Introduction of Port Management

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Curriculum Vitae

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Education Background

1. Chun-Ang University, **Korea**

Feb, 1990-1992, Feb 1995-1997,

Doctor of International Trade

2.National Taiwan Maritime University, Taiwan on R.O.C

Sep.1987- Jun.1989

Master of Maritime Law

3. National Taiwan Maritime University, Taiwan on R.O.C

Sep. 1983- Jun.1987

Bachelor of Shipping & Transportation Management

Work Experience

- **1.2002-Current**
- National Kaohsiung Institute of Marine Technology,
- Department of Shipping & Transportation Management
- Associate Professor and Head of Department
- **2.1997-2002**
- I-Shou University
- Department of International Trade & Business
- Associate Professor
- **3.1994-1995**
- Din-Shin international Group, China
- Human Research Department
- Manager
- **4.1993-1994**
- Shan-Tai Industrial Group, Taiwan and China
- Marketing Department
- Senior Specialist

1.New challenges for Port Management

- A port is essentially a point where goods are transferred from one mode of transport to another. In an era of economic globalization ports are evolving rapidly from being traditional land/sea interfaces to providers of complete logistics networks.
- This means the ports had to face many challenges due to unpredictable environmental changes and trends in the shipping, port and logistics industries.

1.1 Port functions

- Landlord for private entities offering a variety of services;
- Regulator of economic activity and operations;
- Planning for future operations and capital investments;
- Operator of nautical services and facilities;
- Marketer and promoter of port services and economic development;
- Cargo-handler and stores;
- Provider of ancillary activities.

Integrated View of Port Element

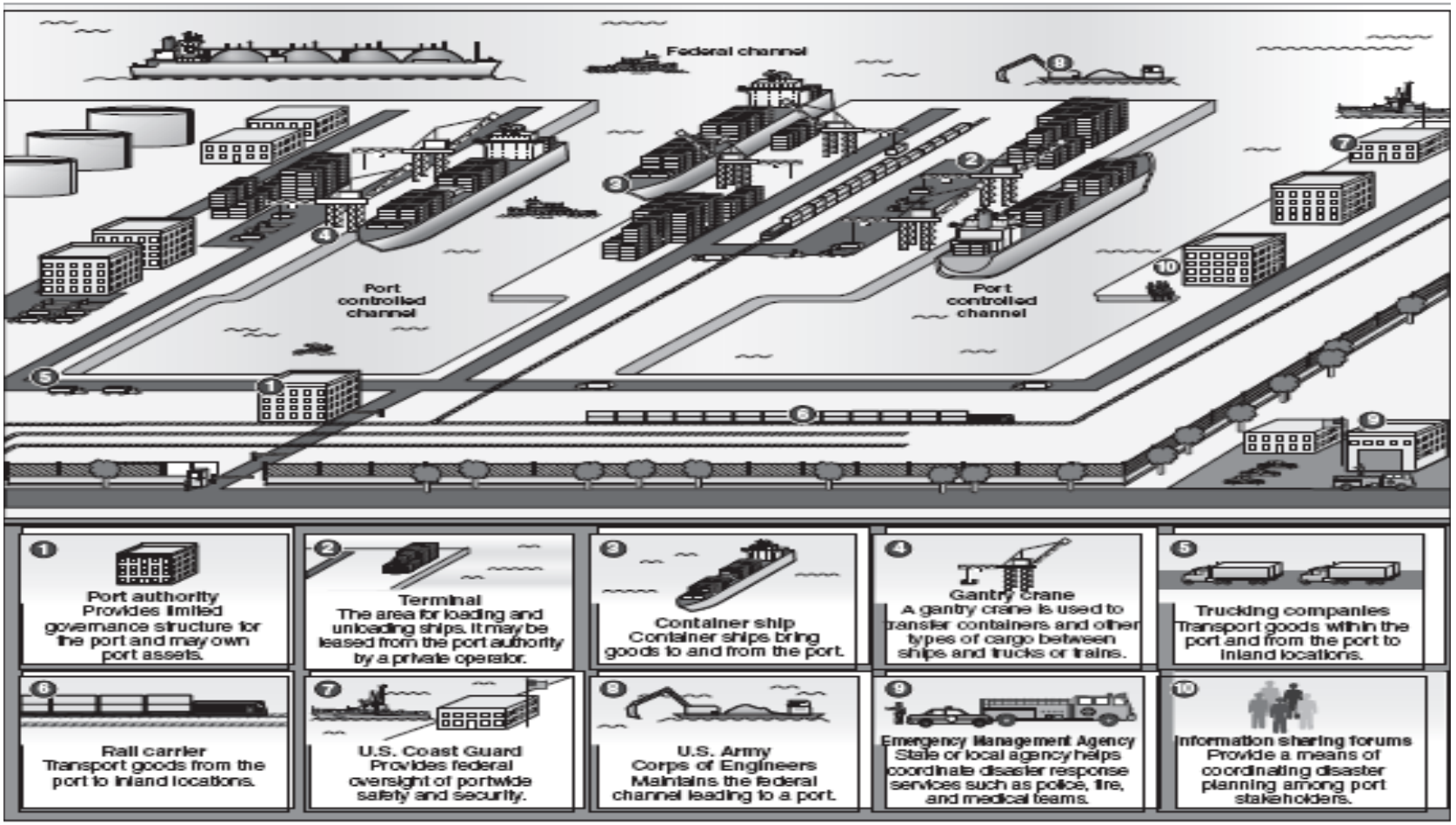


Table III.1. Evolution of port function

	First generation	Second generation	Third generation
Start period:	Before 1960s	After 1960s	After 1980s
Principal cargo	Conventional cargo	Conventional cargo and bulk cargo	Bulk and unit cargo containerization
The port development position and development strategy	Conservative junction point of the sea and inland transportation	Expansionism transportation and production centre	Industrial principle international trade base chain connecting transportation system
Activity scope	(1) Cargo handling, storage, navigation assistance-pier and	(1) + (2) Cargo type change (distribution processing), ship related industry - enlargement of port regions	(1)+ (2) + (1) Cargo information, cargo distribution, logistics activity – Formation of the terminal and distribution centres
Structure formation and specifics	- Everybody acts individually in the port - Port and its users maintain informal relations.	- Relations between port and its users become more close - Emergence of the slight correlation among port activities - Negative cooperation relations between port and self-governing community	- Formation of the port cooperation system - Trade and transportation chain concentration in the port - Relations between port and self-governing community become more closer - Extension of the port structure
Character of the productivity	- Invention of the cargo distribution - Individual supply of the simple services - Low value added	- Invention of the cargo distribution - Cargo processing - Complex services - Increase of the value added	- The flow of the cargo and information - Distribution of the cargo and information - Combination of the diversified services and distribution - Value added
Core factors	Labour/capital	Capital	Technology and know-how

Note: Modified from *UNCTAD, Port Marketing and the Challenge of the Third Generation Port*, 1992.

1.2 To define the conditions for successful hub port

- *Location (proximity to major world routes)*
- *Quick turnaround time*
- *Quality service with efficiencies and productivity*
- *Reasonable costs*
- *Ability to accommodate super larger ships-deep water, advanced equipment*

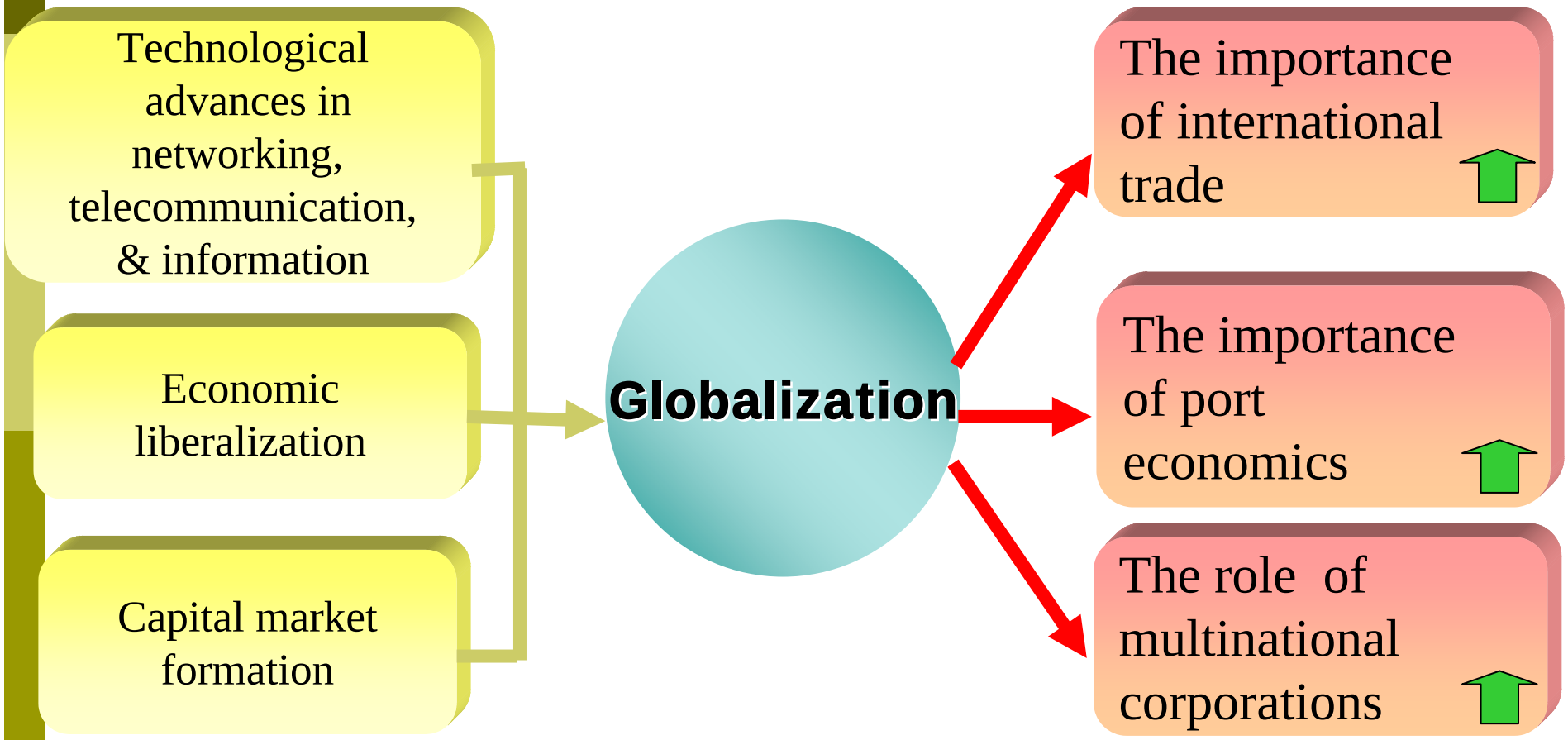
- *Excellent networks covering neighboring feeder ports*
- *Existence of logistics cluster supporting value-added logistics activities*
- *No burdensome paper works*
- *Intermodal infrastructures-access to rail, air and road distribution networks*
- *Local market producing freight volume*

