EFFICIENT HINTERLAND TRANSPORT INFRASTRUCTURE AND SERVICES FOR LARGE CONTAINER PORTS

PORT INVESTMENT AND CONTAINER SHIPPING MARKETS ROUNDTABLE

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INTRODUCTION AND OBJECTIVES

- Discuss the role of hinterland transportation for large container ports
- Highlight the challenges associated with the expansion of large container ports
- Bring in the experiences from other international contexts

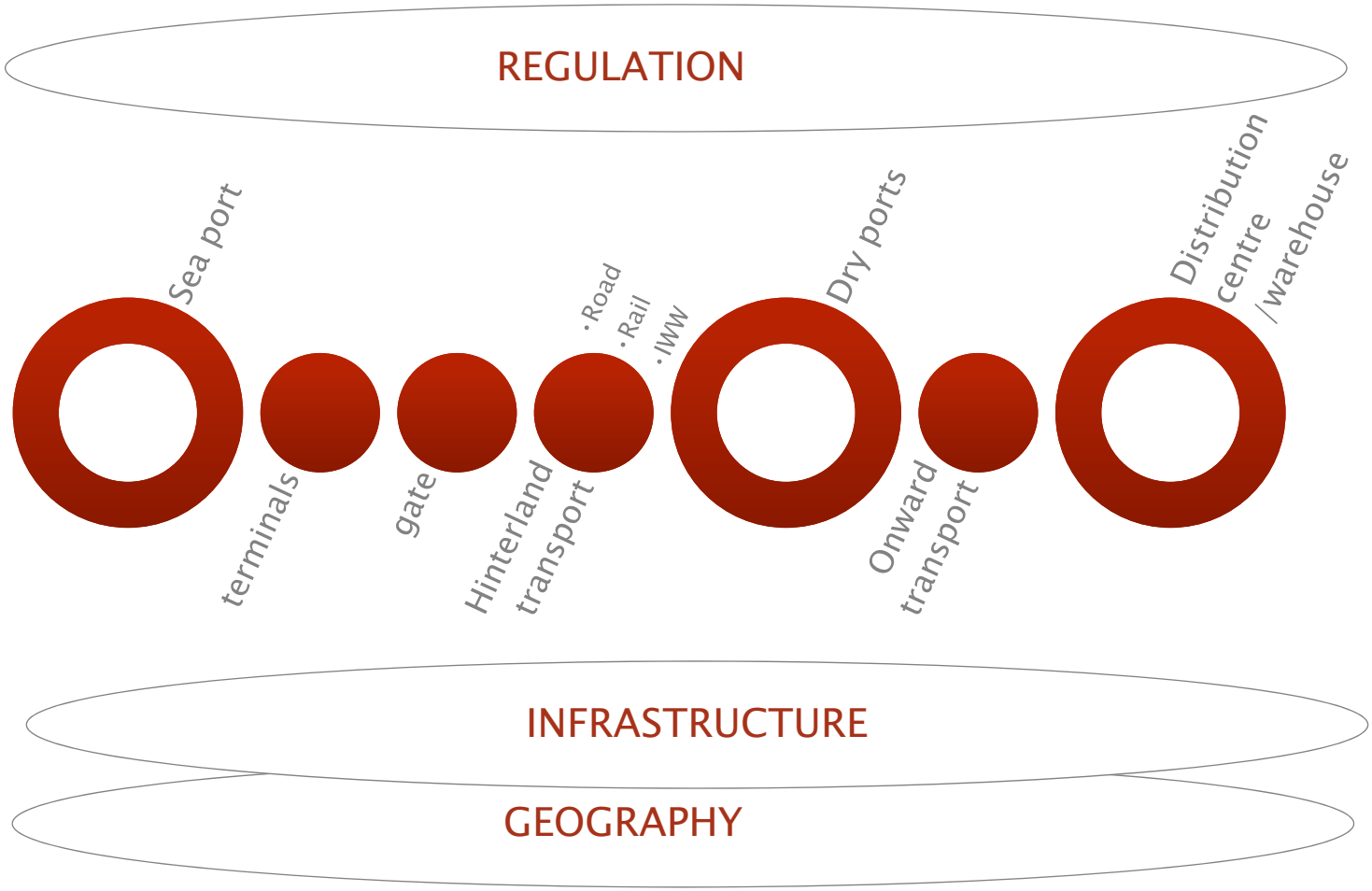
FROM THE PORT TO THE HINTERLAND

Role of hinterland cannot be stressed enough: Ports are able to **create value** on the supply chain as long as they are well connected with the hinterland

