

China-ASEAN Port Cities Cooperation Network
International Exchange and Training

Smart Port Construction

智慧港口建设

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Port Evolution

1992, United Nations Commission for Trade Development
*Principles for the development and improvement of port's
modern management and organization*

-1950
Transport
hub

1950-1980
Transportation
and service
center

1980-1990
Trade and
logistics center

1990-2010
Informatization and
flexibility of port and
shipping alliance &
Ports Cooperation
alliance

2010-
environmental-
friendly, low
carbon, IOT,
intelligent

Definition of Smart Port

The base: modern infrastructure and equipment;

The core: integration of new generation information technology such as cloud computing, big data, Internet of things, mobile Internet, intelligent control and port transportation business;

The driving force: the innovation of port transportation organization and service;

The guarantee: perfect system mechanism, laws and regulations, standards and specifications, and development policies;

Definition of Smart Port

Optimal allocation of port resources;

To meet the requirements of multi-level, agile and high-quality port transportation services,

A new type of modern port transportation with distinct characteristics production intelligence, management wisdom, service flexibility and strong guarantee.

Characteristics of Smart Port

- Modernization of port infrastructure and equipment
- Deep integration of new generation information technology and port business
- Intelligent automation of port production and operation
- Cooperation and integration of port operation organizations
- Agility and flexibility of port transportation service
- Intelligence of port management decision.

Function of Smart Port

- Perception
- Information integration and processing
- Information publishing and sharing
- decision support

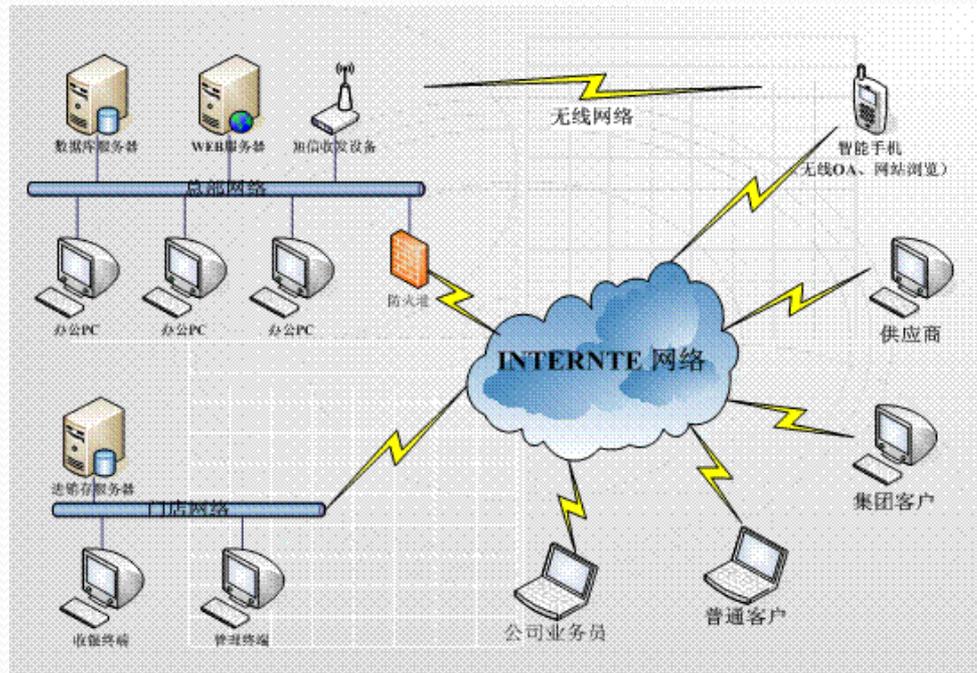
Function of Smart Port

- Perception



Function of Smart Port

- Information integration and processing
- Information publishing and sharing



Function of Smart Port

- decision support



Rotterdam Port

1. Improve port operation efficiency and intelligent level.
2. Build a developed hinterland transportation network.
3. Application of modern information technology.
4. Innovate port logistics chain coordination service.
5. Promote environmental-friendly and sustainable development of the port.
6. Build a good port ecosystem.

