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## NOTES

This is the compilation of papers for the 8th Congress of the International Association of Institutes of Navigation (IAIN) held in Beijing, China, in Sep. 6 - 11, 1994. Among 69 papers received before Aug. 10, 1994, 49 are for presentation and 19 for supporting purpose. Since it is photo-printed, all the papers remain the same as they are received.

## CONTENTS

### NAVIGATION PLANS AND TRENDS

1. CHINA'S SHIPPING TOWARDS THE 21ST CENTURY 9-28  
LIN ZUYI (CIN)
2. INSTITUTIONAL REQUIREMENTS FOR A GLOBAL NAVIGATION SATELLITE SYSTEM 28-36  
D.W. BROUGHTON, W.F. BLANCHARD (RIN)
3. THE INSTITUTIONS OF AN INTERNATIONAL GNSS 37-43  
O. CHREL (IFN)
4. THE 1994 FEDERAL RADIONAVIGATION PLAN 44  
FRANK TUNG (USION)
5. PLANNING FOR THE FUTURE AIR NAVIGATION SYSTEM 45-51  
F. TOMASELLO (IIN)
6. PERSPECTIVE ON GNSS CIVIL AVIATION APPLICATION TOWARDS THE 21ST CENTURY 52-70  
ZHOU QIHUAN, WEI XIONGZHI, CHEN HUIPING (CIN)

### SATELLITE NAVIGATION

1. IONOSPHERICALLY CORRECTED DGPS  
E. ENGLER, N. JAKOWSKI, D. KLAHN (DGON)
2. SATNAV, A NEW MEANS TO IMPROVE FLIGHT SAFETY 72-79  
J. GROSSIN (IFN)
3. INS/GPS/CNS INTEGRATED NAVIGATION SYSTEM 80-92  
SUN JIANFENG, SHEN GONGXUN
4. GLONASS—ALTERNATIVE AND SUPPLEMENT FOR GPS  
A. JUNGSTAND, E. T. KNICKMEYER (DGON)
5. SINGLE FREQUENCY C/A CODE GPS POSITIONING METHOD WITH 93-108  
POSITIONING ACCURACY OF LESS THAN 1 METER  
WU GUANGHUA (CIN)
6. SATELLITE & TERRESTRIAL NAVIGATION 109  
S. ANDERSON, J. B. BEUKERS, F. C. SAKRAN JR, DR. ANDREW STRATTON

## MARITIME NAVIGATION

1. NEW DEVELOPMENTS IN SHIP WEATHER ROUTING 111-119  
J. A. SPAANS (NIN)
2. AUTOMATED WEATHER ROUTING SYSTEM USING INMART-DATA  
COMMUNICATION 120-127  
H. HAGIWARA, S. KUWASHIMA, R. SUZUKI, M. HIGASHI, M. TANAKA  
(JIN)
3. THE RESEARCH AND DEVELOPMENT OF ELECTRONIC DISPLAY AND  
INFORMATION SYSTEM IN CHINA 128-146  
GUO XING, ZHAO DEPENG (CIN)
4. COMPUTATION OF THE TRUE COURSE OF THE TARGET SHIP FROM ITS  
IMAGE AT SEA 147-154  
Y. HAYASHI, N. WAKABAYASHI, T. KITAHASHI, H. WAKE (JIN)
5. OPENING OF THE NORTH SEA ROUTE - THE GATEWAY FROM EUROPE TO  
THE FAR EAST  
E. HAAVIK (NNF)
6. COMPUTER AIDED PASSAGE PLANNING AND NAVIGATION 155-162  
C. A. SCHEELE (NIN)
7. THE INMARSAT - 3 NAVIGATION PAYLOADS WAYPOINTS TO RADIO-NAVIGATION  
IN THE 21ST CENTURY 163-172  
J. NAGLE (INMARSAT)

## AERONAUTICAL NAVIGATION

1. NAVIGATION AND DATA LINK 174-181  
C. BOILEAU, J. M. JUD, O. GUIRAUD (IFN)
2. FLIGHT TESTING OF THE KINEMATIC LANDING SYSTEM  
C. E. COHEN, H. S. COBB, B. S. PERVAN (USION)
3. AVAILABILITY INVESTIGATION OF THE APPLICATION OF DGPS FOR  
PRECISION APPROACHES OF TRANSPORTATION 182-200  
HOU FUDI (CIN)
4. EUROPEAN BRITISH AIRWAYS ETOPS FLIGHT PLANNING AID 201-209  
P. E. MOORE (RIN)
5. FROM ILS TO MLS  
J. SCYBOLD (DGN)
6. FRENCH ACTIVITIES IN DATA LINK MODES & EARLY APPLICATIONS OF  
DATA LINK SUCH AS ADS (IFN) 210-217

