

United Nations Economic Commission for Europe (UNECE)

**3rd Executive Forum on Trade Facilitation
Paperless Trade in International Supply Chains:
Enhancing Efficiency and Security**

20 - 21 June 2005

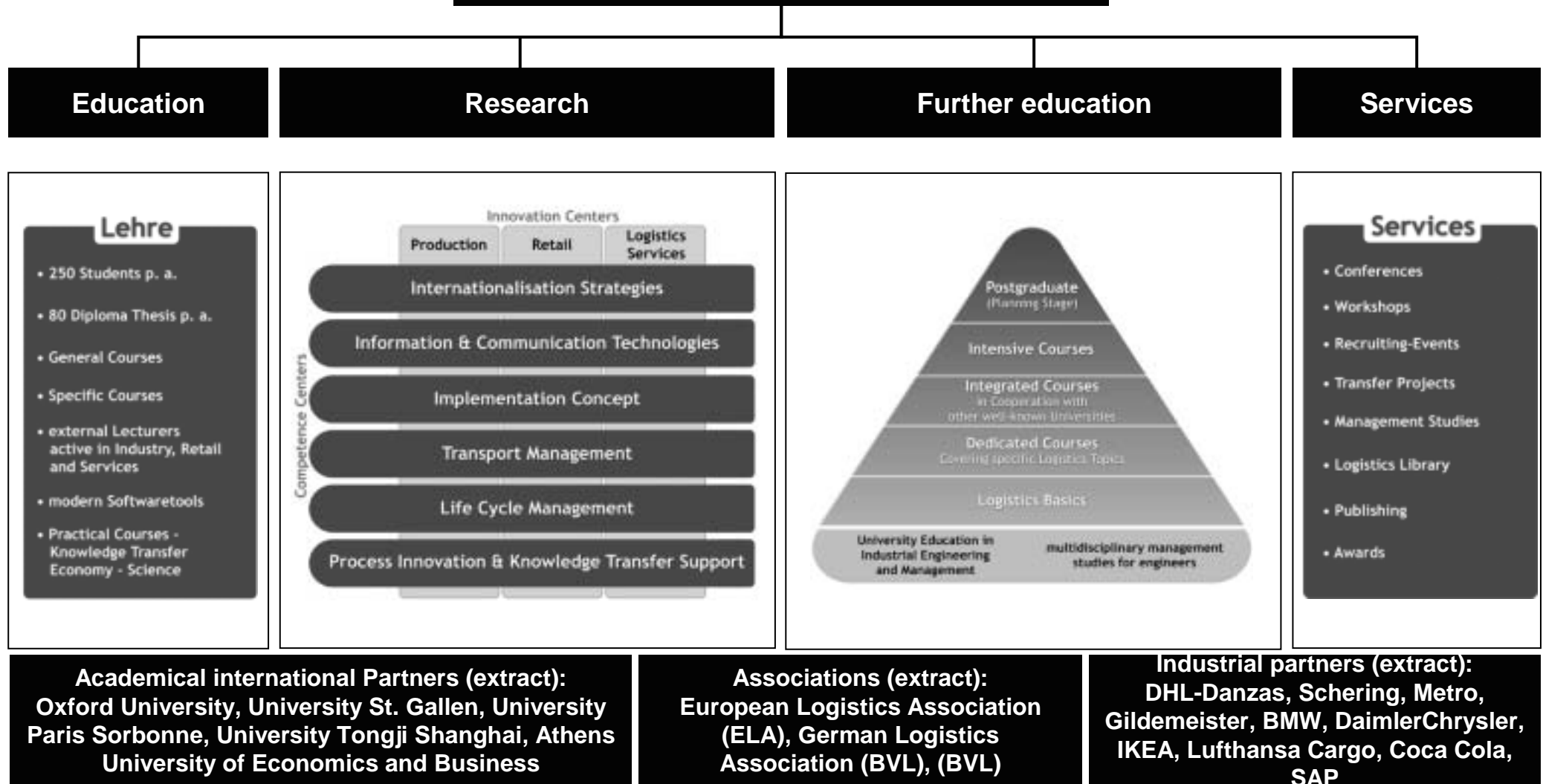
***Supply Chains and Digital Information:
Current State and Future Trends***

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Institut for Technology and Management

Range of services of the Logistics Department

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Supply Chains and Digital Information: Current State and Future Trends

Agenda

1 Development Pathways of Logistics

2 Internationalisation and international Supply Chain Networks

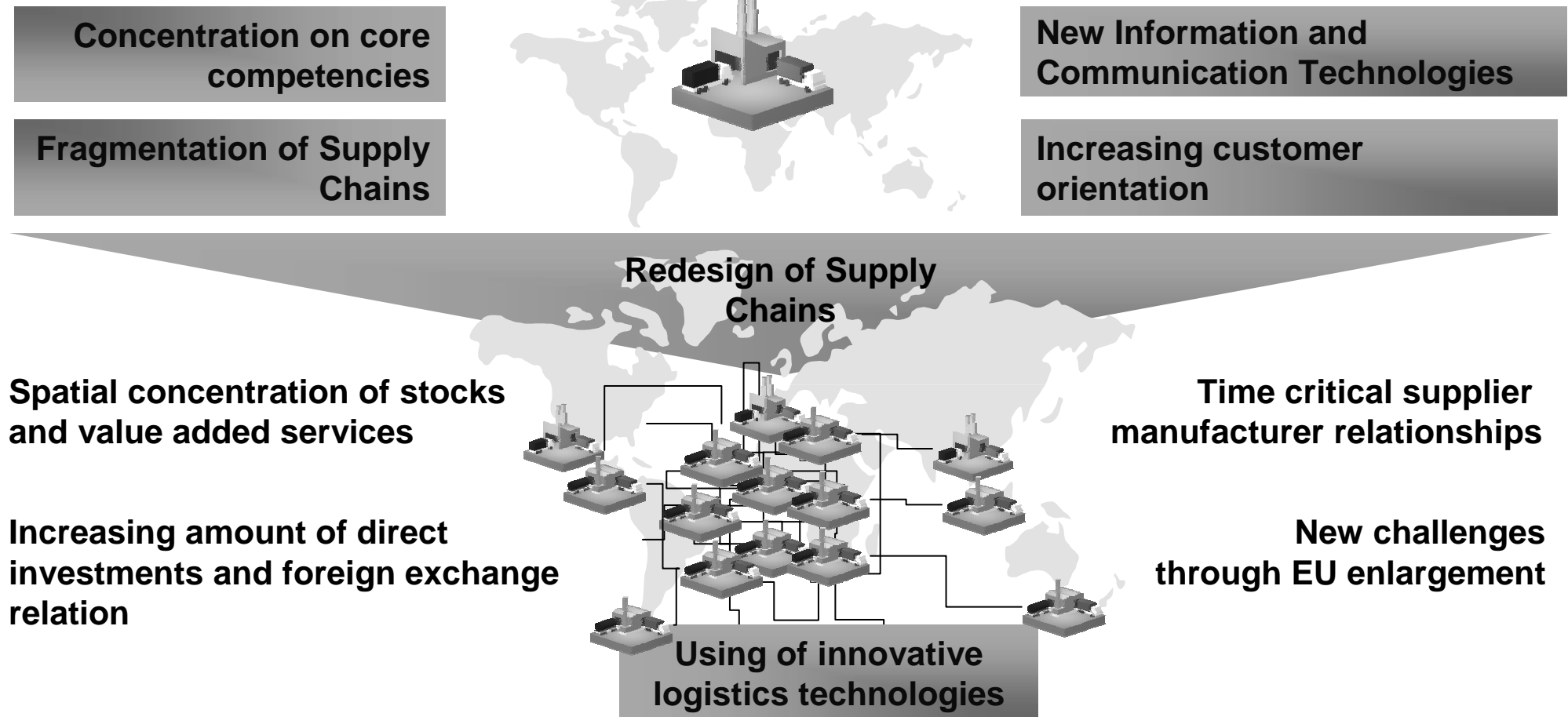
3 Importance of Information within Supply Chain Networks