Rotterdam Port

1. Improve port operation efficiency and intelligent level.



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2. Build a developed hinterland transportation network.



Rotterdam Port

3. Application of modern information technology.



Rotterdam Port

4. Innovate port logistics chain coordination services.



Rotterdam Port

5. promote environmental-friendly and sustainable development of the port.



Rotterdam Port

6. Build a good port ecosystem.



Singapore Port

2016, Singapore port put forward *the port strategy of 2030*, making it clear to build a smart port with high efficiency, intelligence, security, environmental-friendly and sustainable development.

Singapore Port

1. Optimize infrastructure, technological innovation and application.
2. Establish an active and effective incentive mechanism through regulations, taxes and incentives
3. Strengthen port logistics supply chain Coordination services.
4. Integration of smart environmental-friendly concept into port system engineering.
5. Implement the port ecosystem strategy.

汉堡

- 2012/10, *port development plan 2025* was issued.
- Aiming at building a safe, efficient, collaborative, environmental-friendly and sustainable “smart port”,
- Put forward the concept of port logistics service chain, focusing on the intelligent terminal operation, logistics value chain service, port service upgrading, ecological environment optimization to promote the construction of smart port.

Hamburg Port

1. Strengthen the construction of port logistics infrastructure and improve the automation productivity of port.
2. Improve the intelligent level and efficiency of port operation.
3. Optimize the service system of the hinterland multimodal transport network, and build an intelligent transport system from the aspects of land transport, water transport and railway transport
4. build a modern control center and port big data center, build a customer-oriented e-commerce platform PORTlog, and provide integrated services for customers in the logistics chain such as cargo owners, warehouse operators, shipping companies, freight forwarders, etc.
5. promote the construction of the port ecosystem from the aspects of innovating policy services, promoting the harmonious coexistence of port industry and city, strengthening port shipping cooperation, enhancing value chain services, and strengthening the construction of ecological and human environment.

China's Smart Port

2017/01/24, China Ministry of transport issued a notice decide to carry out the smart port demonstration project.

To promote the internet + port application,

To explore the new mode of internet services such as electronic waybill and online settlement,

To promote the application of Beidou System in port production and logistics,

To improve the port logistics information system based on cloud architecture.

China's Smart Port

On January 24, 2017, China Ministry of transport issued a notice decide to carry out the smart port demonstration project.

Efforts should be made to innovate the logistics service mode , safety monitoring and supervision mode with the port as the hub,
To promote the realization of the port logistics operation system with one single freight system and one information network,
To promote the improvement of port informatization and intelligence level in China through demonstration.

China Smart Port Demonstration Project

2017/06/08, the general office of China Ministry of transport issued the notice on publishing the list of smart port demonstration projects, announced 13 smart port demonstration projects in 10 provinces (districts and cities).

- 1.大连港“壹港通”智慧物流跨界服务大平台示范工程（大连港集团有限公司）
- 2.京津冀协同下的“一键通”大宗干散货智慧物流示范工程（河北港口集团有限公司）
- 3.港口企业危险货物智能化安全管理示范工程（唐山港集团股份有限公司）
- 4.京津冀港口智慧物流协同平台示范工程（天津港（集团）有限公司）
- 5.港口物流电商云服务平台示范工程（青岛港国际股份有限公司）
- 6.海江河全覆盖的港口安全监管信息平台示范工程（江苏省交通运输厅港口局）
- 7.江海联运一体化全程物流供应链港口智慧物流示范工程（南京港（集团）有限公司）
- 8.基于港口网络的江海联运智慧物流示范工程（上海国际港务（集团）股份有限公司）
- 9.港口企业危险货物标准化程序化智能化管理示范工程（宁波舟山港股份有限公司）
- 10.厦门国际航运中心港口智慧物流平台示范工程（厦门港务控股集团有限公司）
- 11.省级港口危险货物安全监管综合服务平台示范工程（福建省港航管理局）
- 12.互联网+港口物流智能服务示范工程（广州港集团有限公司）
- 13.面向内河中小港口多式联运智慧物流平台示范工程（安徽皖江物流（集团）股份有限公司）

Achievements of China's smart port construction

(1) the construction of fully automated terminal, unmanned and intelligent terminal operation.

