

THE DEVELOPMENT OF INTERNATIONAL FREIGHT TRANSPORT IN EUROPE AS A RESULT OF DEVELOPMENTS IN INTERNATIONAL TRADE AND LOGISTICS

*Canada's Asia-Pacific Gateway and Corridor Research Conference,
Vancouver BC, May 2-4, 2007*

TNO | Knowledge for business

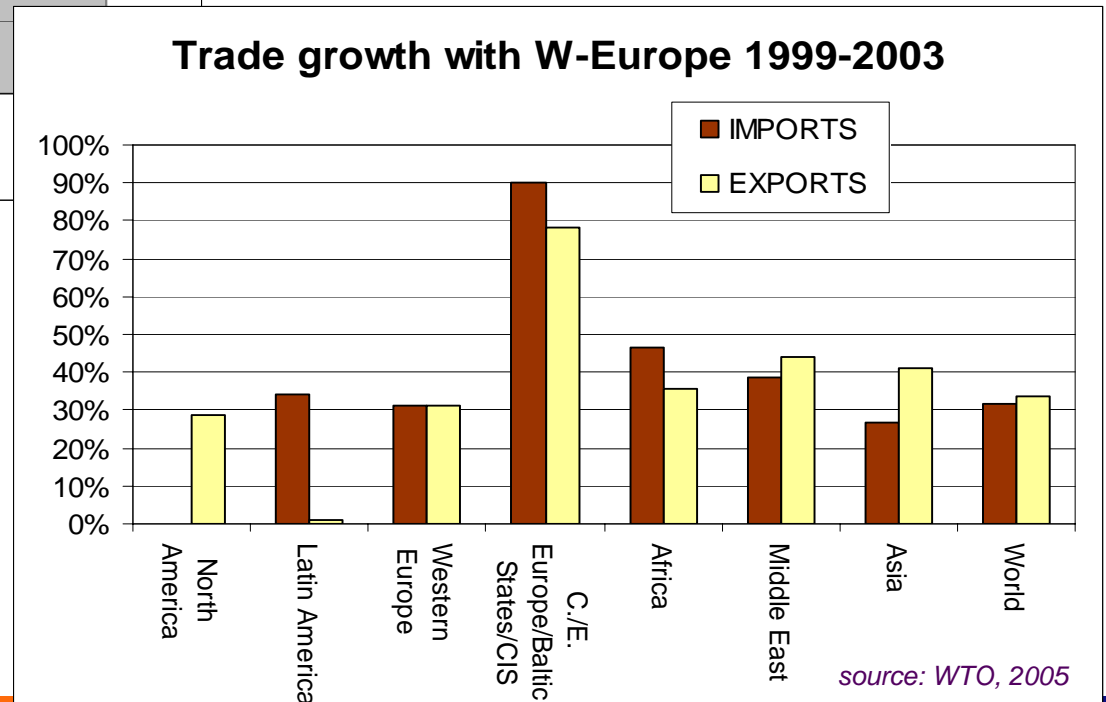
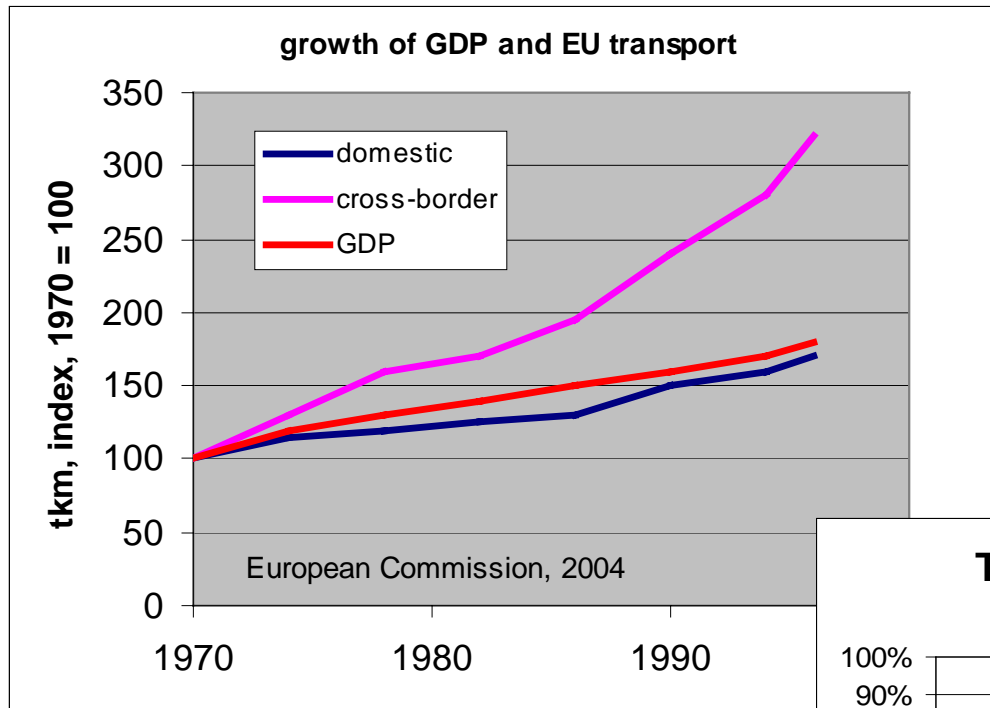


Cees J. Ruijgrok,
TNO Mobility and Logistics &
TIAS Business School at Tilburg University

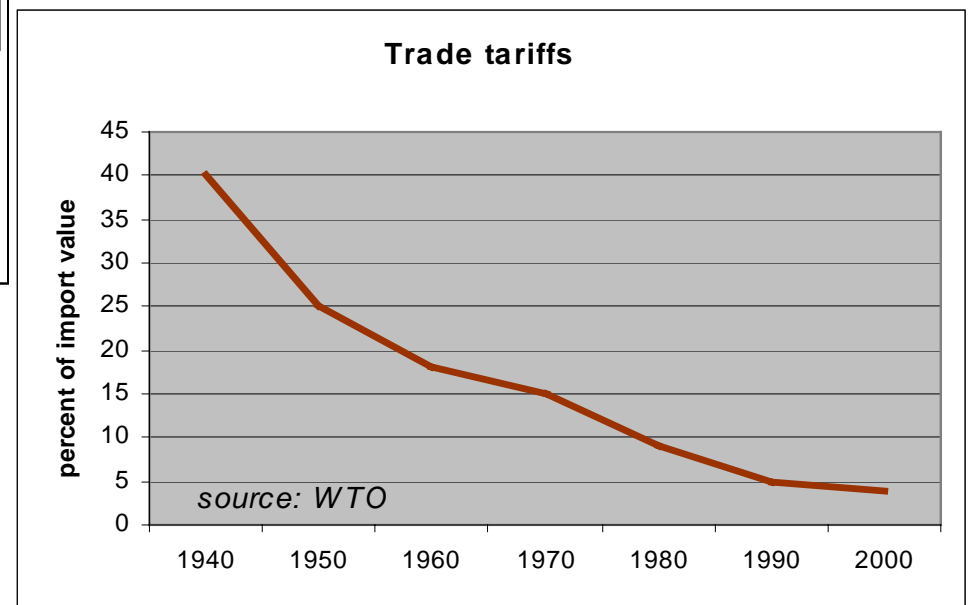
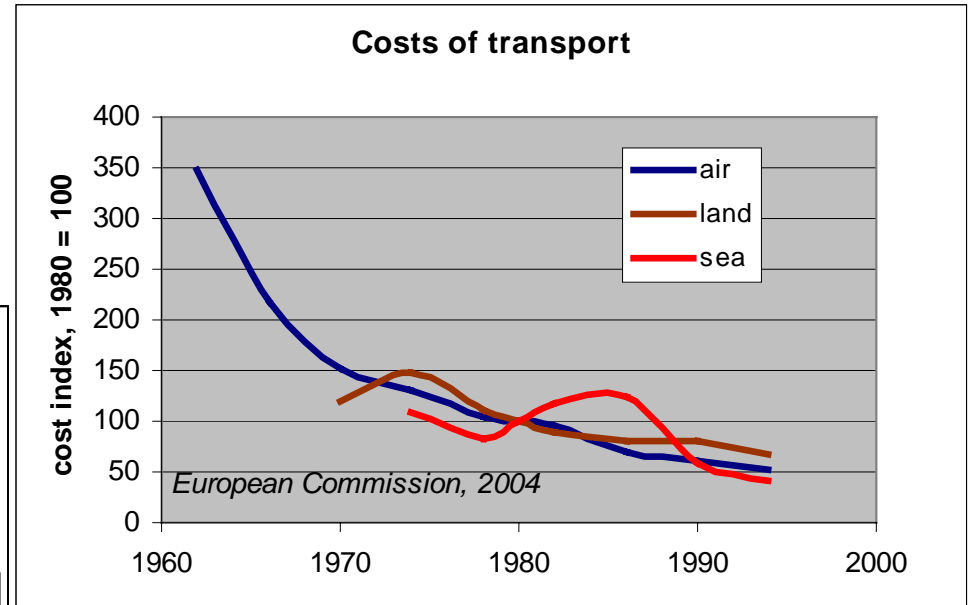
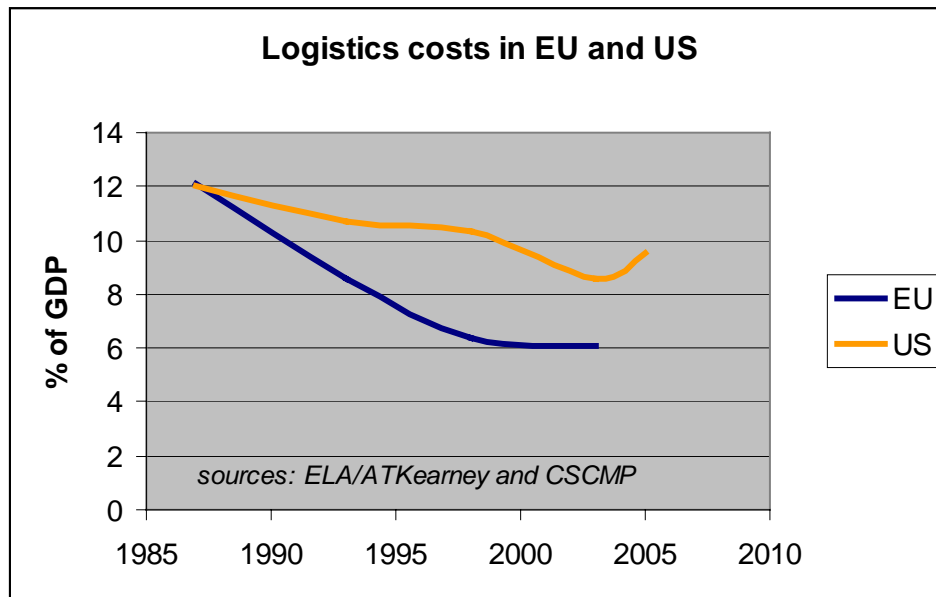
Agenda

- Developments in Transport and Logistics in Europe
 - In the past
 - In the future
- Developments in Transport networks
 - Driving forces
 - Trade offs
 - Towards hybrid networks
- Effects of Globalisation on Transport volumes
 - Harbour developments and containerization
 - Relative importance of external vs internal relations

Transport growth has been staggering



Will costs continue to fall?