4 “Paperless” E-Solutions within Supply Chain Networks

5 Barriers and Obstacles of an “E-Adoption”



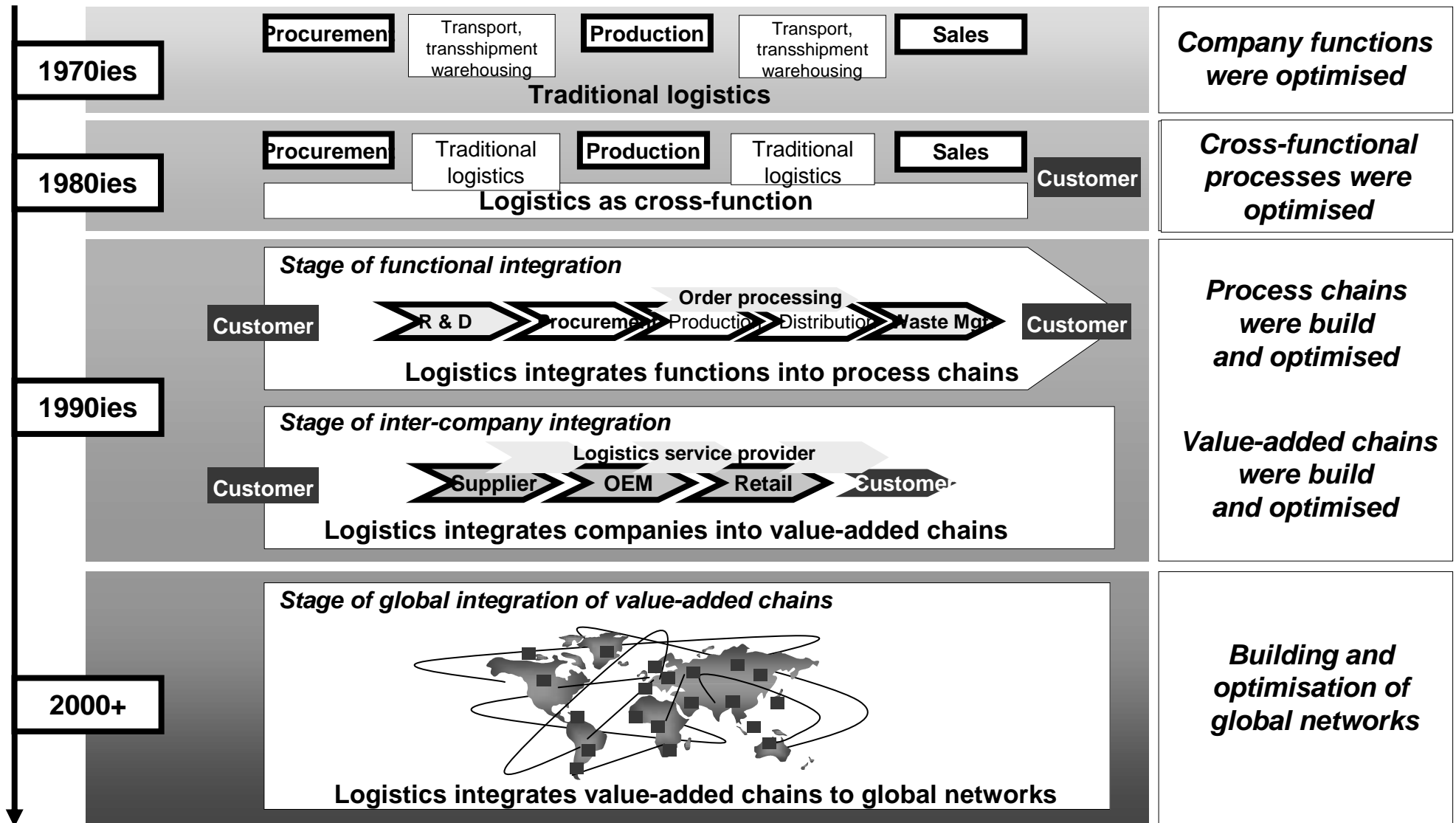
Logistics and its drivers



► **Logistics is the process of planning, implementing, and controlling the efficient, effective flow and storage of goods, services, and related information from point of origin to point of consumption for the purpose of fulfilling customer demands. Thus means having the right thing, at the right place, at the right time.**



Stages of development of logistics tasks

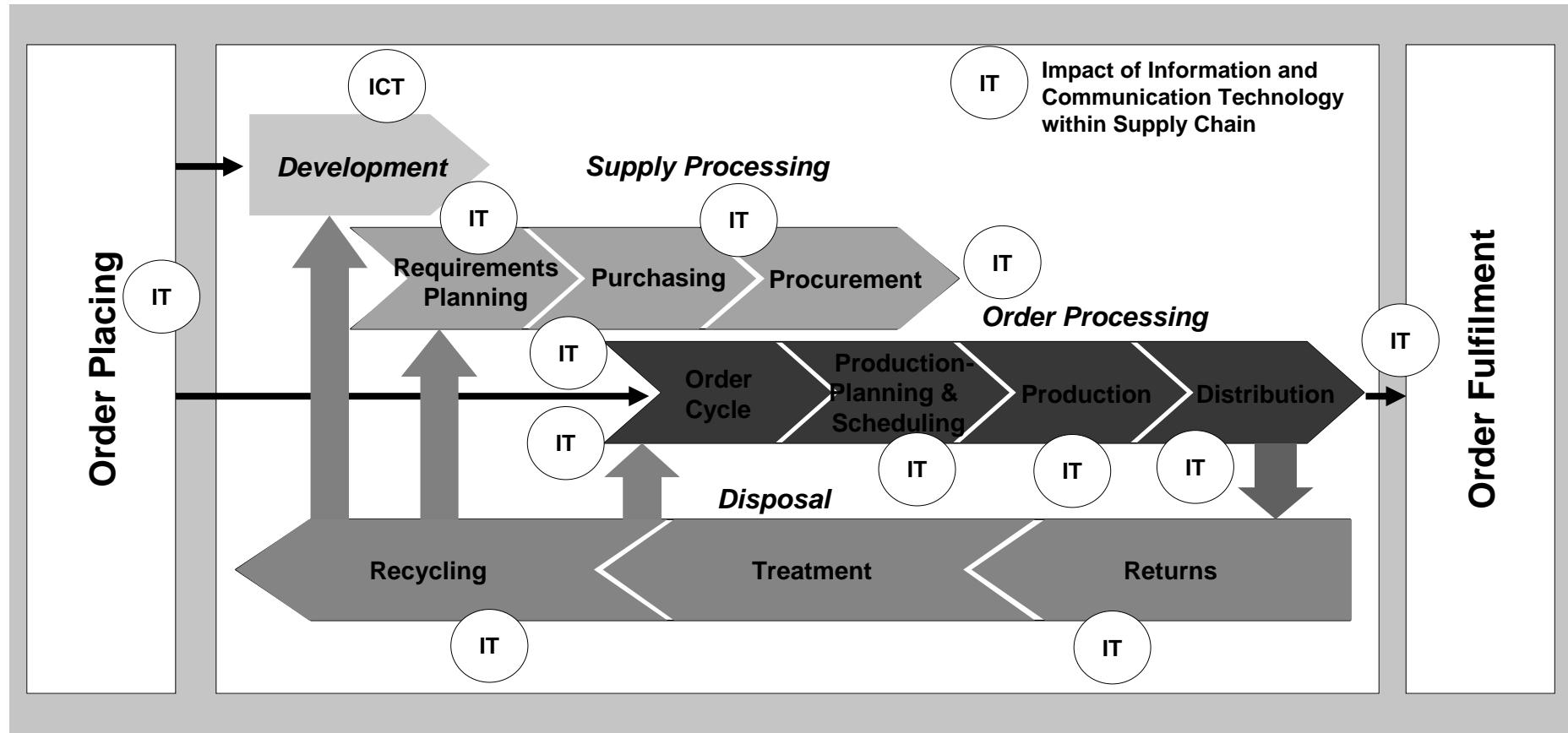


Source: TU Berlin, Logistics Department



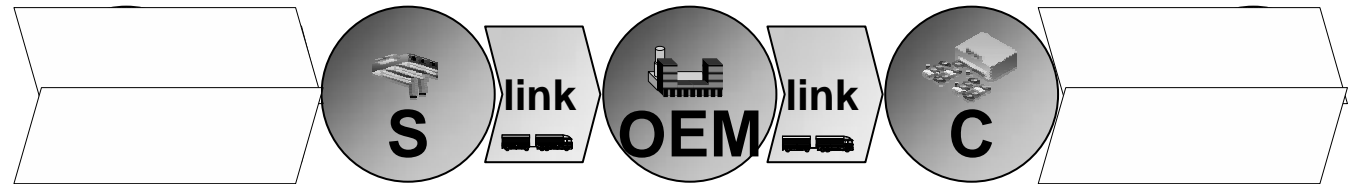
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Supply Chains and Digital Information: Current State and Future Trends

The impact of new technologies



Degree of Integration in Supply Chains on a European Level

Scope of influence on the example of the OEM:



SS: Supplier's Supplier, 2nd-tier Supplier; S: Supplier, 1st-tier Supplier; OEM: Original Equipment Manufacturer; C: Customer, 1st-tier Customer, CC: Customer's Customer, 2nd-tier Customer

Automotive



Chemicals



Building Materials



Consumer Goods



▶ The perception of the degree of integration between two companies in a supply chain can vary greatly in some cases.