2.Emerging Challenges and issues for most ports

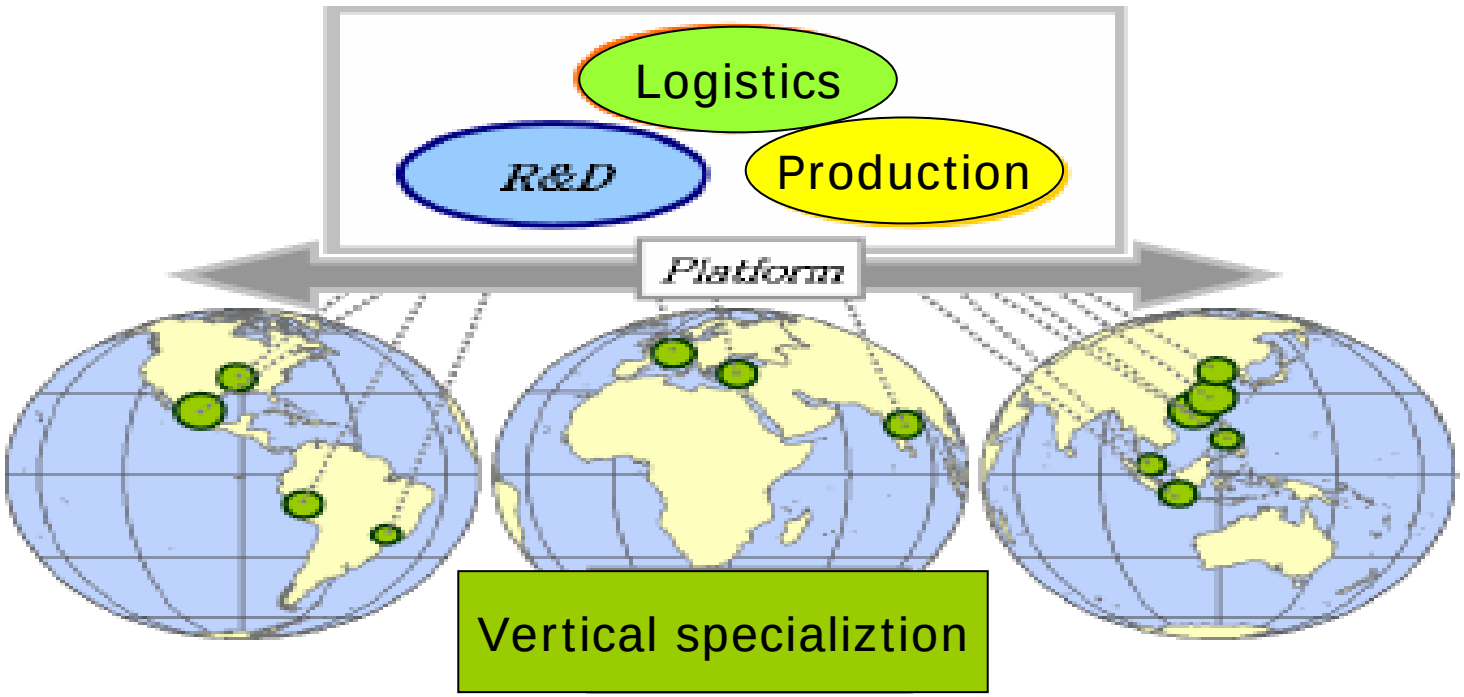
- globalization of manufacturing and outsourcing
- global trends of logistics network restructuring and reposition of regional and/or local distribution centre
- rapid growth in volume of world seaborne freight, especially container
- emerging hub and spoke system in global shipping service
- increase of transhipment cargo and competition among ports and terminal operators
- introduction of the super mega size containership

- increasing competition towards hub ports
- emerging global terminal operators and their growing market share
- one stop shopping concept and intermodal transport linking strategically between ocean, railway, road and inland waterway
- increasing role of ports in global supply chain management and logistics network structures
- increase of productivity and efficiency in ports
- high cost and constraints for developing port facilities.

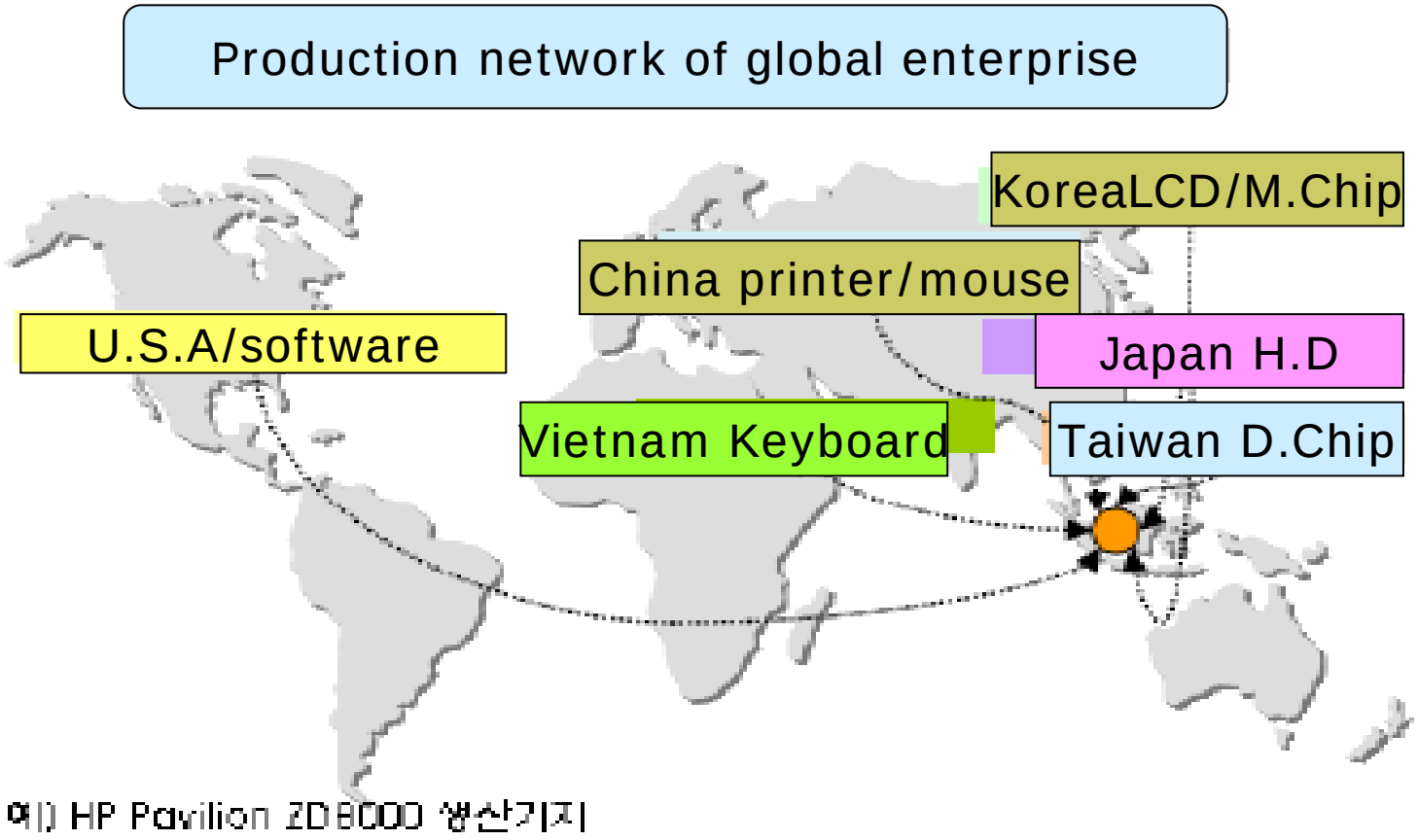
2.1 Globalization of world economy bolsters the increasing importance of international trade and the roles of ports and MNCs.



2.1.1 International trade platform of global ports



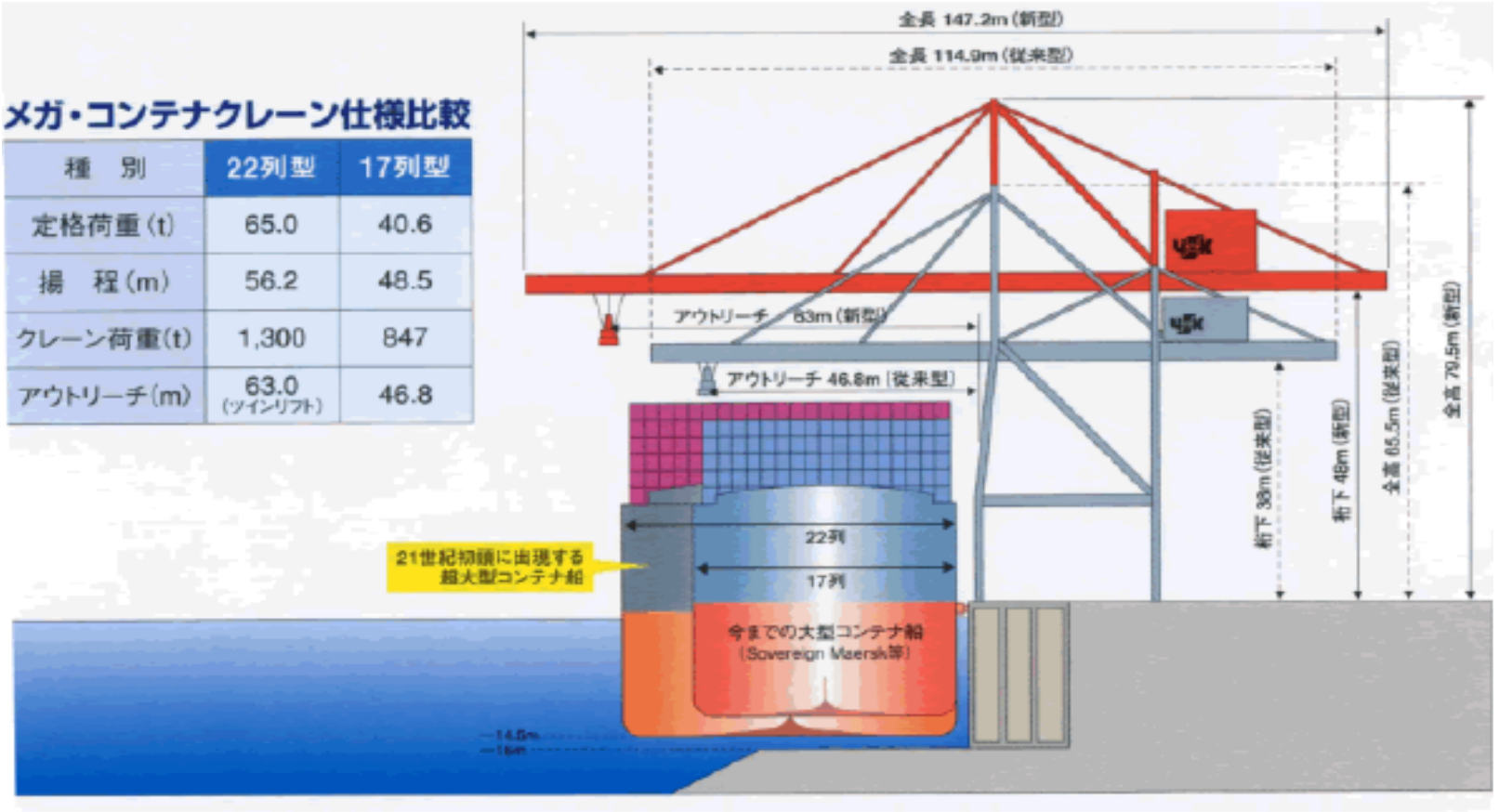
2.1.2 Diversified supply chain for port network



