„Logistics, Traffic and Environment“

Professor Dr.-Ing. Uwe Clausen,

Director, Fraunhofer Institute for Material Flow and Logistics (IML) Dortmund – Germany

Chairman, Fraunhofer Transport Alliance (Verbund Verkehr)

Guangzhou 14.11.2005

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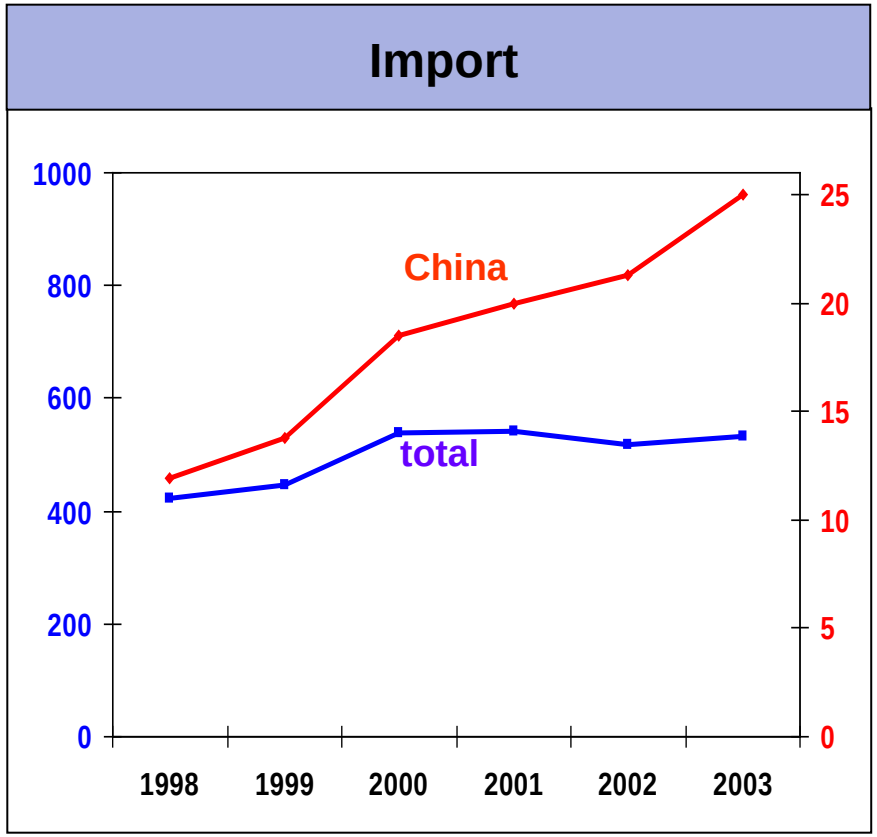
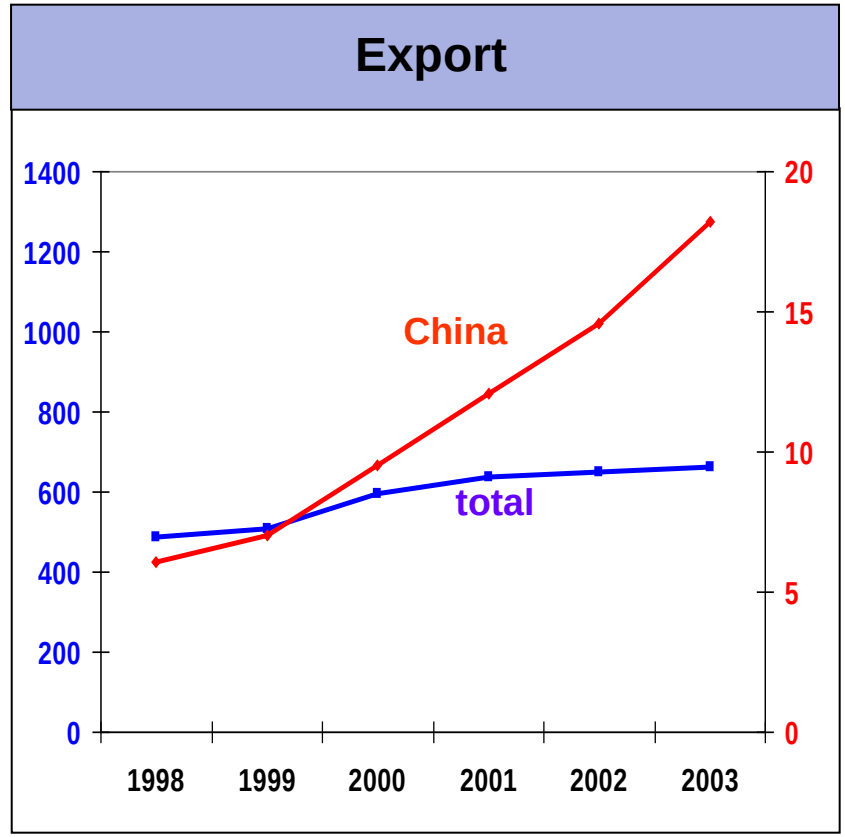
Import / Export Germany 1998-2003, in bn. €