▶ The integration of logistics service providers fluctuates even in the automotive industry.

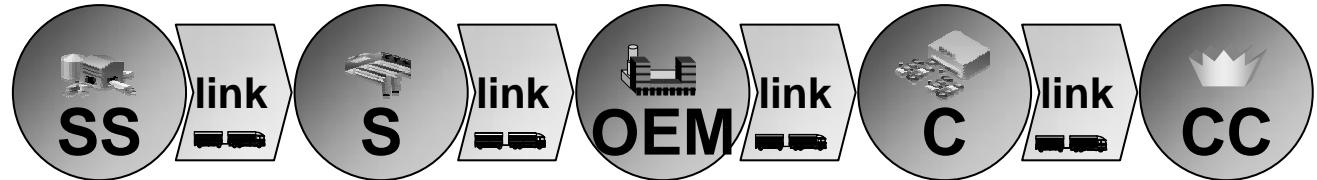
▶ The degree of integration correlates to regional conditions.

▶ The automotive industry is on the leading edge in the integration of processes with direct suppliers and direct customers.



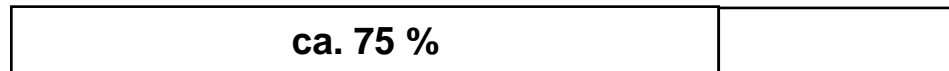
Communication Methods for the Exchange of Data along the Chain

Scope of influence on the example of the OEM:

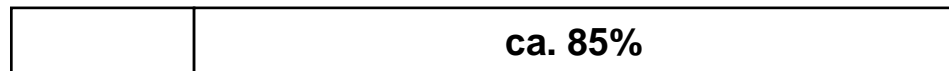


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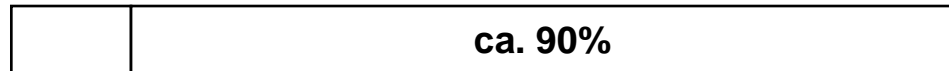
Automotive



Chemicals



Building Materials



Consumer Goods



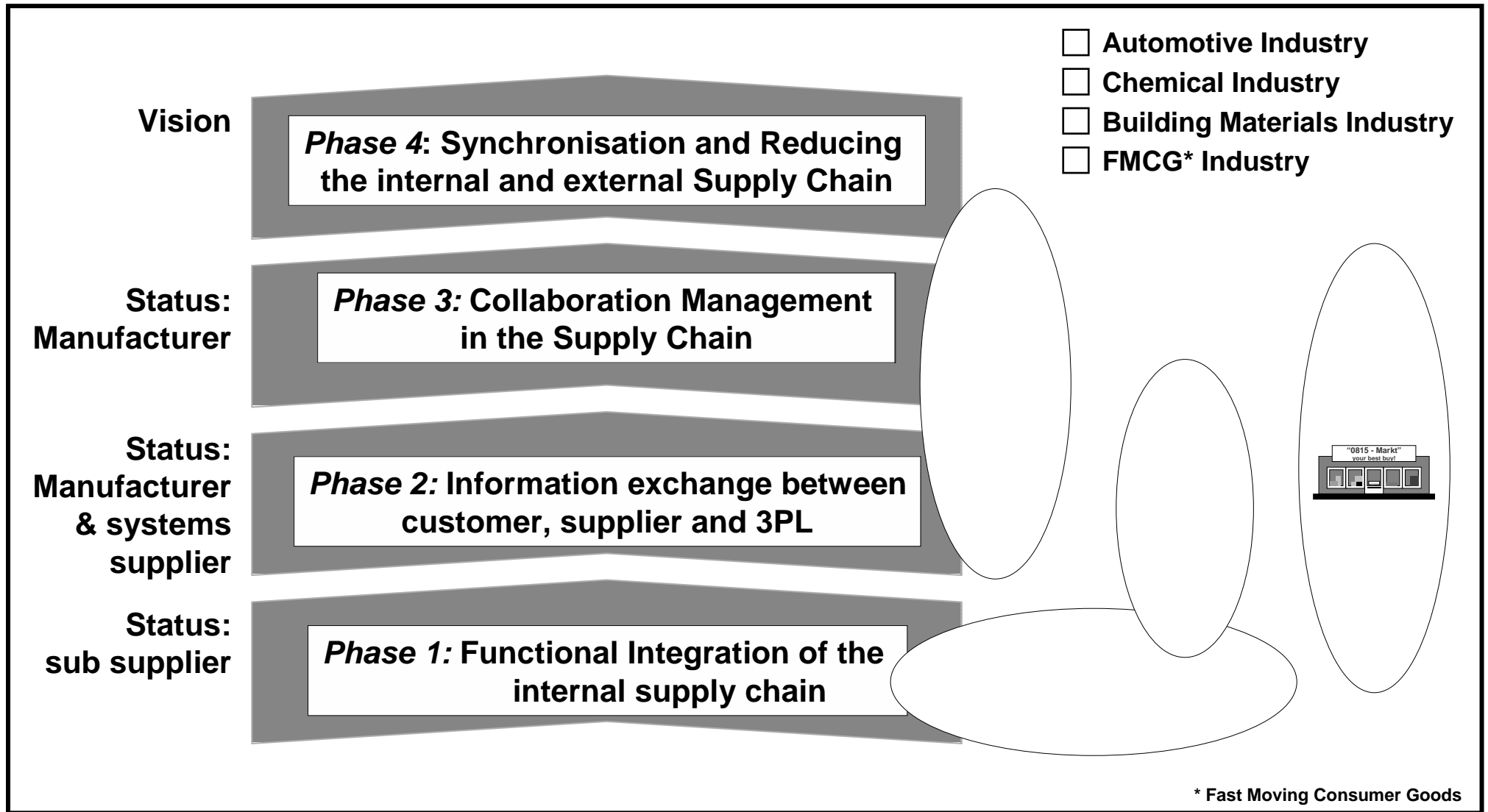
Data exchange via:

- dedicated networks
- open networks (Internet)
- paper-based or by phone

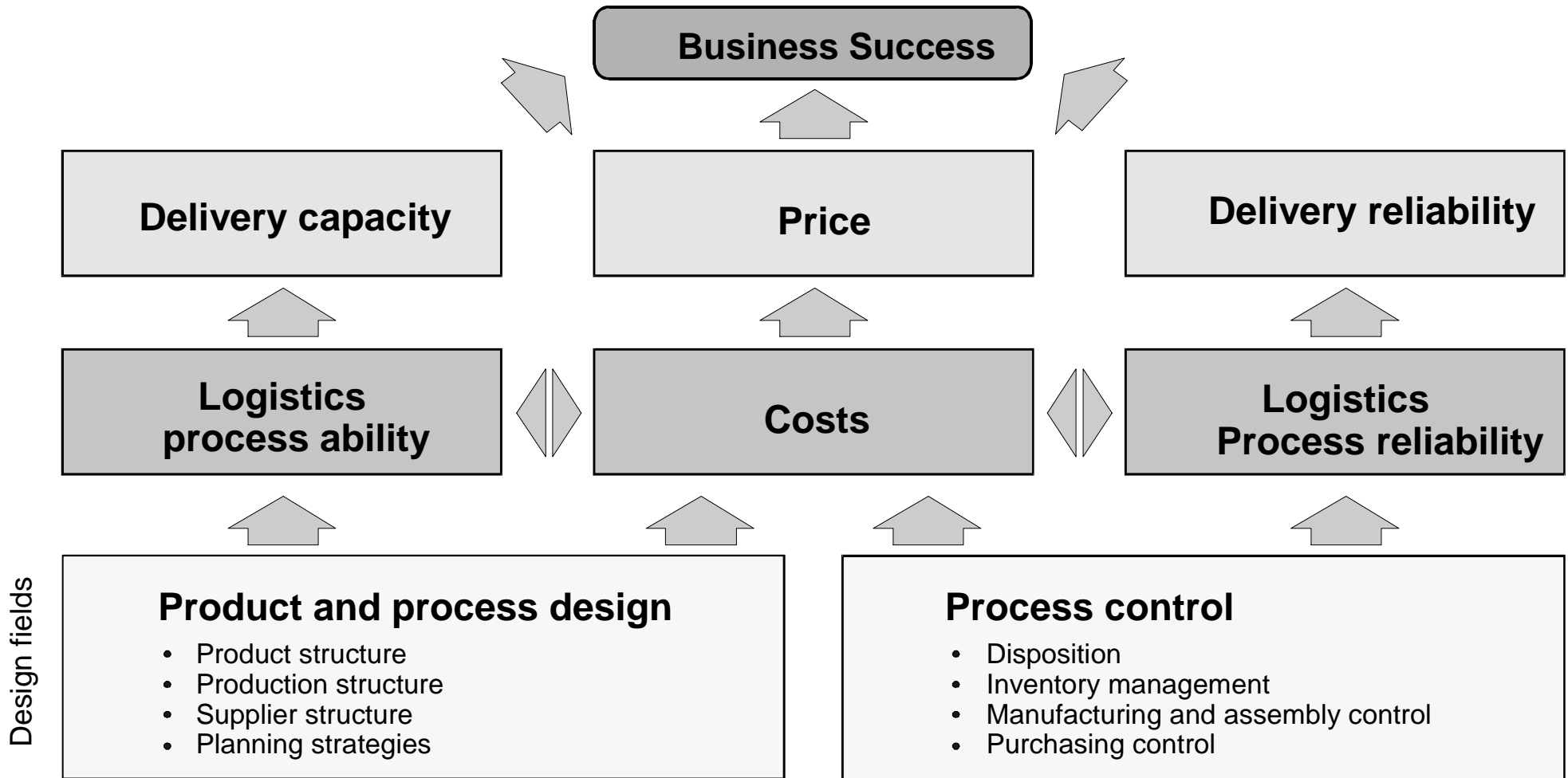
► The varying degree of utilisation reflects the early entry of certain industries into state-of-the-art communication methods.