2.2 Developing tendency of Mega size Gantry Crane

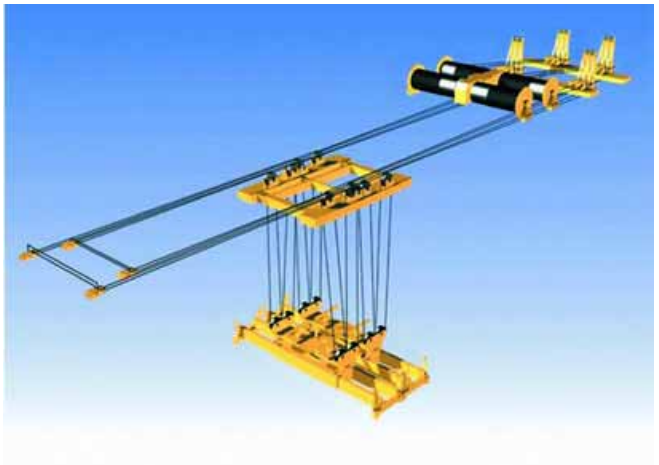
メガ・コンテナクレーン仕様比較

種　別	22列型	17列型
定格荷重(t)	65.0	40.6
揚　程(m)	56.2	48.5
クレーン荷重(t)	1,300	847
アウトリーチ(m)	63.0 (ツインリフト)	46.8



出典：横浜港頭公社資料より抜粋

2.3. Evolution of Container Handling Technology



2.4 Developing trend of Mega size ship

	Late 1960s	1970s	End of 1970-early 1980s	Late 1980s
Alias	Feeder	Handy	Sub Panamax	Panamax
TEU	700-1500	1800-2300	2000-2500	2500-4400
TEU	752	1887	2464	4626
Length(m) Lpp	187.0	263.3	247.4	281.6
Width(m)	26.0	32.2	32.2	32.25
Depth(m)	15.5	19.6	24.1	21.4
Draft(m)	10.5	11.5	13.2	32.25
GT	16,240	37,799	52,615	53,80
Speed(kn)	22.6	26.0	19.5	24.5
Propeller	1	1	1	1
Operator(year)	NYK(1968)	MOL(1973)	Safmarine(1979)	Hapag Lloyd(1991)

	First half of 1990s	Late 1990s	1997-2002	Early 21st Century
Alias	Post Panamax	Super Post Panamax		**Ultra Super Post Panamax**
TEU	4300-5400	6000-6670	7000-8700	10000-13000
TEU	4340	6418	7060	13000
Length(m) Lpp	260.8	302.3	331.5	365
Width(m)	39.4	42.8	32.8	55.0
Depth(m)	23.6	24.1	24.1	30
Draft(m)	12.5	14.0	14.5	15.0
GT	50,206	81,488	91,560	150,000
Speed(kn)	24.2	25.0	26.4	
Propeller	1	1	1	2
Operator(year)	APL C-101988)	Maersk(1996)	Maersk(1997)	(2006)

2.5 Forecast of Global Ocean cargo volume

Unit: Million TEU

		1997	1998	2000	2004	2008	2012	Year Avg.
World Total		171.8	187.9	218.6	301.4	392.1	491.1	7.3%
China	Total	79.8	83.7	99.3	145.1	193.1	249.7	7.9%
	China	29.2	31.6	37.9	51.4	66.5	83.9	7.3%
Asia portion		46.4%	44.6%	45.4 %	48.2%	49.3 %	50.8	-

Source : Ocean shipping consultants

2.6 Static of Global Strategic Alliance

Alliance Groups	Member Companies	Vessels	TEU
Grand Alliance	NYK, P&O-Nedlloyd, HapagLloyd, OOCL, MISC	313	811,000
Maersk-Sealand	Maersk, Sealand	257	678,138
New World/YML	MOL, APL, HMM	192	511,118
Cosco/Kline/YML	COSCO, K-Line, YNL	232	465,067
United Alliance	HJS, DSR, Senator, USAC	159	381,766
Evergreen/LT	Evergreen, LT	149	369,947
Total		1,302	3,216,936

3. A shipping line's perspective of how to select a hub port

No or little deviation from the main routes

Central location in the area to allow feeder network to serve in a respectable time

Modern and large port infrastructure allowing competitive productivity and immediate availability of berths/cranes

Limited paperwork requirements from local authorities

Competitive costs

Hub port with local markets is of course a plus

Regional hinterland via intermodalism is an extra plus.

(Whitelaw, 2002)

3.1 Port Characteristics

Table 3.5 Port characteristics (Song, 2002)

Dimension	Factors	Measuring tools/Means
Port Location	Distance to the industrial agglomeration region Distance to the main lines Strategic location in the global network	Referencing geographical information Surveying carriers and LLPs*
Port Infrastructure and Superstructure	Berth number Berth depth Crane type Yard area	The requirements of accommodating the latest generation container ship
Port Service	Load and discharge speed Pick up and delivery service Information availability Provide customized service Ancillary service	Referencing to the international benchmarks Surveying shippers and forwarders Surveying carriers
Port Charge and Cost	Port charge of cargo Port charge of ship	Referencing to the international benchmarks
Carrier's Service in Port Connectivity	The calling frequency The freight rate	Referencing the published data
Hinterland Accessibility	Intermodal operation time consume Intermodal operation cost Custom clearance procedure Cargo tracing serve	Referencing to the international benchmarks Surveying carriers and LLPs
Distribution Centre (DC)	Total operation area of DC The equipment and information system of DC Service scope	Referencing statistics data Requirements of the advanced supply chain management (Surveying LLPs)
Info-structure	Port community system Information interchange with customs Information exchange between the intermodal organizations	Requirements of the advanced supply chain management (Surveying LLPs)

* LLPs: Lead Logistics Providers who are responsible for managing the primary interface between the customer and other logistics providers.

4. Categories of Port Modal

Table 3.3 Key port elements: Privatization options (Baird, 1999)

Port Models	Port		Operator
	Regulator	Landowner	
PUBLIC	Public	Public	Public
PRIVATE/I	Public	Public	Private
PRIVATE/II	Public	Private	Private
PRIVATE/III	Private	Private	Private

4.1 Port Regulator

- Regulatory activities within a port will generally be related to duties and responsibilities such as enforcing regulations and providing pilotage services and vessel traffic management, most of which will have been established by statute.

4.1 Port landowner

They key tasks a port landowner will need to undertake include:

- *Managing and developing the port estate*
- *Conceiving and implementing policies and development strategies*
- *Supervising major civil engineering works*
- *Providing and maintaining channels, breakwater, locks, truing, basins, berths, piers and wharves.*
- *Providing or arranging road access to the port complex*

4.1 Port operator

- Operations may include a range of value-added activities and free trade zones related activities within the port estate.

4.2 Four types of port management models

- *Public Service port*
- *Tool port*
- *Landlord port*
- *Private Service port*

4.3 Port Administration Models

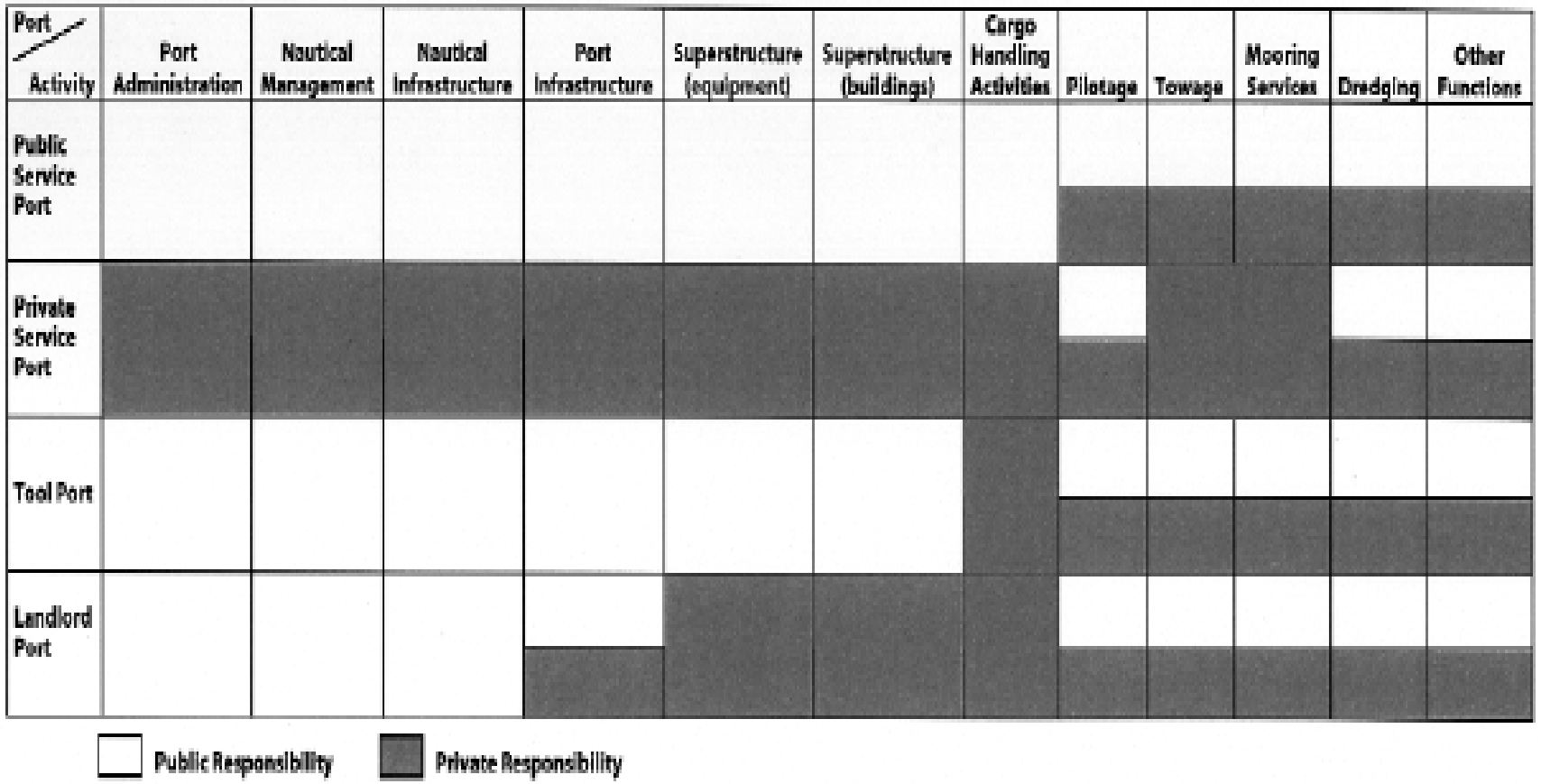
A number of factors influence the way port are organized, structured and managed including:

- The socio-economic structure of a country (e.g., market economic, open borders);
- Historical developments (e.g., former colonial structure)
- Location of the port(e.g., within an urban area, in isolated regions);
- Types of cargos handled(e.g., liquid and dry bulk, containers).