- Qingdao port and Shanghai port adopt the production scheme of "remote control double trolley quayside bridge + automatic guided vehicle (AGV) + automatic control rail crane".
- Under the unified planning, unified scheduling and other business instructions of the terminal operation system (TOS), different terminal operation units cooperate and orderly carry out work, continuously improve the terminal operation efficiency and save more than 70% of the terminal manpower.

Achievements of China's smart port construction

- (2) Optimize the coordination of port land transportation business and improve the operation efficiency of wharf and truck fleet.
- The "e-card vertical and horizontal" platform of Shanghai port, the intelligent logistics collaborative platform of Xiamen port, and the e-commerce platform of Tianjin port all adopt the appointment system of container trucks, reasonably arrange the inbound operation of Container trucks, and reduce the waiting time of container trucks in the port. At the same time, optimize the overall operation scheduling of the terminal, effectively improve the transport efficiency of truck fleet and port operation efficiency, and optimize the port collection and distribution system.

Achievements of China's smart port construction

(3) promote the application of new technologies in different business sectors and help port transformation and upgrading.

- Hebei Port Group applies multi-functional terminals based on Beidou System in port operation vehicles, ships and port operation mechanical equipment to realize positioning, monitoring, anti-collision and visual management;
- Qingdao port built the first private cloud platform for domestic port and shipping enterprises;
- Tianjin Port speeds up 5G network deployment, realizes 5G panoramic HD video return function driverless container truck and 5G + MEC based scheme is applied to the cargo individual inspection business.

Achievements of China's smart port construction

- (4) The construction of port unified cloud data center and electronic business documents, and standardize the internal and external, upstream and downstream data transfer.
- Tianjin Port has completed the electronization of the main business documents of 18 kinds of port operations, such as manifest, release, entrance and exit,
 - Qingdao port has completed the electronization of 20 kinds of port operations business documents,
 - Shanghai port has saved ¥ 400 million of printing and transfer cost every year by implementing the paperless EIR.

