Freight Transport Demand Management

A Contribution to Urban Traffic Management and Sustainability of Logistics

TECHNISCHE UNIVERSITÄT DARMSTADT

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WCTRS – SIG10 Workshop, Vienna, 14th-16th March 2012

Source: www.welt.de

Fachgebiet Verkehrsplanung und Verkehrstechnik

Dynamo PLV – Dynamic and Seamless Integration of Production, Logistics, and Traffic

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Interdisciplinary joint research project

- Technische Universität Darmstadt (nine chairs)
- European Business School (two chairs)

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European Business School
International University · Schloss Reichartshausen

Funding

- German Federal State of Hessen

HESSEN Hessisches Ministerium für Wissenschaft und Kunst

LOEWE – Landes-Offensive zur Entwicklung Wissenschaftlich-ökonomischer Exzellenz

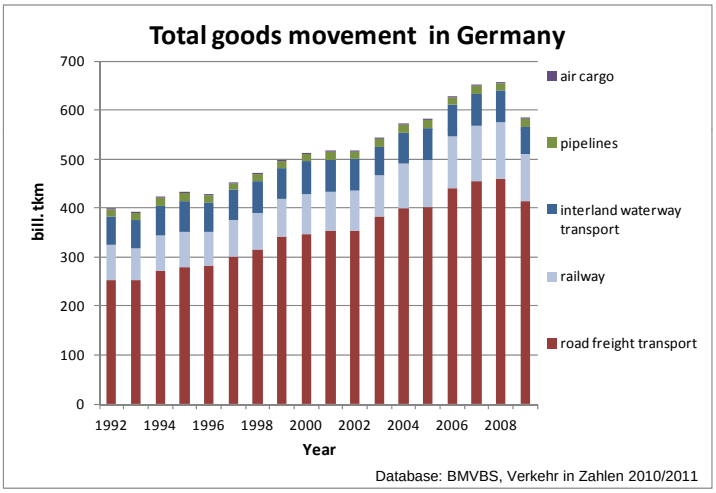
Project Goals

- Integrated optimisation of processes and measures in production, logistics, and traffic
- Developing policies, methods and tools which support such integrated decision-making processes towards

Dynamo PLV

Fachgebiet Verkehrsplanung und Verkehrstechnik

Rapid Growth in Road Freight Transport



Database: BMVBS, Verkehr in Zahlen 2010/2011

Rapid growth in freight traffic volume during the past 20 years

The growth has mainly taken place on the roads

Consequences are increasing capacity constraints and a growing awareness of environmental problems.

Public authorities respond with an increasing number of restrictions

General tendency:

Particularly the increasing public awareness of environmental problems leads to more and more restricitive measures for freight traffic.

Selected examples:

- Amendment of German Federal Immission Control Act due to European requirements
- Environmental zones
- Bans on trucks
- Speed limits

Source: www.verkehrsrundschau.de

Source : www.tagesschau.de

Source : www.verkehrsrundschau.de

Enterprises have a microspopic view on traffic and transport

Source: W. Tomassovich / pixelio.de


Source: E. Westendarp / pixelio.de

It lacks of entrepreneurial awareness to regard own transport activities as a part of the overall system of traffic and transport.

- Traffic and transport are largely seen as an imperative of economy.
- Therefore, entrepreneurial transport decisions are usually made without consideration of the traffic condition.
- Only internal logistical parameters determine the transport optimisation.

It lacks in mutual understanding …

Decisions in production and logistics

… are made without consideration of impacts on traffic and transport systems.

Decisions in traffic and transport, particularly about restrictions for road freight traffic,

… are made without a consideration of impacts on production and logistics.

… are mostly implemented as static measures although dynamic traffic management approaches could be applied.

Source: www.hna.de

Source: www.[illegible]