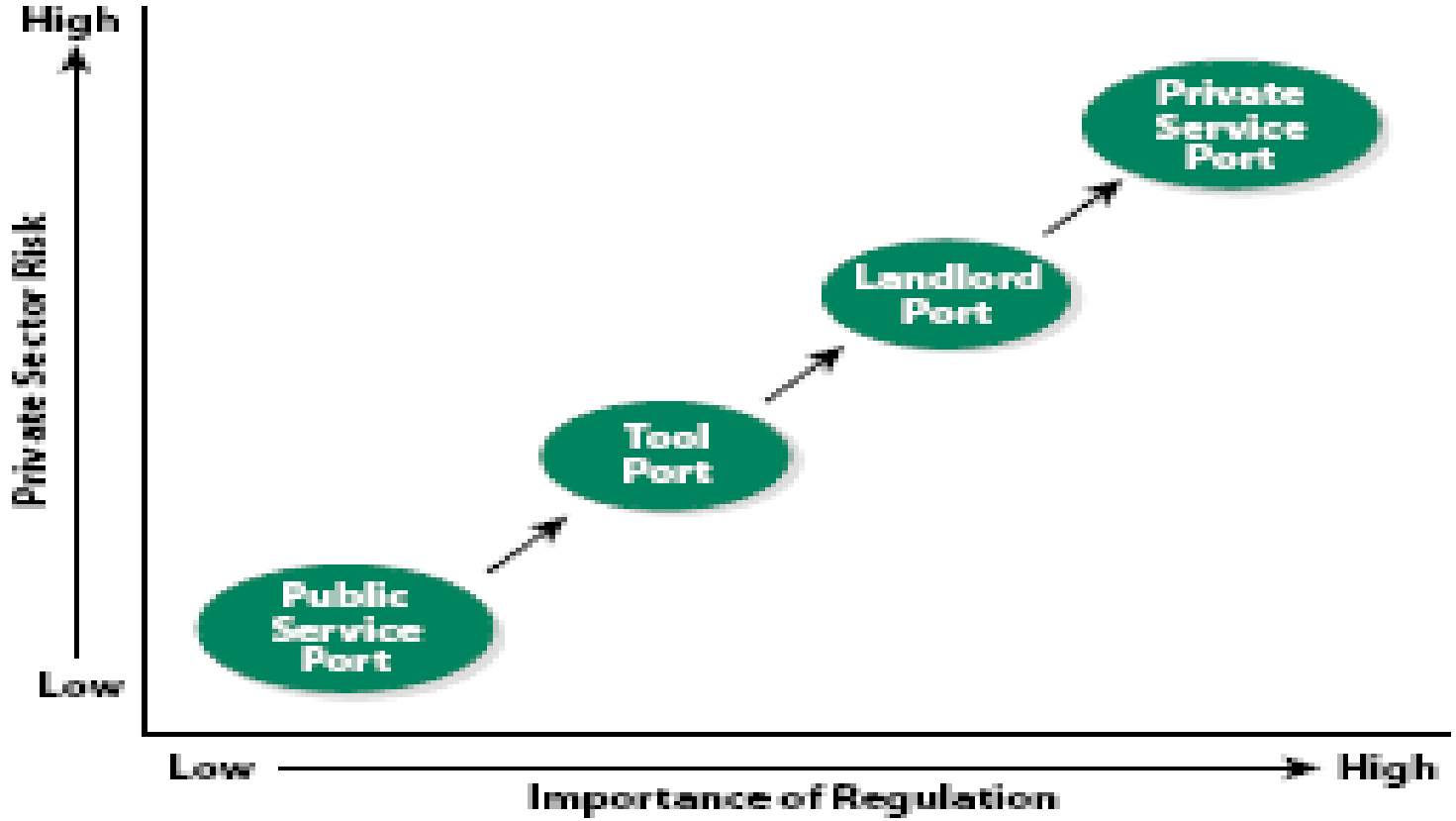
4.4 Basic port management models

Type	Infrastructure	Superstructure	Port labour	Other functions
Public service port	Public	Public	Public	Majority public
Tool port	Public	Public	Private	Public/Private
Landlord port	Public	Private	Private	Public/Private
Private service port	Private	Private	Private	Majority private

4.5 Public-Private Roles in Port Management



4.6 The public-private balance of Risk and Regulation

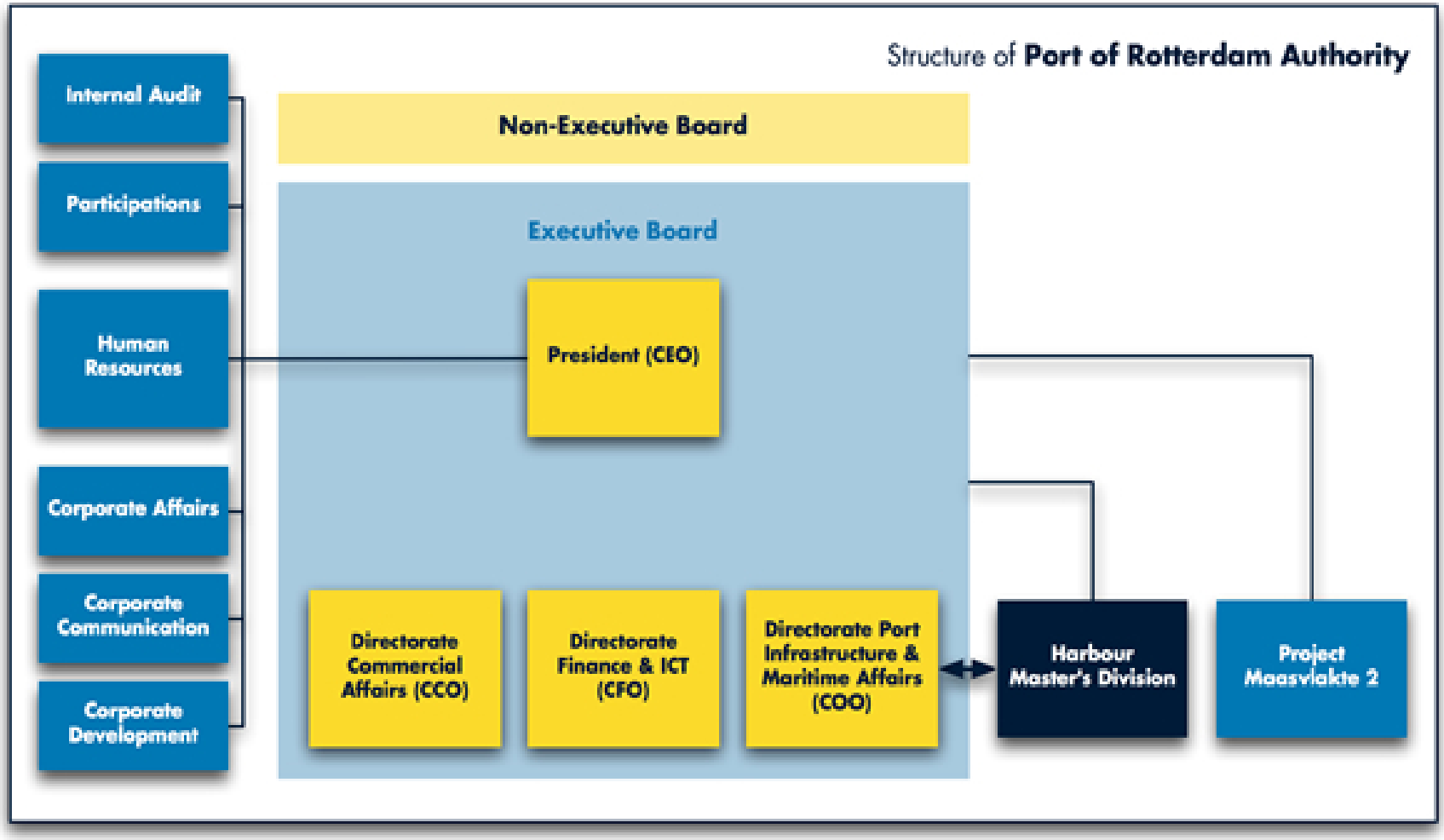


5.1 Profile of Rotterdam Port Authority

- The Port of Rotterdam Authority is the coordinator, authority and service provider of the Rotterdam port area. The Port Authority stimulates and facilitates economic activity in the port area, leases sites to businesses and bears responsibility for the efficient and safe handling of shipping traffic. In cooperation with customers, (local) authorities, (umbrella) organizations and the surrounding the Port Authority wants to develop a definitive world-class European port. And quality is the key. The port of Rotterdam, which covers some 10,500 hectares, is a major factor in the national and regional economy. The port is a hub in the international freight flows, and a business location for industry and logistics services. Every year, some 35,000 deepsea ships and 130,000 inland waterway vessels call at the port of Rotterdam.

- The Port of Rotterdam Authority is responsible for the efficient, safe and reliable handling of all this deep-sea and inland shipping. We do so using an advanced radar system, patrol boats, and inspectors who keep a close eye on the transport of dangerous freight. Attention for safety and the environment is crucial for the Port Authority. As the manager of the port, the Port of Rotterdam Authority leases sites amounting to around 5,000 hectares to businesses. The Port of Rotterdam Authority also provides the infrastructure of waterways, roads, quays and other services for the users of the port area

5.2 Structure of Rotterdam Port Authority



5.3 Core values of Rotterdam Port Authority

- The Port of Rotterdam Authority has defined the following core values for achieving its aims:
- **Reliability**sticking to agreements;
- **Enterprising** proactive and businesslike conduct within the set course and the vision;
- **Customer-orientation** putting the interests of the port and its customers first;
- **Care** honest and responsible in dealing with interests and resources;
- **Sustainability** working with an eye to the future on the definitive world-class European port.