What direction for the future?

- Strong globalisation forces
- Cost curves are flattening
- But especially in emerging regions, cost still about to drop
- Let us look into logistics forces...

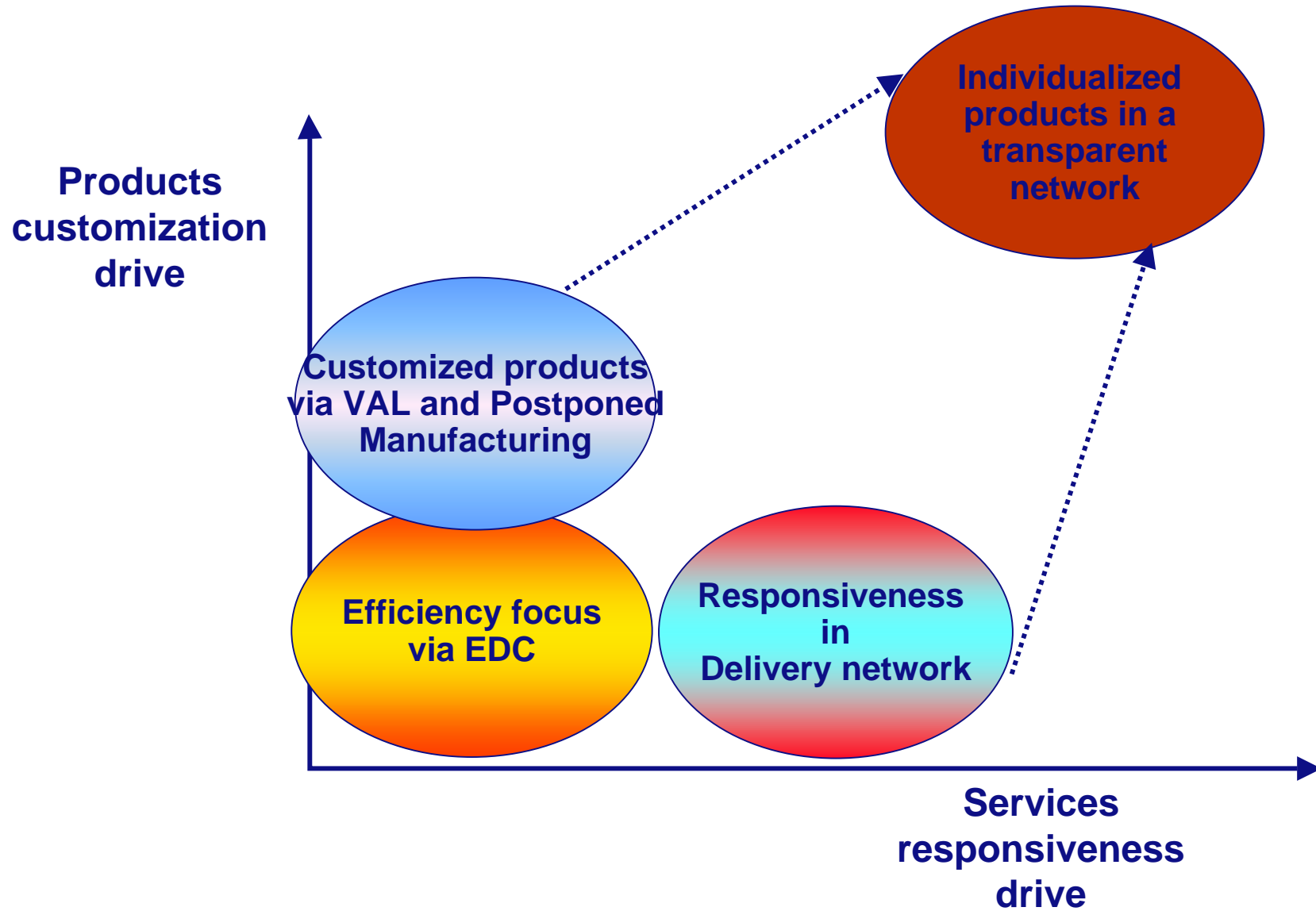
Different focusses of logistic services demand different attributes (Vermunt/HIDC)



2 Reliability: Correct Time, Place, Quantity, Condition

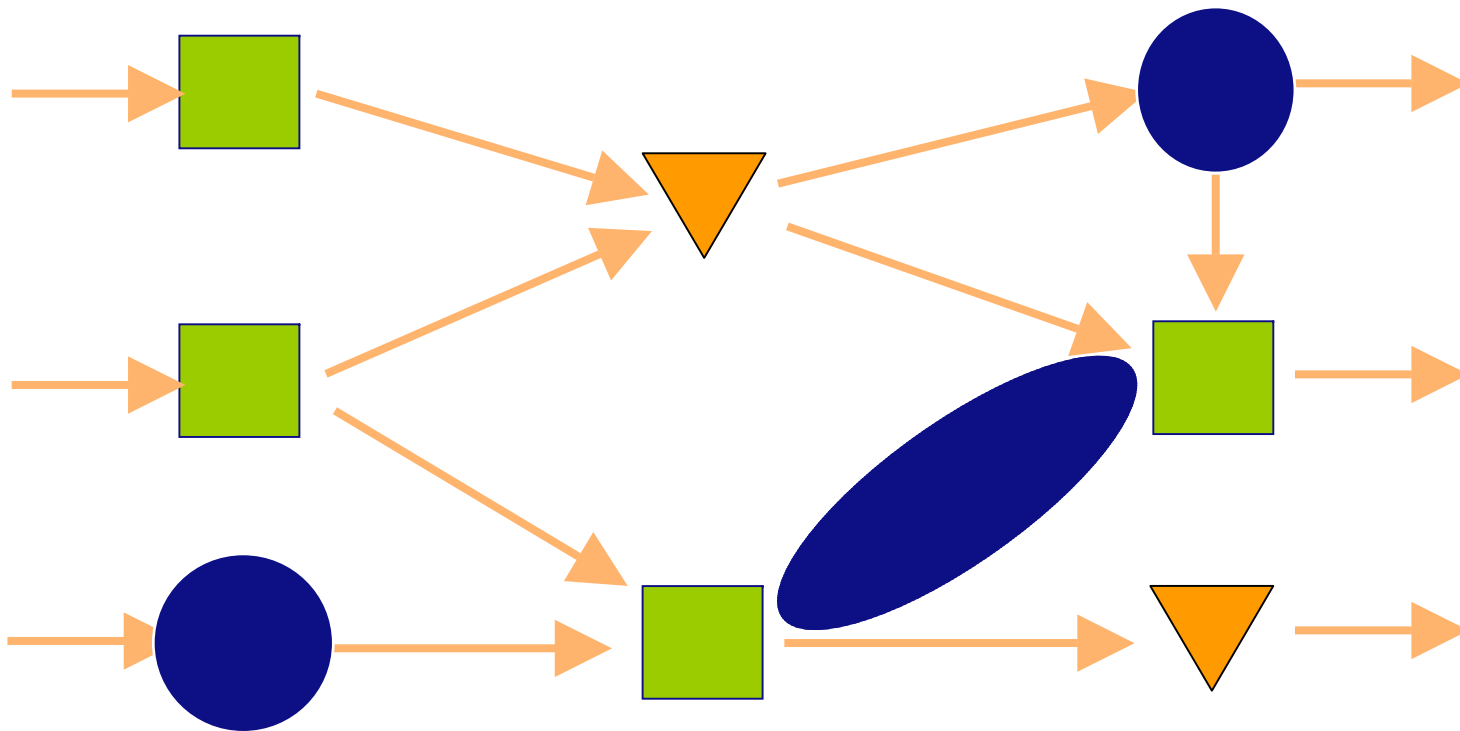
3 Responsiveness: Lead time, Flexibility, Contact frequency

European logistics 20??



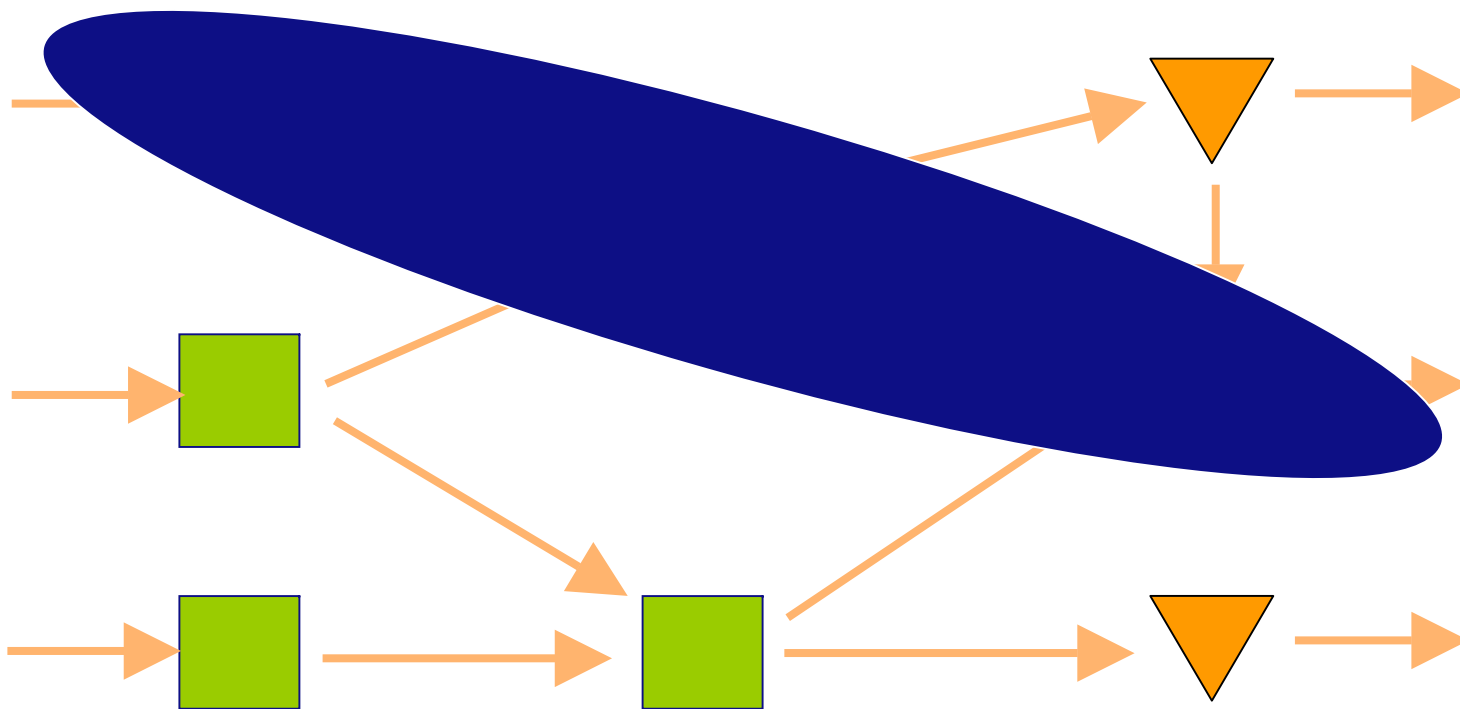
Development Focal Point

Process optimisation within one company



Development Focal Point

Chain optimisation



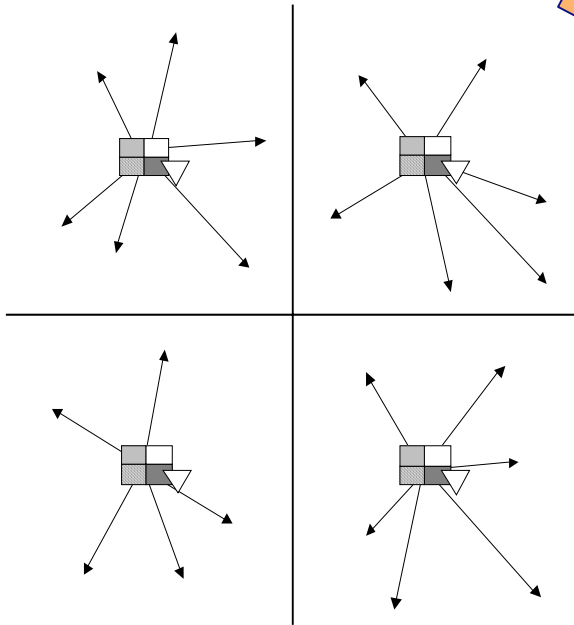
Development Focal Point

Network optimisation: this is really complicated!

