

# Gateways and Corridors

## Adding Value in Global Logistics Systems

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ITLS Research Seminar, 18. September 2007

## Agenda

- 1 Introduction: Customer Orientation and Value Management
- 2 Logistics in Global Value Systems: Networks and Flows
- 3 Dynamics of Logistics: Modes, Nodes, and Flows
- 4 Gateways and Corridors:  
Logistical Contingencies and Configurations

# Introduction: Customer Orientation and Value Management

- Logistics Integration as Value Added
- Paradigm Shift: From Volume to Value
- Markets and Customers:  
Dynamics of Global Value Systems
- Strategic Development Guideline for Gateways  
and Corridors: Creating Customer Value

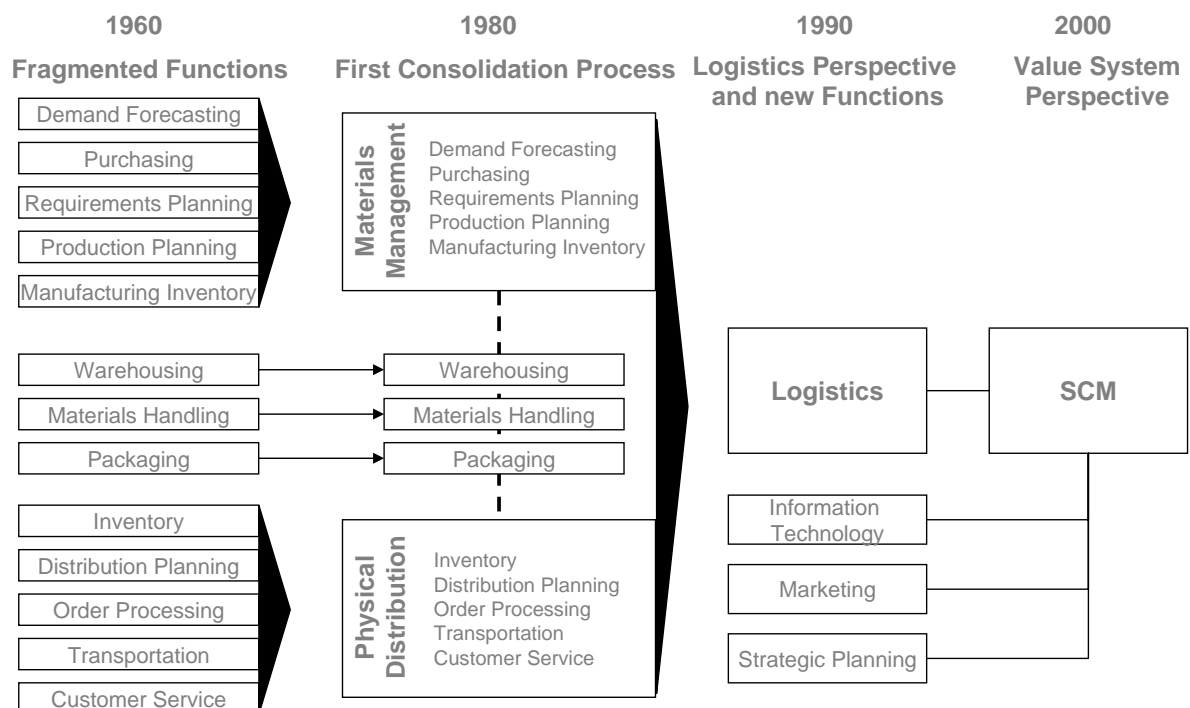
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# Logistics in Global Value Systems: Networks and Flows

- Evolution of the Logistics Concept: From Fragmentation to Supply Chain Management
- Globalization of Value Systems: Functional Specialization and Logistical Integration
- Value Chain Governance
- Logistics Service Providers and Contract Logistics (3/4 PL)