5.4 Port Vision 2020

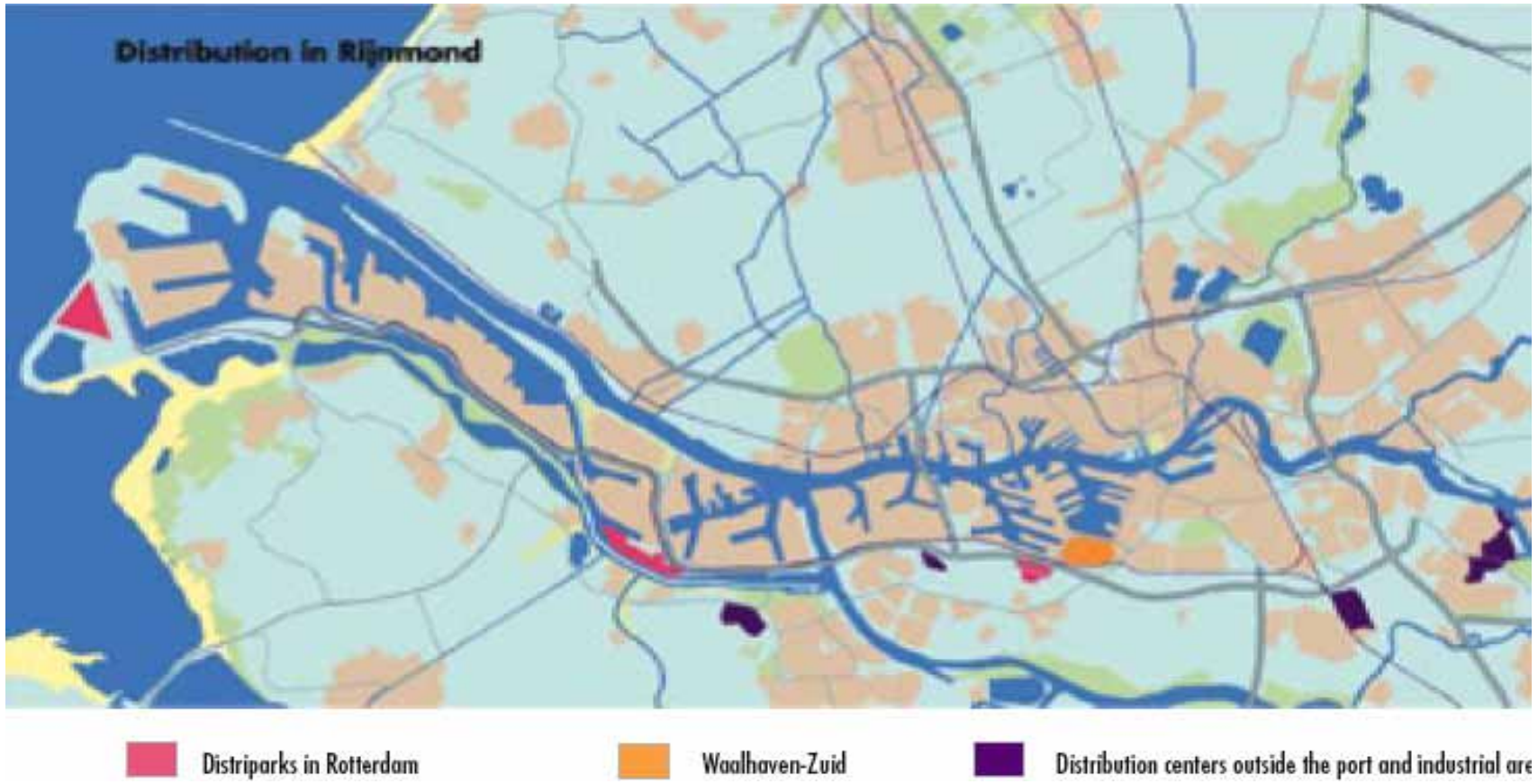
Port Vision 2020 has three objectives:

- to reinforce the international competitive position of the port and industrial complex;
- to help strengthen the economic structure of the city and region;
- to contribute to a better residential and living environment in the region.

Important components

- Among the important components of Port Vision 2020 are the following:
- constructing a port extension into the sea;
- bringing together the port, housing and work in the City Ports (Waalhaven, Eemhaven, Merwehaven/Vierhavens);
- improving the accessibility of the port by water, rail, road and pipelines;
- strengthening the existing business clusters in the port;
- devising creative solutions for uniting the port, industry, housing, natural amenities and recreational facilities on the right and left bank of the River Maas.

Map of Rotterdam Port



5.2 Profile of Busan Port Authority

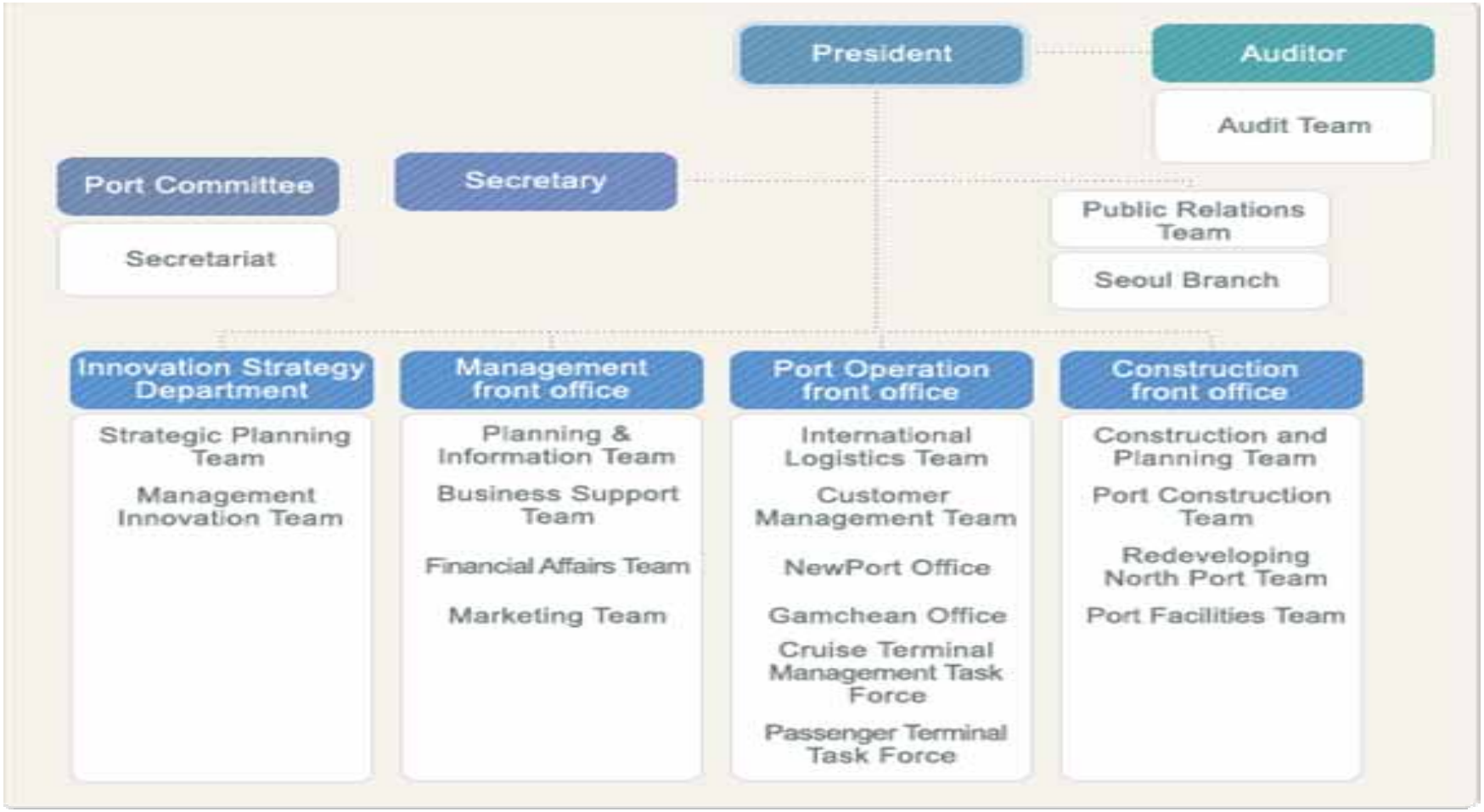
Busan Port Authority (BPA), the first port authority in Korea, is responsible for the management and development of the Port of Busan. It was launched on January 2004 with 3.2 trillion won worth assets. Busan Port, the largest port in Korea, handles about 80% of the total container volume in Korea. It is the 50th busiest container port and 3rd busiest transshipment port in the world. In addition, Busan Port has excellent connectivity with 500 ports in more than 100 counties and all the world's major shipping companies are calling at Busan Port

BPA is now undertaking three important projects- First, New Port project. A total of 30 new berths will be completed by 2011, Then the Port of Busan will have 52 berths that will be the largest port capacity in the world. Three will enter into operation on January 2005. Secondary, a total of 1.2 million sq. m of logistics areas called Districtpark will be offered to provide comprehensive logistics services to the customers. Lastly, BPA will redevelop the old piers in the present port as the significant part of current cargoes will gradually flow into New Port.

5.2.1 Port facilities managed by BPA

- The port facilities managed by the BPA include
- the quay wall where loading work is performed while a vessel is berthing, fishing boat quay, pier, dolphin,
- anchoring facilities such as the dock,
- CY in an open storage yard of the warehouse, CFS, silo, oil storage facility,
- distribution/sales facilities of freight such as a freight terminal,
- fixed or movable loading facilities such as cargo transportation facility/piping facilities,
- passenger convenience facilities such as a waiting room, passenger elevator facility, and a parcels office, and oiling and watering facilities for vessels.