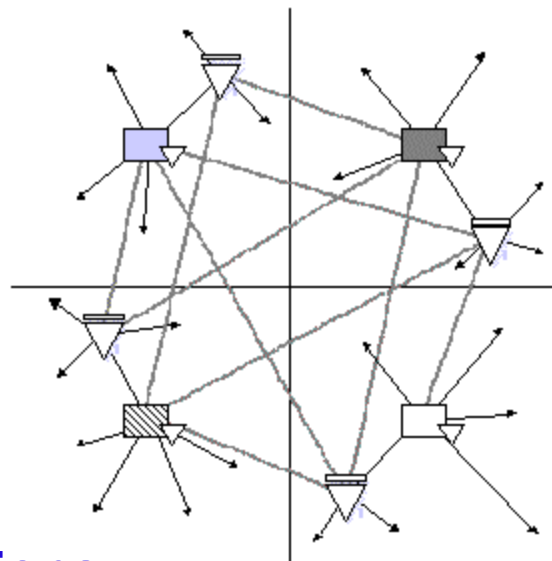


Changes in Production and Logistics will continue

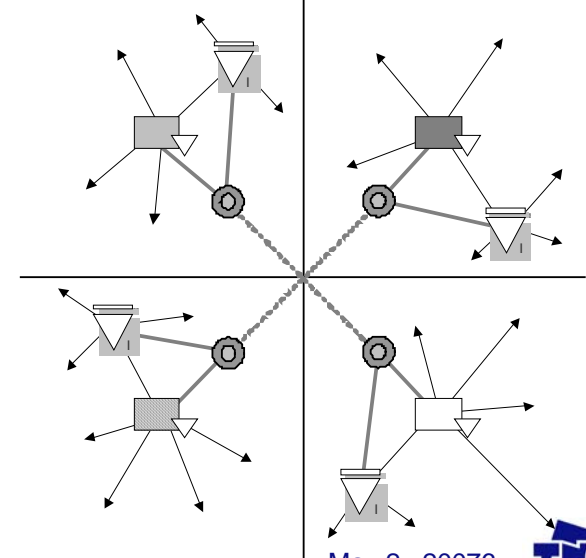
(A) Host market production
(multinational companies)



(B) Single source production
(transnational companies)



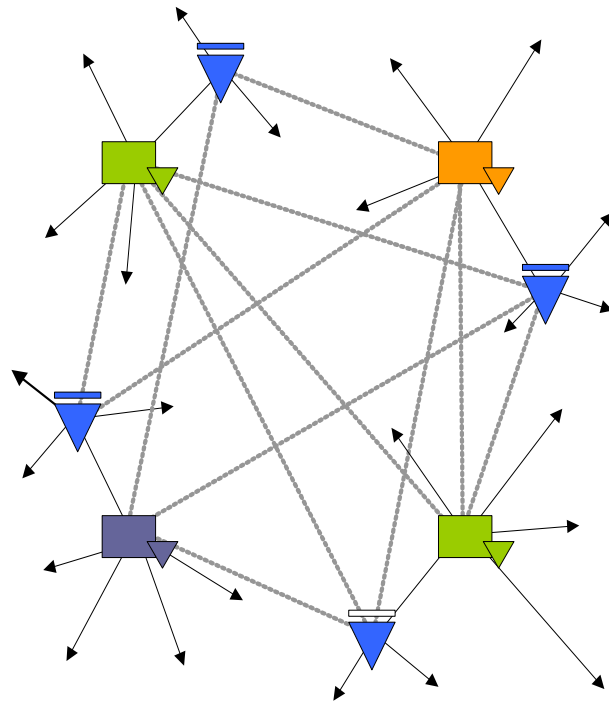
(C) Single source production
(transnational companies operating in hub network)



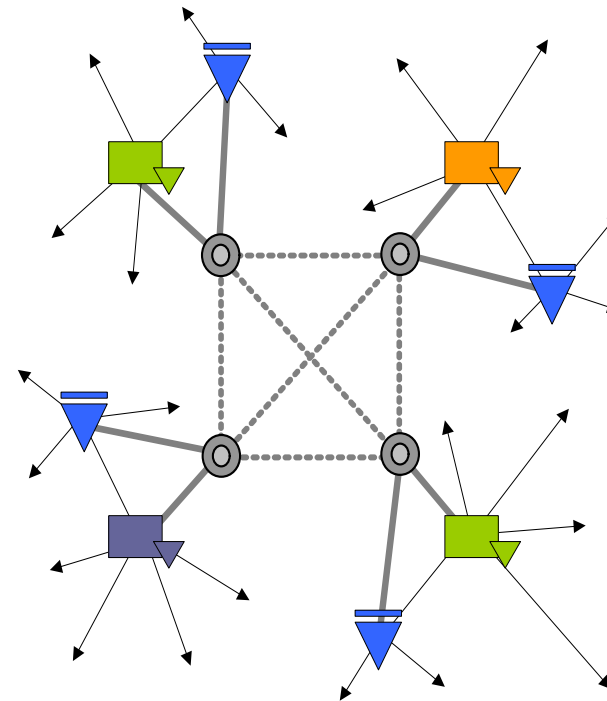
- Hub networks
- Focussing activities/locations
- Collaborative Planning

Towards Collaborative Hub Concepts

Direct fragmented flows between origin and destination



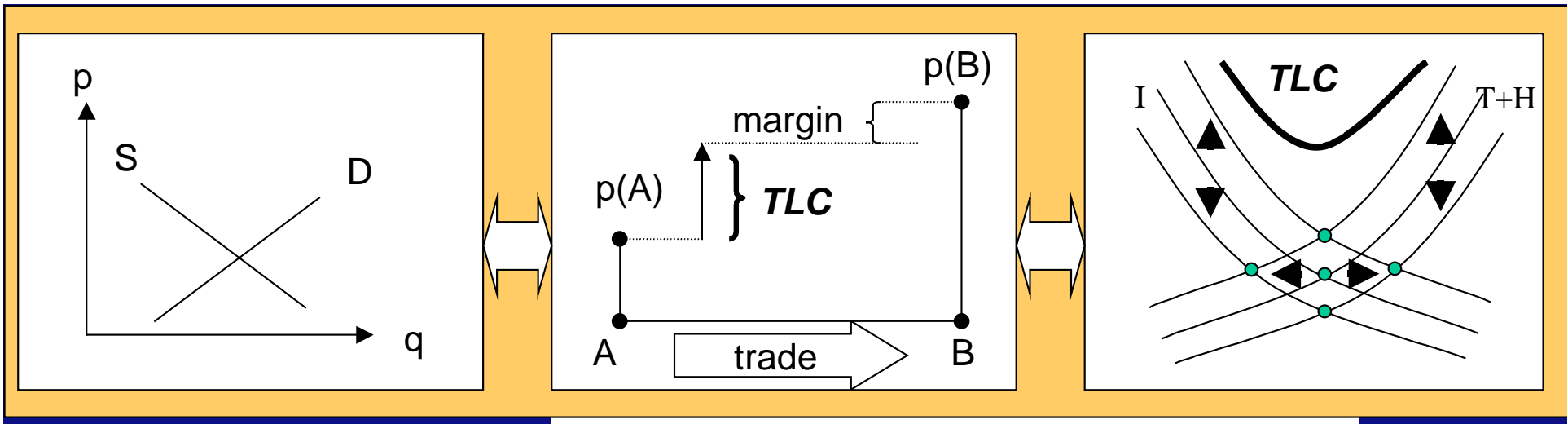
Collaborative network with consolidated flows via hub network



■ Manufacturing facility
 ▼ Distribution center
 ● Hub facility
 ↗ Distribution
 - - - Direct transportation
 - - - Interhub link
 / To/from hub



Global logistic developments will depend on development of cost differences and logistic trade offs