Germany´s trade with China grows by more than 19% p.a.

source: Statistisches Bundesamt

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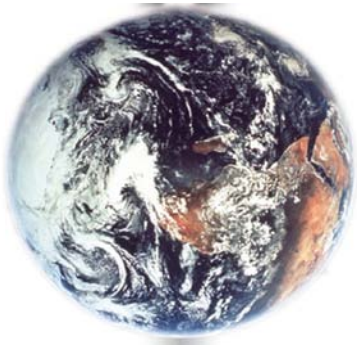
Increase of global trade requires optimized logistics



Globalization worldwide

- increase of needed goods transport services

Internet

- a chance for communication, especially among logistic network partners

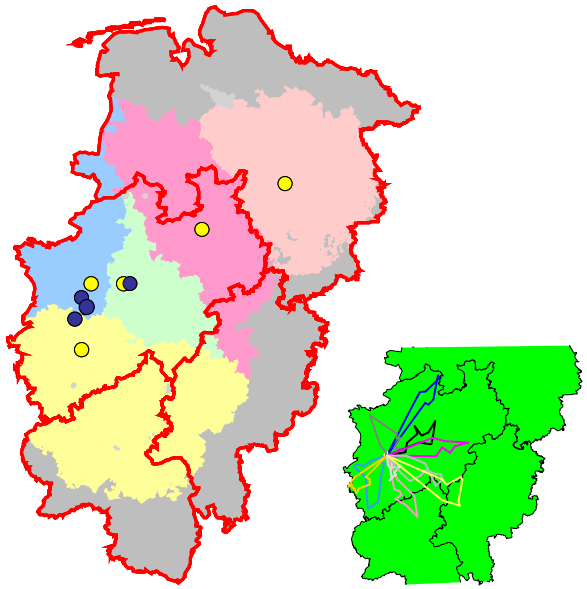
Logistics locations and networks

- airport logistics
- ports and logistic parks

Industrially sustainable development

- fuel efficiency
- optimized logistics structures
- saving resources by a closed-loop-economy

Optimization of the ThyssenKrupp Schulte GmbH warehouse and distribution logistics



- warehouse planning
- industry-specific warehouse and transport optimization
- resource, personnel and freight cost calculations
- development of realizable solution: new distribution structure including specific locations of the external logistic service provider

Research fields:

- steel trade
- storage and transshipment techniques
- infrastructural systems
- warehouse management
- vehicle routing and scheduling

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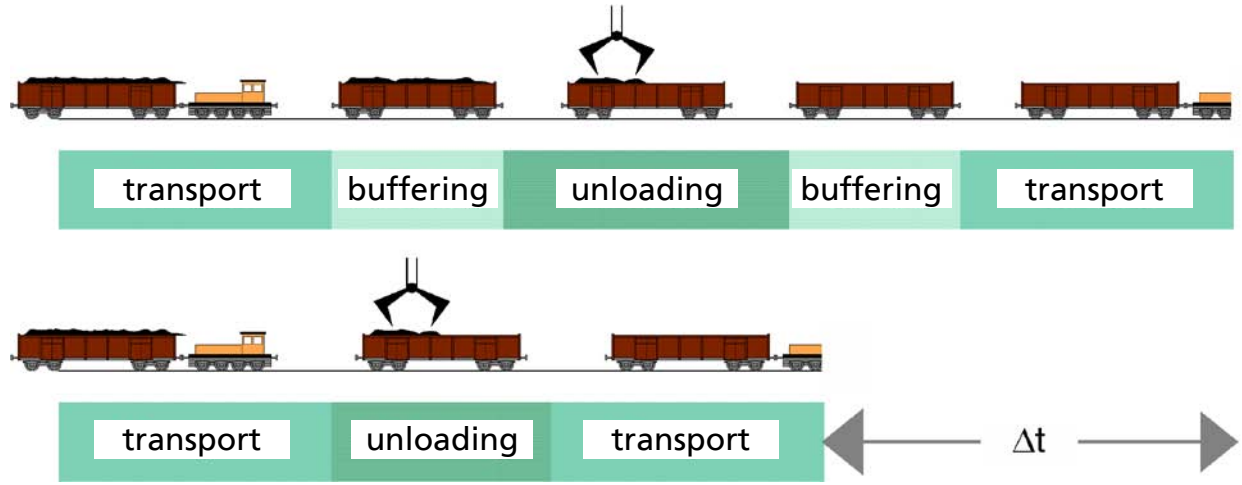
Optimization of the material and information flow aiming at the reduction of demurrage