5.2.2 Organization Chart of BPA

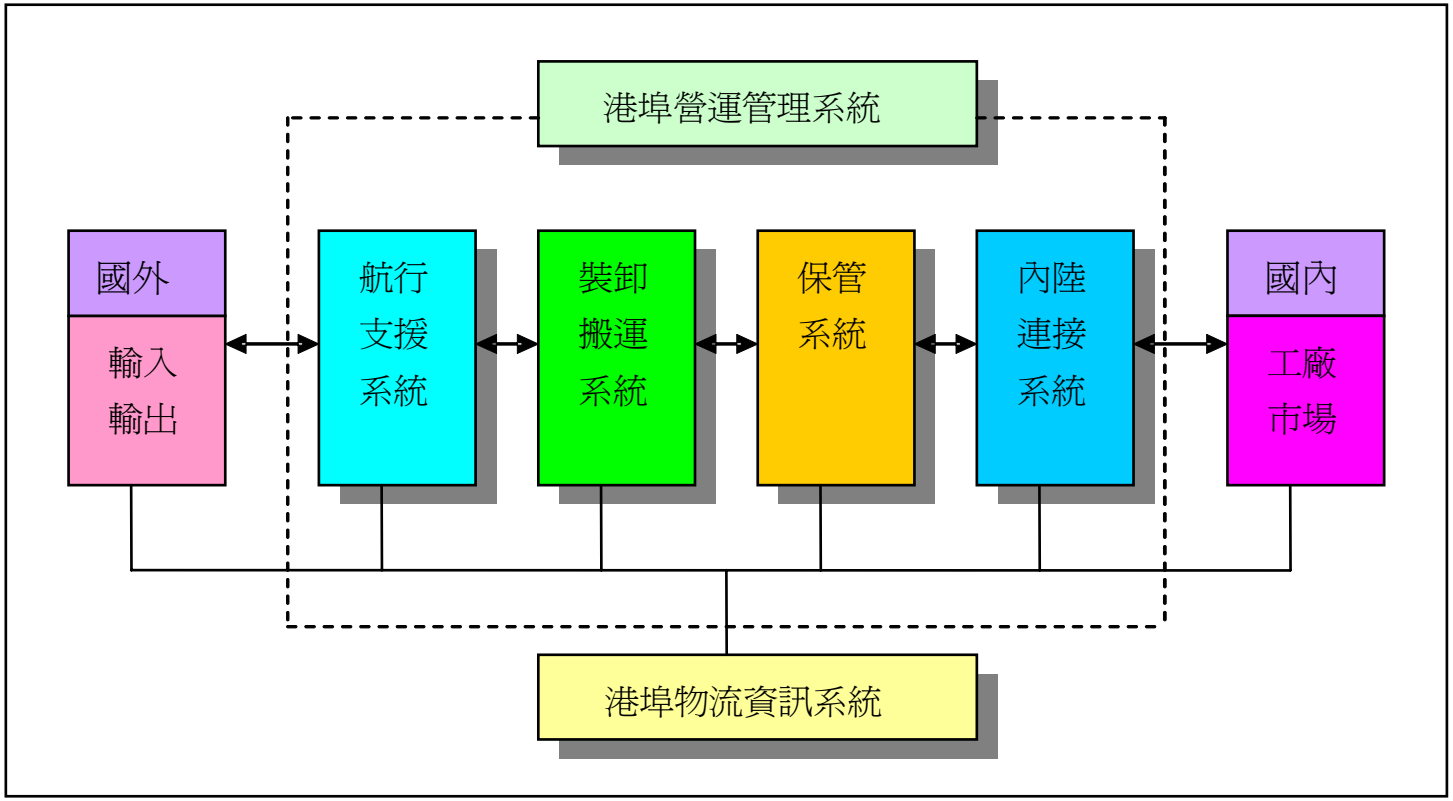


Map of Busan Port

Architecture of port logistics

- Architecture of port logistics operation contain Nautical Facilitating System, Cargo Handling System, Storage System and Inland Access.
- Port logistics IT extend aforementioned scope of port operation to international inbound / outbound and domestic factory / market.

Architecture of port logistics



Framework of Value Added Service

- Ports are becoming part of so-called integrated logistics chains.
- Value Added Service can be divided into Value Added Logistics and Value Added Facilities.
- Value Added Logistics has two major components: General Logistics Services (GLS) and Logistics Chain Integration Services (LCIS).

Overview of Value Added Services in Ports

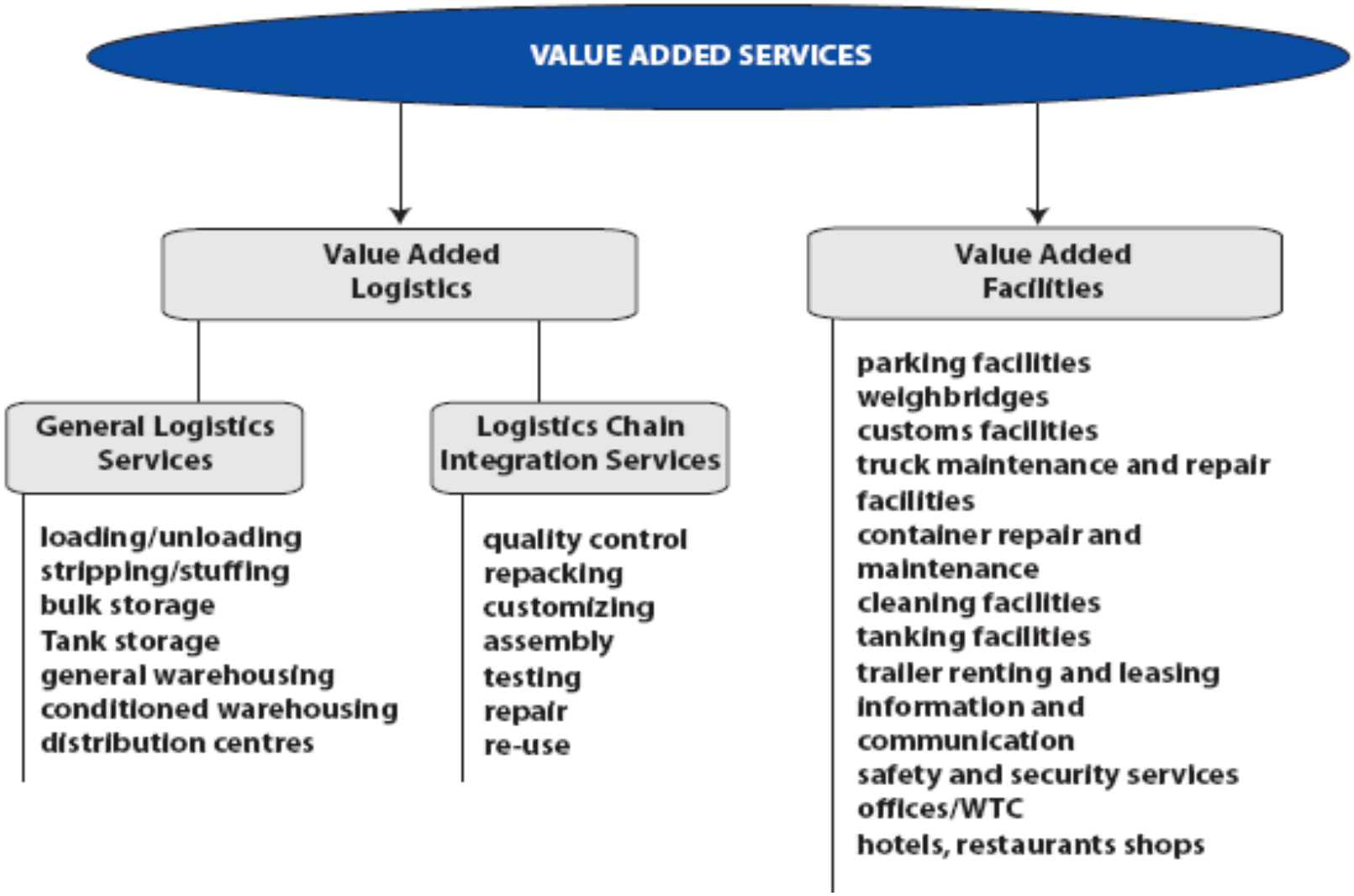


Figure III.5. VAL service of logistics centres in port area

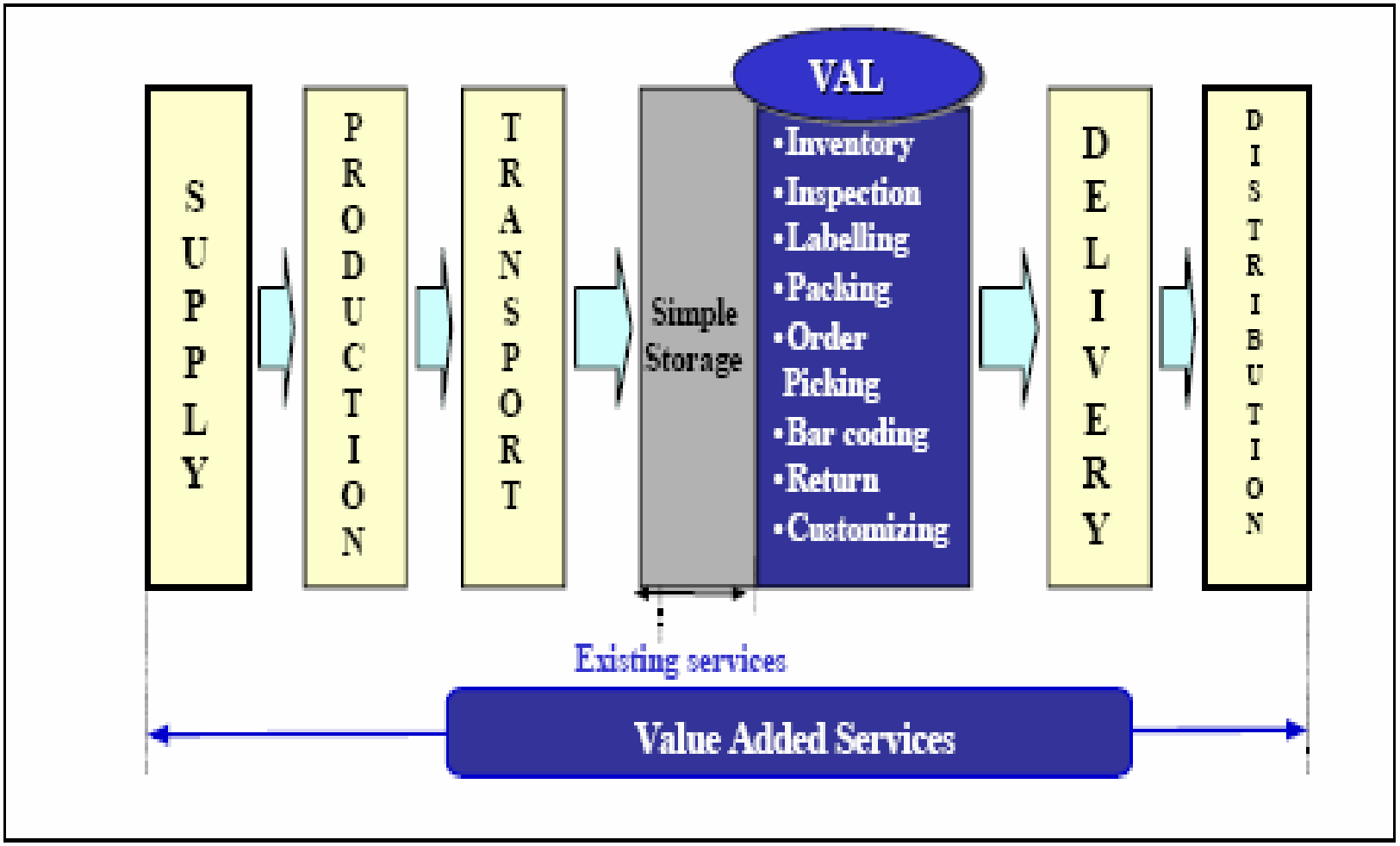


Table III.2. Logistics centres evolution

1960s-1970s	1980s-early 1990s	Mid 1990s –present
		Materials management Distribution Services (national/global)
	Bonding	Import clearance Bonding Inbound transportation
Receiving	Receiving	Receiving
	Cross-docking	Cross Docking
Storage	Storage	Storage Inventory management and control Shipment scheduling
Order processing Reporting Picking	Order processing EDI Reporting Picking	Orders processing EDI Reporting Picking
Order assembly (Re)packaging	Order assembly (Re)packaging Stretch-shrink- wrapping	(Product)subassembly Order assembly (Re)packaging Stretch-shrink-wrapping
Palletizing/unitizing Label/mark/stencil	Palletizing/unitizing Label/mark/stencil	Palletizing/unitizing Label/mark/stencil
Shipping Documentation	Shipping Documentation Outbound transportation	Shipping Documentation Outbound transportation Export documentation FTZ operation JIT/ECR/QR services Freight rate negotiation Carriers/route selection Freight claims handling Freight audit/payment Safety audits/reviews Regulatory compliance review Performance measurement Returns from customers Customer invoicing

Source: Ernst F. Bolten, Managing time and space in the modern warehousing, Amacom, 1997, p. 19.