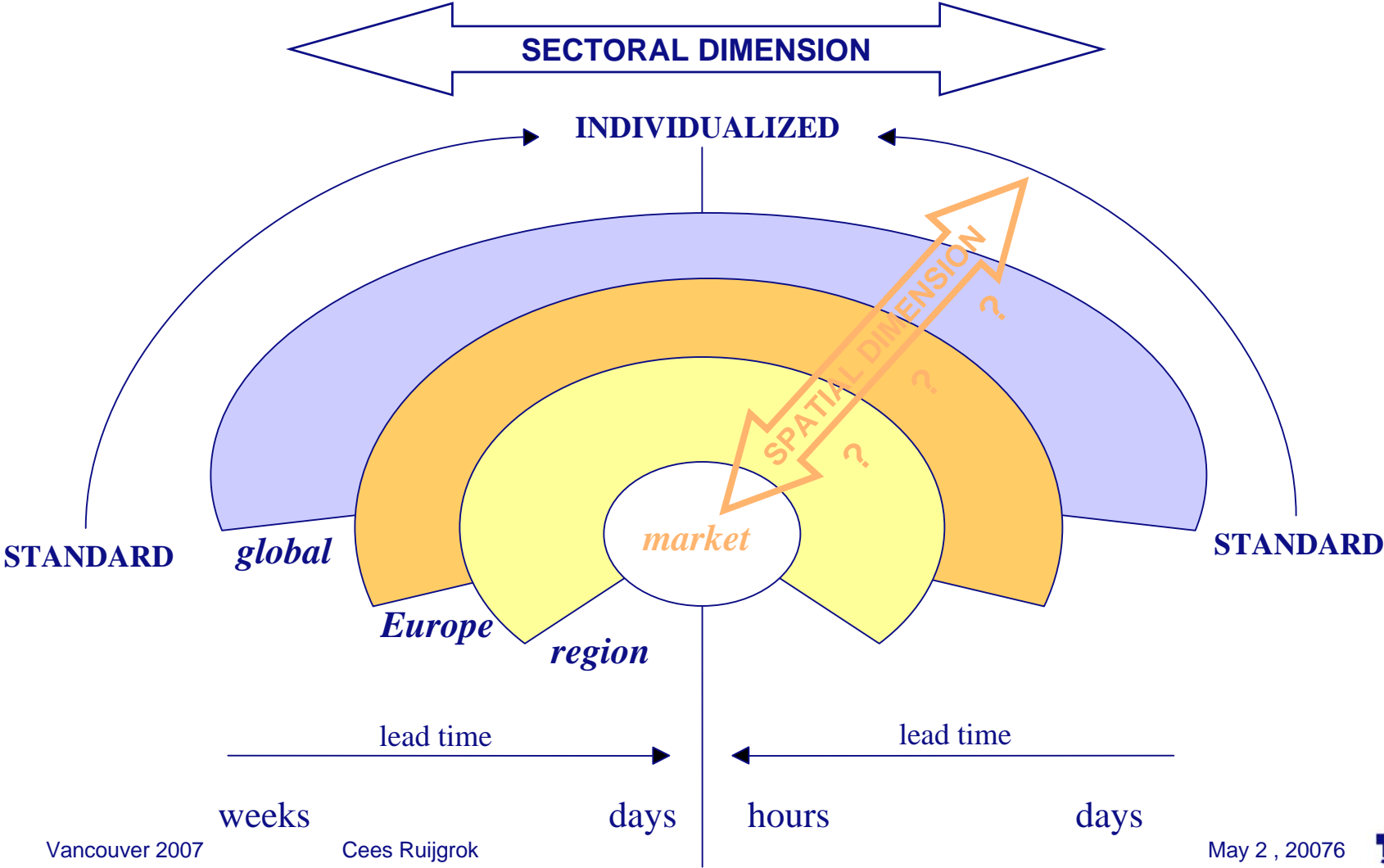


Production and consumption

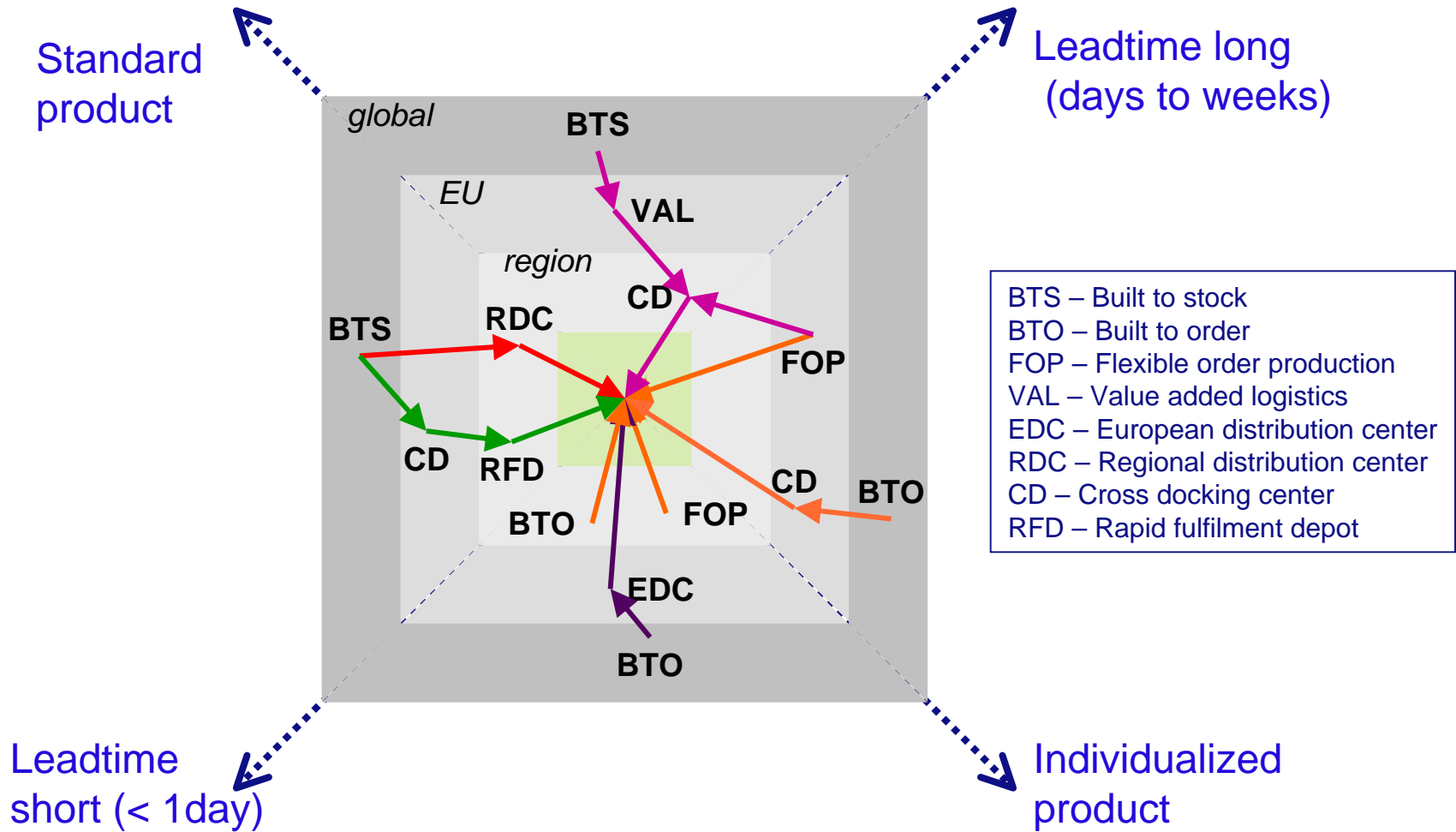
Trade based on price differences & Total Logistics Costs

Logistics structures based on service and cost trade-offs

Future logistic structures?



Networks move towards individualized products and services



Source: adapted from Vermunt, 2001



Long term trends in network architectures

fragmentation of flows

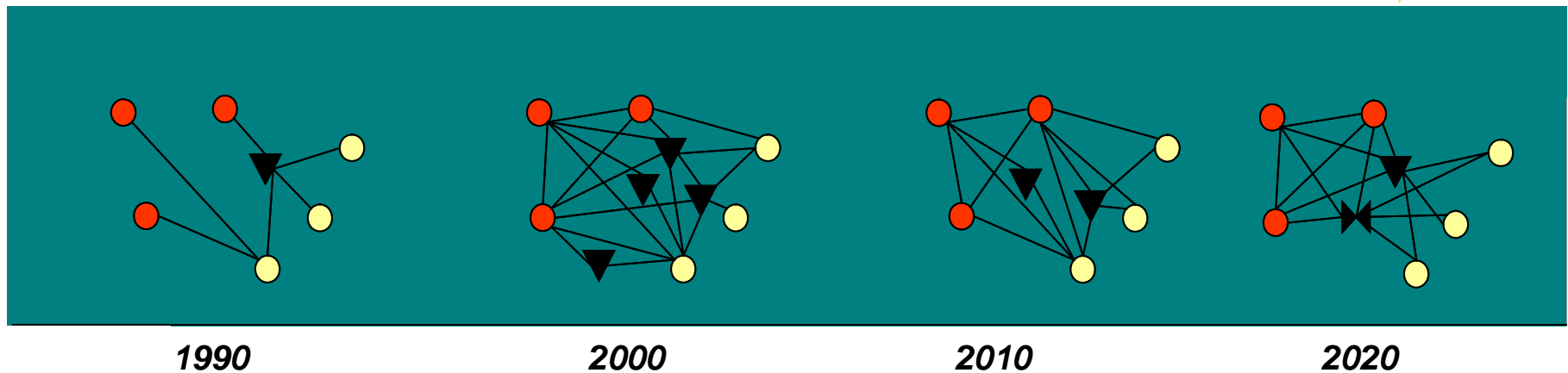
- direct shipping
- vertical disintegration

internal rationalization

- stock reduction
- outsourcing 3PL => 4PL

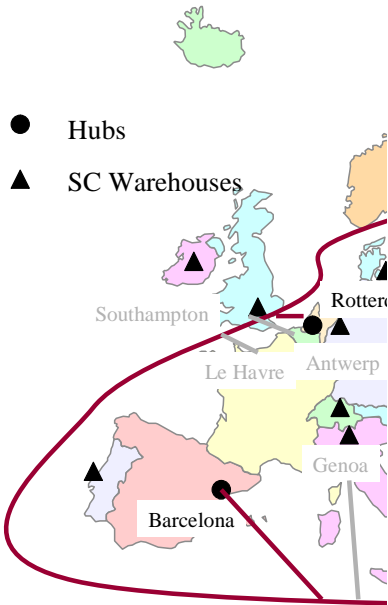
external collaboration

- multi-user hub networks
- horizontal bundling

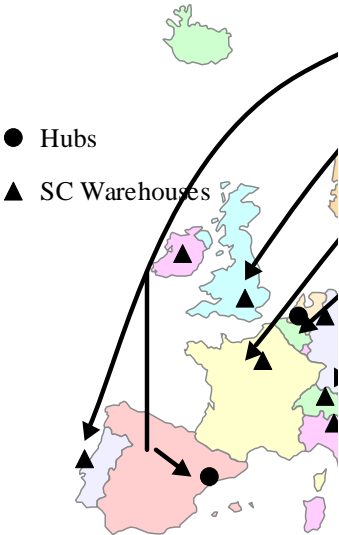


Intermodality in hybrid networks: “co-modality”

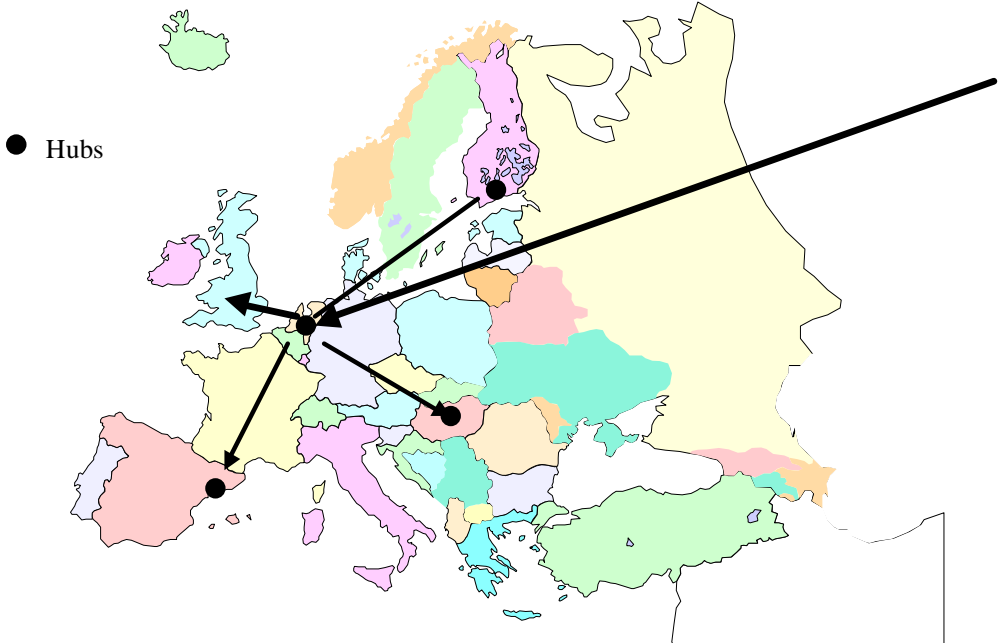
Sony Europe - Proposed Shipping Routes FY01 - 4 Ports