- weak point analysis of the waste metal transports
- measures on the cost reduction and elimination of the bottlenecks
- improvement of the information flow
- design of interfaces production – transport - recycling



DORTMUNDER EISENBAHN GMBH

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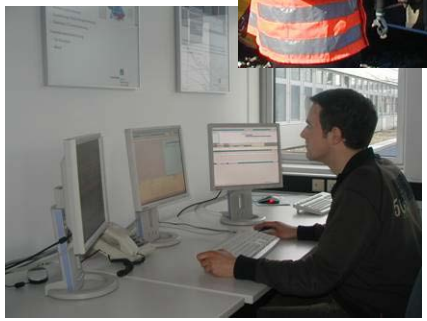
Innovative mobile identification and information technologies for railway transportation (mRail-Business)

Funded by

Bundesministerium für Bildung und Forschung



Proceeding:

- demonstration of the processes of the Stahlwerke Bremen (Germany) factory railway
- analysis of mobile device functionality for railway logistics
- **Targets:**
- improved IT support of operational processes
- improved information flow from the personnel outside up to the dispatch processes in the headquarter
- reduction of waiting and handling times in factory railway operations

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Procurement and disposal logistics within production

e. g. on behalf of a foundry premises (Fritz Winter Eisengießerei GmbH & Co. KG)

Initial situation

- german federal railway (DB Railion) disassociates from more than 500 inefficient siding tracks, private railways operate many of these in cooperation with DB Railion
- truck traffic within works premises needs space and is obstructing in-plant logistic processes

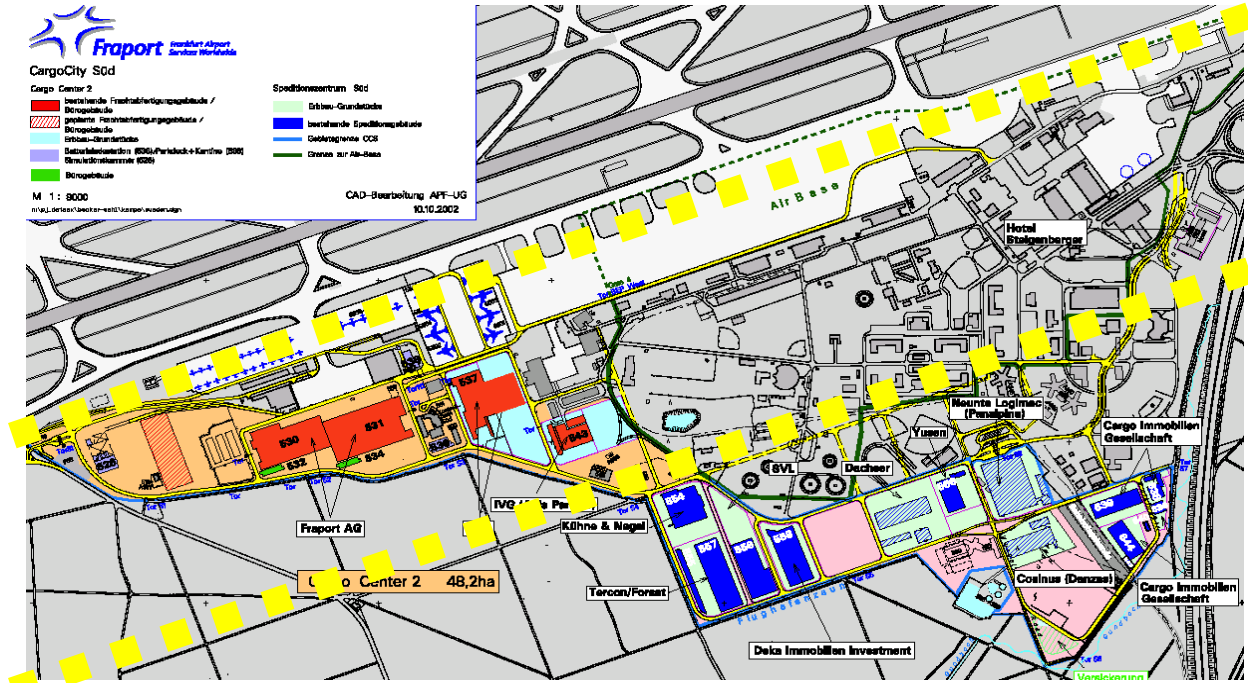
Result of Research Project

- avoidance of 432,000 truck-km/a by using recycling plants (foundry waste sand, core sand) situated close to location
- shift of 1,100,000 truck-km/a to transport mode rail (new sand, coke, silicon carbide) instead of truck
- improved safety of staff on premise