Different Levels of Integration in Europe



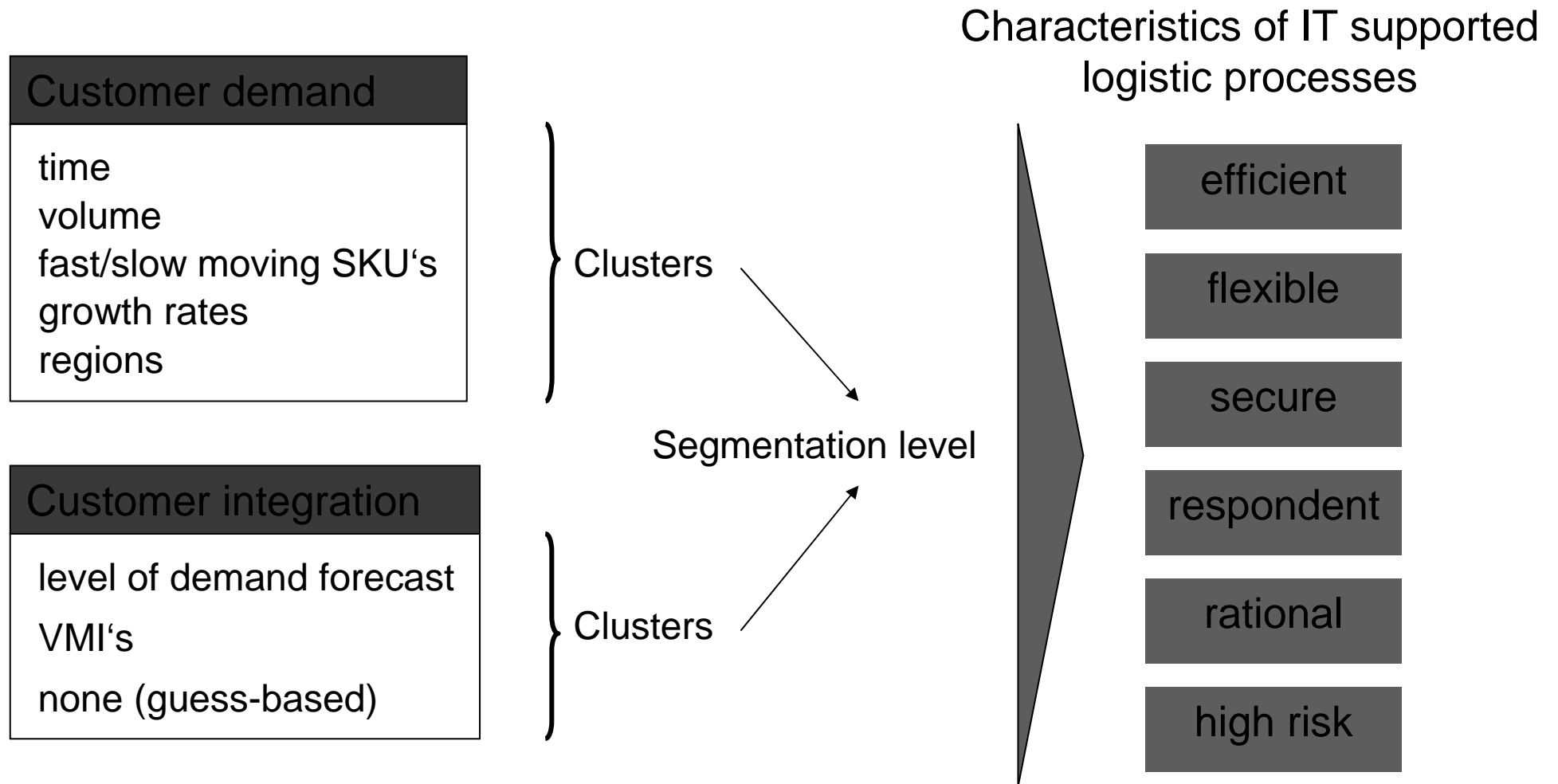
Logistics success factors of manufacturing companies



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How to differentiate IT supported logistics processes?



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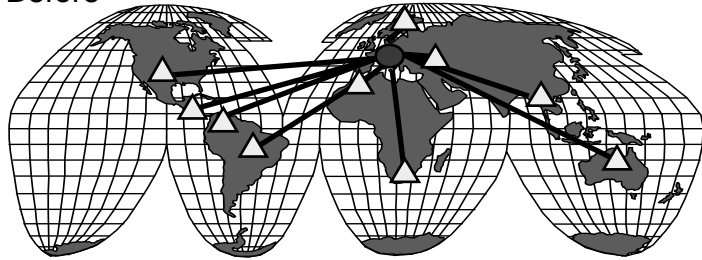
4 “Paperless” E-Solutions within Supply Chain Networks

5 Barriers and Obstacles of an “E-Adoption”



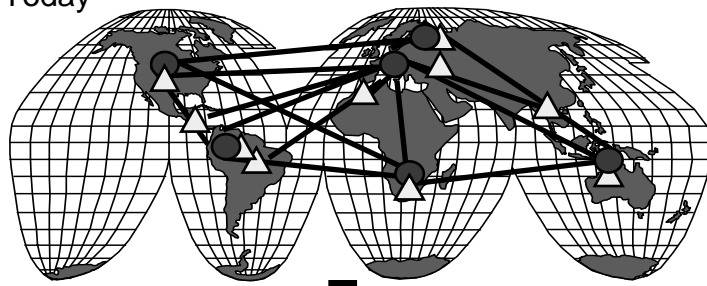
Driver of Supply Chain Networks

Before



- Company
- △ Market
- Material and Information Flow

Today



**Increasing the
Importance of
Supply Chain
Networks**

► Competition and Market growth

- Potential for growth in foreign markets due to limitations on a domestic market
- Improving fast reaction on customer needs in volatile markets
- Independence of imports and entry barriers

► Cost Reduction

- Taking advantages of the cost differences (e.g. cheap labour costs, low material costs, low R&D costs)