Current Air Cargo Entry Points to Warehouse Network - FY98, 13 Entry Points



Future Air Cargo Entry Points to Warehouse Network - FY01, 1 Entry Points



Summary

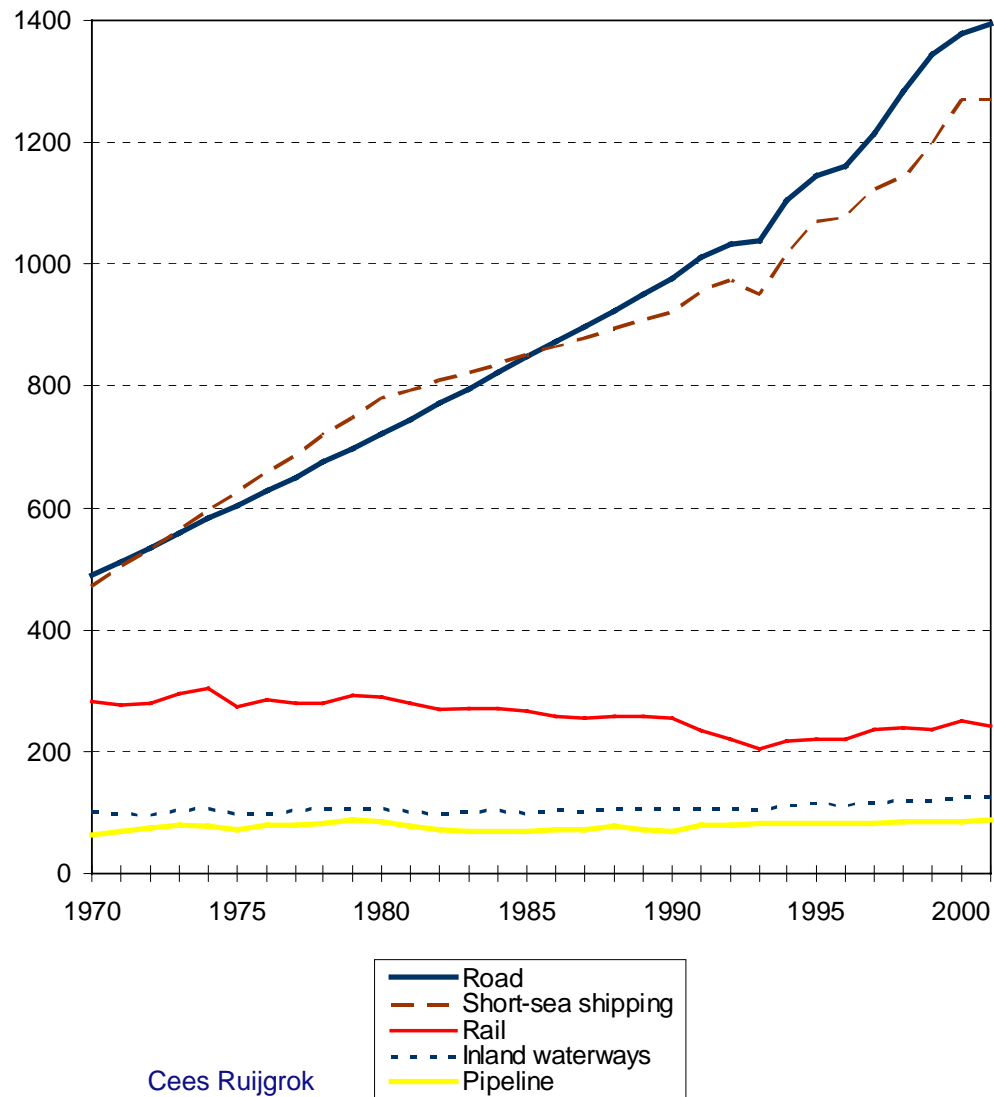
- Reduction of costs of interaction has boosted changes in global supply chain networks
- Firms have succeeded to improve service and product quality dramatically, creating a new competitive playing field
- The quality/price ratio is maintained by consolidation and horizontal collaboration
- Implications for transport systems?



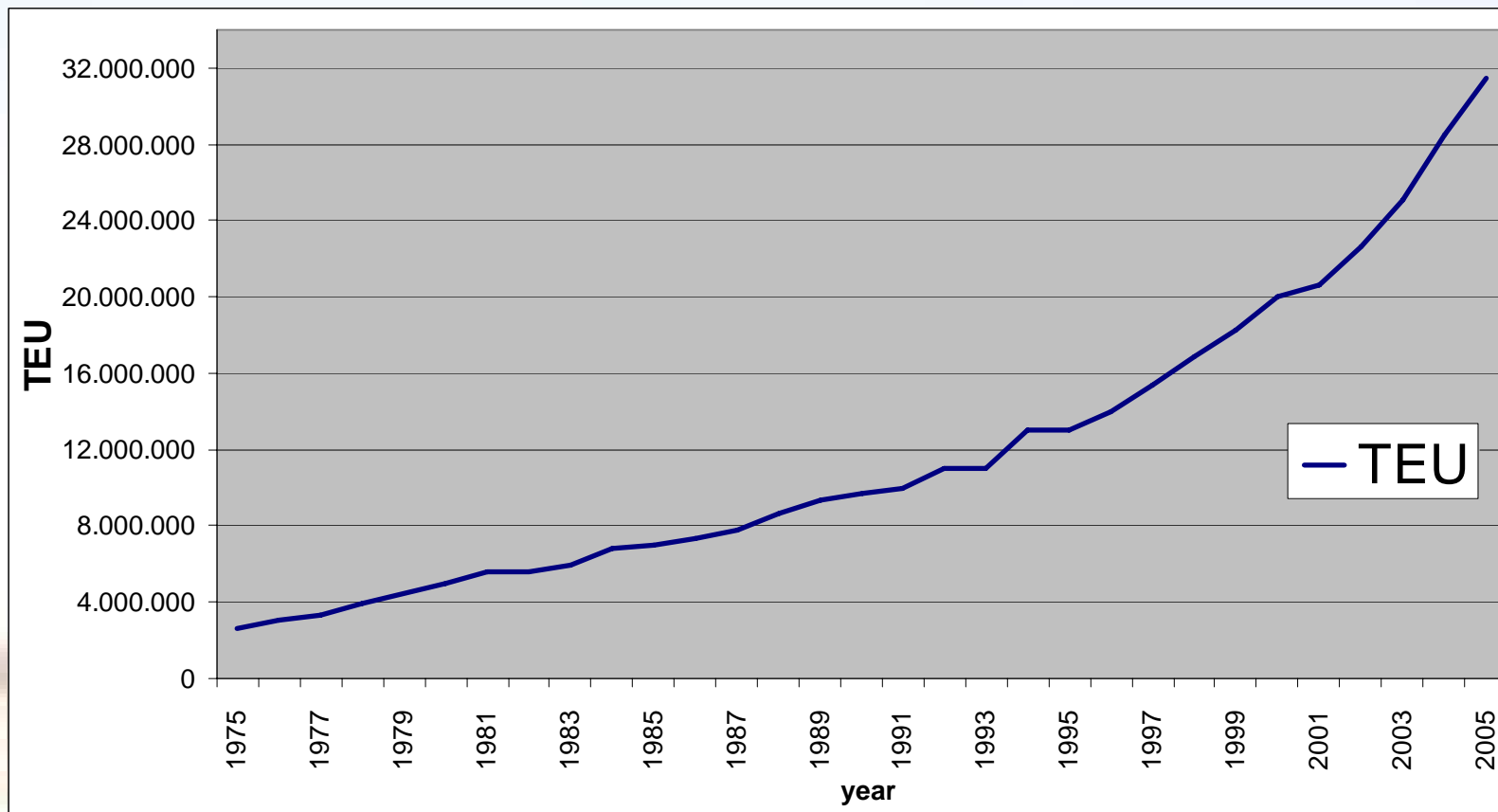
Trends and expectations

- Steady growth of sea and air traffic
 - Double digit growth in global LSP market
 - Changes in spatial patterns of flows due to logistics networks
 - Congestion and fuel price starts to hit developed economies
 - Reliance on slower modes of transport in Hinterlands
 - Firms are also looking for consolidation and collaboration options
-
- New transport systems need to respect trends in logistics:
 - ...directions?

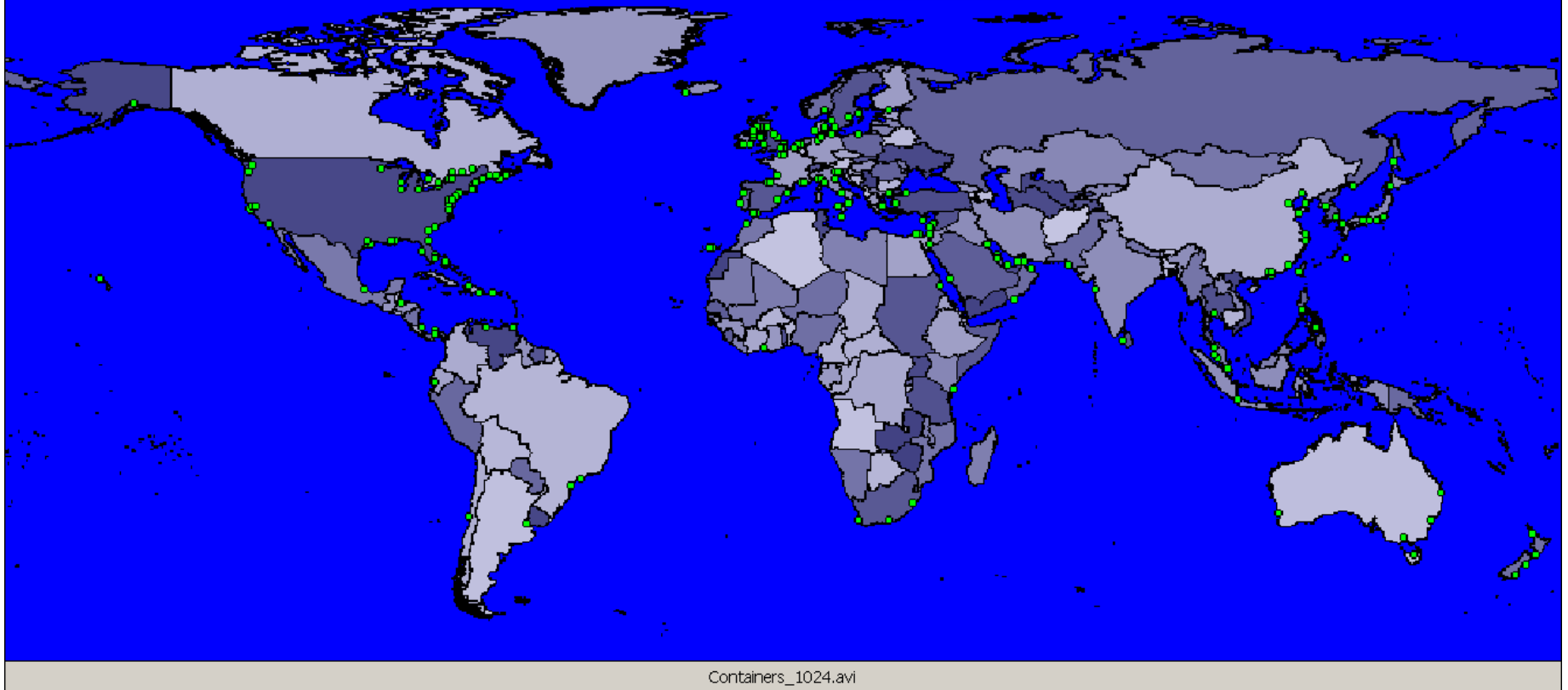
Performance by goods transport in billion tonkm 1970-2001 (DG TREN, 2003)