Focus over time has moved from creating infrastructure at port to **create networks** in which ports are integrated nodes

Logistics connectivity of the port is one of the main determinants of its success

HINTERLAND TRANSPORT PROCESSES



TERMINAL GATE SYSTEMS

Three main models

Traditional

- Trucks are served and container loaded when they are available

Appointment system

- Trucks have to make appointments to be loaded

Window system

- Trucks are allowed to collect/deliver cargo only within certain periods of time

IMPORTANT CONSIDERATIONS

- IT infrastructure: capabilities and security issues among others
- Labour regulation and trucking industry practice: unions, safety regulation, business practices (e.g. distribution centres opening hours)
- Security and custom procedures at the terminal

EXAMPLE: LOS ANGELES/LONG BEACH

Following environmental pressure the port of Los Angeles and the port of Long Beach implemented strict regulation on trucking

This included:

- Licensing/registration
- Introduction of appointment system at the gate
- fees

Results have been positive:

- Reduction of congestion
- Reduction of emissions
- Improvement of the fleet

- At a cost that could have been reduced if more concerted action had been taken

THE IMPORTANCE OF ROAD TRANSPORT

Road transport has typically a competitive edge

Most ports around the world rely heavily on road transport to bring cargo to the hinterland

Modal shift has been difficult

On dedicated corridors other modes of transport may have cost and reliability advantages

advantages

- Avoids the last mile problem
- Cheap
- Flexible

disadvantages

- Congestion
- Emissions

What are the objectives of the PA?
Road transport has strong advantages

TRANSPORTATION TO THE HINTERLAND BY RAIL

Advantages

- Larger volumes
- Environmental friendliness
- Cost advantages
- Reliability

Issues

- Infrastructure development and management
- Market structure
- Governance model
- Coordination

Organisational structure

- What is the relation with existing railroads
- Relations with passenger transport
- Reform process in the country

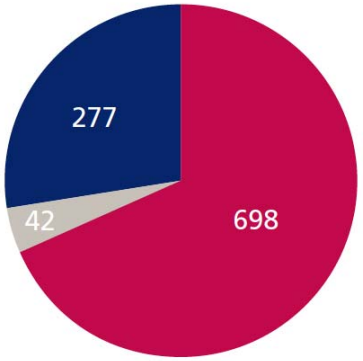
Environmental impacts

EXAMPLE 1: BETUWE ROUTE

- Construction of Betuwe Route freight rail connection to Germany
- Main corridor for Continental Europe
- Development of “Inland Container Transferium”
- Creating / stimulating open market for rail transport, by brokering between parties interested in creating rail shuttles
- Increased interests from both “Sea Side” and “Land Side” market players in developing and operating inland rail and barge connections
- Cost doubled over 10 years to 4715 million EUR

- From the Port of Rotterdam to the German rail network (160 km)
- Projected capacity: 10 trains / hr per direction
- Compliant with latest European standards: 25 KV power supply and ERTMS safety system
- Market driven approach
- Dedicated for freight trains on double track
- Prepared for European cross border traffic