► Process and product innovation

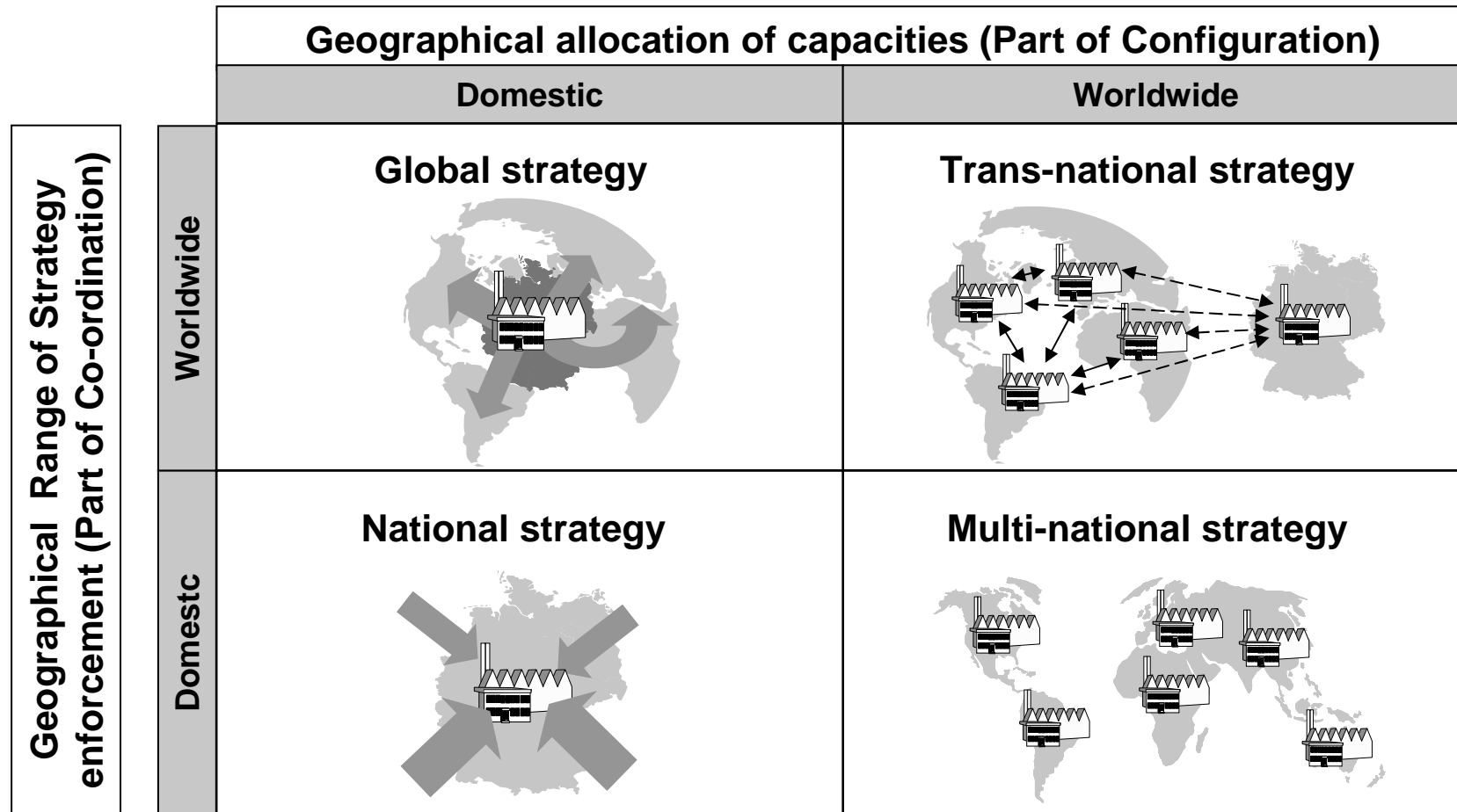
- Using specific location advantages (e.g. R&D)

► Minimisation of risks

- De-concentration of production capacities
- Increasing long term steadiness
- Reducing economic and political risks (e.g. currency fluctuations)
- Preventions of losing corporate know how



Strategies for the creation of international networks

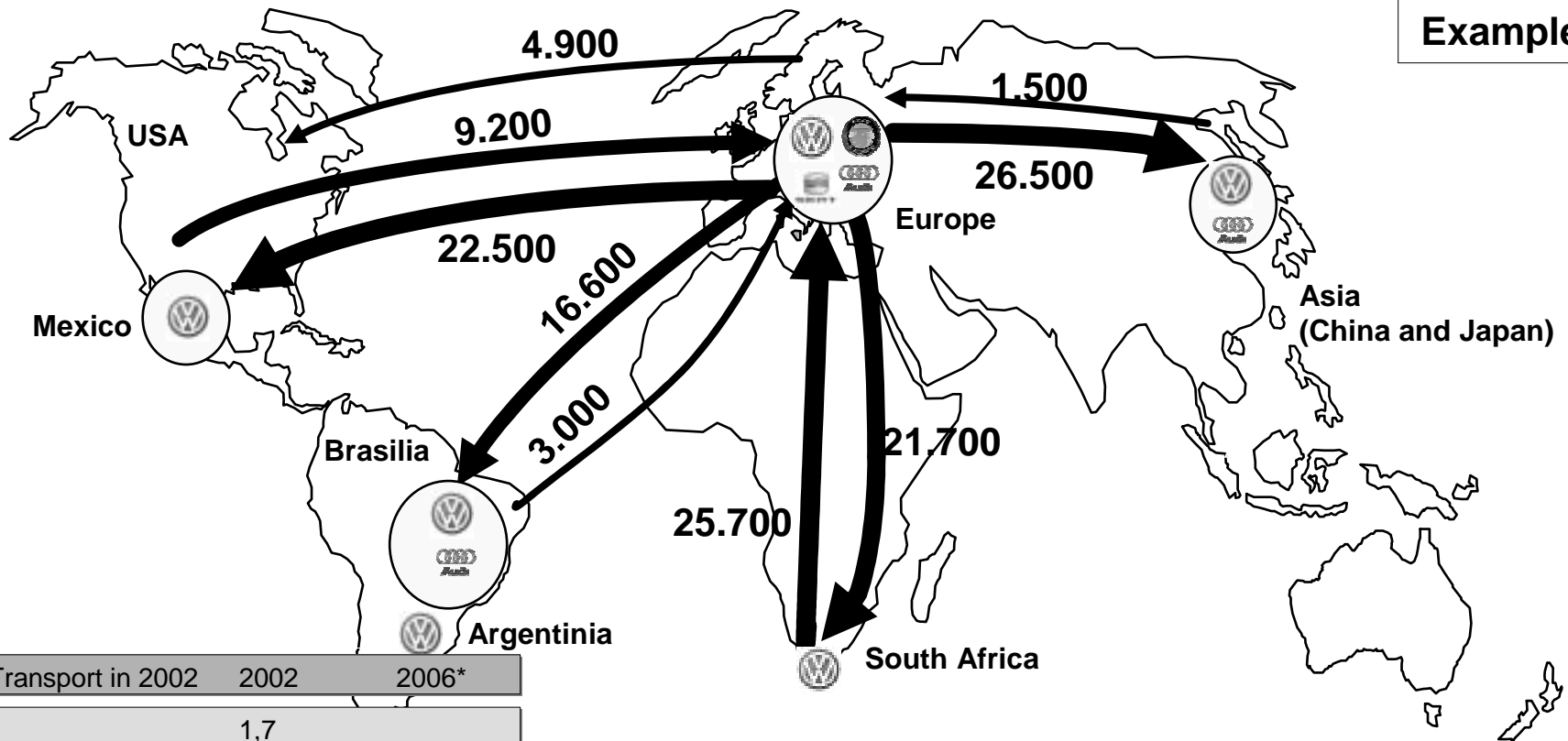


Source: Wrede 2000



Transportation volumes in International Supply Chains (in TEU) - Case Volkswagen AG

Example



Source: VW Transport 2003

- It will be expected an increasing volume of 20 percent for international exchanges and trade within the internal supply chain network of the Volkswagen AG until the year of 2006.

VOLKSWAGEN Transport in 2002	2002	2006*
Revenue (Bill. €)	1,7	
Employee	1.800	
Vehicles transported (Mio.)	3,4	
Material transported (Mio. to.)	10,4	+15%
of which - Interlocation traffic	2,9	+14%
- Inbound traffic	4,9	+18%
- Outbound traffic	2,5	+18%
- Miscellaneous	1,4	
Container (TEU)	130.000	+20%



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Clear liabilities in Supply Chains