## LAND AND INLAND NAVIGATION

1. SECURING NAVIGATION IN ASWAN HIGH DAM LAKE 219-228  
S. BALBAA
2. LOW COST POSITIONING SYSTEM FOR LOCALIZING GROUND VEHICLE 229-237  
BECHTER, COIFFET (IFN)
3. MOBILE COMMUNICATIONS LAND VEHICLE NAVIGATION 238-245  
B. EYLERT (DGON)
4. SAFETY & VTS  
J. MEINE (DGON)
5. MODELLING SAFETY MEASURES AS A TOOL IN RISK MANAGEMENT FOR  
INLAND WATERWAYS 246-255  
D. VAN DER BRAND, C. J. M. VAN DER KRAATJ (NIN)
6. GPS POSITIONING FOR FIELD MEASUREMENT APPLICATIONS 256-263  
J. FANTOU (IFN)

## MARITIME SAFETY

1. ANALYSIS OF AND MEASURES FOR SAFE-MOORING OF ULTRA-LARGE VESSELS  
LEI HAI (CIN) 265-336
2. STUDY FOR EFFECTIVE HUMAN-COMPUTER INTERACTION-DESIGNING THE USER  
FRIENDLINESS OF THE NAVIGATIONAL EQUIPMENT  
K. NISHIMURA (JIN)
3. THE EVOLUTION OF NAVIGATION LIGHTS FOR SHIPS 337-344  
J. F. KEMP (RIN)
4. MARINE CASUALTIES IN RELATION WITH NAUTICAL DOCUMENTS AND  
NAVIGATION SYSTEM, PAST, PRESENT AND FUTURE 345-353  
J. N. PASQUAY (IFN)
- ✓ 5. IDENTIFICATION & MONITORING OF VESSELS IN VTS AREA 354-361  
M. VULTGGIO (IFN), HAN GUANGYU (CIN)
6. ASPECTS OF DGPS FOR MODERN SHIPS  
(DGON)

## AREONAUTICAL AND MARITIME SAFETY

1. SATELLITE-BASED SECONDARY SURVEILLANCE RADAR SYSTEMS CONCEPTS  
G. GALATI, R. MURA (IIN) 363-374
2. STCA VERSUS TCAS, SAFETY NETS IN AIR TRAFFIC CONTROL  
H. MENSEN (DGON)
3. AN AIRLINE'S VIEW ON FUTURE LANDING AND APPROACH SYSTEMS 375  
W. JURZIG (DGON)
4. STUDY ON A SIMPLE GUIDANCE SYSTEM FOR HEAVY WEATHER OPERATION  
T. ISEKI, K. OHTSU, T. HOTTA (JIN) 376-383
5. ORGANIZATION AND CONTROL OF AIR, LAND & SEA TRAFFIC FLOWS  
J. L. GUIBERT (IFN) 384-393
6. ANALYSIS OF COLLISION OCCURRING IN MEDITERRANEAN SEA 394-428  
M. A. NUTTALL (AIN)

## EDUCATION AND TRAINING

1. DEVELOPMENT IN ELECTRONIC INFORMATION TECHNIQUES AND NAUTICAL  
EDUCATION 430-440  
SUO JIDONG, LIU XIAOMING, ZHANG RUNZE, WANG YANCHIU (CIN)
2. AN INTELLIGENT TUTORING SYSTEM FOR MARITIME TECHNOLOGY 441-449  
Y. S. EL-GAMAL (AIN)
3. COCKPIT EXPERIENCE FOR SINGLE MAN BRIDGES 450-457  
G. ROTONDO, A. GAMBARDILLA, A. FLEGO, M. RALLI (IIN)
4. THE BREAKDOWN OF A DIGITAL NAVIGATION 458-461  
A. H. J. V. VAN, OORSCHOT (NIN)
5. DRS-90 ATC RADAR SIMULATOR 462-471  
YU ZHISHENG, ZHANG DAHONG, NE JIANSUN (CIN)
6. MARITIME EDUCATION FOR INTELLIGENT SHIP ERA 472-481  
E. M. A. GALIL (AIN)