# Evolution of the Modern Logistics Concept

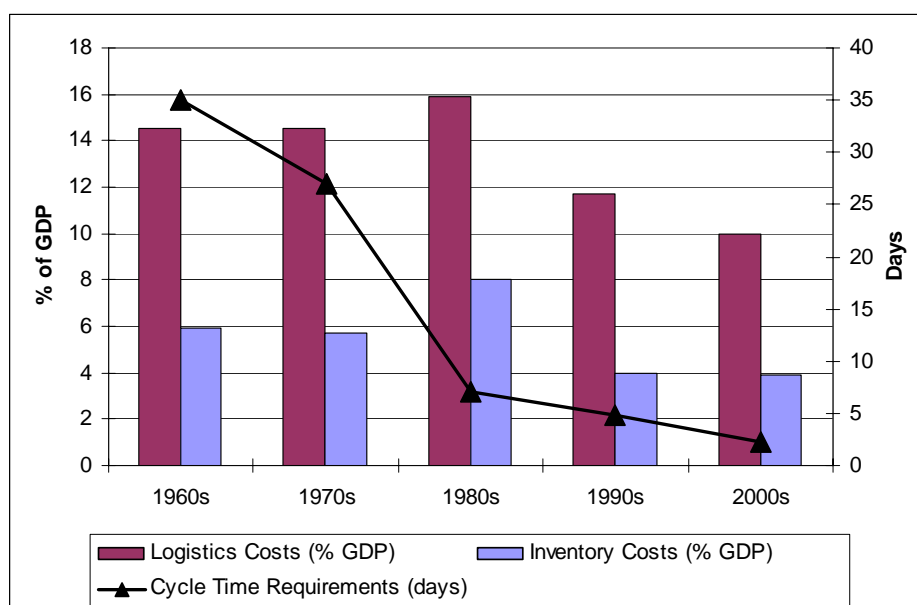


Adapted from: Hesse, Rodrigue (2004), 5

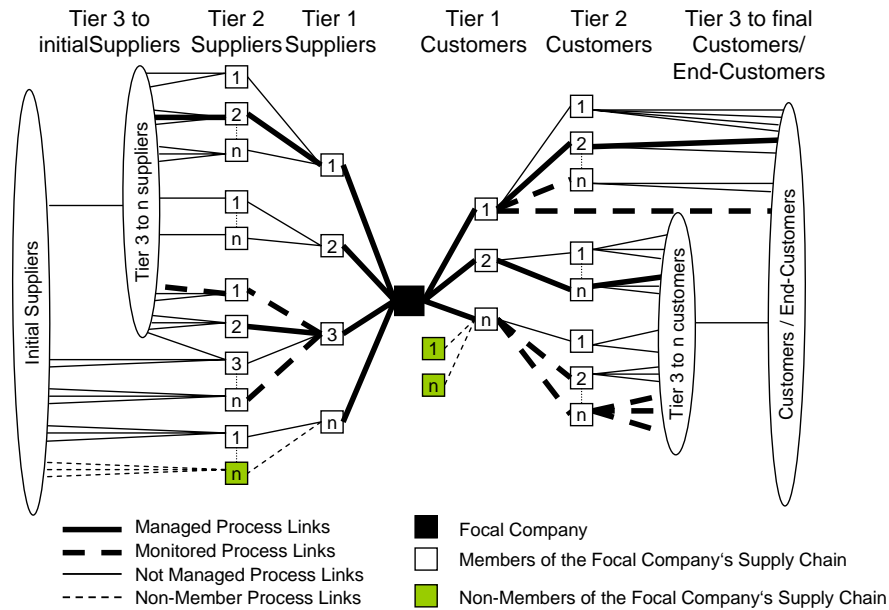
## Logistics is supposed to provide

- the right quantity of the right good
- in the right quality, composition and sequence
- at the right time and location
- at the lowest possible cost / price
- with the highest possible reliability, security, precision, flexibility, and additional services,
- meeting customer requirements and confirmed features

## Logistics and Inventory Costs & Cycle Time Requirements

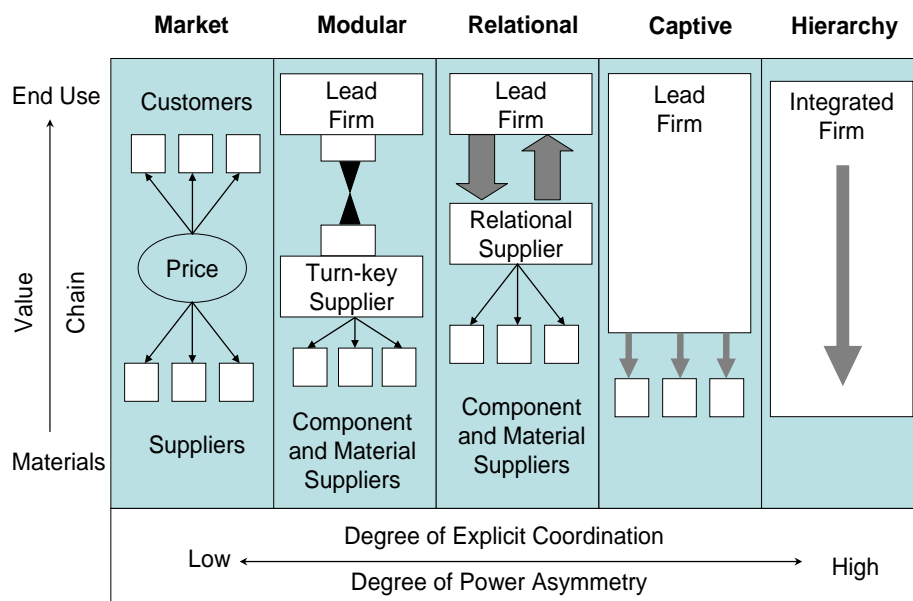


# Span of Integration in Value Systems



Source: Lambert, D.M.; Cooper, M.C.; Pagh, J.D.: Supply Chain Management: Implementation Issues and Research Opportunities, in: International Journal of Logistics Management, Vol. 9, No. 2, 1998, p.7.

# Types of Value Chain Governance



Source: Gereffi, Humphrey, Sturgeon (2003), 9.

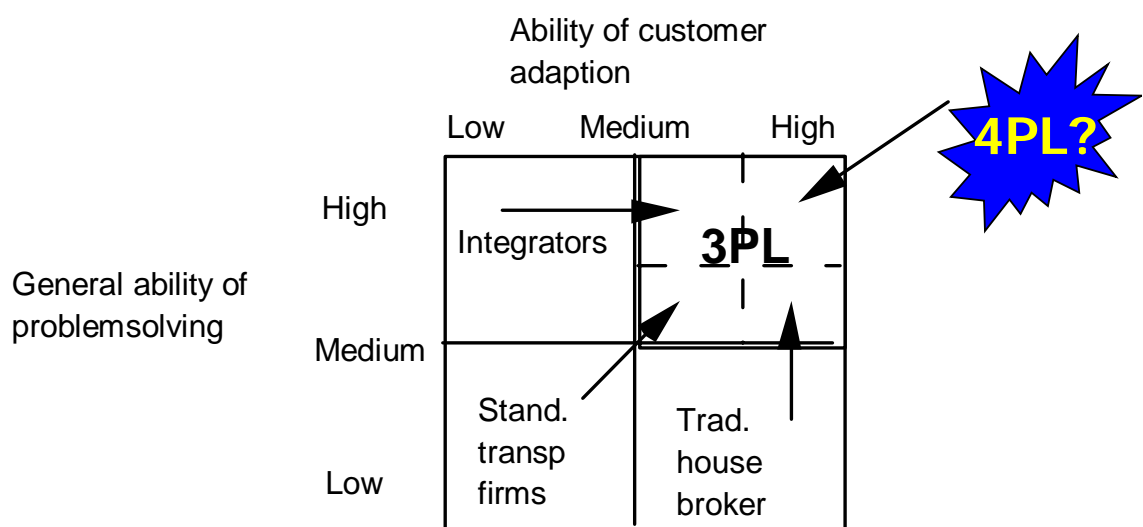
## Main Challenges in Global Logistics: „Managing Contradictions“