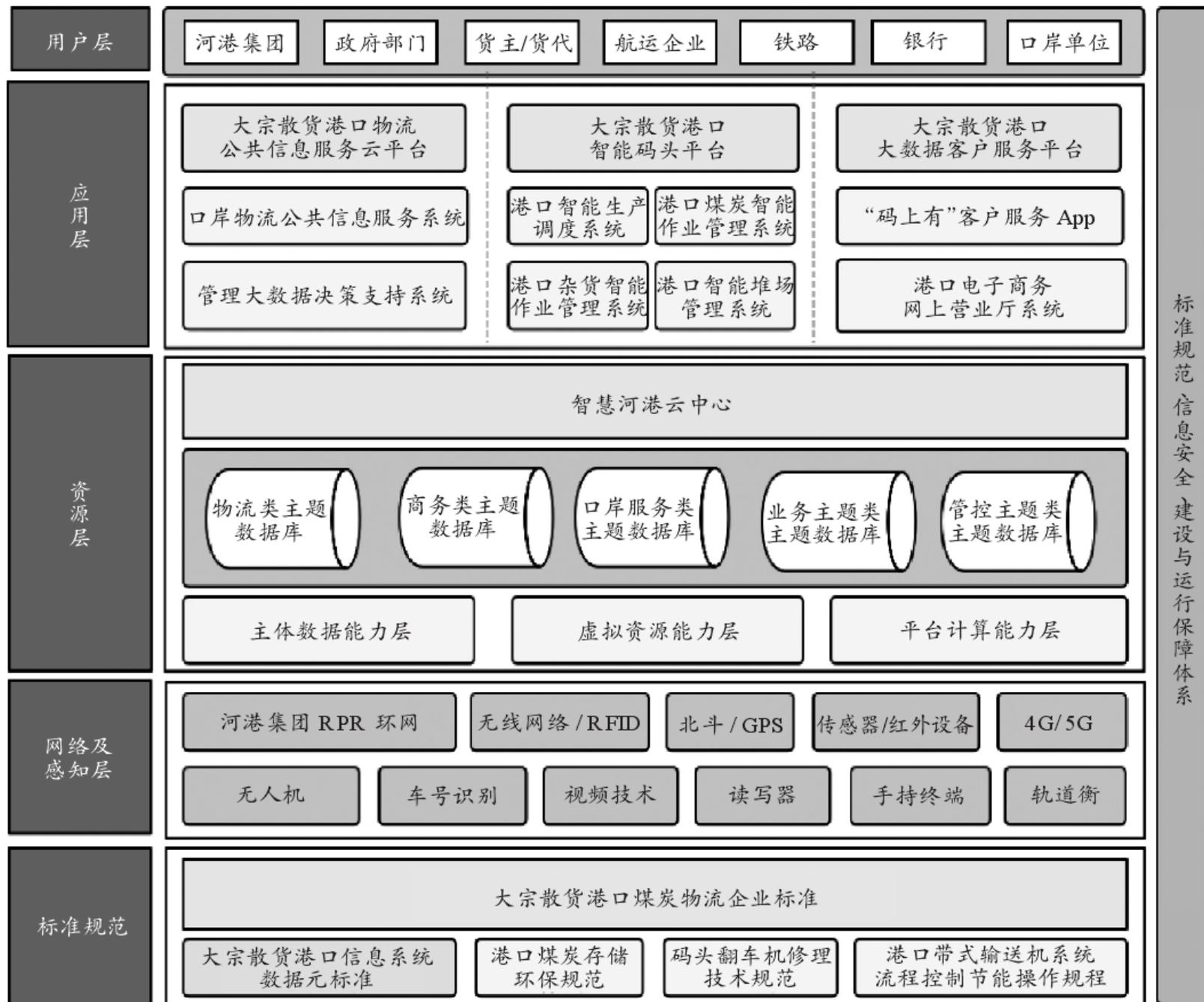
Achievements of China's smart port construction

- (5) Port logistics chain information sharing and coordination, and innovation of port logistics operation mode.
- The collaborative platform of river sea intermodal transport business constructed by Shanghai Port , between Shanghai port and Yangtze River port, realizes the coordination of river sea intermodal transport loading and unloading operations and customs clearance business, realizes the series connection and whole process visualization of related businesses, and improves the port supply chain business collaborative ability;
 - Dalian port takes port as the core, integrates the information resources of multimodal transport business, constructs the inland integrated collection and distribution system, and promotes the upstream and downstream Logistics node operation coordination and information sharing, effectively supports the container rail water intermodal transport business. ◦

Achievements of China's smart port construction

(6) The application of a variety of intelligent sensing means to promote port dangerous goods to achieve all-round supervision.

- Ningbo/Zhoushan port uses high-resolution remote sensing mapping, video monitoring, UAV (unmanned aerial vehicle) and other intelligent acquisition terminals, through 3D modeling and geographic information system (GIS) and other technologies, to realize 2D, 3D integrated visualization and full space video display of key areas of dangerous goods, and to improve the level and ability of port dangerous goods supervision.