## SUPPORTING PAPERS

1. ECDIS - AN INTEGRATED NAVIGATION SYSTEM 484-492  
CPT. J. PFEIFFER (DGON)
2. THE POSSIBILITIES OF ONBOARD HIGH CAPACITY NETWORKS 493-500  
P. REAGENT (IFN)
3. PRECISE GEODETIC POSITIONING IN SUPPORT OF NAVIGATION  
P. WILLIS, C. BOUCHER (IFN)
4. THE NAVIGATION INFORMATION PROCESSING SYSTEM IN ECDIS 501-513  
SUN WENLI, LI DINGYOU (CIN)
5. DIFFERENTIAL GPS AND THE HIGH ACCURACY NAVIGATION SYSTEM ALONG  
THE CHINESE COASTLINE. 514-519  
JI WEIRONG, YANG YONGKANG, FANG NAIZHENG (CIN)
6. MICE AND SAILORS FOR THE SAFETY OF NAVIGATION 520-528  
X. LEFEVER (IFN)
7. TOWARDS A TRAFFIC CONTROL HARMONIZED WITH COASTAL PROTECTION  
P. REAGENT (IFN) 529-536
8. DETERMINATION OF UPPER BOUND OF MOISTURE CONTENT OF NICKEL  
ORE IN BULK  
S. OHTA (JIN)
9. SAFETY AND ENVIRONMENT  
TRUGGERI (IIN)
10. THE SHIP COLLISION AVOIDANCE AUTOMATION SYSTEM IN THE FUTURE  
YANG BAOZHANG, SHI AIGUO, KANG DIANG, YUE FENG (CIN) 537-557
11. SAFETY INDEX & ITS APPLICATION IN VESSEL TRAFFIC SAFETY  
EVALUATION 558-566  
WU ZHAOLIN, WANG FENGCHEN, FANG XIANGLIN, XU DEXING (CIN)
12. AUTOMATIC COLLISION AVOIDANCE SYSTEMS: TOWARDS 21ST CENTURY  
ZHAO JINSONG (CIN) 567-576
13. THE ROLE OF METEOROLOGY & OCEANOGRAPHY IN THE DEVELOPMENT OF  
SAFETY NAVIGATION AIDS & ENVIRONMENTAL PROTECTION. 577-582  
LT. COL. GIAN CARLO RUGGERI (IIN)

14. POSSIBLE MAP PROJECTIONS FOR PLAN VIEW DISPLAYS IN ATC 583-592  
V. NASTRO, A. RUSSO (IIN)
15. ACAS - AN AIRBORNE COLLISION AVOIDANCE SYSTEM 593-600  
F. CASAUX (IFN)
- ✓ 16. A NEW CRISIS OF SHIPPING WORLD, A TALENTED PERSON AND NEW  
PATTERN FOR CONTINUING EDUCATION IN THE 21ST CENTURY 601-612  
MA ZHONGXIN (CIN)
17. QUALITY ASSURANCE IN THE TRAINING OF SHIPS OFFICERS 613-619  
R. HAIGH, AUSTRALIAN MARITIME COLLEGE LANNCESTON TASMANIA  
(AUN)
18. AN INTEGRATED NAVIGATION SYSTEM FOR MARINE APPLICATION  
WU XIFU, C. RIJOS, SCHOOL OF GEOMATIC ENGINEERING, THE UNIVERSITY  
OF NEW SOUTH WALES, SYDNEY, AUSTRALIA (AUN) 620-627
19. A FEW QUESTIONS ON THE GNSS INSTITUTIONS 628-633  
OLIVER CAREL (IFN)



## NAVIGATION PLANS AND TRENDS

1. CHINA'S SHIPPING TOWARDS THE 21ST CENTURY  
LIN ZUYI (CIN)
2. INSTITUTIONAL REQUIREMENTS FOR A GLOBAL NAVIGATION SATELLITE  
SYSTEM  
D.W. BROUGHTON, W.F. BLANCHARD (RIN)
3. THE INSTITUTIONS OF AN INTERNATIONAL GNSS  
O. CHREL (IFN)
4. THE 1994 FEDERAL RADIONAVIGATION PLAN  
FRANK TUNG (USION)
5. PLANNING FOR THE FUTURE AIR NAVIGATION SYSTEM  
F. TOMASELLO (IIN)
6. PERSPECTIVE ON GNSS CIVIL AVIATION APPLICATION TOWARDS THE  
21ST CENTURY  
ZHOU QIHUAN, WEI XIONGZHI, CHEN HUIPING (CIN)

# **China's Shipping towards the 21st Century**

**Mr. Lin Zuyi, President of  
China Institute of Navigation**

## **I. Introduction**

As a maritime nation, China has a long ocean-shipping history, the shipping industry plays a vitally important role in her national economy. Since the founding of the People's Republic of China, especially since the Reform and Opening to the Outside, with the development of the domestic economy, the country's shipping industry and navigational technology have witnessed dramatic progress.