- **Outsourcing:**  
Physical Decentralization vs. Integration
- **E-Commerce:**  
Informational Integration vs. Geographical Distance
- **Mass-Customization:**  
Customer-Oriented vs. Process-Optimization
- **Interorganizational Cooperation:**  
Strategic Partnership vs. „Virtual“ Organization
- **Integrated Control:**  
Supply Logic („Push“) vs. Demand Logic („Pull“)

## Gateways and Corridors as Intermediate Infrastructure in Global Value Systems

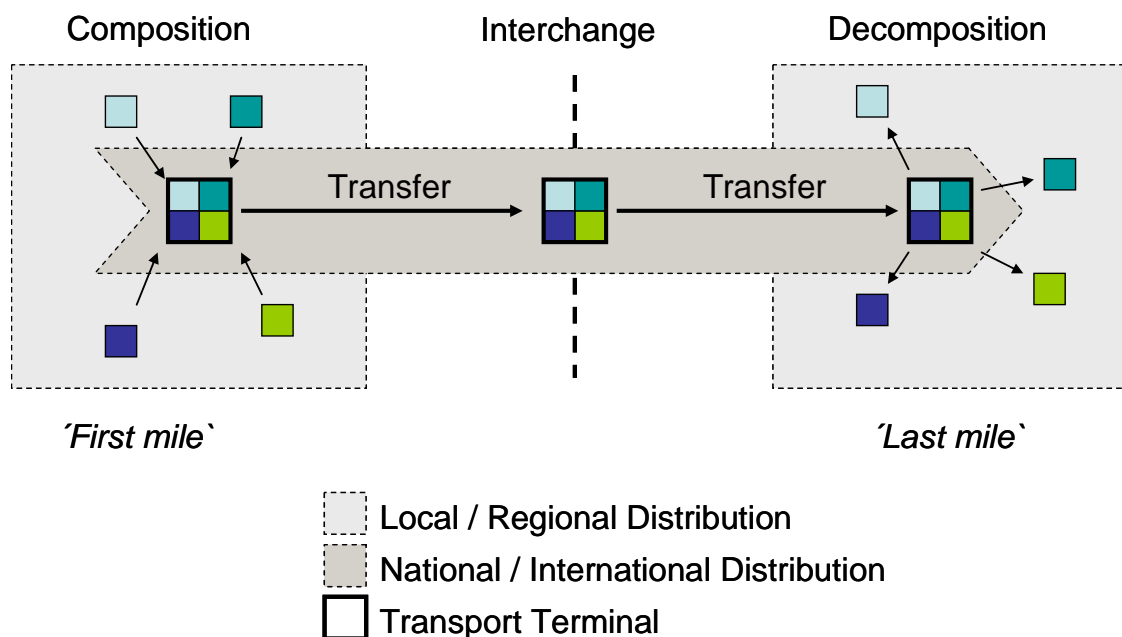
- **MACRO LOGISTICS:**  
Global Consolidated Goods Flows
- **MICRO LOGISTICS:**  
Company / Customer specific Goods Flows
- Gateways as Key Interface Nodes between  
Macro and Micro Logistics
- Corridors as Key Interface Links between  
Macro and Micro Logistics

- Logistics Complexity and Multi-Tier LSP
- Trends towards Asset Free 4PL
- Customized Modal Choice / Multi-Modality
  
- Privatization of Port Infrastructure
- Globalization of Port Operators
- Approaches of LSP to Integrate Port Operations

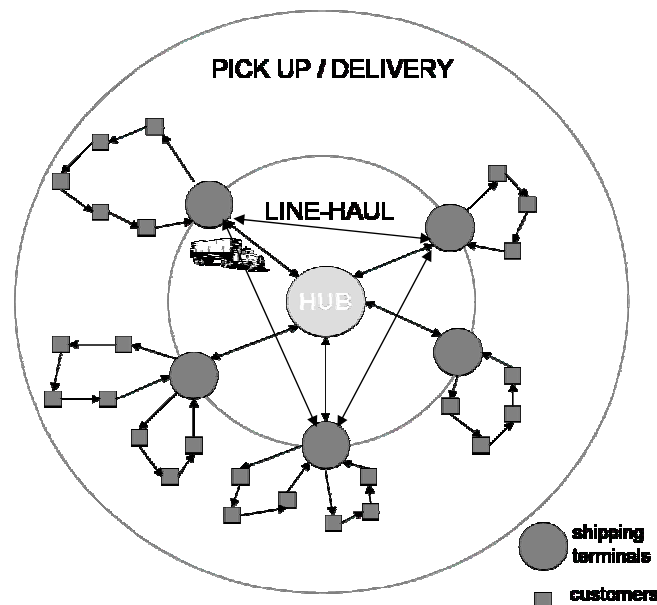
Strategic Positioning of  
Logistics Service Providers

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## Structure and Process in Logistics Networks