Source: www.schwarzwaelder-bote.de

Interrelations in the freight transport system are neglected

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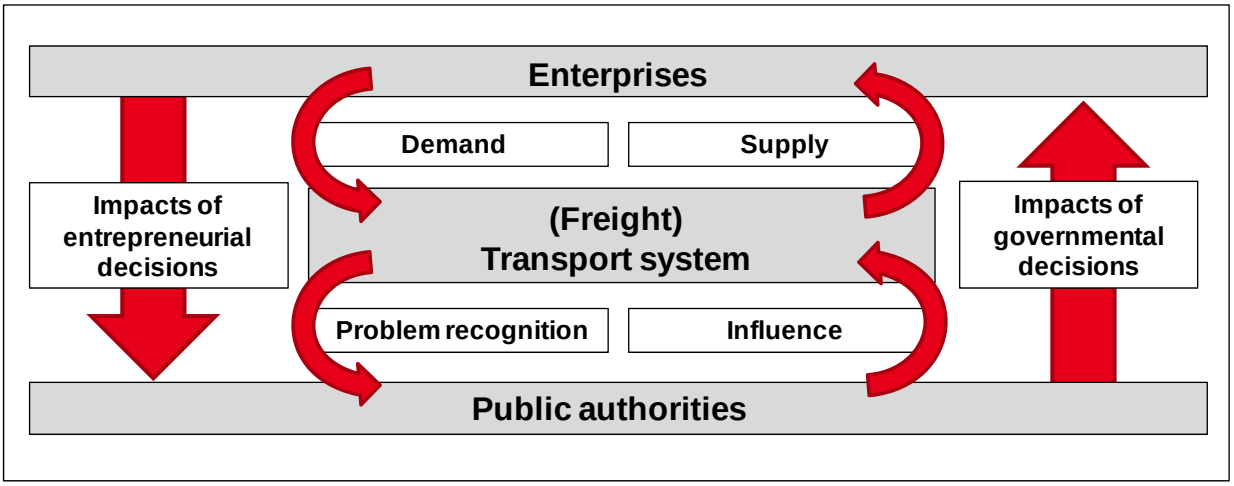
Despite the evident interrelationships between decisions in production, logistics, and traffic, their interdependencies are constantly not considered in the decision-making processes.



An `intelligent´ use of infrastructure is needed

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- A continuation of the growth in road freight transport must be expected.
- But growth-adequate extension of traffic and transport infrastructure will not be possible due to public budget constraints and conflicts with environmental aims.

New ways for an `intelligent´ use of the existing infrastructure need to be found!

- Transport policy must consider entrepreneurial interests.
- Companies must question and modify their processes.

Traffic Management

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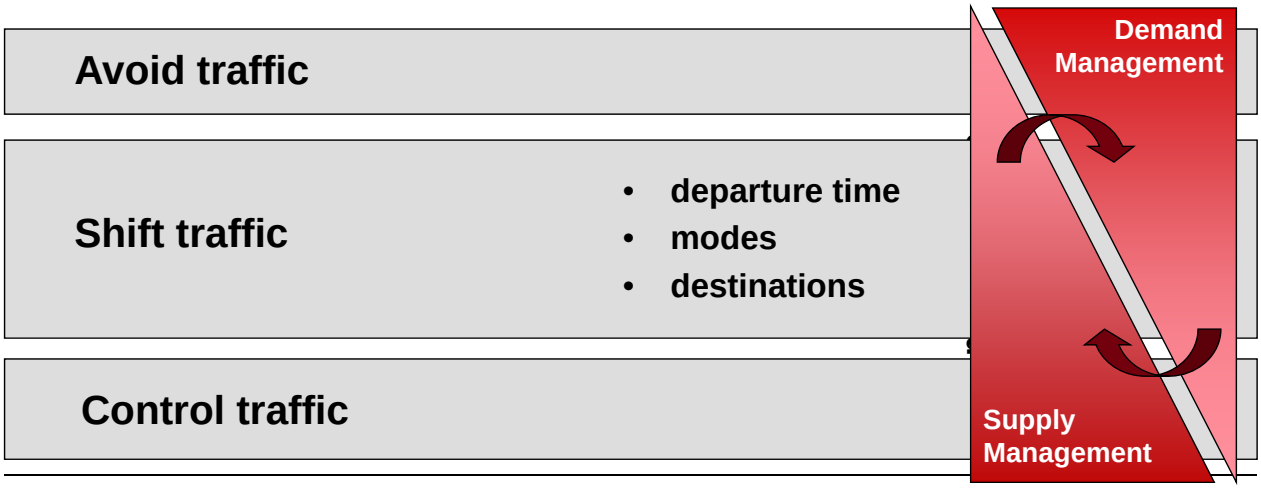
Traffic management influences the supply of traffic and transport systems as well as the demand for travel and transport through a bundle of measures with the aim to optimize the positive and negative impacts of traffic and transport.



Freight Transport Demand Management

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Freight transport demand management (FTDM) as a part of traffic management aims at influencing the demand for freight transport. By implementing a bundle of measures, the impacts of freight transport on the overall system are sustainably optimised.