Categories of Special Zone for developing National Economic

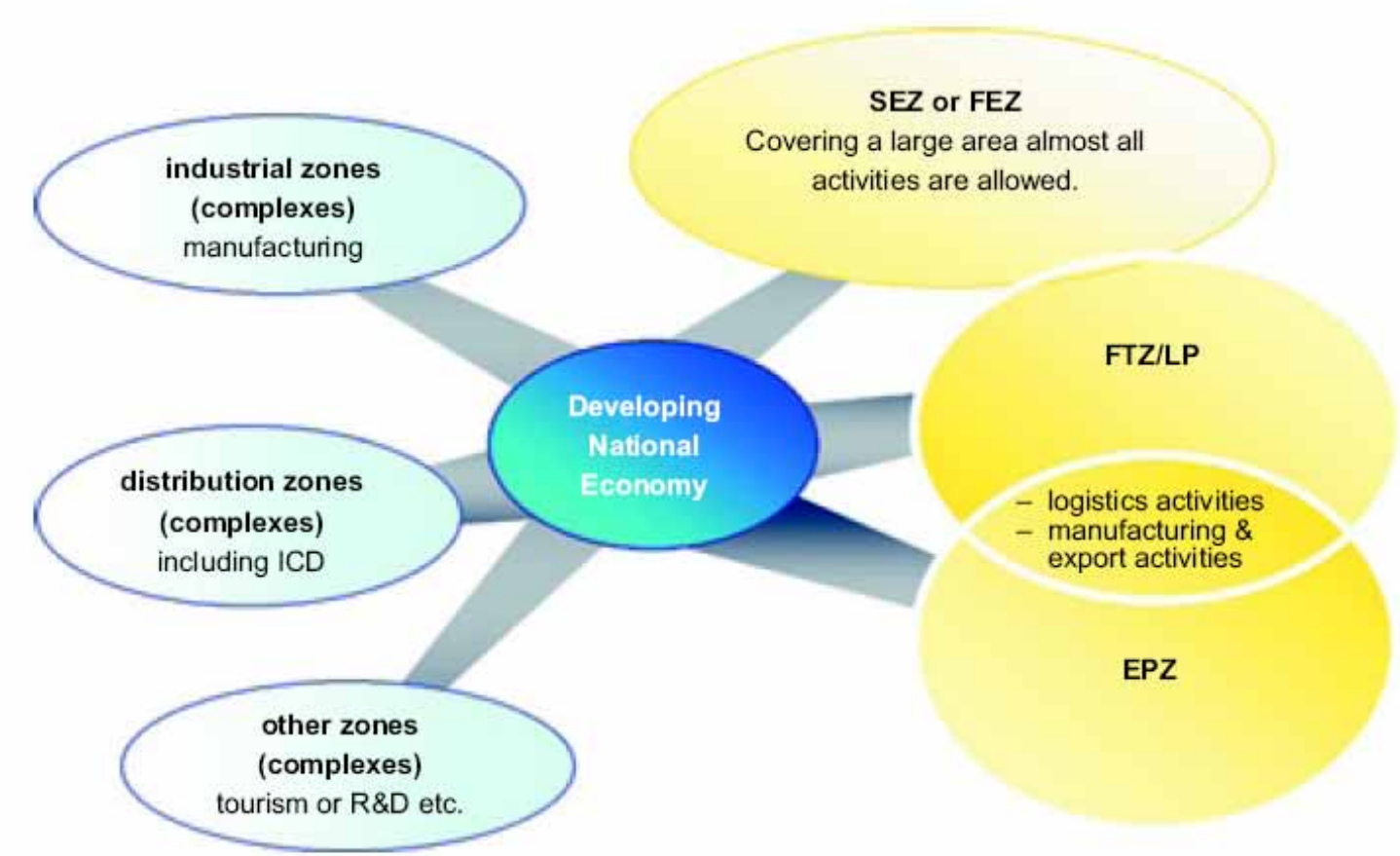


Figure 2.10 Several special zones as alternative policies for economic development

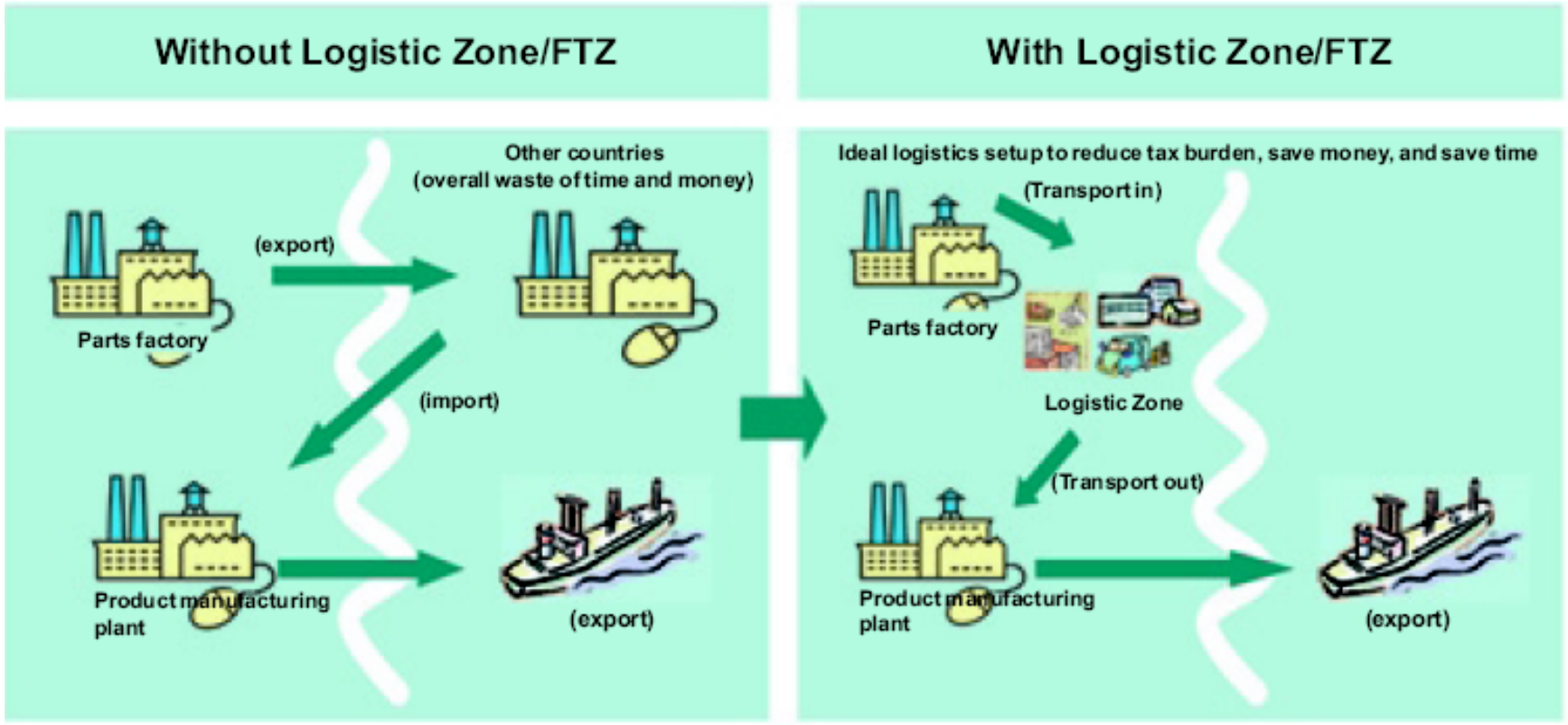
Definition of Free Trade Zone

The **F**ree **T**rade **Z**one means a specific area designated for tenant companies to perform freely manufacturing, logistics, distribution, and trade activities. It will provide benefits to the tenant companies including the free of customs duties, reduced taxes, and competitive lease fees.