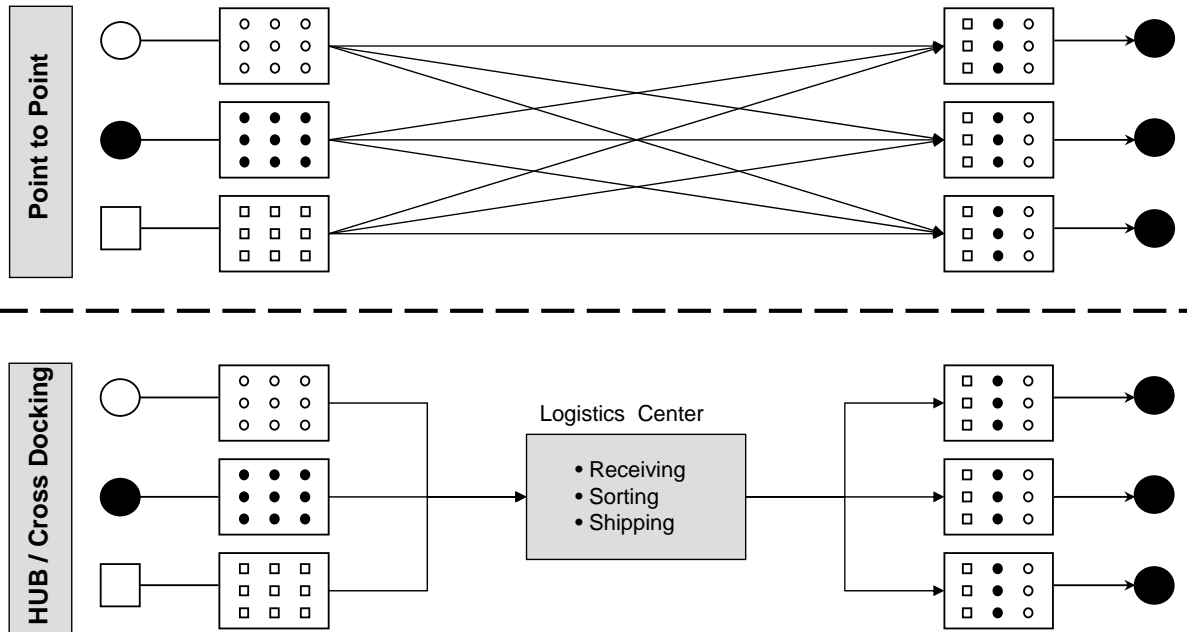
Source: Rodrigue (2006), 6



Adapted from: Zäpfel, Günther / Wasner, Michael: Planning and optimization of hub-and-spoke transportation networks of cooperative third-party logistics providers. In: Int. J. Production Economics, vol. 78, issue 2, 2002, p. 207.

- General Shift to Multi-Step Value Chains
- General Shift to Multi-Modality
- Increased Number and Importance of Value-Adding Transshipment Points
- Focused Modal Choice according to Customer Requirements and Logistical Flow Patterns
- **CONCLUSION:**  
Development of Nodes and Networks focussing on specific Modal Capabilities and Advantages

# Principles of Flow Control



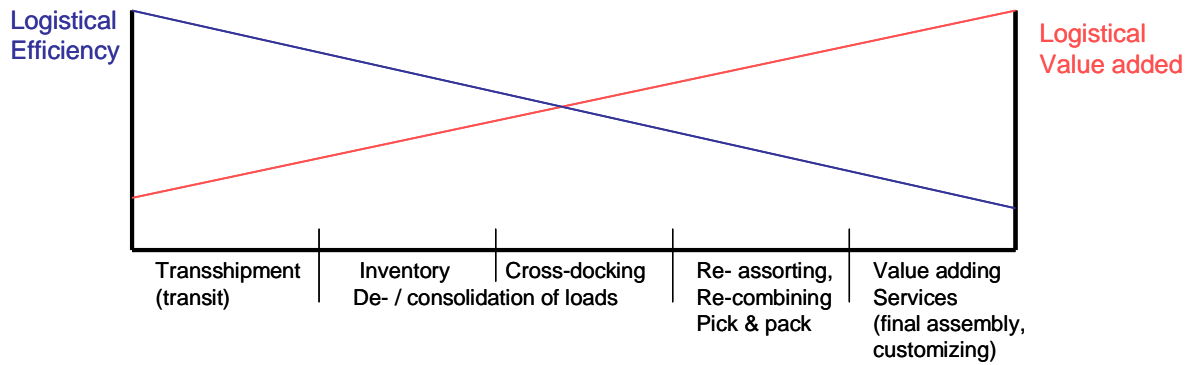
# Transmodal & Intermodal Nodes

|          | Air | Sea | Waterway | Road | Rail |
|----------|-----|-----|----------|------|------|
| Air      | T   | (I) | (I)      | I    | I    |
| Sea      | (I) | T   | I        | I    | I    |
| Waterway | (I) | I   | T        | I    | I    |
| Road     | I   | I   | I        | T    | I    |
| Rail     | I   | I   | I        | I    | T    |