Airport logistics - Master Plan for the “CargoCity South” at Frankfurt Airport

- **First Line:**
  Cargo terminals with direct access to apron

- **Second Line:**
  Forwarder terminals



- **Result of Research Projekt :**

  Definition of the location and utilisation concept of CargoCity South – building and integrating air cargo facilities - checked by simulation of the entire cargo processes at the airport

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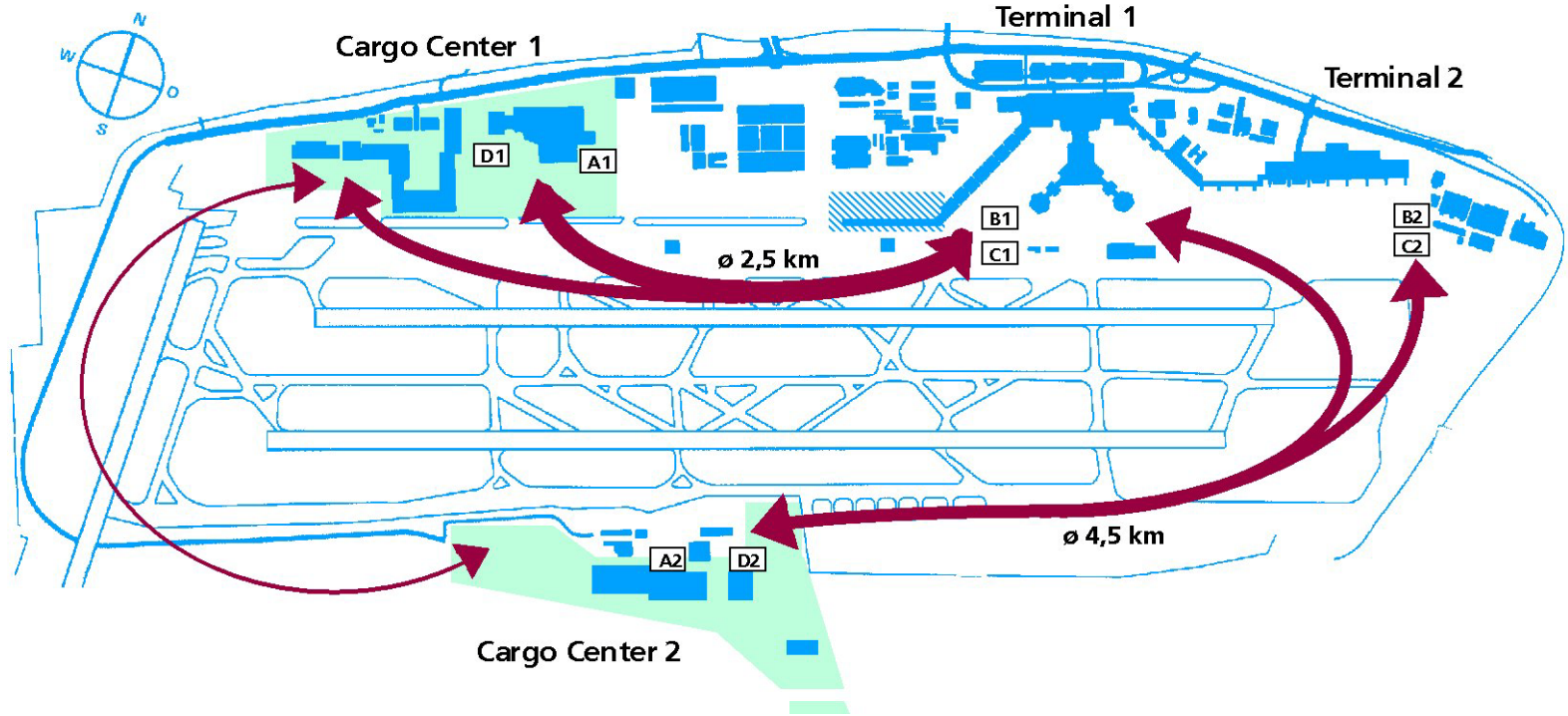
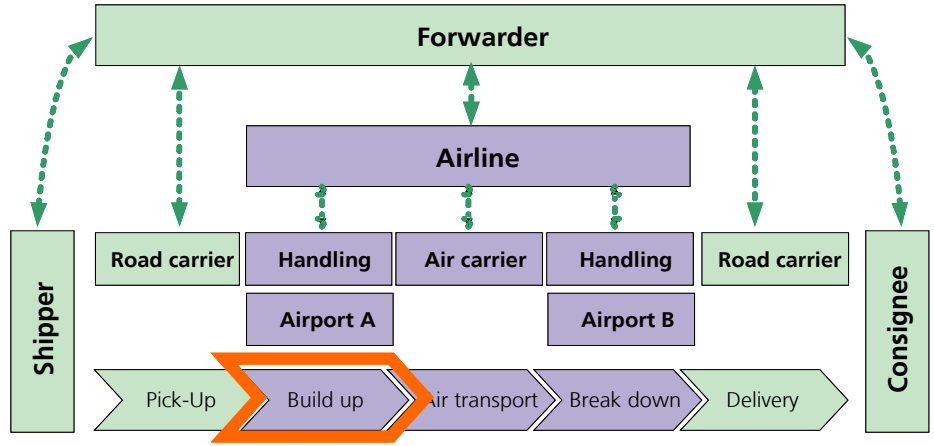
Cargo City South at the Airport Frankfurt Main