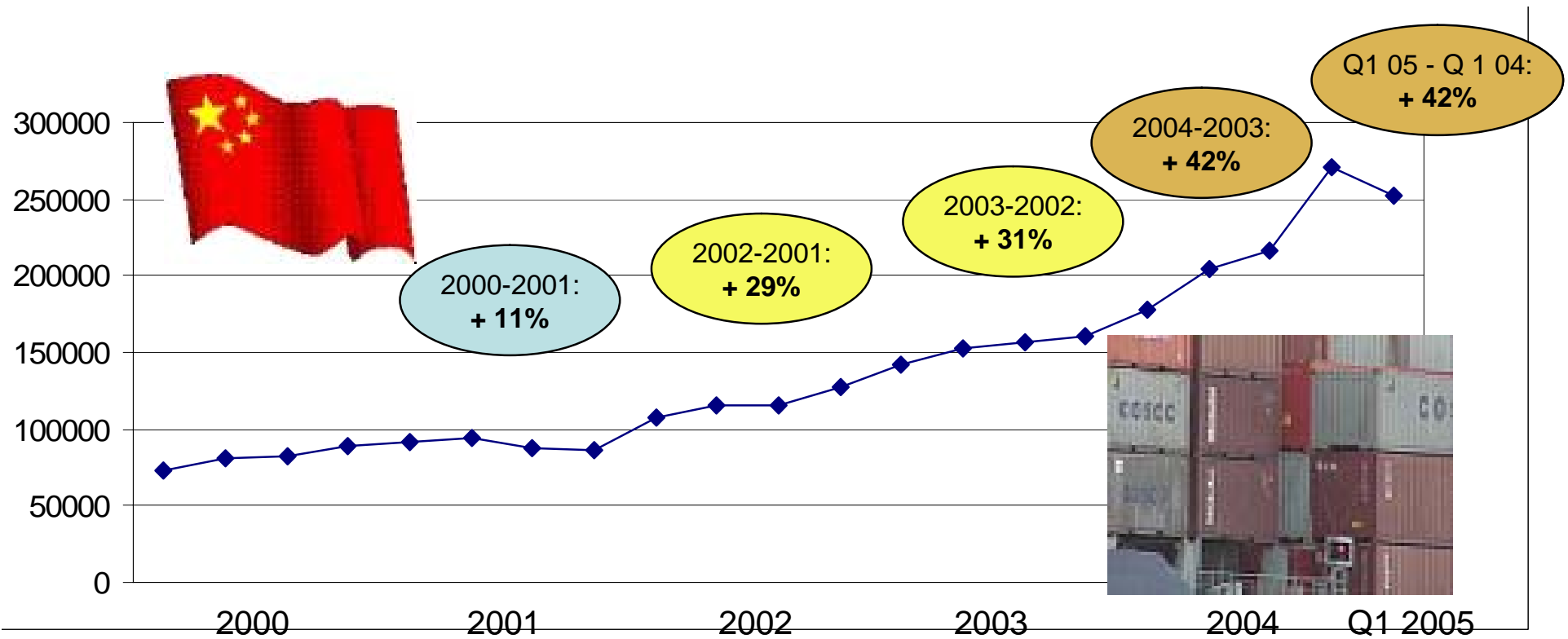
TEU-throughput in the Hamburg – Le Havre range (1975-2005)



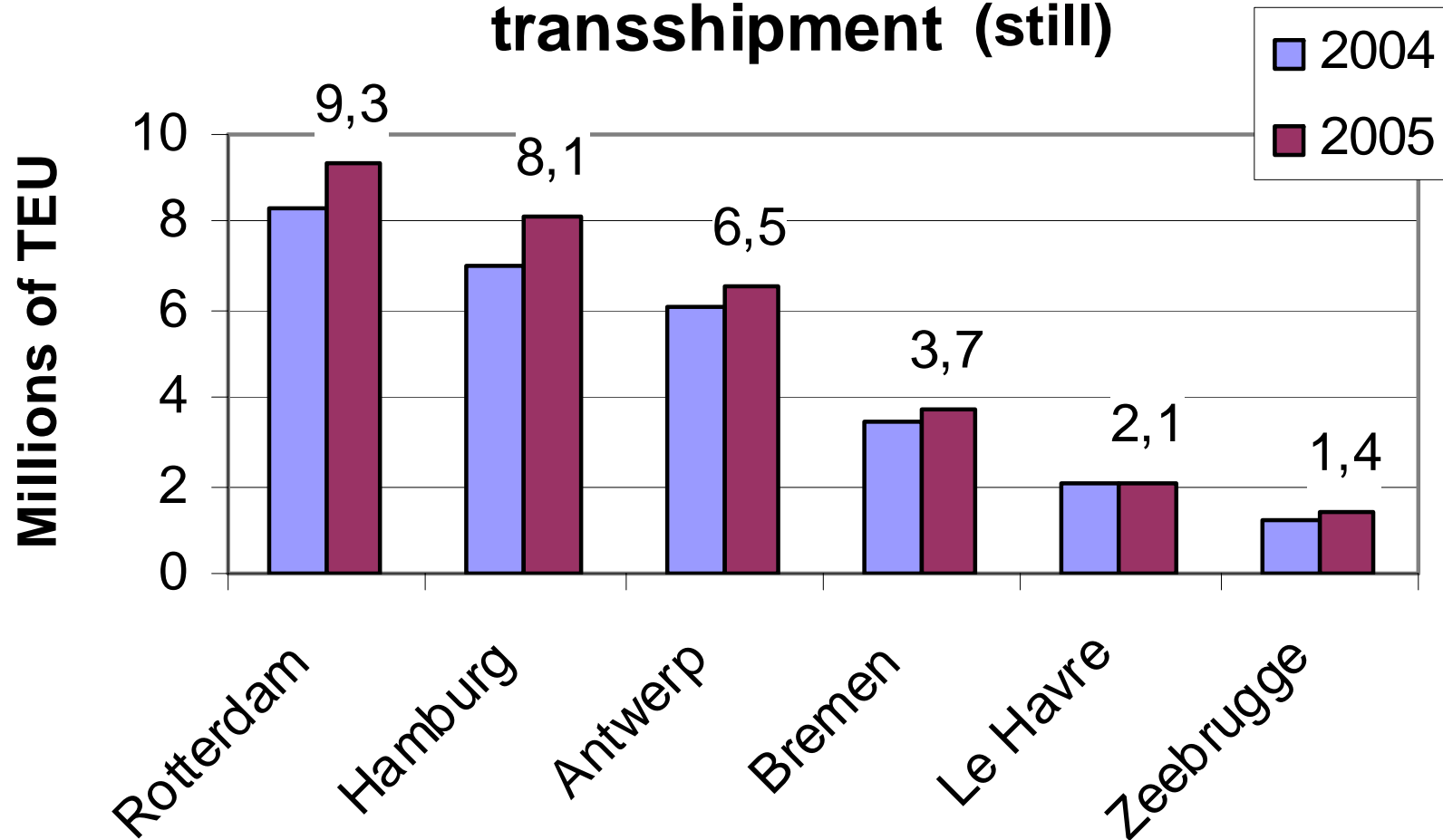
Globale Container Overslag 1971



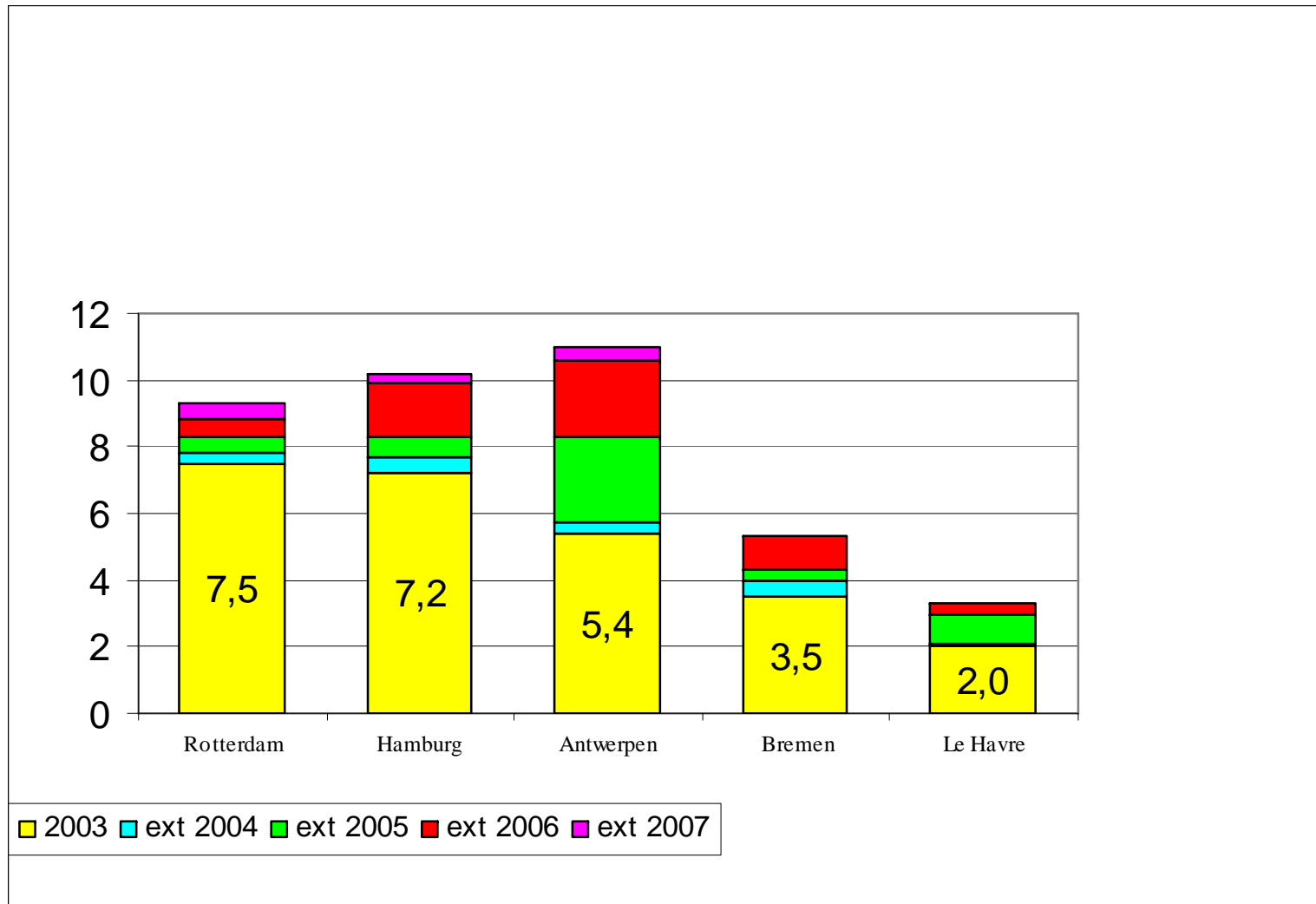
TEU's to and from China in the port of Rotterdam