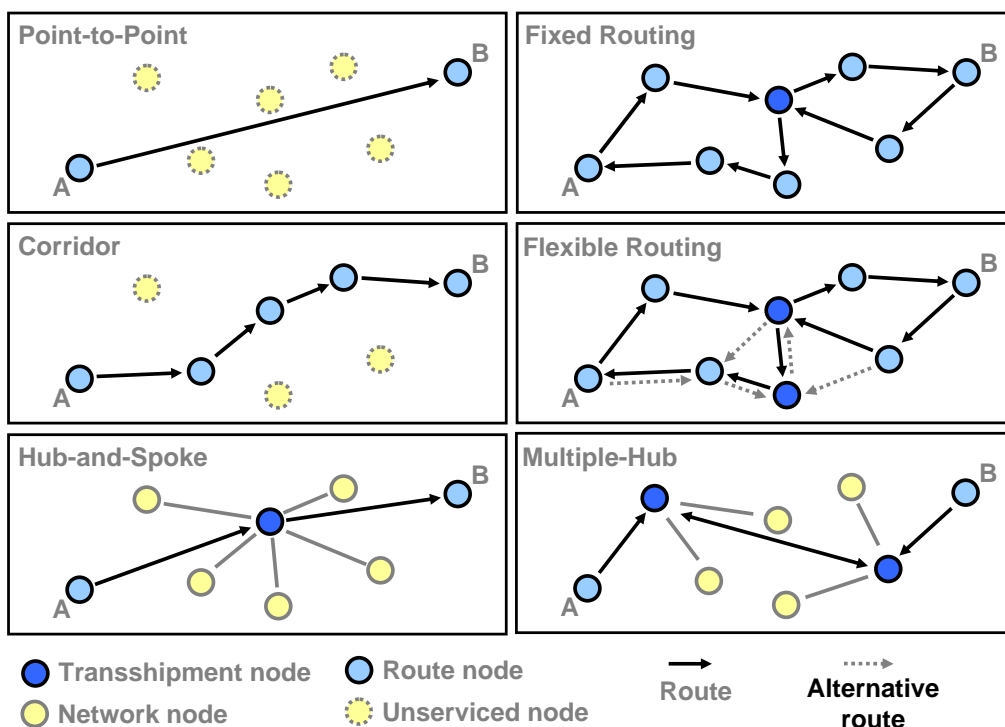
T : Transmodal Logistics Nodes

I : Intermodal Logistics Nodes

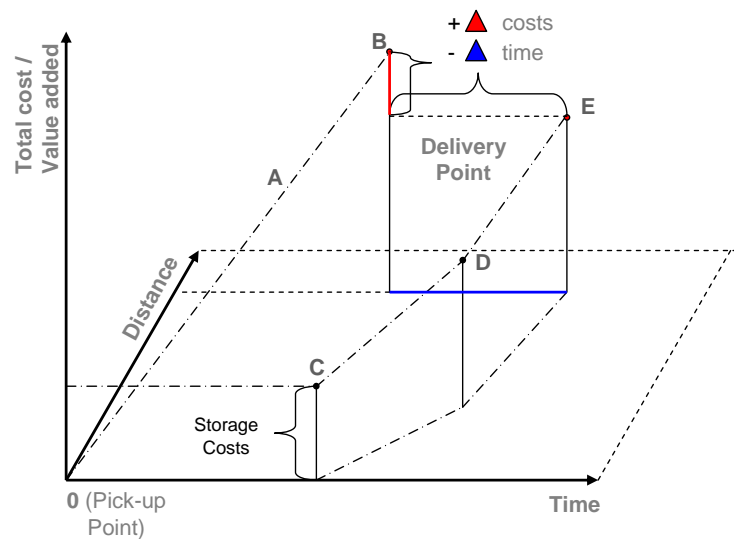
# Functional Capacity of logistical nodes: The efficiency / value-added trade-off



# Network Structure and Scheduling Processes



- Assumption: B and E are identical geographical delivery points
- Differences in total costs and time due to transportation costs (mode of transportation and routing) and option to store (storage costs and time)
- Option to choose alternatives 0-A-B vs. 0-C-D-E dependent on time preference and desired overall cost of delivery

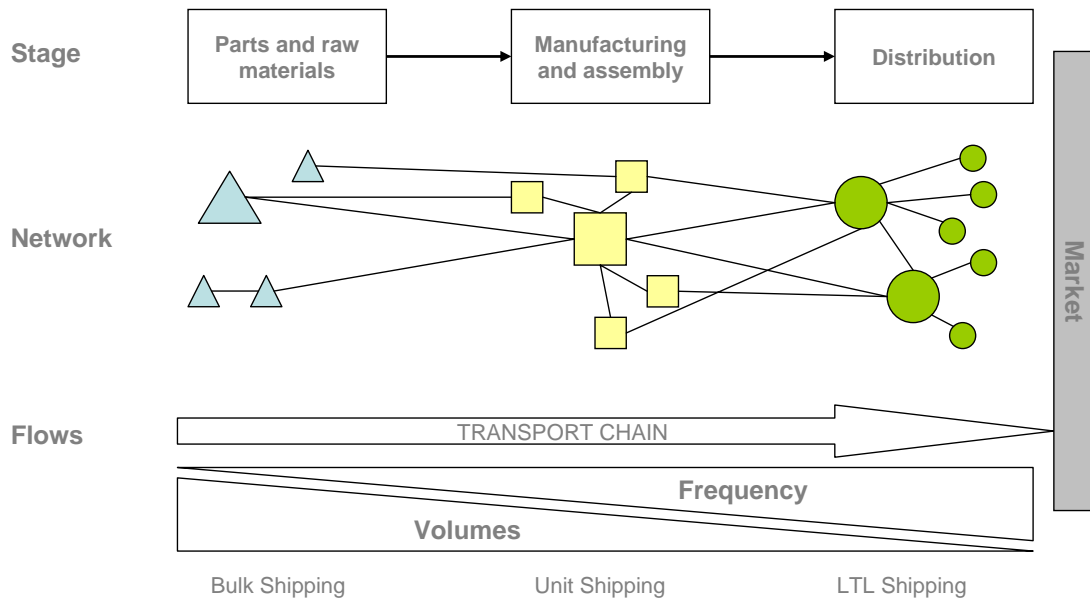


- Distance in miles / km
- Distance in time
- Geographical obstacles
- Cost
- Reliability / Regularity / Congestions / Delays
- Complexity
- Modal / Flow Interfaces
- Border Crossing
- Cultural / Language Borders

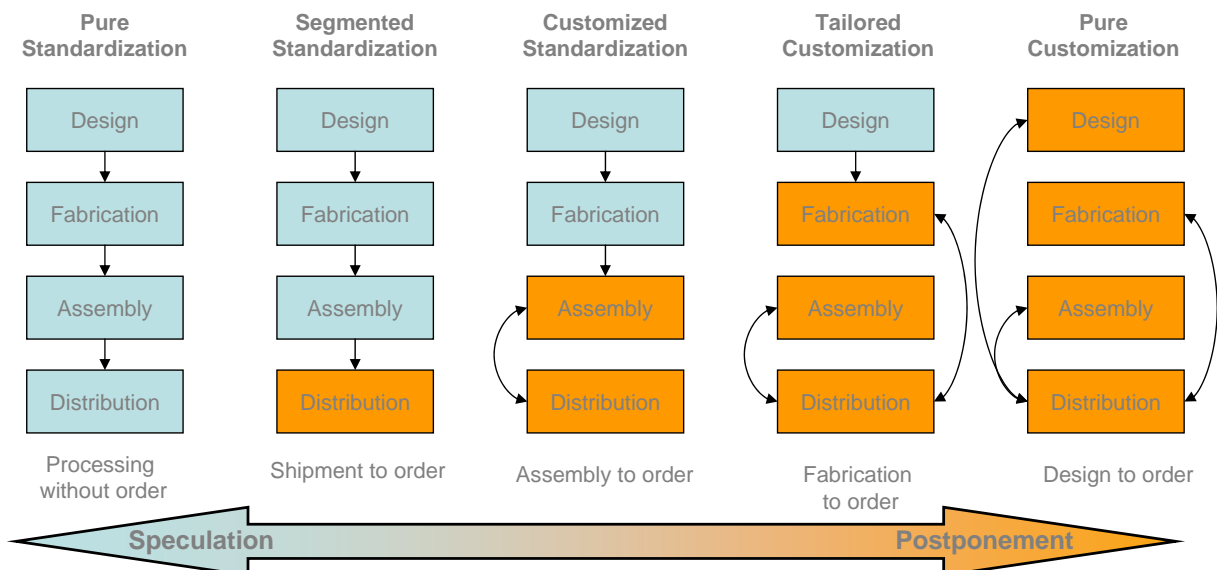
- Picking & Packing
- Labeling
- Sorting
- Customization
- Final Assembly
- Facturing
- Just in Time / Sequence Supply / Delivery
- ...