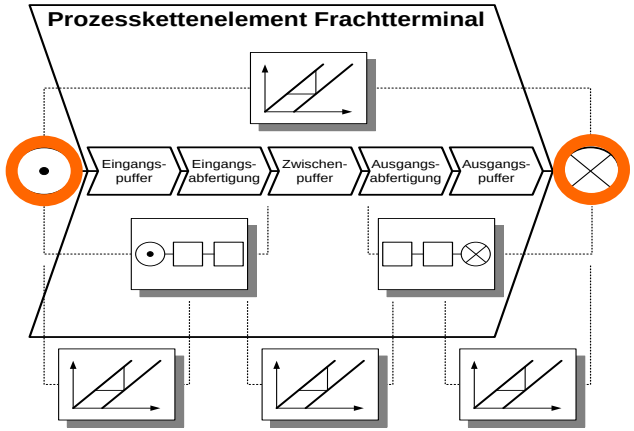
- Development concept regarding operational buildings and dummy areas for cargo handling as a basis for planning of traffic tying and development
- Determination of the dimensional and functional requirements as a basis for architectonical and constructional design of the cargo facilities

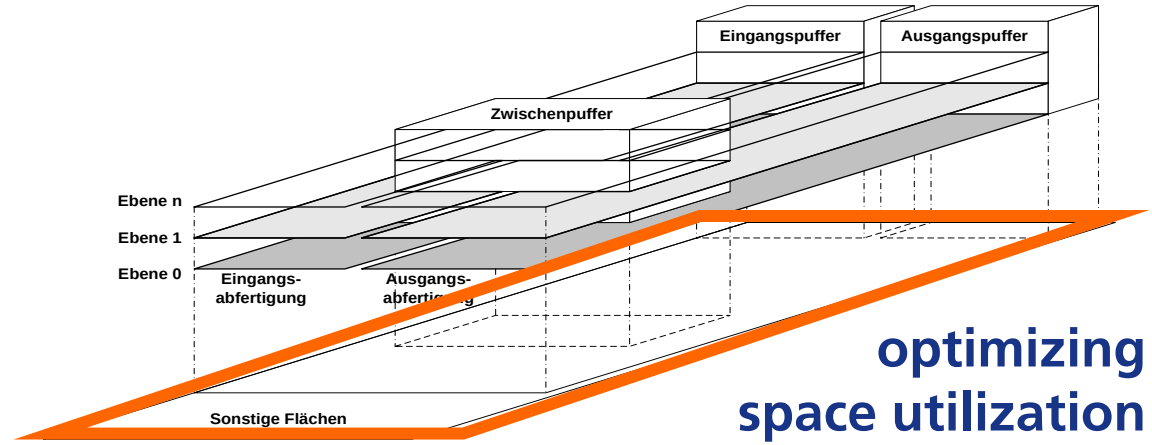
Airport logistics - Conceptual Design of Cargo Terminals