Starting from the late 1980s, China has already stepped into the top rank of the ten biggest maritime nations of the world. In recent years, the fast growth of national economy and the success of international economic cooperation have further promoted China's maritime industry. In 1993, China's cargo transportation grew to 980 million tonnes, cargo turnover reached 1,3672 billion ton/km; passenger transport volume achieved 270 million men/trips, with a turnover of 19.8 billion men/kms. The major ports handled 950 million tons of cargo, among which 250 million tons were for foreign trade. The volume of containers handled has been growing at double digits for 13 consecutive years since 1981, reaching 3 million TEU in 1993, which amounted to 263.3 million tonnes, a 36% growth over the previous year. As of the end of 1993, there are 190 companies engaged in international shipping service, and a combined capacity of 218 million DWT.

China's shipping community will strive to accomplish all the tasks for the remaining final years of the 20th century, and career into the 21st century with new prowess.

## **II. 21st Century, the Golden Age for the Development of China's Maritime Industry**

1. 21st Century's Economic Development Trends for China and the World Peace and Development are the two themes for the world today. Economic development requires social stability. International shipping and that of each and every country are closely linked with the stability and to their respective future

economic development speed.

The world economy, in comparison to the pre-1990s, presents a new robust growth tendency. The past economic situation underwent changes mainly as a result of the play of political elements, nowadays, however, economic elements have become decisive factors. The development of world economy is subject to two exterior forces, namely the mutually-pervasive, interdependent, reciprocating interplay upon each other between the economy, trade of all the countries, on the other hand, in the process of national economic development of the countries, different nation will inevitably be inclined towards protection of their own interest or regional interest stemming from consideration of their specific situations, thus leading to trade and economic friction. But, in review of the recent years development, the former is encouragingly found to be predominating and this force has already become and is promoting world economic integration and fostering group development. This tendency is represented by the emergency of economic community, free trade area and unified market in some regions of the world. The regionalization as well as formation of unified market will have their profound effects on the 21st century's world economy and trade, which will naturally affects transportation.

For a long time, China, together with all other nations of the world have made persistent efforts to uphold world peace and develop trade and economy in which we are developing a socialist market economy at home, while at the international side, we are trying to reenter GATT. As a big country with a vast population and high speed economic growth, China will certainly have a great impact on the future international economy and trade development.

2. 21st-Century economic development at home and abroad offers excellent expansion opportunities for China's maritime industry.

New trends in world economy have boosted the growth of world trade. According to statistics, from now to the turn of the century, world GNP growth will keep at 3% per annum, whereas the growth of world trade will reach 5% per year. World trade has already been growing faster than economic growing for the preceding successive ten years, this momentum will be enduring right to the end of century, or even onto further future. All these show that the international market is growing, this in turn, provides favorable opportunities for international transportation

to grow.

Let's look at the features and structure of the cargo transportation of the 21st century: firstly, the percentage of cargoes suitable for containerized transport will continue to grow; secondly, the proportions of primary products and semi-processed or processed products among the cargoes for carriage will vary considerably. In view of the fast domestic and international containerization process, the loading condition and operating speed improvement of the fleet, on top of the inherent advantages of large volume and low charge of ships, maritime transportation will still be the major movement method for international commodity trade.

In recent year, China's GDP has been growing rapidly, and broke the line of RMB 3,000 billion for the very first time in 1993, it was a growth of 13.5% over the year before, the biggest growth ever since 1985, making China the fastest growing country in terms of economy. Along with the expansion of Opening to the Outside into deeper stratum and new areas, by 1993, the total volume of our foreign trade has grown to USD 195.72 billion, a hefty 18.2% growth over the previous year, of which, export accounts for USD 91.77 billion, an annual growth of 8% against 1992, while import hit USD 103.95 billion, 29% increment over 1992. In 1993, the country increased nearly 100,000 projects using foreign funds with an actual foreign capital input of USD 33 billion, of which, USD 24 billion were of direct investments.