- Gateways (Ports) as Intermodal Interfaces  
(Sea-, Air-, and Landports)
- Hubs as Transmodal Interfaces
- Merging Role of Gateways and Hubs as Intermediate  
Nodes in complex Networks
- Competition of Centralized vs. Polycentric (Distributed)  
Networks
- Functional Upgrade of Logistical Nodes:  
From simple Transit to Value Added Logistics
- Impact of Customization on required Flow Patterns and  
Nodal Functionality

# Traditional Flow Patterns in the Value Chain



# Changing Flow Logic of Value Chains



- From Consolidation to Customization
- Timeliness and Reliability
- Total Service provided
- Total Cost of Ownership
- Total Value Chain Control
- Flexibility and Robustness
- Federated / Distributed Value Chains

- Smaller Shipments
- Higher Frequencies
- Higher Customization
- Higher Flexibility
- Higher Value Density
- Higher Global Complexity
- Higher Modal Complexity / Multiple Modality
- Higher Nodal Complexity

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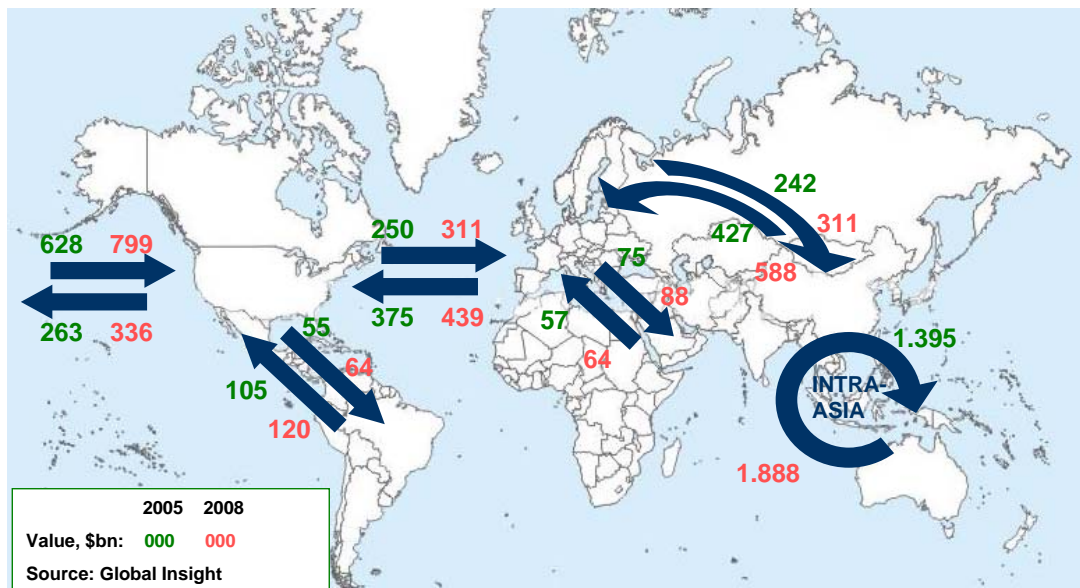
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## Gateways and Corridors: Logistical Contingencies and Configurations

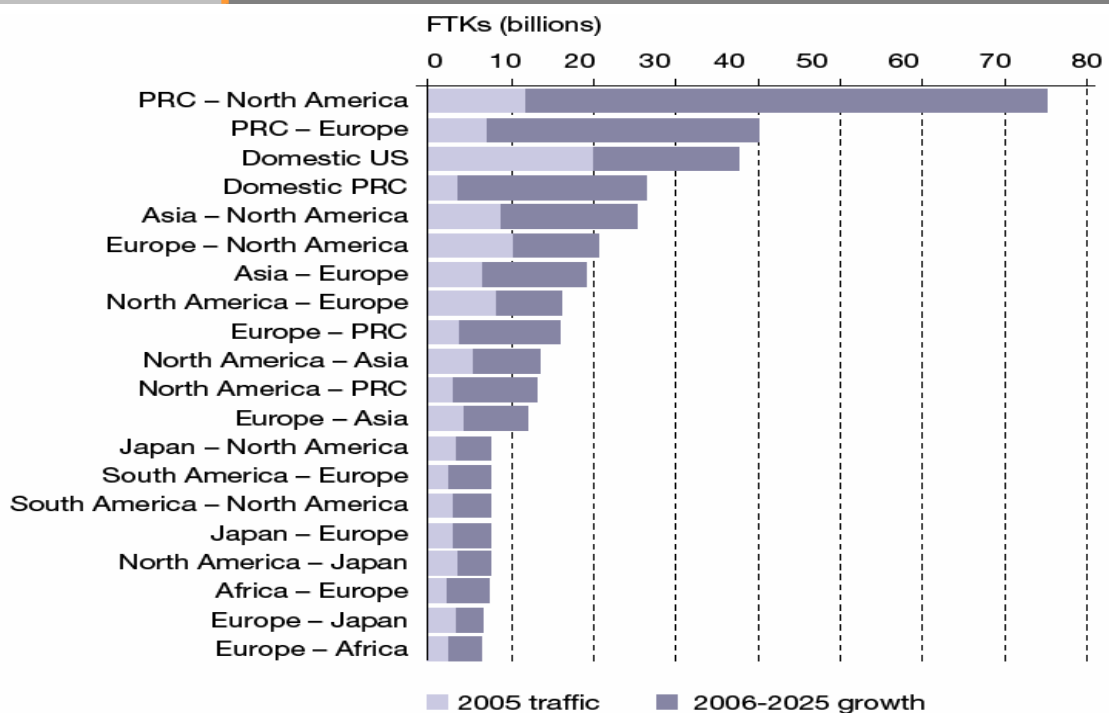
- Re-Assessing Port-Corridor Integration
- From Hinterland Accessibility to integrated Network Functionality
- Local Impacts of Global Flow Imbalances
- Modal and Nodal Choice in the Light of Total Cost of Ownership and Total Value Added
- Contingencies of Network Configurations