transport and handling processes of subnet

hub internal handling processes





optimizing space utilization

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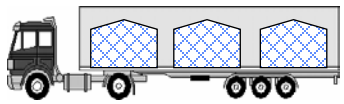
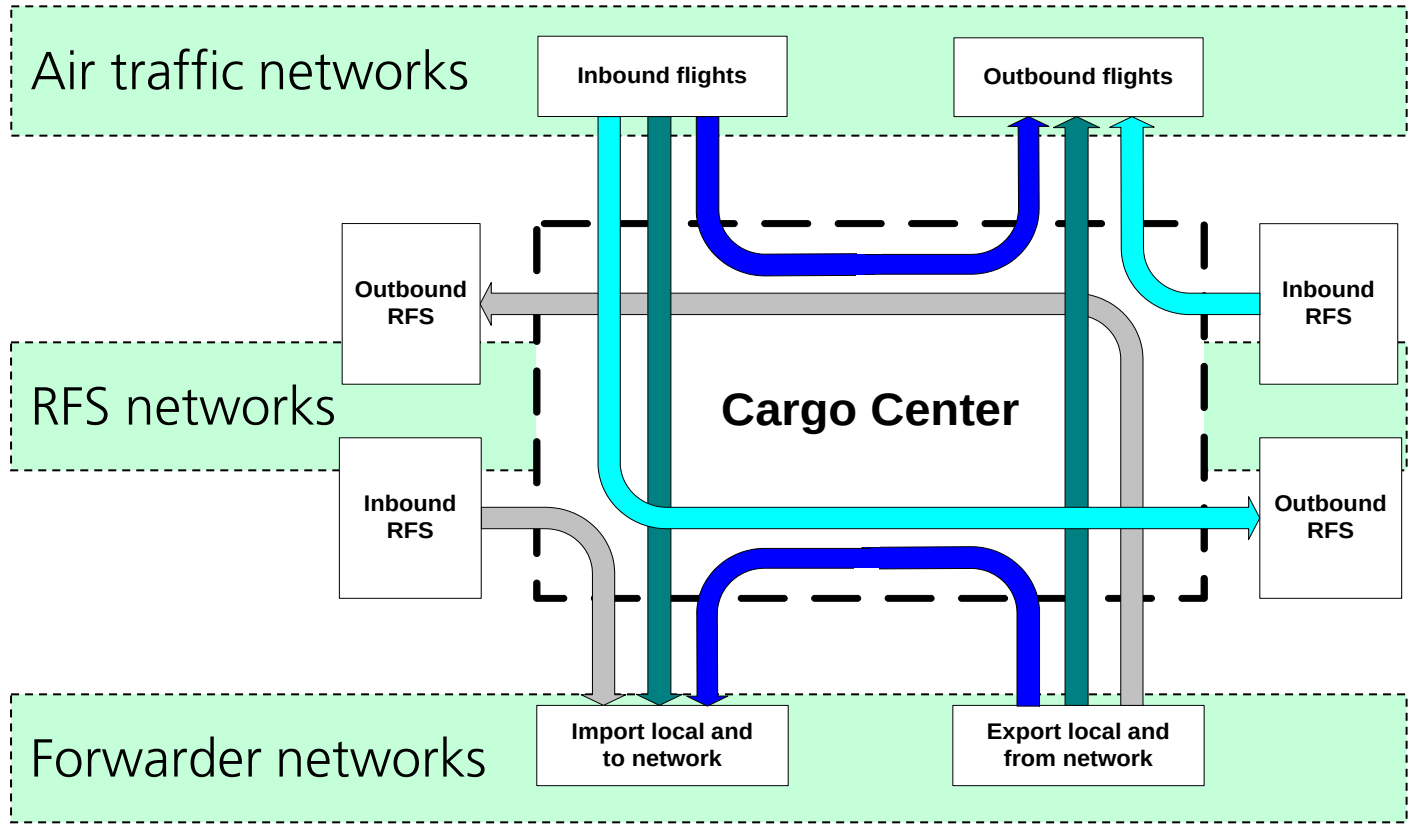
Airport logistics - Optimisation of Interfaces between Networks





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Logistics Location Planning - Research focus and Procedures

Location Evaluation

- Analysis of strengths and weaknesses
- Consideration of different target groups
- Including future requirements

Location Development

- Determination of development guidelines
- Determination of investment needs
- Strategic positioning, organisation and cooperation types

Implementation Planning

- Development of time and cost plans
- Selection of an operator concept
- Recommendation of realisation schedules

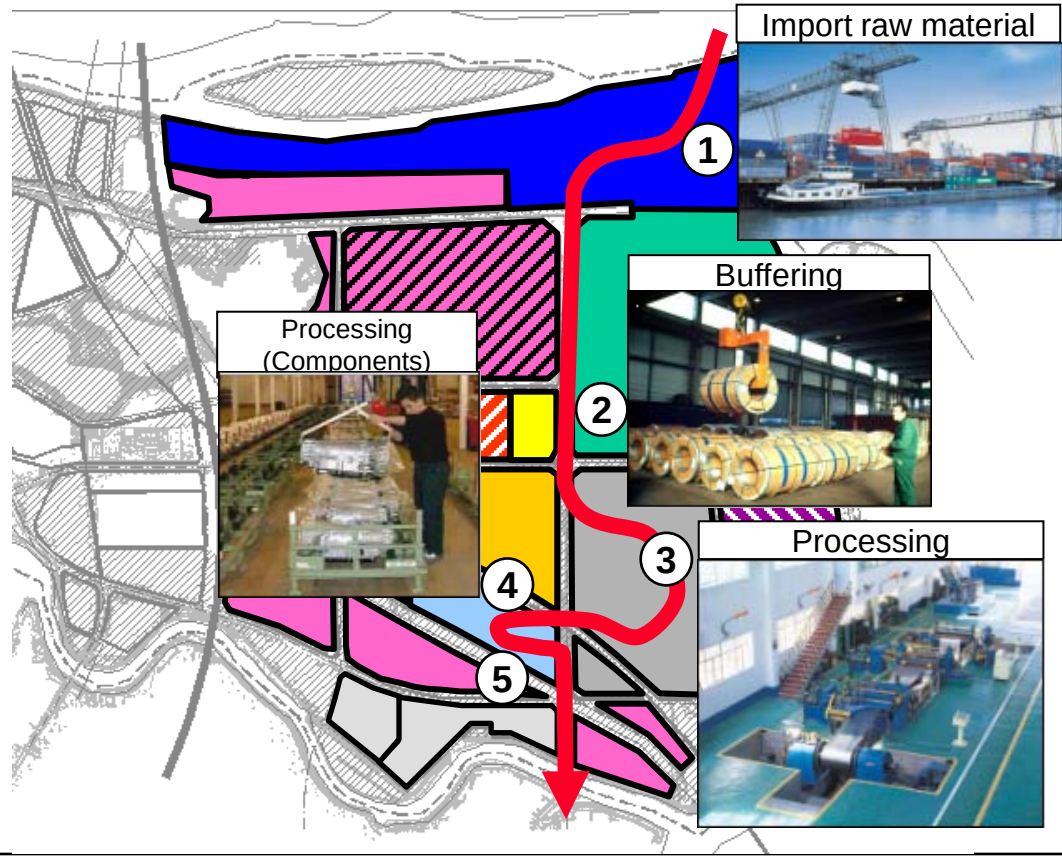
Optimization of the logistical infrastructure - example Nanhai
三山国际物流园区 „Sanshan International Logistics Park“