EXAMPLE 2 (CONT.'D): NUMBER OF TRAINS OVER THE BETUWE ROUTE

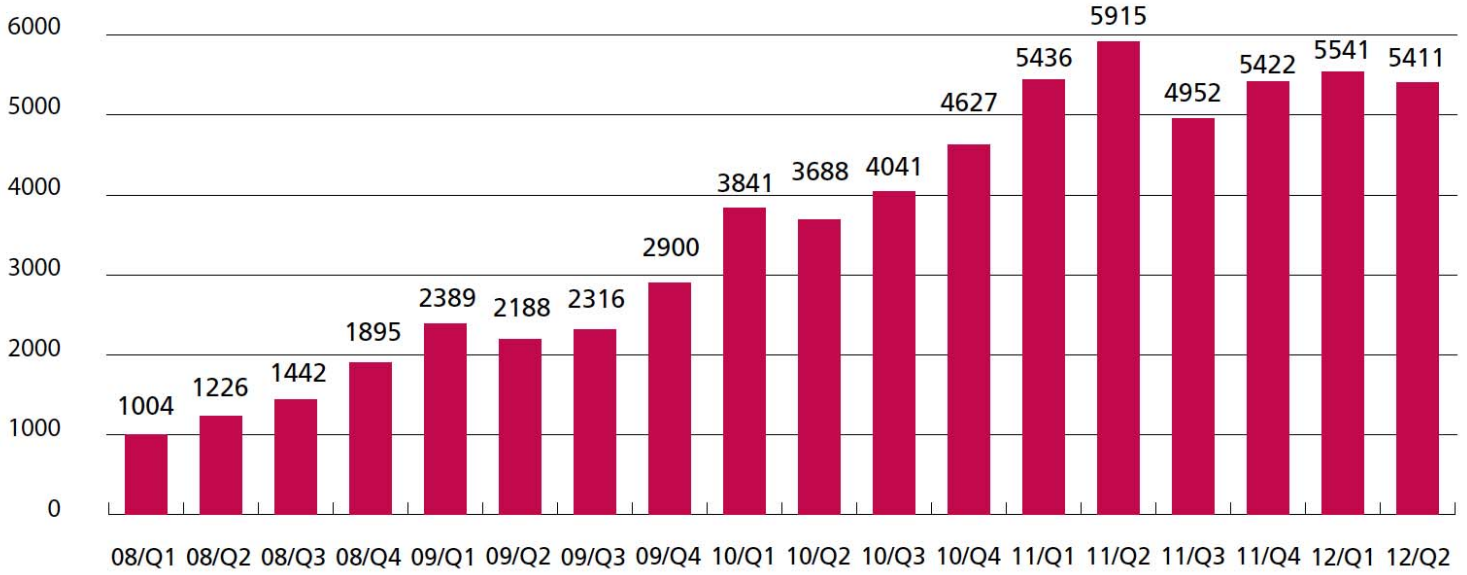


Road
Rail
IWW

Million tonns (2011)

Take-outs

- Struggle to reduce congestion
- Coordination was an initial issue
- Infrastructure costs



Source: Keyrail 2013, data up to Q22012.

EXAMPLE 2: THE JADE WESER PORT

- quay length: 1.725 m
- terminal surface: 130 ha
- logistics zone: 160 ha
- total capacity: 2,7 Mio. TEU
- start of operations: 2012

Volumes 2013: less than 0.1 Mio TEU

Take-outs

- Political development
- Large costs borne by public bodies
- Business case built on draft and growth projections
- Delays
- Limited use to date

- Max ship length: 430 m
- Max ship breadth: 58 m
- Max draft: 16,5 m
- Hinterland connectivity:
  - Direct connection to freeway
  - Connection the German railways freight network

- Total cost 950mio EUR

EXAMPLE 3: HAMBURG PORT RAIL

Hamburg is among European Ports on of the **success stories** in terms of rail transport

Originally HPR unique operator of the railways

Today one single network manager, but **92 railways operators**

More than 230 freight trains a day

Modal split is for **30%** reliant on railroads

Charging system:

- Basic fee for use of infrastructure
- Additional fees depending on requirements
- Charges for delayed occupancy of infrastructure
- Specific access fee to the network