# Trade (exports) between main regions, growth forecast 2005-08



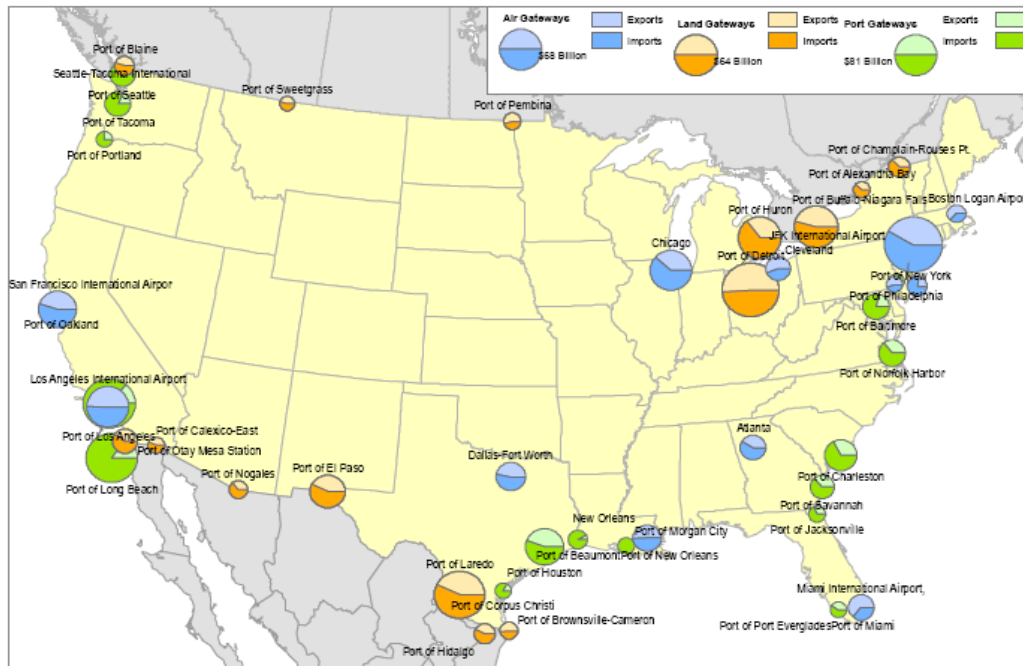
Source: „Shining Examples“ in: The economist, 17.6.06, p. 5.

# Growth and Imbalance of Global Air Cargo Flows



Source: Airbus (2007)