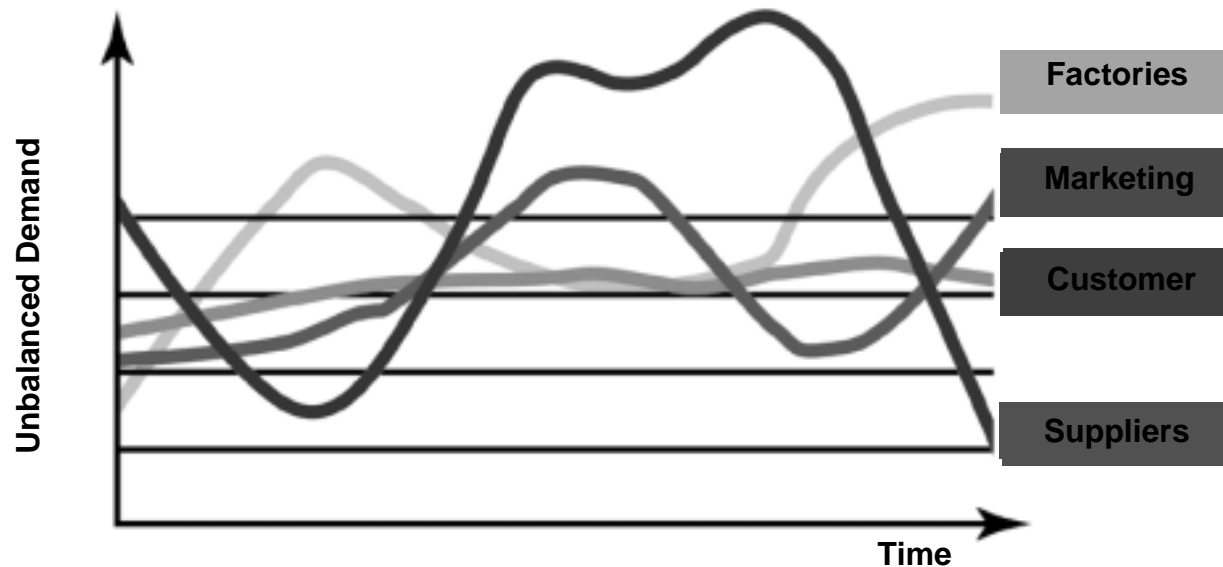
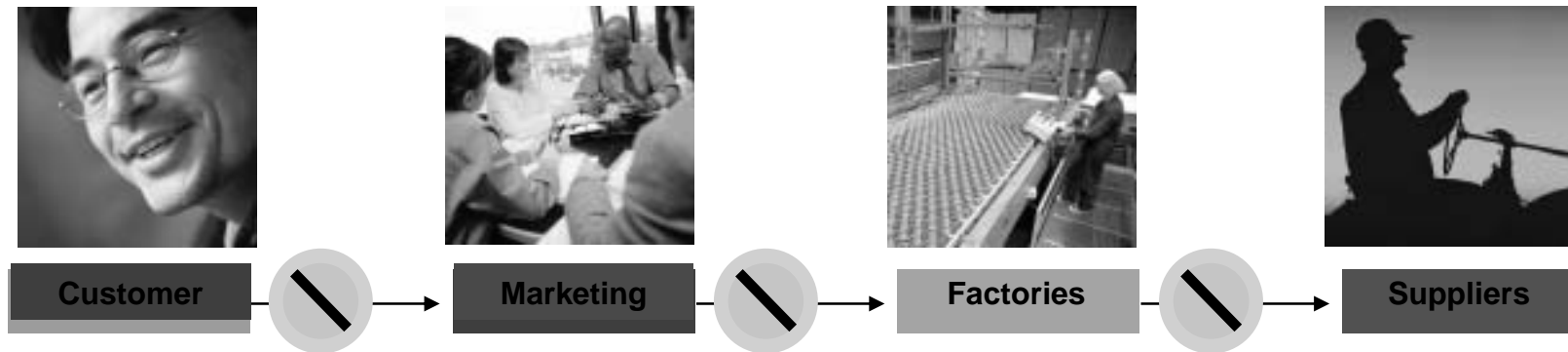
Unclear process ownership and heterogeneous IT tools create massive planning complexity



Many have to care. But, nobody feels responsible.



Information Uncertainty - The Bullwhip Effect



► Lack of information flow and uncertainty leads to stocks



Lack of Information Flow



Out of Stock - Situations

Results: 8.2% Out of stock quote (\emptyset , N = 40 Retailer)

Causes: (N = 20 Retailer)

- 47% Misordering, Lack of imprecise forecasting
- 25% Shelf replenishment
- 28% Category management

Source: Gruen, Corsten and Bharavaj (2002):
Worldwid Retail Out-of-Stock Study



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Expected effects through e-business based logistics applications

	Cost reduction	Service level	Delivery time	Cash-Cycle
Automotive Industry¹⁾	Operation costs: 6,2% p.a.*	35% to 95% (weekly based)	5 – 18 Days (individual vehicles)	- 2 bis + 2 Days
DELL²⁾ (Computer)	Operation costs: 15% p.a. **	92% to 98% (daily based)	< 5 Days (individual PC´s)	- 12 Days
Otto-Group³⁾ (Retail)	Operation costs: 25% p.a. ***	> 99,5% (six hour based)	< 48 hours (complete shipment)	not specified

* : Increasing efficiency through back-end optimisation, price reducing, stock reducing, assortment redesign