	Passenger transport	Freight transport
Influence of traffic supply	Provision and operation of transport infrastructure	
Influence of traffic demand	Mobility management	**Freight transport demand management**

Examples for Demand Management Measures

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	Mobility Management	Freight Transport Demand Management
Avoid Traffic **Shift Traffic Destinations**	• Land use planning → decentralized concepts • Campaigns for „car-free days“ • Car-pooling agency • Parking management • Influencing choice of destination • …	• Location planning → clustering of enterprises • Cargo transport centres • Freight exchange agency, city logistic concepts, … • promotions (e.g. for local products) • *Adaptation of production processes?* • *Adaptation of supply chains?* • …

Examples for Demand Management Measures

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	Mobility Management	Freight Transport Demand Management
Shift Traffic Departure Times	• Staggering of or transition to flexible - working hours - school hours - shopping hours • Peak pricing in public transport • …	• Introduction of defined delivery time slots or transition to flexible delivery time slots • Ban on heavy vehicles (e.g. Sunday truck ban) • *Financial incentives? (e.g. road pricing in Stockholm)* • *Adaptation of production processes?* • *Adaptation of storage concepts?* • …

Examples for Demand Management Measures

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	Mobility Management	Freight Transport Demand Management
Modal Shift of Traffic	• Public Transport Prioritization • Image campaigns for public transport, cycling, ... • Job tickets, semester tickets, event combi tickets • Reducing parking capacity, parking fees • Mobility consulting for new citizens • …	• Promotion of combined traffic, siding tracks • Image campaigns, „Green Logisitics“, … • Environmental certificates, *certificates for cooperative enterprises?* • *Further financial incentives (e.g. heavy vehicle tolls)?* • *Transport consulting service (e.g. in Sweden)* • …

Examples for Demand Management Measures

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	Mobility Management	Freight Transport Demand Management
Traffic Control (Route Choice, Driving Behaviour)	• Public Transport Prioritization • Pedestrian zones • Information and routing systems • …	• Priority routes for trucks • Truck bans • Speed limits *(situation-responsive?)* • Information and routing systems *(more specific services for heavy vehicles?)* • *Road pricing differenciated by route and time? (e.g. truck pricing in Japan)* • *Truck Prioritization? (situation-responsive?)* • …

Needs for Action: Integrated Concept for FTDM

Many measures for freight transport demand management (FTDM) are in action already.

However, improvement of such measures and development of new measures seems to be promising.

Comprehensive concepts for FTDM are rare, which is clearly a gap in traffic management.

A promising approach to cope with the increasing challenges is an integrated concept of FTDM as a new and important part of traffic management.

Needs for Action: Institutionalisation

A FTDM institution **promotes a mutual understanding and system-wide cooperation**, needs **institutional independence** and owns **decision-making power** to optimise the total system.

- How to merge competences of different actors?
- Where may the new institution be settled to assure ex-officio decision-making but avoid any partisanship?

Suggestion: **stepwise introduction**:

- Round table for enterprises, transport authorities, police authorities, citizens‘ initatives, and others
- Freight transport demand manager

Needs for Action: Incentives for Enterprises

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It can be assumed that especially **material incentives** may convince enterprises to contribute efficiently to a freight transport demand management (FTDM).

However, the use of **immaterial incentives** may support the success of FTDM.

- Which possibilites for material incentives within the freight transport system exist?
- Which immaterial incentives suit to motivate enterprises for FTDM?

Needs for Action: Modelling of Impacts

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Estimating costs and benefits of measures needs **more knowledge on the impacts** of decisions made in production, logistics, and traffic on the other areas.

Respective **empirical studies** must be conducted.

User-friendly instruments are needed for the decision support.

Linking existing models from different disciplines (production, logistics and transport).

- Which appropriate models for the linkage exist?
- How could new integrated models look like?

Conclusions

Various freight transport-related problems require a re-thinking of freight transport policy.

Many measures for freight transport demand management (FTDM) are in action already. Improvement of such measures and development of new measures seems to be promising.

A comprehensive concept for FTDM needs to be developed to fill the gap in traffic management.

Further research on FTDM has to focus on

- its institutionalisation,
- the idenfication of appropriate incentives for enterprises,
- the knowledge on and the modelling of measures‘ impacts.


Source: www.auto.de


Source: www.focus.de


Source: www.verkehrsrundschau.uk

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