Results

- Market analysis of the requirements of the local industry
- Strategic planning of the logistic functions for specific areas
- Strategic development and marketing concept
- Business model for the development enterprise including a cost benefit analysis

Generalisation

- A proper functional planning results in competition advantages and enables a better focus for the aspired user goups



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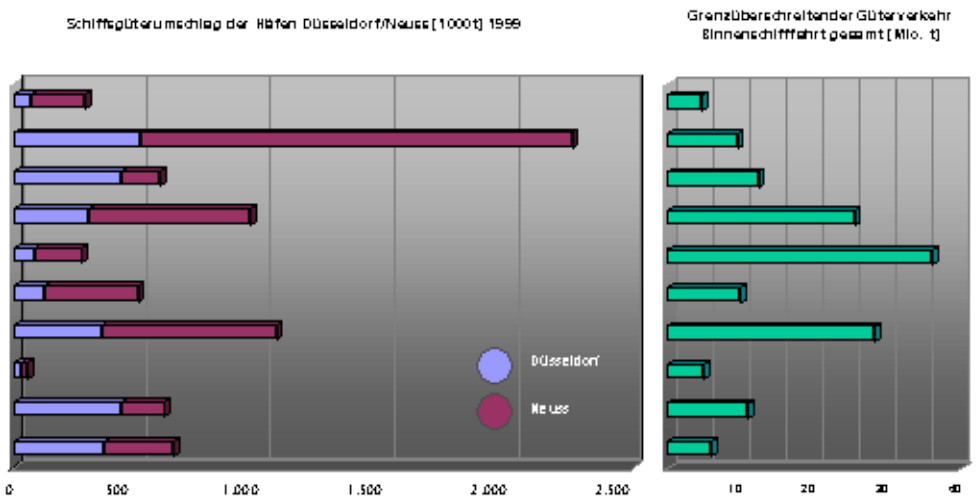
Cooperation of ports - example Düsseldorf and Neuss (in Germany)

- Determination of the strengths and weaknesses of both ports
- Recommendations for new business areas and logistic services
- Derivation of long term development guidelines
- Identification of synergy potentials based on the cooperation



duisport
excellence in logistics

CENTRAL HAFEN NEUSS

Stadtwerke Düsseldorf AG

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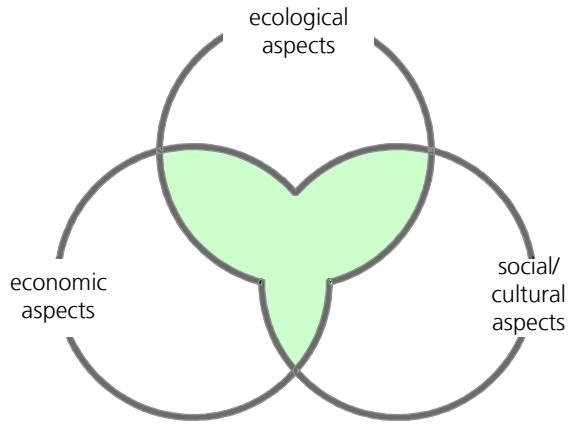
Industrially sustainable development is characterized by...