** : CRM, SCM and Logistics network with main supplier

***: in comparison to catalogue ordering

Source: 1) Own Analysis Automotive Industry in Europe 2002

2) Forrester Research, 2003

3) Corporate Declarations, 2003

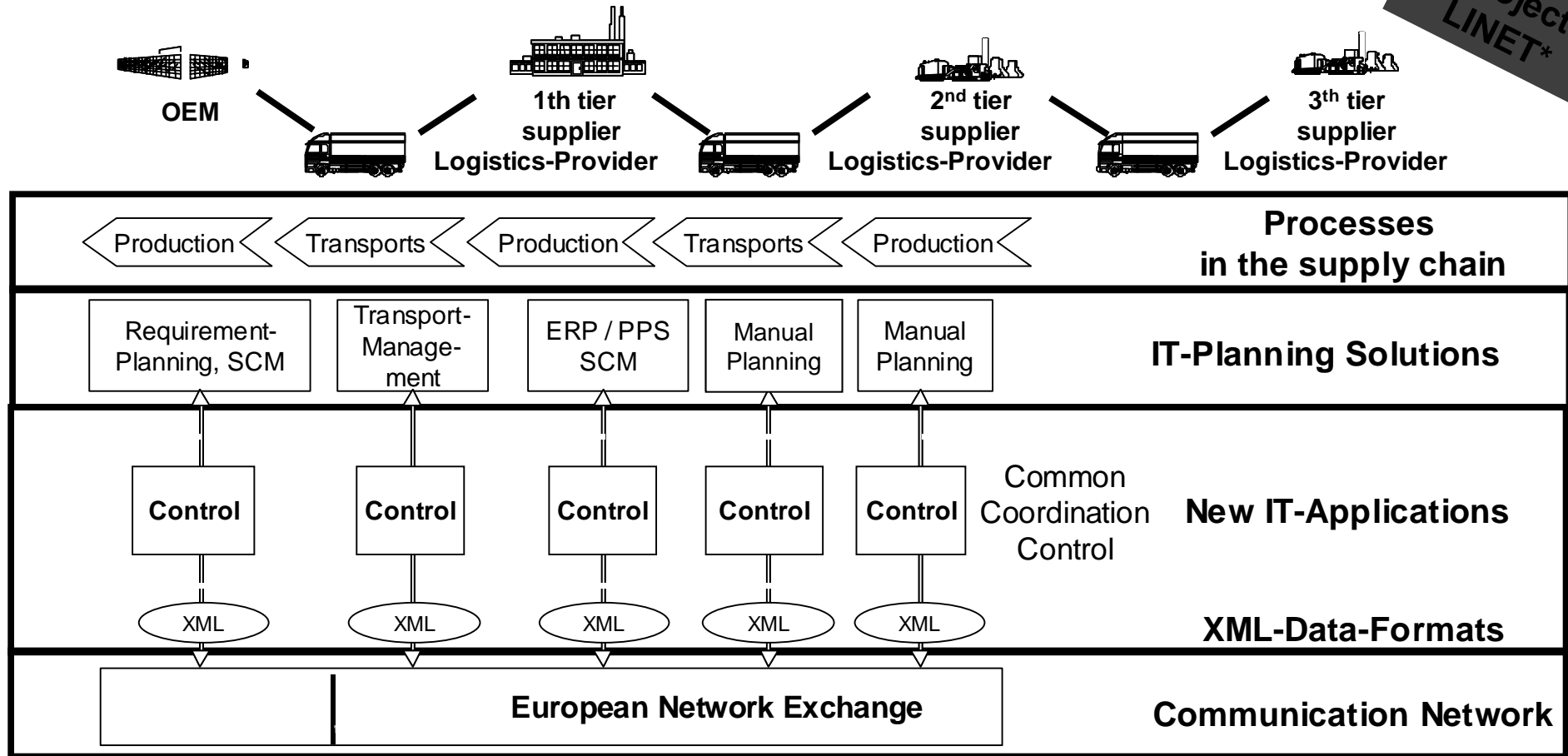


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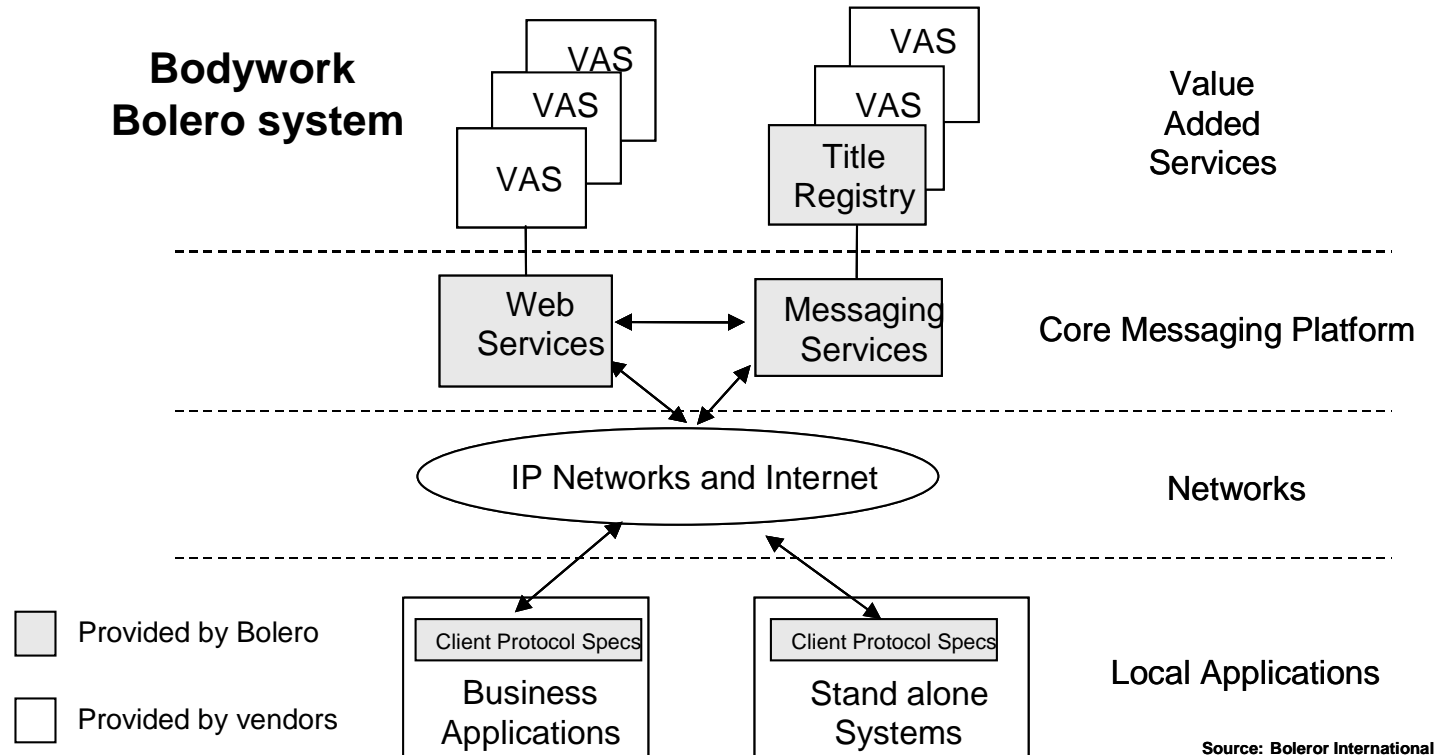
E-Solution in the Automotive Industry: Model of information exchange

TUB-
Project
LINET*



E-Solution: Paperless trade in cross bordering supply chains

- ▶ Broken information flows cause delays in supply chains particularly in handling with sensitive paper based documents (e.g. bill of lading, commercial Invoice etc.)
- ▶ Potentials to accelerate the processes will be found in the electronic shipping of sensitive documents considering legal formalities



Source: Bolero International Ltd.

- ▶ Bolero enables the exchange of critical documents in an Java based application with multilevel client server environment
- ▶ Basic module of the Bolero system is the Core Messaging Platform, which is kernel of the paperless information exchange between business partners.



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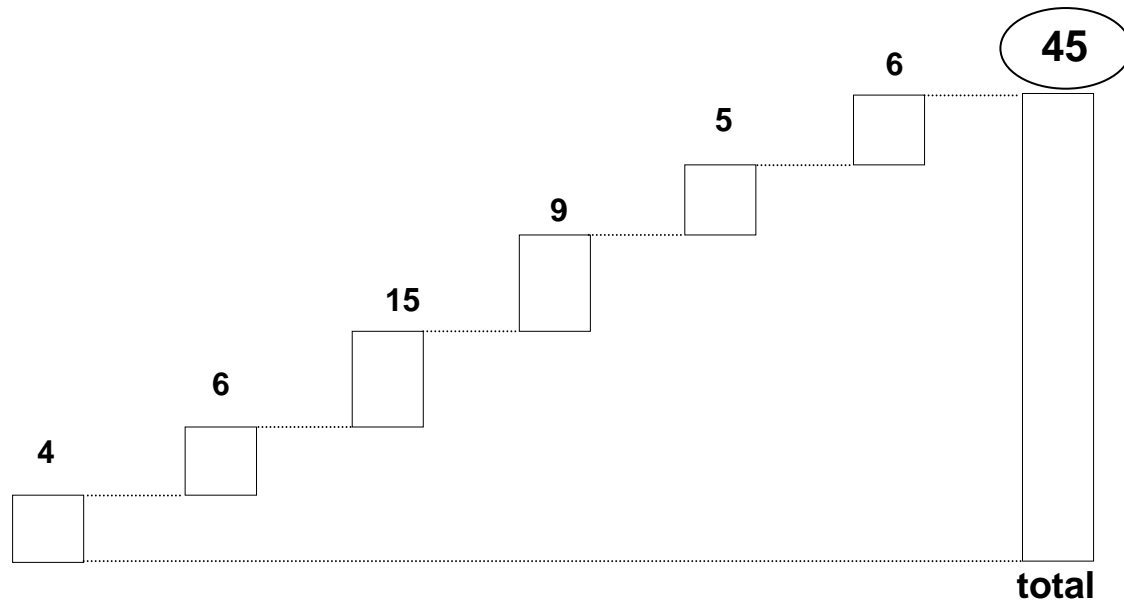
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Survey: E-Logistics in the Automotive Industry (2002)



Original Equipment Manufacturer	1st-tier-Supplier
2nd-tier-Supplier	3rd-tier-Supplier
Branchenmarktplatzanbieter	Logistics Service Provider

Methodological Approach:

- Explorative analysis with inquiries by interviews and questionnaires
- Covering the entire automotive supply chain by the respondents
- Derivation of the results by arithmetical averages
- Scattering of answers through regarding the weighted standard deviation



Meaning of e-business based logistics

Relevance

Is your company moving forwards to an „network company“?

Improves e-Business the importance of your supply chain processes?

Do you know already, which supply chain processes are supported by e-business applications?

