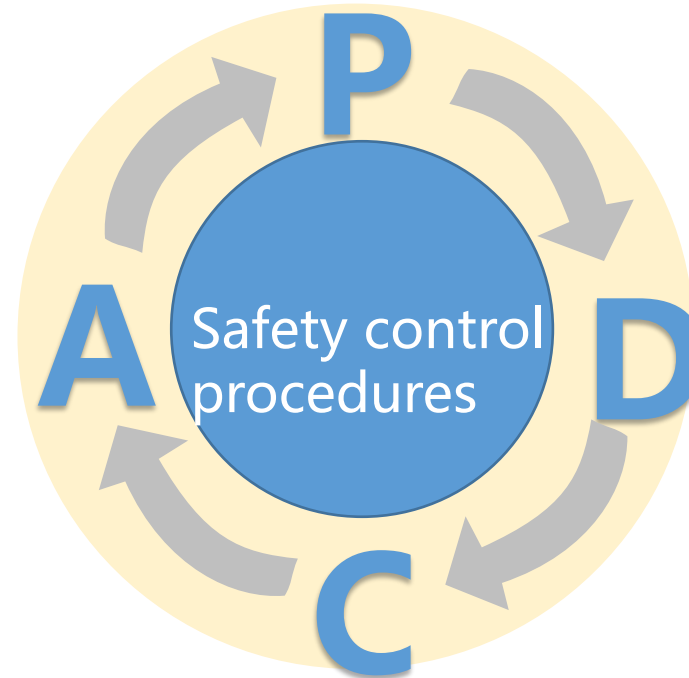
- Filter and search queries on events in different dimensions
- Closed-loop processing of events



- Application algorithm planning
- Delineation of detection area



- Optimizing and adjusting the point algorithm
- Training and learning event samples



- A dedicated person manages the application platform
- Timely handle alarm events



- Alarm event audit and inspection
- Alarm event statistical analysis



Implementation



06

Green Port Case Studies

China Ports & Harbors Association Introduction

- A national port industry association in China approved by the Ministry of Civil Affairs of the People's Republic of China
- It is a cross-regional and cross-departmental non-profit social organization voluntarily formed by the national port industry and enterprises and institutions related to the port industry
- An associate member of the International Port Association
- At present, there are more than 750 unit members, including large port group enterprises such as Shanghai International Port (Group) Co., LTD., provincial and municipal port administration agencies, port education units such as Dalian Maritime University etc.



Evaluation Bullet Points

Idea

10%

Strategy

Strategic planning
Special fund
Work plan

Culture

Corporate culture
Education and training
Promotional activity

+

Action



40%

Environmental protection

Pollution control
Resource utilization

Energy saving & low carbon

Main equipment
Operation process
Energy consumption
Auxiliary facility

+

Management

15%

System

Governing body
Audit certification
Target assessment

Regime

Statistical monitoring
Incentive and constraint

Effect



35%

Level

Environmental Protection

Energy Saving & Low Carbon

Total Score
100

Five-Star Green Ports



Green five-star terminal:

- Qingdao Qianwan
- Shanghai Shangdong
- Tianjin Pacific
- Tianjin Second Container

Green five-star port area:

Qinhuangdao Port Bulk Cargo
Port Area

Company Overview

Tianjin Port Pacific International Container Terminal

- **4 million TEU** annual design container throughput
- Six specialized container berths of 200,000 tons
- 1.75 million square meters of storage area
- 140,000 TEU storage capacity

The coastline is 2300 meters

Land depth 1050 meters

16.5 meters

Highlights of Green Port Construction



1

The world's largest wind and solar power generation project in a single terminal area was completed

- ✓ Total installed capacity 15.5MW
- ✓ Achieve **100% use of green electricity**

2

The world's largest fleet of electric container trucks in a single terminal area has been built

- ✓ 120 container trucks in the terminal have been realized
- ✓ Achieve **100% electric iteration**

3

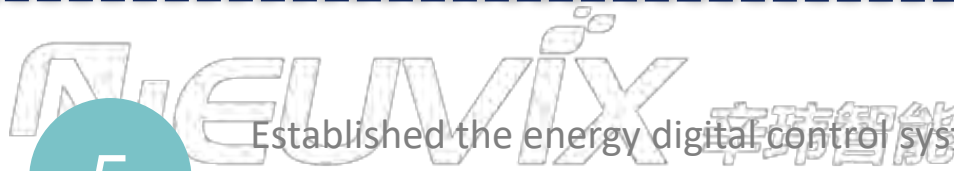
Shore Power 2.0: The world's largest 8MW shore power system for container terminals

- ✓ Achieve **100% shore power coverage for all berths** and maintain regular use

4

The cleanest crane and crane maintenance site for container terminals in the world

Highlights of Green Port Construction



5

Established the energy digital control system of Pacific International Company

6

Realized real-time trend prediction of environmental indexes such as atmospheric suspended particles, wind speed, wind direction, humidity, etc.