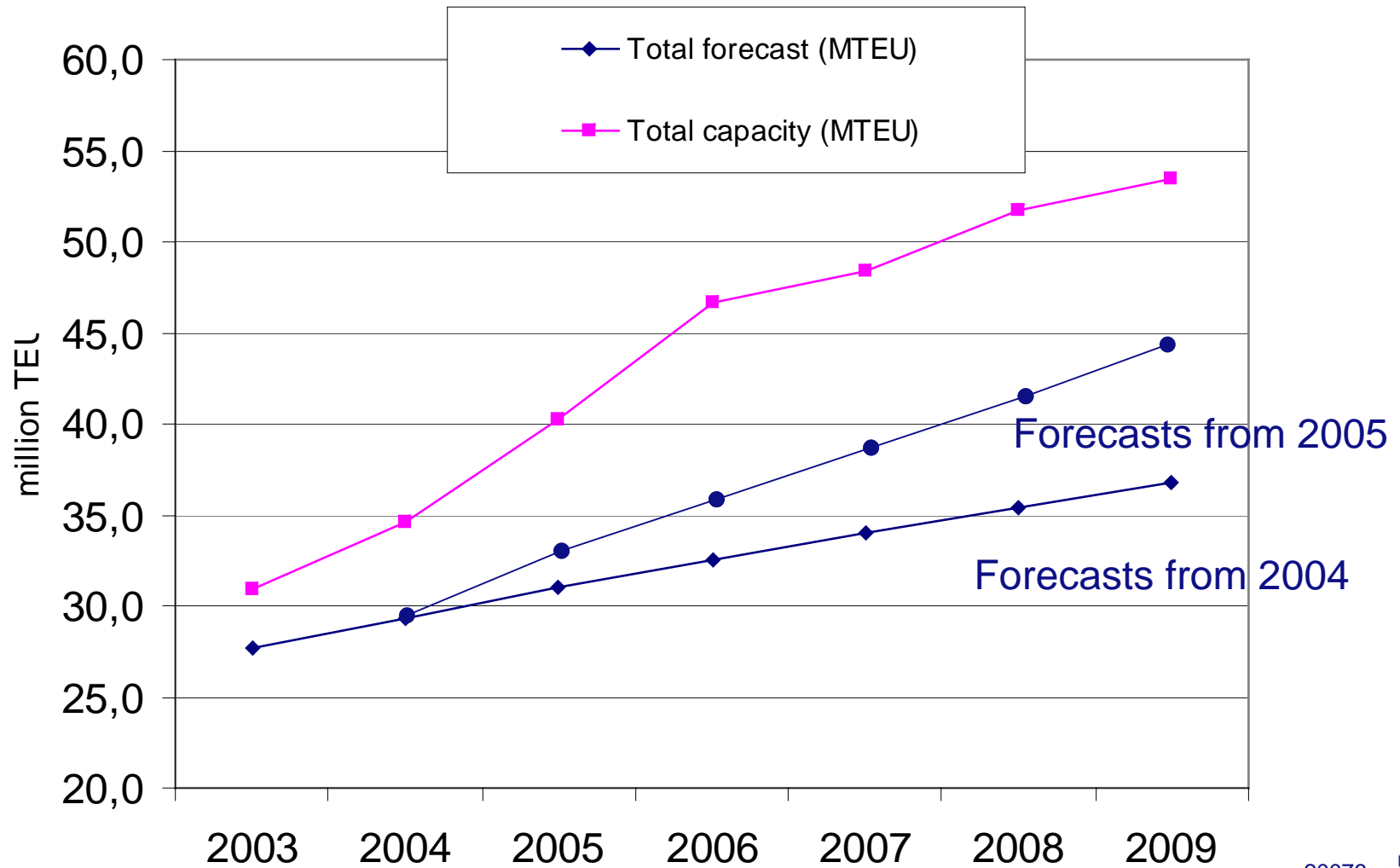
Rotterdam nr.1 in European container transshipment (still)



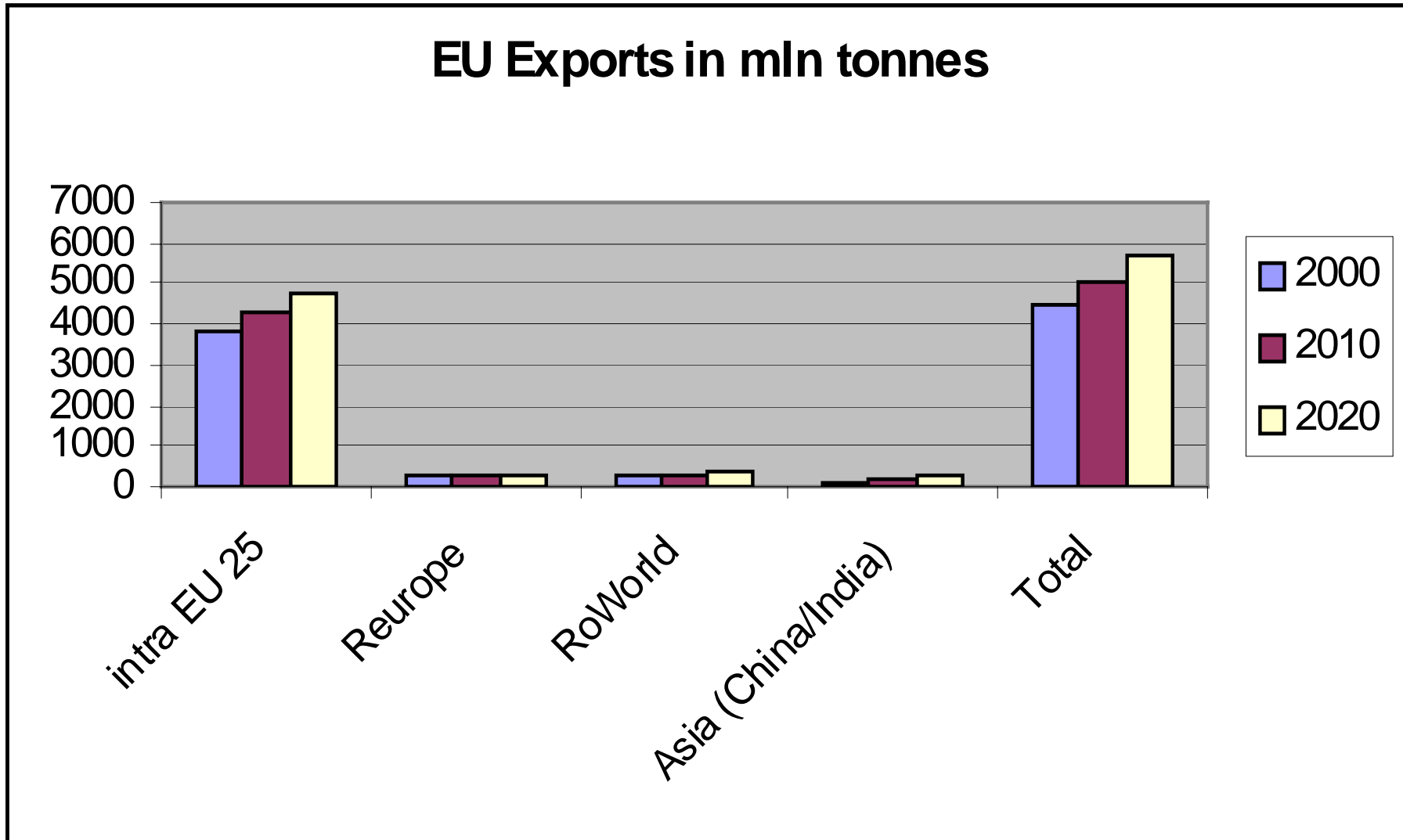
Capacity growth in container transshipment



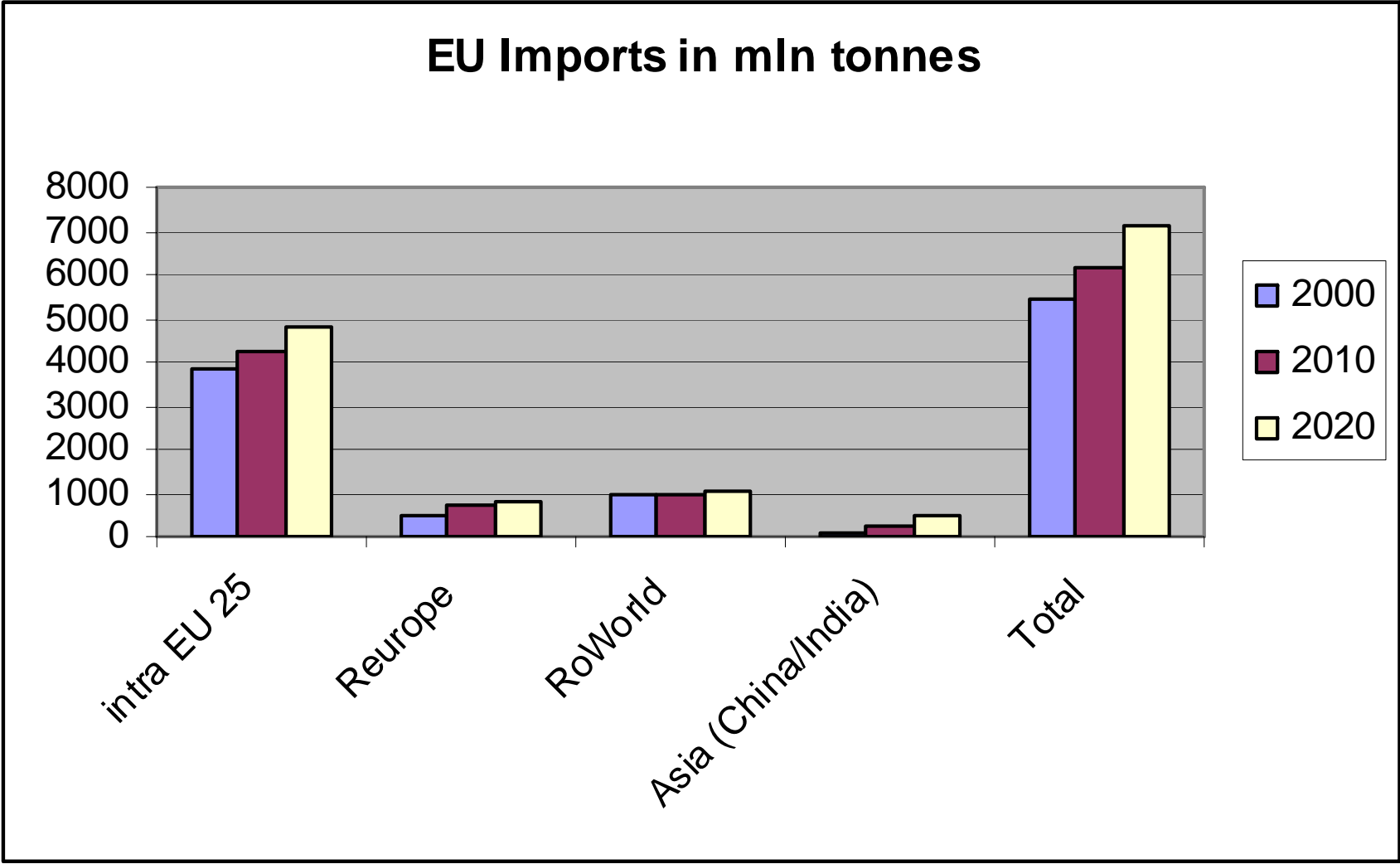
Total capacity utilisation for 5 biggest ports in Le Havre – Hamburg range