Chinese Governments has always been emphasizing the development of the maritime industry, for the transportation of cargoes for international trade, so as to create favorable conditions for the national economy to continue its fast, healthy, continued growth, and for the smooth implementation of reform measures. New trends of national and international economic development will provide further development opportunities for China's maritime industry, and also provide excellent chances for China to catch up with the world's medium-level developed countries by the middle of the 21st century.

### **III. Development Direction of the 21st Century Maritime Industry of China**

#### **1. Continuation of Reform & Opening Policy, Strengthening of International Transport Cooperation.**

In recent years, international cooperation of the maritime

industry of China has achieved drastic growth. By the end of 1993, 43 governmental maritime agreements have been concluded. Apart from receiving loans from world's financial institutions and foreign governments, substantial progress has been made in direct investment in port infrastructure by foreign businessmen, besides, contracting for oversea engineering projects and seamen service cooperation have also been gratifying in result.

China will follow her reform and open policies, seize all opportunities, deepen reform, expand opening, advance development and keep the social stability, will be the country's general situation. In the maritime industry, China will also take every good opportunity that offers and broadens its interantional cooperation. In the field of infrastructure construction, we'll resort to more foreign sources of financing. Joint venture in the construction and operation of public docks and berths is encouraged; joint venteres are also allowed to lease docks without facilities and engage in stevedoring business; subject to the uniform management of the port and navigation authorities, foreign investors can construct and operate their dedicated port areas and docks, including public berths in the said area, servicing cargo/passenger transport of the development zones when they invest in and develop tracts of land; sino-foreign joint venture or sole foreign investment are encouraged to construct large scale transport facilities, etc.. On the transport service market, on the basis of equality and mutual benefit, foreign shipping companies are allowed for their own vessels or operated ships to issue bills of lading, canvass cargoes, settle accounts and sign contracts.

While marching towards the 21st century, China will expand her cooperation with the maritime nations of the world.

## 2. Full-scale Application and Development of Novel Navigational Science and Technology

With the continual increase in size and speed of the ships and also the growth in number, stricter demands for safety of navigation and efficiency in operation are made. New developments in science and technology, with electronics, telecommunication, and computers can make powerful guarantees for navigation safety and high efficiency of operation.

Over the recent years, along with the renewal of the fleets of China's shipping companies, more and more ship navigaton, control,

safety and telecommunication systems have been installed on ships and applied to management. China's navigation for the 21st century will take full advantages of modern high technology, applying and developing them side by side.

#### 1) Development and Perfection of Ocean Navigation and Safety Guarantee Systems

In pace with the development of scientific and technological progress in domestic and international shipping fields, the ocean-shipping companies, Maritime groups, and some major local shipping companies have installed ARPA devices on their ships to a very large extent, GPS systems have been put in place, currently, they are renewing and acquiring appropriate apparatus and devices required of in the implementation of GMDSS according to the time table set therefore. Our country's science and technology research staff have successfully developed Electronic Chart Display Apparatus (ECDIS) and have used the technology in ship and port navigation safety control

In the meantime, China has also stepped up the establishment of shore-based supportive facilities. Following the requirements for implementing GMDSS, our coastal radio stations are being redeployed, and the equipment, and to be either renovated or replaced. On June 3, 1991, IMMARSAT-A Beijing Earth Station was commissioned and became operational, it can provide coverages of the Pacific Ocean and the Indian Ocean and render mobile telecommunication services for both in land and sea customers. At the end of 1992, IMMARSAT -C station also started service. Furthermore, China is building a complete satellite telecommunication service network on the basis of Beijing IMMARSAT Earth Station. Upon completion, the network will give China's transportation-related Telecommunication a completely new appearance, apart from providing a complete variation of services to sea-based users, it can also widely serve the needs of other mobile users.

In addition, VTS systems have either been built or partly constructed in many ports, such as Dalian, Qinhuangdao, Tianjin, Qingdao, Lianyungang, Yantai, Shanghai, Guangzhou, ect, and have entered into service. These VTS systems, with complete series of functions or basically-complete functions have already or are going to exert active influences for vessel traffic management.

To further increase ship navigation safety, apart from the

above efforts in recent years, our technical people have taken full benefit from the present GMDSS, IMMARSAT, GPS, ECDIS, and VTS technologies in further development of high-tech ship-based comprehensive navigation and safety system, exactly speaking, they are ship navigation automatic handling & control artificial intelligence and expert network systems for application for immediate future and for the distant future. The technology in vision is a comprehensive system encompassing different high scientific and technological achievements with global coverage, and all-weather competence; it is of in real-time and high reliability advanced and practical navigation system in telecommunication, positioning, navigation and collision-evasion. With the perfection of the system and reduction of end user's cost, the new system will have an increasing larger and larger scope of application on ships of different classes and categories.