E **higher fuel efficiency** which results in reduced CO_2 emissions and lower fuel costs

C the development of **a closed-loop economy** (recycling) which saves resources and reduces the amount of waste

O **optimized logistics structures** which reduce kilometers driven, vehicles used and time needed to perform a specific service

➔ Innovative logistics includes all three items and can foster industrially sustainable development putting both, the environment and China's growing economy into a win- win situation.

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Why establishing redistribution systems?

24 R&D projects in Germany proved that annually more than 36 m truck kilometres and approx. 20.5 m € vehicle costs can be saved in the closed-loop economy.

- Avoiding unnecessary transports
- Shifting road transports to eco-friendly transport modes rail or waterway, and relief of the overstrained transport mode road
- Development and utilization of networks within the closed-loop and waste management to feed as much waste as possible to a recycling according to state of the art and to dispose of as little waste as possible
- Opening-up development potentials in vehicle, container and handling systems to increase efficiency

➔ reduction of environmental pollution as well as environmental hazards

Source: Dr. Kremer, TÜV Management Systems GmbH

How can redistribution systems be established?

Basic principles – legislatory frameworks

- Product responsibility: Manufacturers and distributors are obliged to take back, and re-distribute their products in the European Union
- Waste hierarchy:
  Avoiding waste instead of recycling waste before disposal

Task of Manufacturers

- Designing products suitable for recycling (eco-design)
- Installation of product take-back systems
- Recycling, treatment and disposal of returned products

➔ **Minimization of environmental load**

Reduction of road transports for used glass





Funded by

Bundesministerium für Bildung und Forschung

Initial situation

- Transport relations have grown complex over long distances
- 98% of transports for used glass initially takes place on the road

Objective

- Reducing and avoiding transports for used glass on the road by assignment optimization, shift to alternative transport modes, and application of new information technologies (planning & scheduling tools)

Results

- Avoiding transport of used glass via road by approx. 30% with aid of a software planning tool and application of IT to reduce transport volumes
- Development of new vehicles – the Vario-Collector® – with separate, flexible compartments for collecting different types of glass

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Production-Integrated Environmental Protection Check (PIUS-Check)

PIUS® Check
Effizient produzieren.

Initial situation

- Use of raw materials and occurrence of residues in the production process, which have different detrimental effects on the environment

What is the PIUS-Check?

- Survey of the relevant material flows and state of the art in production
- Showing possible improvements in production regarding economic and ecological aspects

Objectives

- Minimization of residues and saving resources in production, closing the loop in the production process and recovery of value substance

Production-Integrated Environmental Protection Check (PIUS-Check)

Example: PIUS-Check in the surface treatment industry

- Optimization of a production line by improved procedure organization in the rinse process (reduction of water and chemical use by 20%),
- Reduction of fresh water use by usage of rain water (substitute fresh water by rain water up to 80%)
- Optimization of fresh water inflow in the rinse baths (reduction of the water use by 5%)
- Reduction of surface losses of heating boilers (reduction of energy use by 10%)
- New conception of the cooling water cycle of an induction plant (reduction of the water use up to 50%).

logistic development of New Fair Munich
- Dynamic parking and traffic management system

- Development of a traffic related concept for a dynamic and freely programmable traffic management system on the motorway and the downstream road network
- Public transport system
- Development of concepts for shuttlebuses between rapid-transit railway station, airport and parking places and the exhibition center
- Logistic concept for the delivery traffic
- Development of a heavy goods vehicle-pool concept for a coordinated traffic cycle at the deliverycourts

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Identification of Traffic Situations

- Camera systems for visual traffic data acquisition
- Picture analysis algorithms for determination of the traffic situation
- WLAN for data coverage of urban agglomerations
- Algorithms and know-how for the combination and interpretation of different types of traffic process data
- Competencies in the field of interface design related to computer-based operations control centers and passenger information system

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Traffic Information Systems

- Intermodal traffic information including public transport
- Real-time identification, dynamic routing
- Tourist and city information

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- Mobility and traffic information systems based on floating car data (FCD)
- Use of location and speed data from few cars to estimate overall traffic
- Development of Passenger information and infotainment systems

Fraunhofer IPK (Berlin)

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非 常 感 谢 ！

Thanks for your attention!

Dortmund

Beijing

Prof. Dr.-Ing. Uwe Clausen
Director
Fraunhofer Institute for Material Flow and Logistics
Joseph-von-Fraunhofer-Str. 2 – 4
44227 Dortmund
Telefon: +49 231/9743-400
Telefax: +49 231/9743-402
E-Mail: uwe.clausen@iml.fraunhofer.de

房殿军 博士 Dr. DianjunFang
德国弗劳恩霍夫物流研究院 Fraunhofer IML
中关村大街18- 3 号
1901 – 1903 室
电话：010 8253 8100

http://www.iml.fraunhofer.de
fang@iml.fraunhofer.de

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