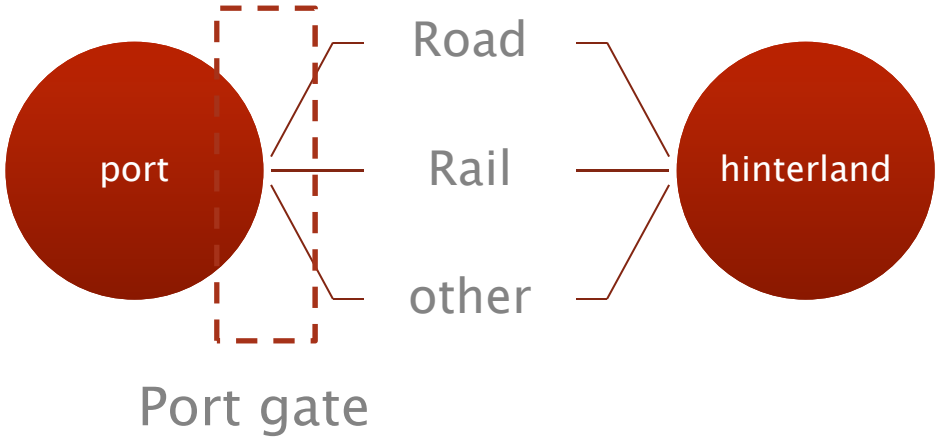
EXAMPLE 3 (CONT.'D): THE ROLE OF HHLA

Take-outs

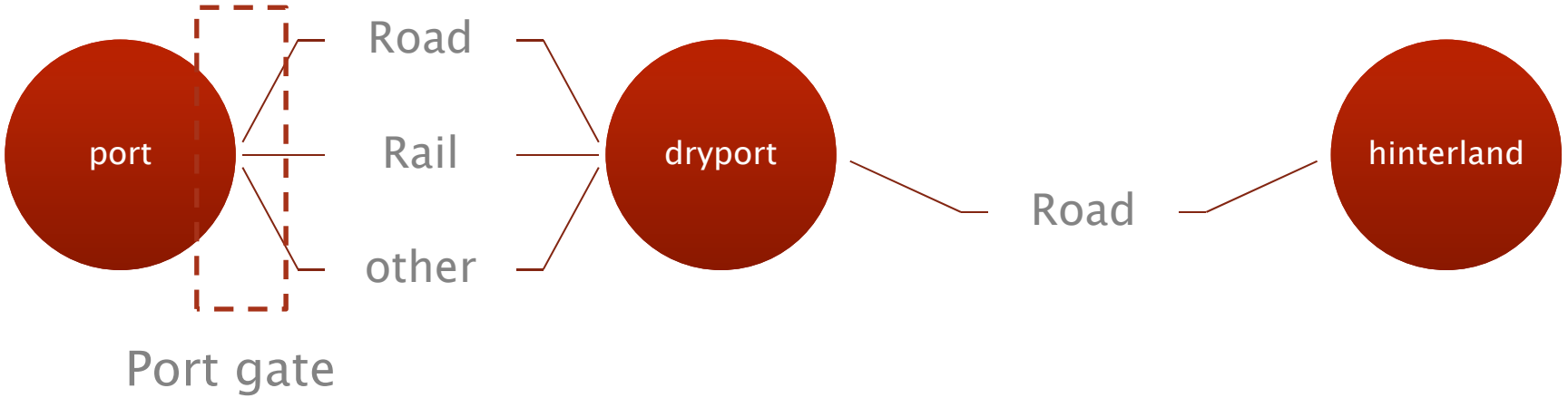
- One of the few integrated operators
- Prioritization of rail transport
- coordination