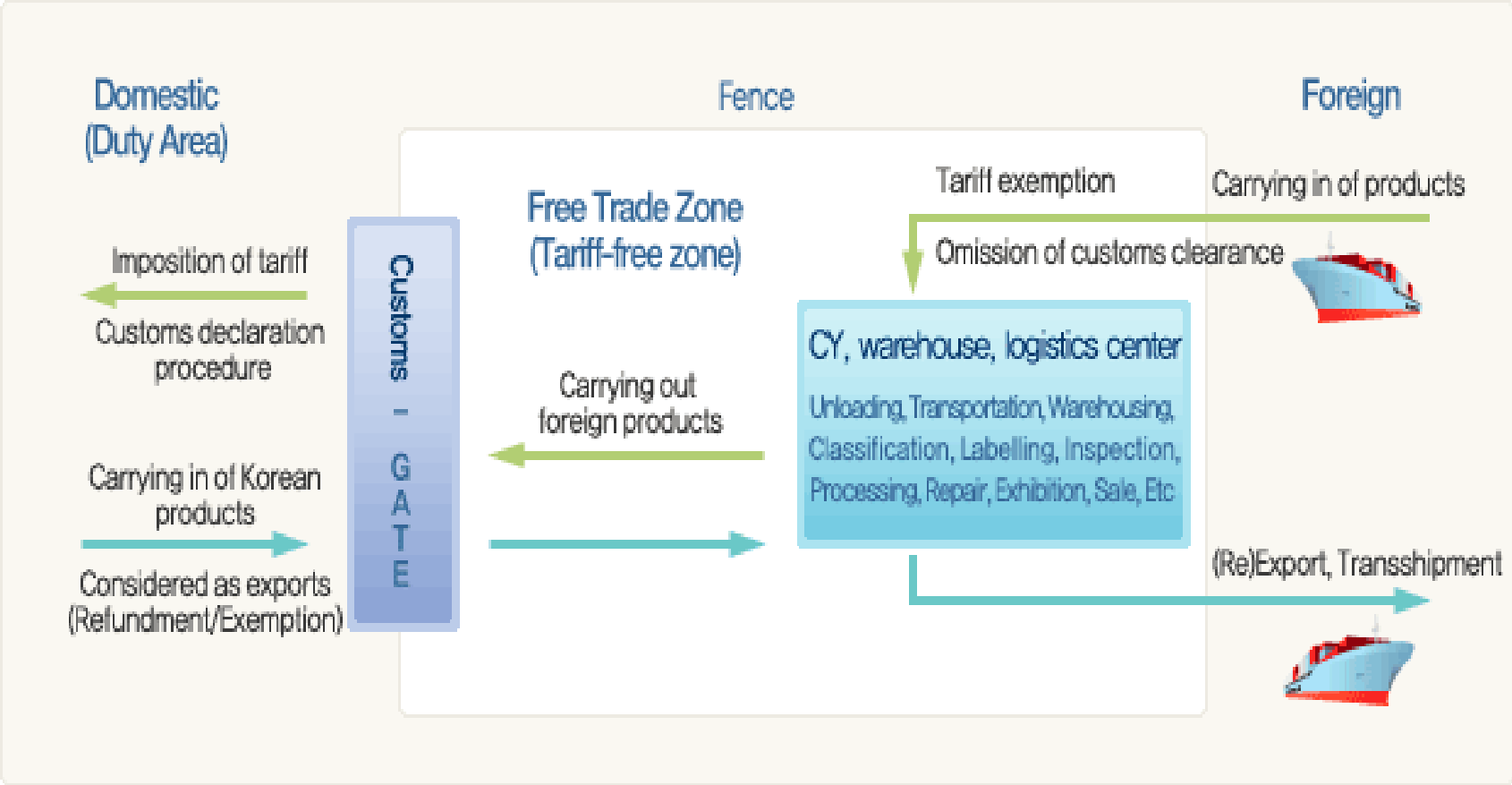
Main Advantages of Free Trade Zone

- *Generation of foreign exchange earnings*
- *Providing jobs and creating income*
- *Attracting foreign direct investment*
- *Generating technological transfer*

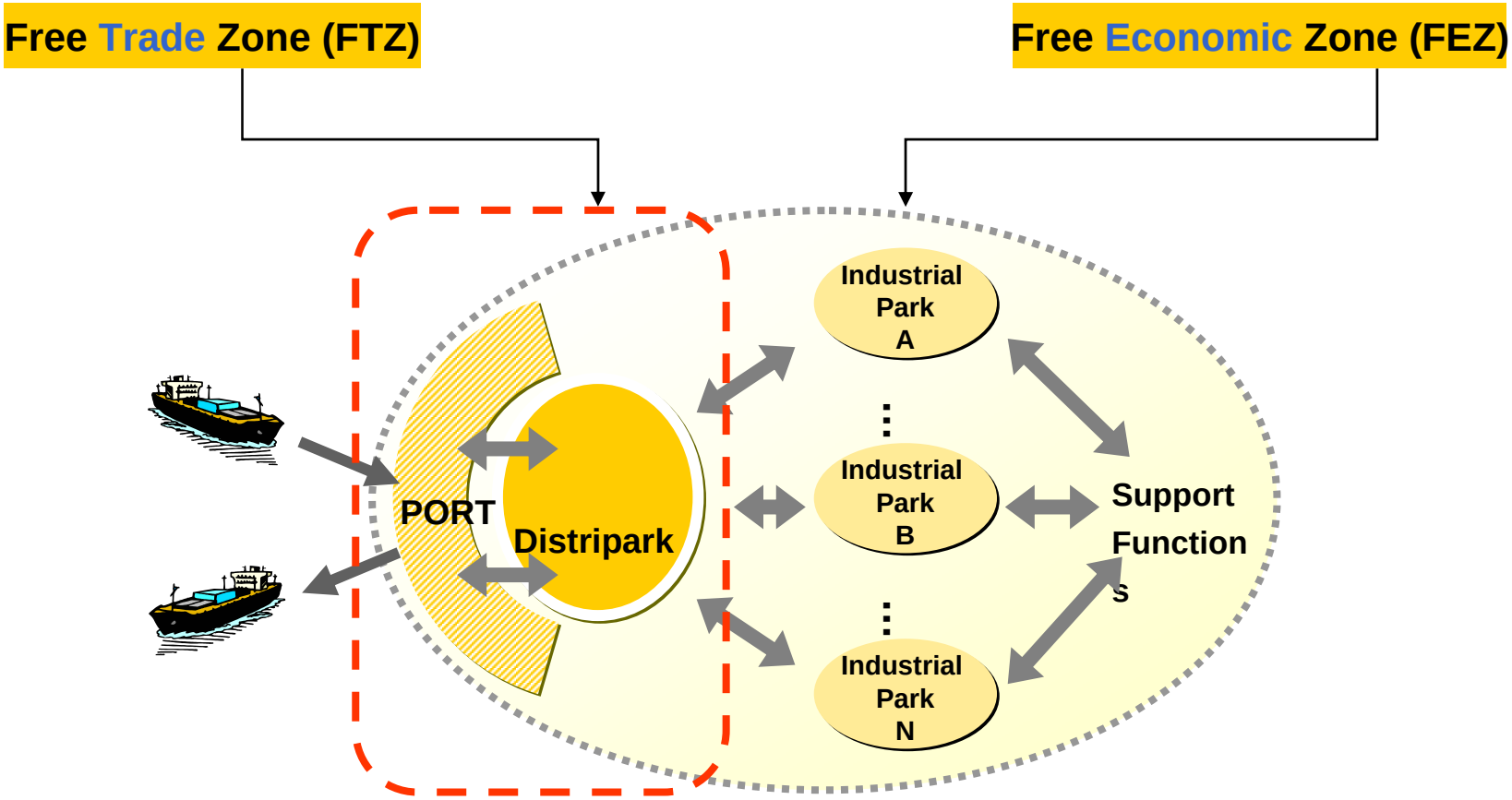
Difference between with or without logistics-oriented in FTZ



Port logistics in FTZ



The Concept of FTZ and FEZ in KOREA



The Locations of Free Trade Zone

Distriparks Available in 2004

1. Busan Gamchon

Gamchon Distripark

2. Gwangyang Distripark-1

Terminal

Distripark-1

Distriparks Available after 2006

3. Busan New Port

Terminal

Distripark

4. Gwangyang Distripark-2

Terminal

Distripark-2

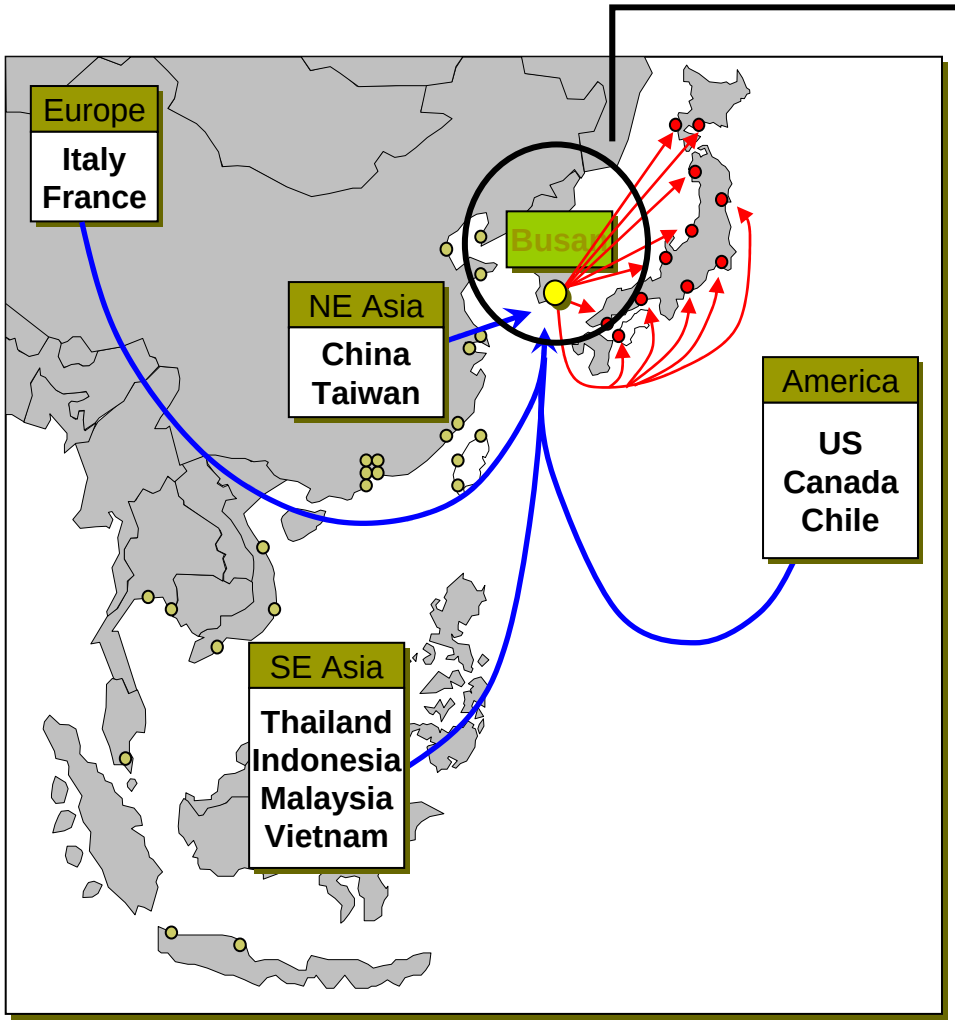
1. Busan Gamchon

Gamchon Distripark

- ✓ Available from : 2004
- ✓ Space Available : 132,000 ㎡
- ✓ Bid : Competitive bids
- ✓ Lease Period : Maximum 50 years
- ✓ Lease Cost : Yearly $ 1.50/㎡
- ✓ Target Activities : Consolidation
  Distribution
  Processing

Mitsui & Co.'s Logistics Center at Gamchon

Mitsui & Co.'s Plan at Busan Gamchon Distripark: "MCC(Multi-Country Consolidation) Model"



Activities at Gamchon Distripark

Storage, Processing, Consolidation, etc.

FCL → FCL, FCL, FCL, FCL, FCL

- ✓ High service quality
- ✓ IT capability, e.g. EDI, WMS, tracking, etc.
- ✓ Extensive shipping routes