标准规范信息安全建设与运行保障体系

图 1 河北港口集团智慧港口总体框架

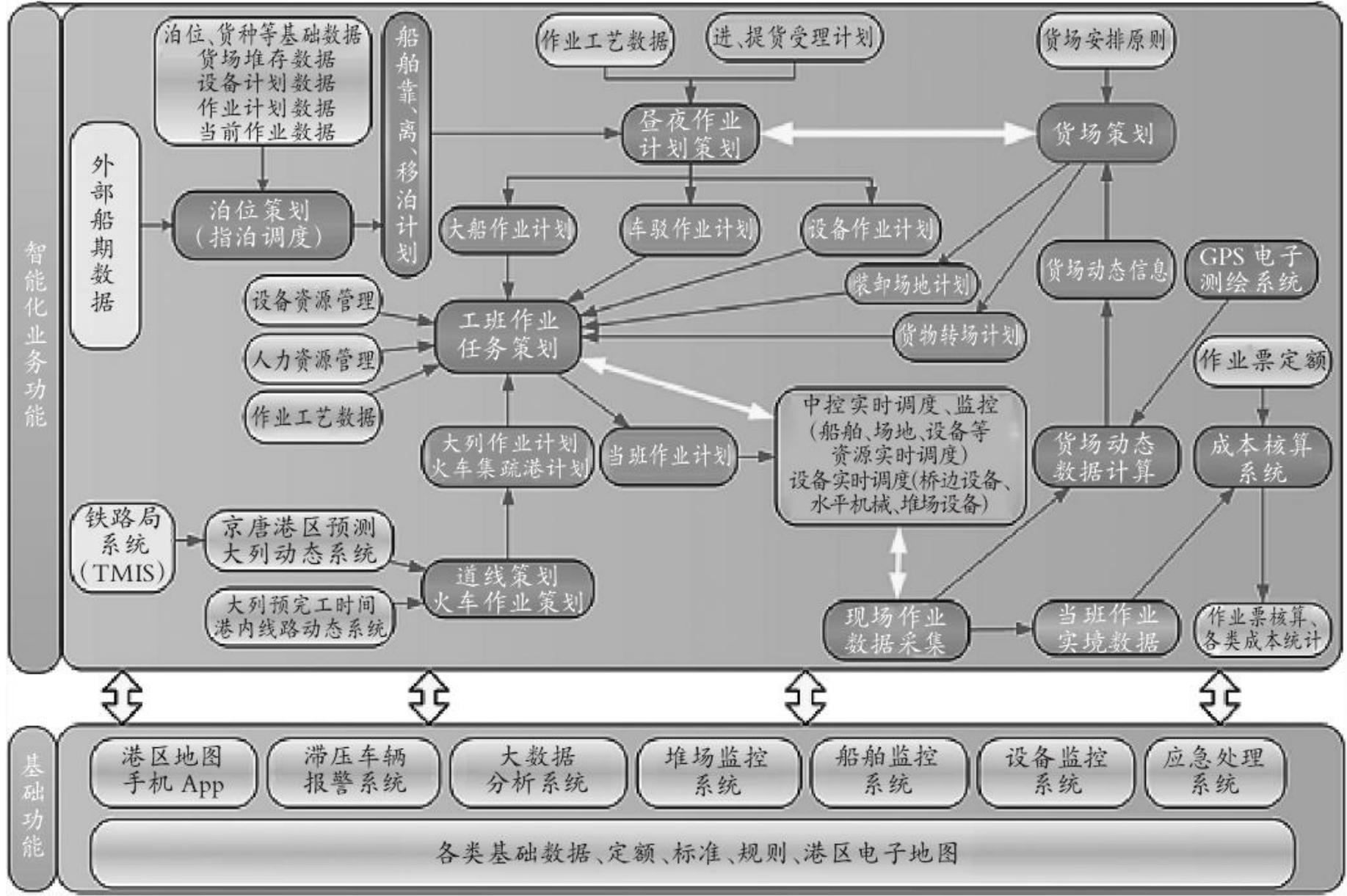


图 1 唐山港智慧生产业务流程与功能模块结构示意图



Thank you!