Source: Cheuvreux German Corporate Conference – Frankfurt/Main, January 2013

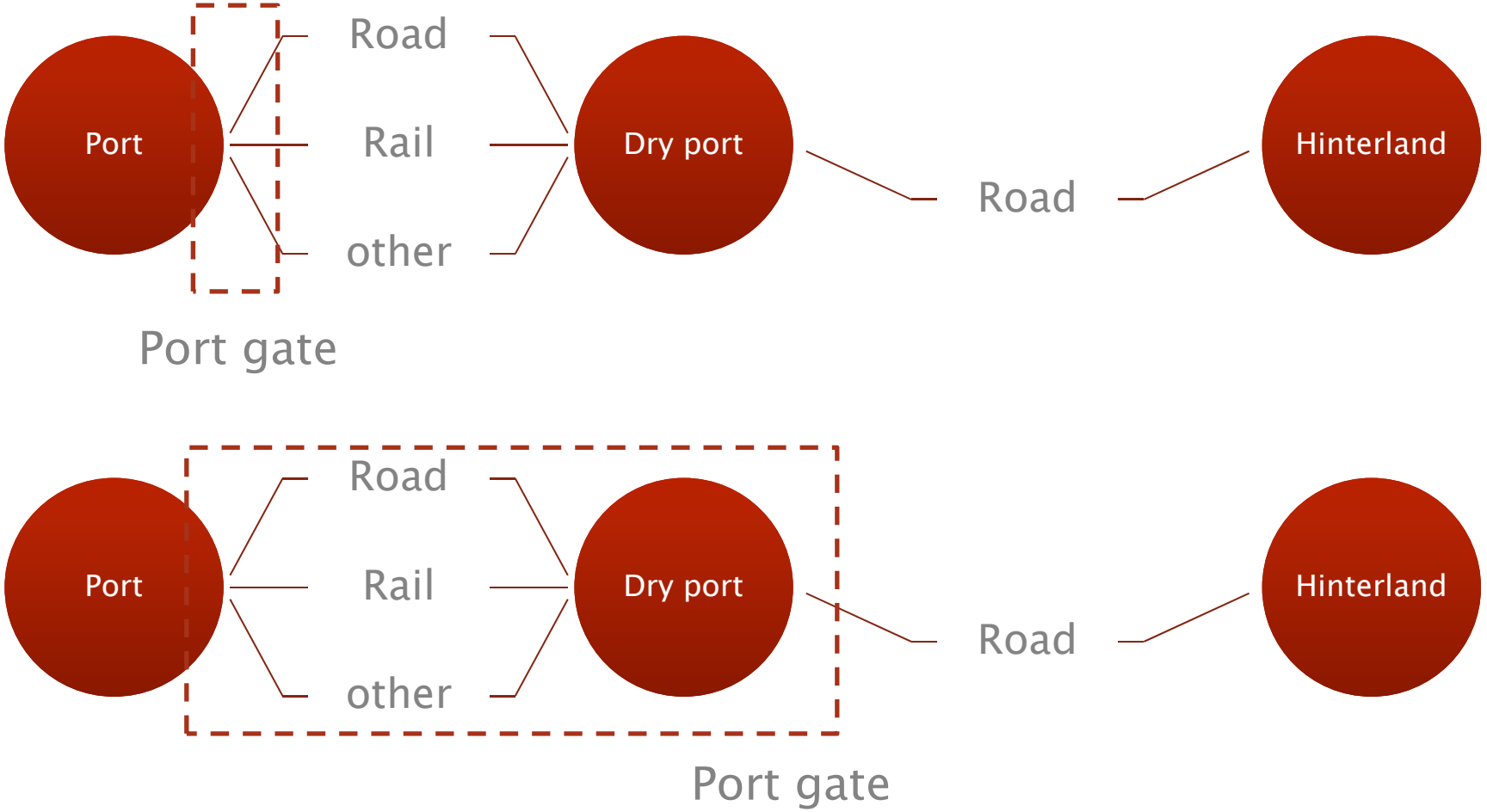
THE DRY PORT CONCEPT



- The exploitation of rail (or barge traffic)might benefit from the development of dry ports
- Dry ports are consolidation centers and allow economies of route density



THE EXTENDED GATE CONCEPT



EXAMPLE: THE ROTTERDAM EXTENDED GATEWAY

Objective:

- Reduce road congestion around the port
- Facilitate the exploitation of economies of density
- Reduce environmental impacts
- Increase the use of barge transport

Issues associated with the extended gate concept:

- terminal location decision
- coordination of container movements (e.g. different containers arrive and are requested by their customers at different times),
- the connectivity of rail or barge transport,
- information exchanges,
- network design
- administrative (e.g. customs) procedures

EXTERNAL EFFECTS OF HINTERLAND TRANSPORT

Emissions
- Recurring theme
- Increasingly a critical element for ports
- Emissions from trucking are lower than emissions from ships

Congestion
- Visible
- Affects the port efficiency
- Affects relations of the port with local communities

Impacts and consequences
- Local community support
- Increase in costs
- Demand from customers

REDUCING EMISSIONS FROM HINTERLAND TRANSPORT

- Rationalising the pattern of container movement
- Shifting container traffic to lower carbon transport modes
- Improving the loading of vehicles, wagons and barges carrying containers
- Increasing the energy efficiency of the transport operations
- Powering these operations with cleaner, lower-carbon fuels

EXAMPLE: ALAMEDA CORRIDOR

- The Alameda Corridor Transport Authority set up in 1989
- 32 km rail corridor designed to reduce congestion in the Los Angeles/Long Beach
- High capacity (3 double stacked tracks)
- Operated competitively (two operators: UP and BNSF)
- Of the 11.8m TEU transiting through the ports, 3.4 m TEU went up the corridor
- Issues of coordination (e.g. UP operation of intermodal yard in Carson)

Project costs:
2.43 bn US$
Approximately half though bonds
And the rest split approximately between the ports, federal loan, MTA loan, and other sources

Importance of marshaling agreements

CONCLUDING REMARKS

- The ability of container terminals to create *supply chain value* through:
  - the container gate systems,
  - hinterland transport by road or rail,
  - and dry ports
- Increasing need for *coordination* to minimise the risk of bottlenecks developing
- A solution needs to be embedded in the port concept
- Long term/short term vision
- Funding and concessioning