7

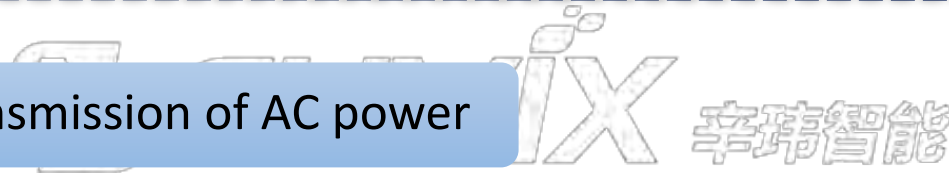
Established Marine biodiversity monitoring system
Continuously monitor the ecological and environmental characteristics of the waters in front of the dock

8

Smart integrated control center
Achieve centralized monitoring and unified management of all elements, processes, and data

Smart Energy Management Platform Development - By Neuvix

1. Real-time collection and transmission of AC power



Loading bridge



High pole lamp street lamp



stand-alone building



Electricity facilities



Intelligent instrument

High-precision smart meters and data collection terminals are used to gather data from 191 AC points, including quay cranes, single buildings, high mast lights, streetlights, and electrical facilities. This data is transmitted via IoT or 5G, ensuring 100% coverage.

Smart Energy Management Platform Development - By Neuvix

2. Customized collection and transmission of DC power



DC power supply bridge



In view of the particularity of the DC busbar power supply of the field bridge, a customized field bridge DC power collection equipment integrating "DC power collection and calculation device + current shunt device + data wireless transmission device" was developed to meet the DC power collection and transmission needs of the field bridge.

Smart Energy Management Platform Development - By Neuvix

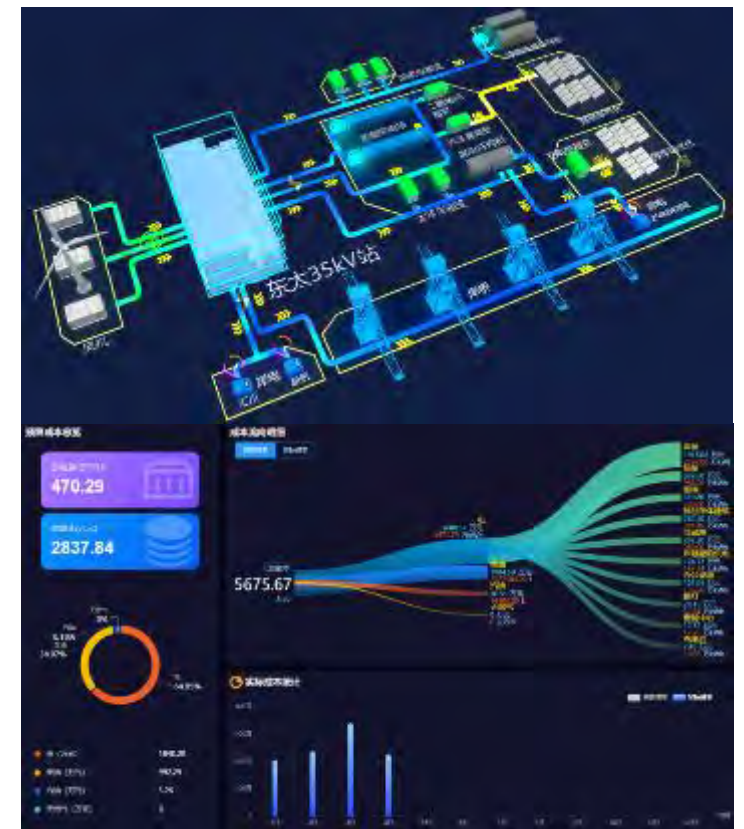
3. Multi-dimensional, full-chain digital supervision management and intelligent analysis between systems



Statistics and assessment of energy consumption performance of operators



Equipment and facility energy consumption analysis and management



Energy flow and cost monitoring and tracking

Smart Energy Management Platform Development - By Neuvix

4. Integration with the panoramic digital twin platform of the terminal



Through the collected on-site energy consumption data, a unified data center is established, data models are constructed for the energy elements of the terminal site, and a panoramic digital twin platform of terminal production, safety and energy is built to control the dynamic information of the terminal site in real time, and further promote the construction of the smart port.

Smart Energy Management Platform Development - By Neuvix

5. Comprehensive management and control of energy supply side



Wind power clean energy



Photovoltaic clean energy

Build clean energy supplies such as wind power and photovoltaics, manage the supply and monitor the status of clean energy through multi-energy coordination and storage methods, replace "city electricity" with "green electricity", complete the transformation from "city electricity" to "green electricity" from the energy supply side, and achieve self-generation and self-use of green energy.

Smart Energy Management Platform Development - By Neuvix

6. Low-carbon transformation on the energy consumption side

智能



- Clean transformation of energy consumption links
- Electromechanical iteration of port machinery
- Electrification of non-road mobile machinery
- Charging facilities are popularized
- Achieve low-carbon transition in energy consumption

CONTACT US



Shang Hai

Contact person :

Li, Liu

(86) 189-5670-7236

(852) 4676-4186

Address :

Room 06, Building 18, No. 100
Jungong Road, Yangpu District,
Shanghai

Tianjin

Contact person :

Jianchao, ZHANG

(86) 139-2012-2004

(852) 4676-4186

Address :

Room 401, Building B2, Animation
Building, Sino-Singapore Eco-City, Binhai
New District, Tianjin

Hong Kong

Contact person :

Coco CHEN (86) 187-8198-8816

(852) 9376-3337

Address :

Room 641, 6th Floor, Building 19, Phase 3,
Hong Kong Science Park, Shatin, New
Territories, Hong Kong

Unlocking boundless possibilities
for the future.