EU25 exports in 2000, 2010, 2020 in mln tonnes

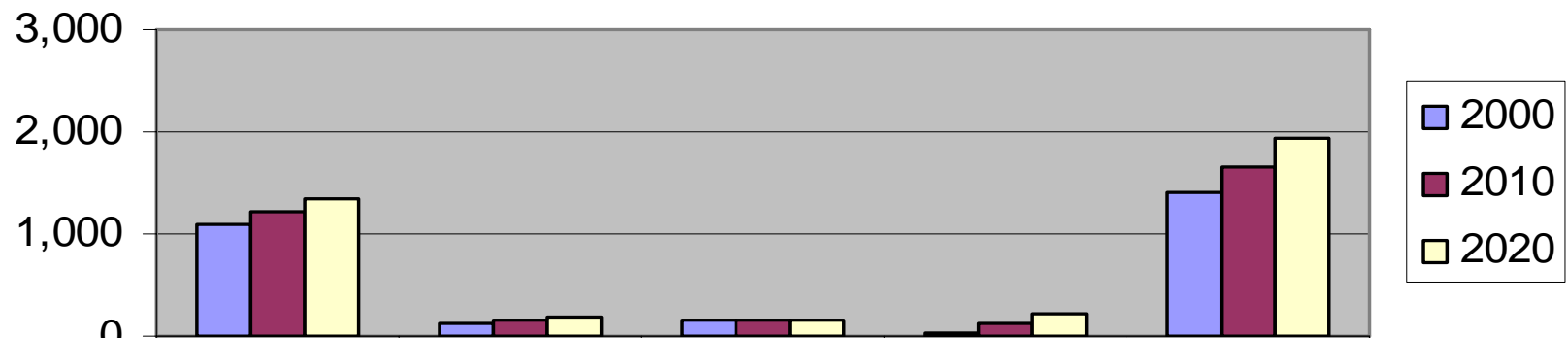


EU25 imports in 2000, 2010, 2020 in mln tonnes



EU25 imports/exports in 2000, 2010, 2020 in mln tonnes; containerised transport NSTR9

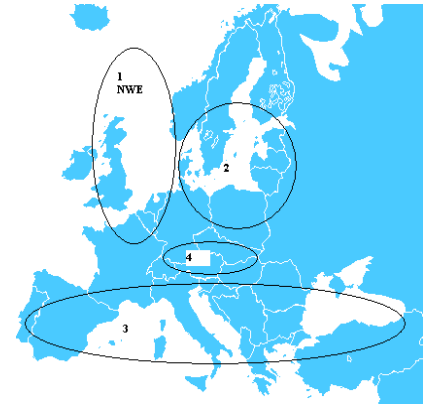
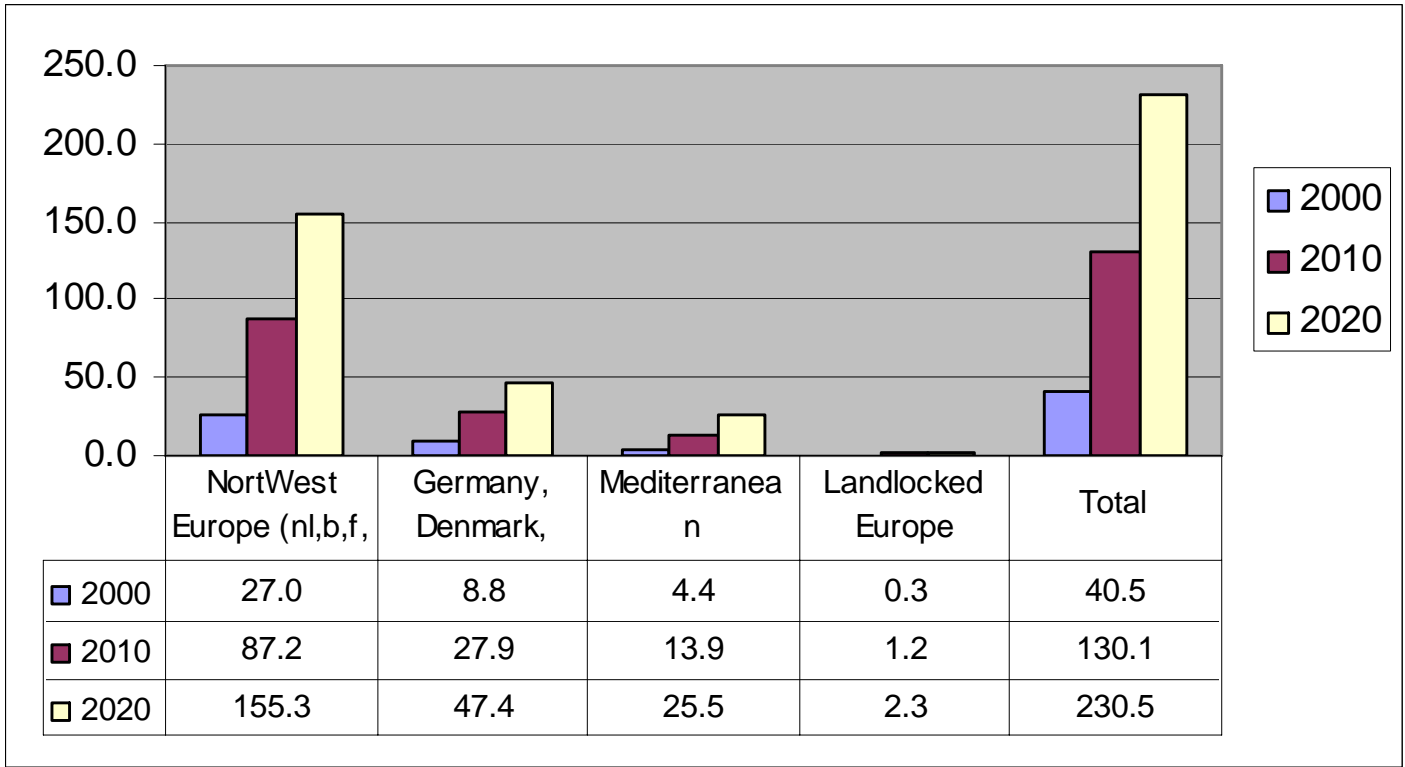
**EU Imports and exports summed 2000, 2010, 2020
in mln tonnes of NSTR9**



	intra EU 25	Reurope	RoWorld	Asia	Total
2000	1,101	125	146	40	1,411
2010	1,216	157	153	127	1,653
2020	1,357	189	165	223	1,933

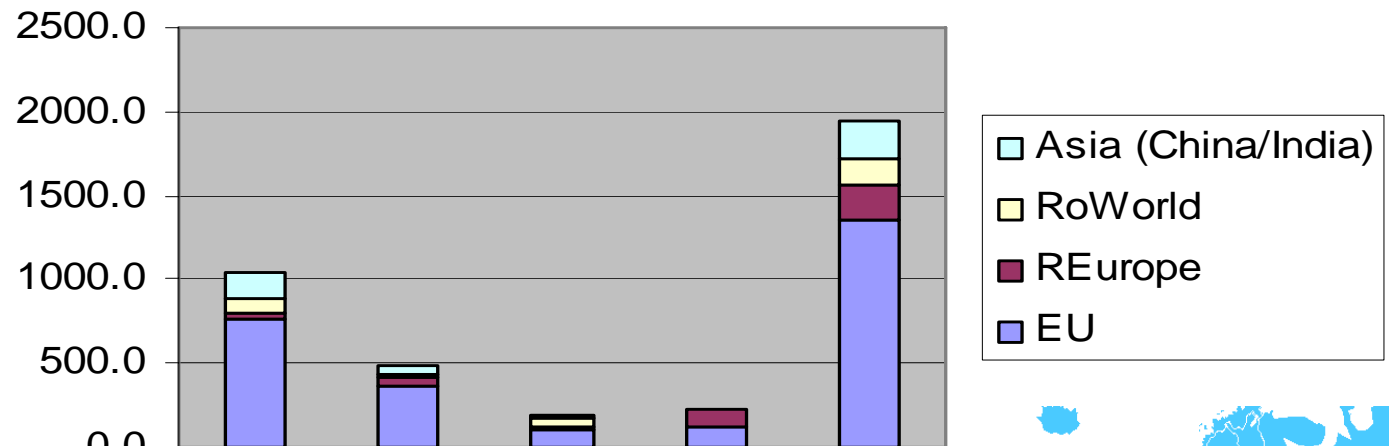


EU25 imports/exports in 2000, 2010, 2020 of NSTR9 in relation with Asia, by European origin/destination

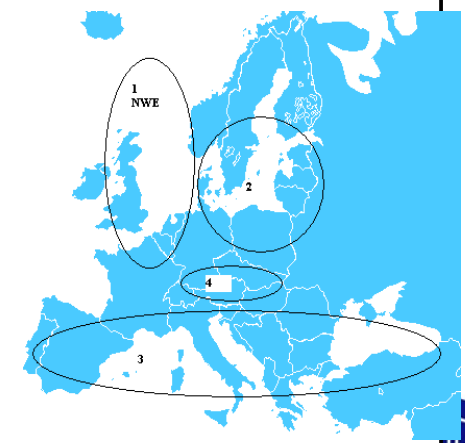


European imports/exports in 2020 of NSTR9, by European origin/destination

European imports/exports of NSTR9 by region in 2020



	NorthWest Europe	Germany, Denmark	Mediterranean	Landlocked Europe	Total
Asia (China/India)	155.3	43.0	25.5	2.0	225.7
RoWorld	91.3	23.5	40.4	10.5	165.7
REurope	21.3	56.1	28.5	92.0	197.9
EU	769.1	362.5	98.2	126.9	1356.7



Conclusions (1)

Key trends

- Customized production
- Globalised trade
- Responsive supply chains

Drivers of change in transport system

- New configurations of global logistics networks
- Changing reliance on transport systems

Tasks ahead

- Take into account logistics networks in transport policy
- Develop analytic capabilities to support logistics policy

Conclusions (2):

- Different products ask for different logistic structures
- Globalisation emerges
- The importance of ICT increases
- The control of logistics is more important than the actual execution



Thank you for your attention!

Cees.Ruijgrok@tno.nl