# Major US Modal Gateways, 2004



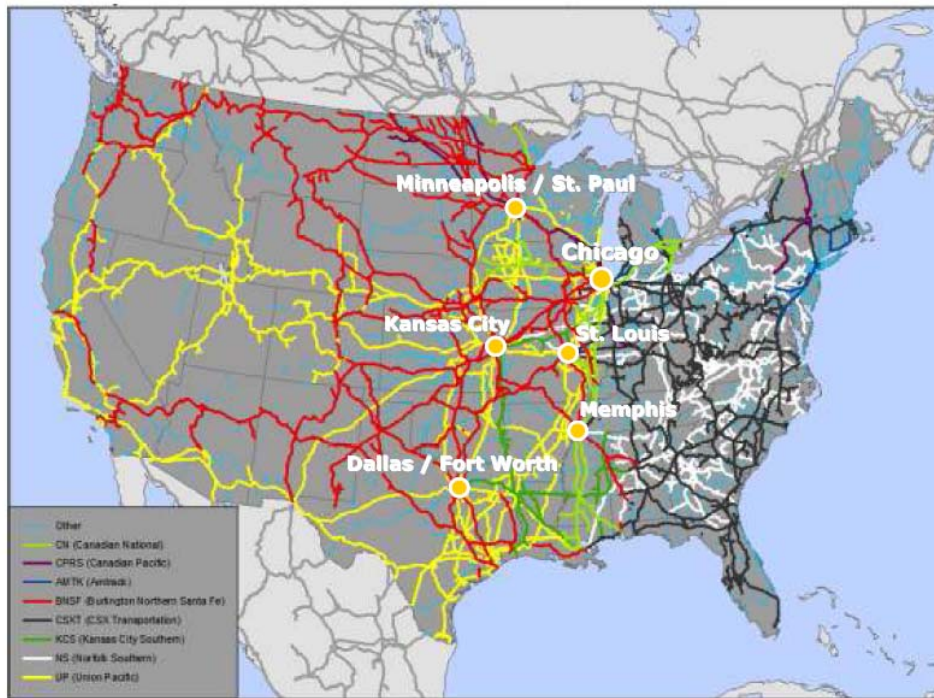
Source: Rodrigue (2006), 9

# North American Landbridges



Source: Rodrigue (2006), 5

## Railroads and Thruport Locations in the US



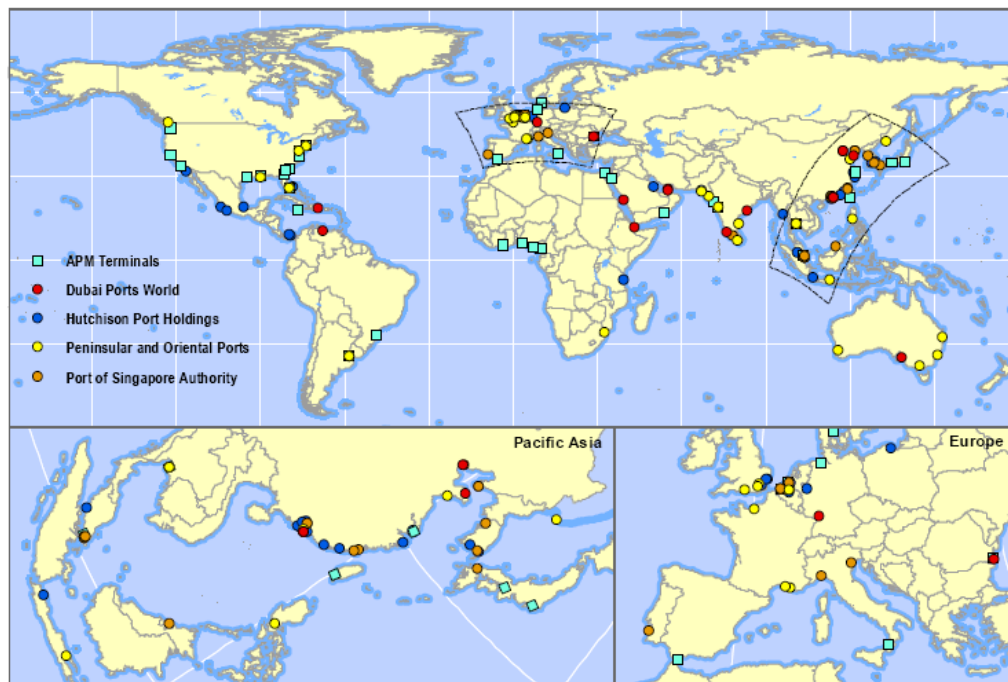
## European Gateways and Corridors



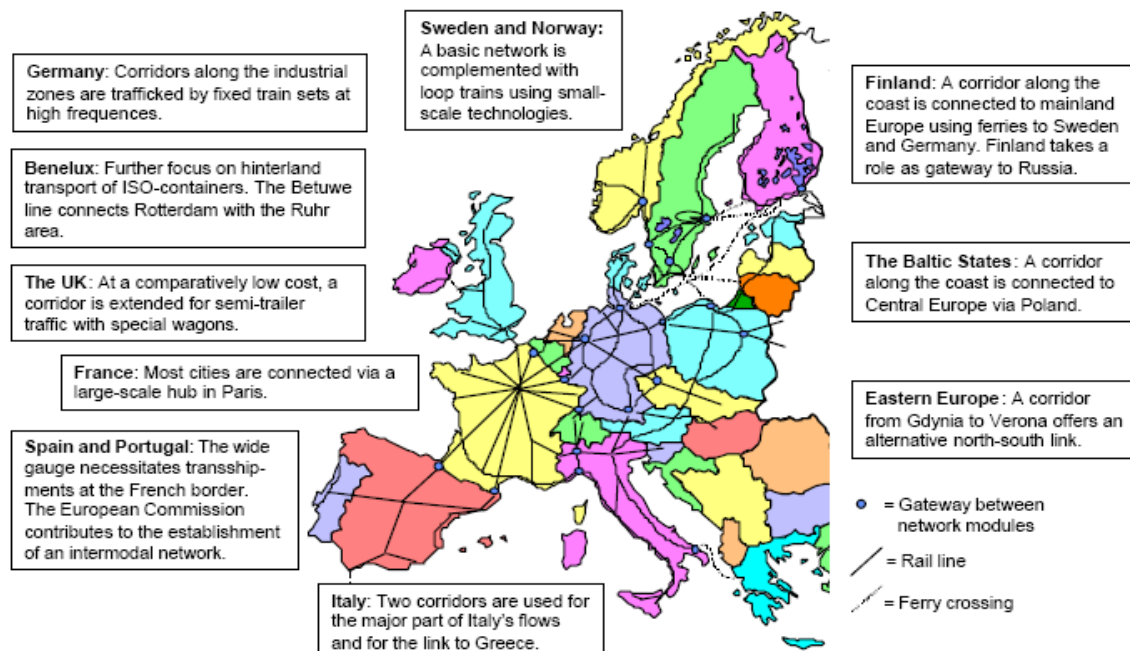
Source: Drewe, Janssen (2001)



## Major global Port Holdings



## European Spatial Development Perspective: Vision of a Future European Polycentric Gateway and Network System



## Future Role of Gateways and Corridors: Opportunities and Risks

- Limits of Centralization: Polycentric Networks!?
- Specialization / Differentiation / Cooperation
- Allocation / Attraction of Value Adding Logistics
- Exploiting Further Potentials of Multimodality
- Global Trends / Shifts of Goods Flows
- Transnational Approaches / Global Reach of Gateways and Corridors
- Impacts of Uncertainties: Strategic Flexibility

## Gateways and Corridors between MICRO and MACRO Logistics

- „Moving“ Gateways:  
Increasing Importance of Closeness (Time) to Markets  
and Modal Integration
- Offshore Hubs:  
Matching Flow Patterns and Modal Choice
- New Competition of Sea- and Landbridges
- CONCLUSION:  
Logistical Value Management will be a Key Guideline  
for the future Development of Gateways and Corridors

# DUBAI Logistics City The Future Gateway Model?



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Thank you very much!

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