To enhance search and rescue capability and to coordinate between adjacent maritime countries in this regard, our country will further perfect maritime search & rescue bodies/agencies and improve salvage measures. A report mechanism that responds to our specific requirements while accomodating the need to effect maritime search and rescue with their foreign counterparts and relevant international organizations will be established, so as to carry out navigation safety management and supervision more effectively.

Besides, the high speed development of national and international industries and transportation services have also made even stricter requirements for marine environmental protection. To this end, China will make greater efforts to monitor and protect marine environment on the basis of strengthening the pollution preventive institutions and legal, regulative education, pursuant to the requirement and regulations of international marine pollution prevention conversions and through traffic control centre and exclusive information service net.

2) Modern navigation management and lifting transport efficiency.

To accomodate the new developments and new demands of the 21st century, port and navigation management needs to be modernized as a prerequisite.

In the era of high technology and highly efficient production

management, full scope modern port and navigation management and the improvement of transport efficiency depend on three props: scientific management, decision-making process, modern means of management, and managerial staff as experts. So, parallel to introduction of international advanced equipment, technology and managerial skills, China will formulate a complete management methodology which is fit for China's unique socialist market economy and works in unison with acceptable international practices.

Starting from the transport economic development for the rest of the century and the next century, China will strengthen modern transportation management on all aspects, to increase management effectiveness. We'll expand sea-land door-to-door service, provide good liner service, make them convenient, fast, high quality and easily affordable to customers, To achieve these purposes, apart from the establishing of a unified shore-ship management system and strengthening TQC in the shipping companies and on board the ships, EDI will be popularized among the shipping companies in management and business transactions, to guarantee the rationality, effectiveness of management, and the timeliness and correctness of business transactions.

In addition to this, cargo-identification, distribution systems will be built, and the management of port handling equipment and cargo management will become increasingly automatic as an effort to speed up the stevedoring and cargo turnover.

In the past two years, Shanghai Port accomplished Industrial Experiment on International Container Transportation System (INTERMODAL TRANSPORT), and also achieved success in the joint operation of Maritime Transport, Dock Transshipment, and Land Transportation subsystems, the speed of document transaction is quickened. The experiment has achieved manifest comprehensive results, increasing the number of containers handled from the 340,000 TEUs in 1991 to 482,000 TEUs in 1993, the time containers stay in port is shortened from 13.1 days to 9, or even shorter, the time a cargo owner needs to settle foreign currency is shortened to one to one and a half day from the original 2-3days. The successful result is further applied to all the major ports and are currently under continual improvement.

### 3. Better port construction and fleet expansion

China's ports and fleets for transportation are also very



important links for the 21st century international and domestic maritime industry.

#### 1) Port Planing and construction

At present, the country has some 200 more ports of varying sizes, among them, there are 37 ports which have handling capacities of over 1 million tonnes, eleven of them exceed 10 million tonnes each in capacity. The major ports handled 700 million tons of cargo in 1993. To fully tap the development potentials of the 18,000 more km of coastline and 14,000 km of island coastline, China's relevant authorities have carefully considered the development of resources, productivity layout, and rational port distribution to satisfy the need for national economic development and expanding opening to the outside world, a coast port development programme has been made.

The programme consists of the layout of coastal ports of national importance, layout for regionally important ports, the scheme for each single port, and the provision of specialized transport system.

The programme mentioned above has given sufficient consideration to the 21st century's cargo transport structure and characteristics, and the continuation of containerized shipment of China's international trade commodities, and the big changes in store for percentages of primary cargo, semi-processed, or processed products in the volume of transportation, these are physically embodied in the programme. For instance, in the programming for the port of Shanghai, The biggest port of the country, to accomodate Pudong Development, and the need for large vessels to berth, the Chinese Government will carry out dredging works, for the Yangtze River estuary, and construct Waigaoqiao New Port Area in Pudong in the bid to elevate the Port of Shanghai's ability to receive the third and fourth generation container vessels. At the same time, the Port of Shanghai will introduce internationally advanced equipment, technology, and efficient, scientific management methods and means of advanced management, so as to improve its technical performance, ability, and management level to the level of the advanced ports of the world. New proessing zones, bonded areas, foreign investment gardens will cluster around the new port area, forming an international transshipment, warehousing, forwarding center, as for the present port areas, adjustment by function will be carried out, making them