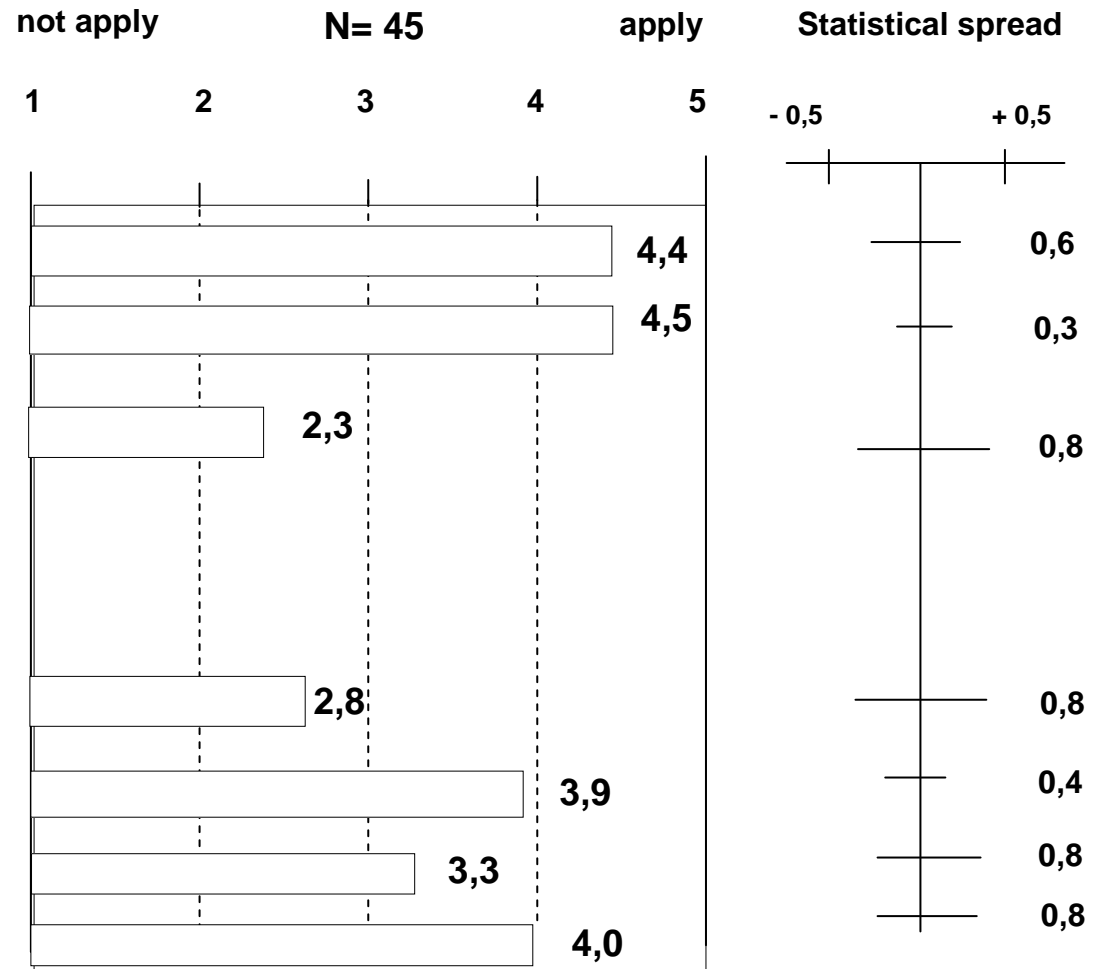
Main obstacles of implementation

Organisational Change

Capability of co-operation in networks

Fear of transparency and visibility

Quality of internal planning systems



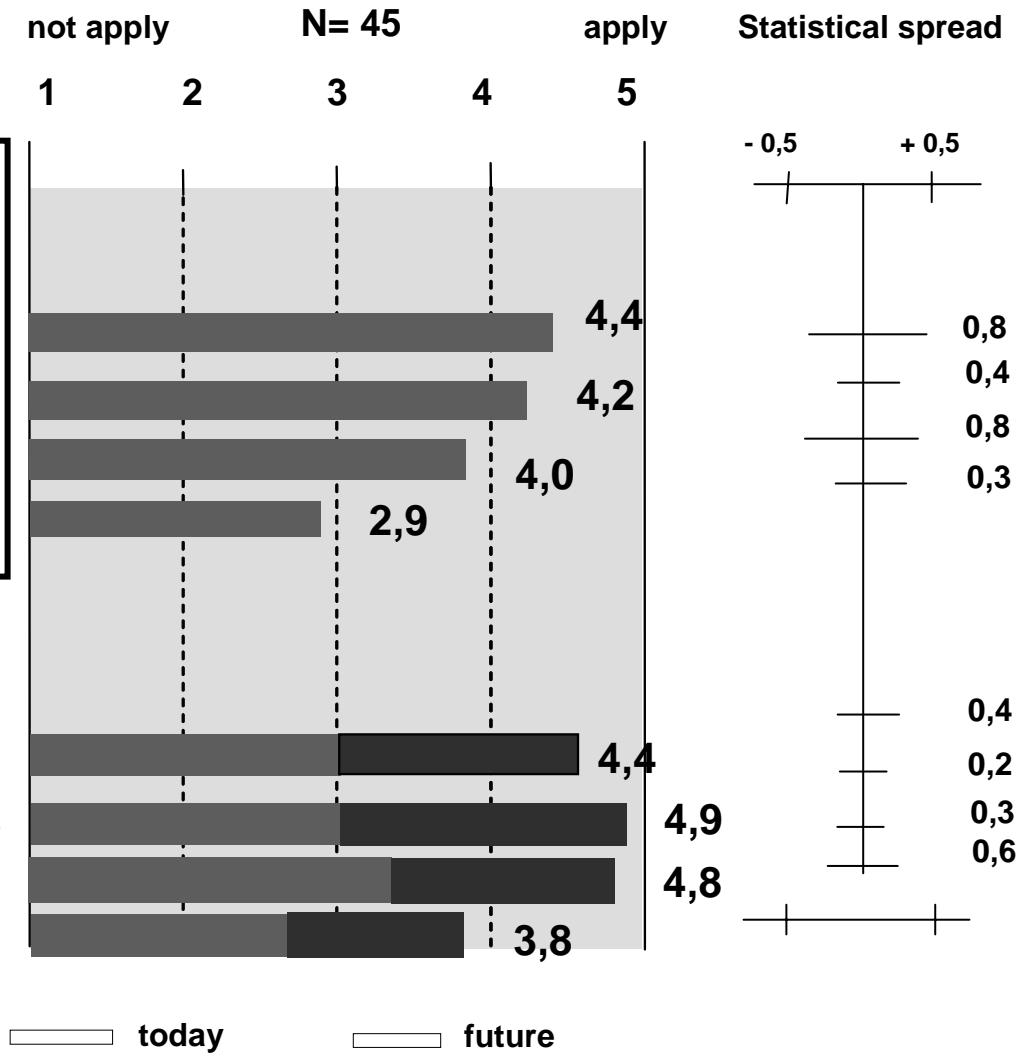
Problems of Adoption and how to improve collaboration activities

What do you expect as the main causing problems in supply chain processes?

Volatility of demands / Inaccuracy of forecasting
 Capacity bottlenecks
 Coordination processes
 Availability of stocks and resources

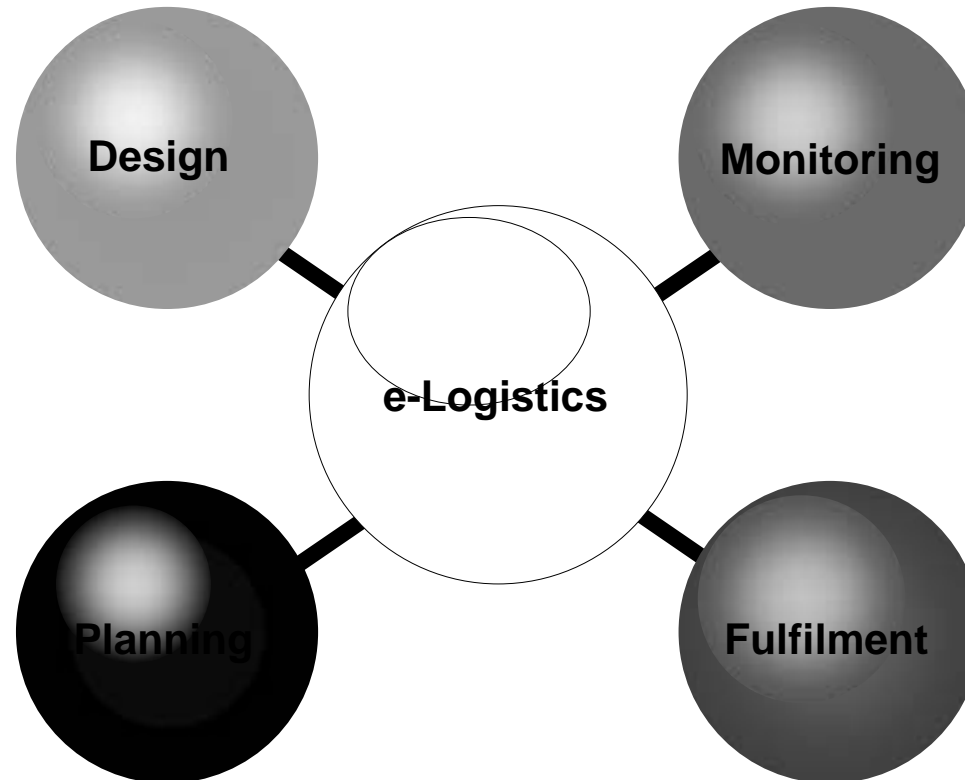
What do you aim in a collaborative environment today and in the future?

Requirements planning and forecasting
 Inventory management
 Development of new products
 Network planning and execution



Standardisation efforts in the e-Logistic environment

- Logistics-Strategy
- Corporate Network Structuring
- Logistics-Development
- Corporate Structure Planning
- Sourcing



- Controlling
- Visibility
- Tracking&Tracing

- Sales and Operation Planning
- Product Planning
- Inventory Planning

- Order Processing
- Delivery Control
- Transportation
- Container Control



Standardisation enables collaborative integration

- ▶ New sales channels powered by the internet, built-to-order scenarios, increased competition and more demanding customers are changing the requirements of the companies. Future tasks are the integration of organisational units along the supply chain and co-ordination of materials, information and financial flows in order to fulfil customer demands.
- ▶ Collaboration and particularly information integration is the answer to relieving the competition pressure and add value.
- ▶ Standardisation activities involve defining the performance of products, processes and services and affect all stages along the supply chain.
- ▶ The overall task is to share nondifferentiating processes and to execute those processes with other collaborative partners to increase the efficiency of the workflow.
- ▶ Multiple versions of systems, software and hardware make it difficult to communicate and move data and information across corporate boundaries - standardisation can not restricted to processes; IT-Infrastructure must also be standardised.
- ▶ The process of standardisation is dynamic and standards must continually evolve in order to meet changing or business requirements. A standard is a set of specifications to which all elements of products, processes, formats, or procedures under its jurisdiction must conform. The process of standardization is the pursuit of this conformity, with the objective of increasing the efficiency of economic activity.

