

Transformation in transport – How does efficient freight transport succeed?



TECHNISCHE
UNIVERSITÄT
DARMSTADT

Seminar Wintersemester 2023/2024

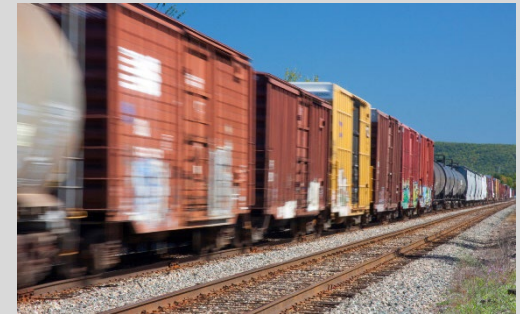


Quelle: Johannes Rentschler

More efficient transports help to increase sustainability

Benefits of efficient transport

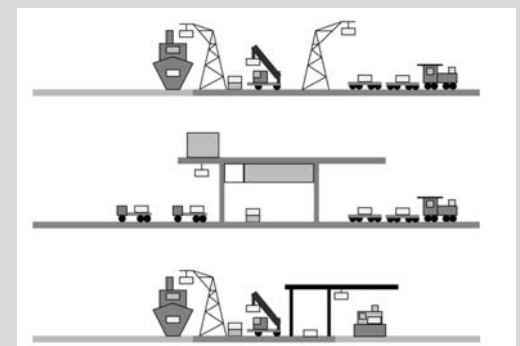
- Leveraging the respective strengths of different modes of transport, such as the sustainability of rail and the flexibility of road transport
- Economic benefits such as reduced road congestion, reduction of greenhouse gases, cost advantages due to mass transport, optimization of working time, high transport safety
- Intermodal transport requires the organization of a complex, multi-link transport chain



Quelle: iStock.com/WoodyUpstate

(Intermodal) rail freight enables ecologically efficient transports

- In contrast to unimodal transport, intermodal transport requires an efficient cooperation between the different modes of transport
- (Intermodal) rail freight transport provides ecological benefits such as reduction of greenhouse gases, reduction of road congestion ...
- Due to the complexity of intermodal transportation networks, various barriers need to be overcome to perform efficient transports



Quelle: Carrillo Murillo, D.G. (2010)

Transformation in transport – How does efficient freight transport succeed?

Seminar focus

Policy & financial circumstances

By setting the framework conditions and investing in infrastructure, policymakers can set the foundations for efficient transportation.

- Climate targets and modal split for freight transport
- Policy measures for efficient transport
- Financial circumstances in rail freight sector

Equipment & Standardization

The standardization of infrastructure, equipment and data exchange greatly lowers the barriers for utilizing rail freight transport

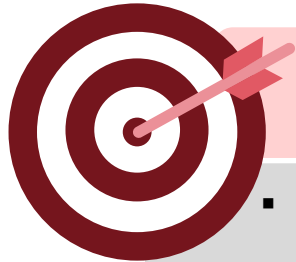
- Inter-actor communications
- Interoperability between railway systems

Transshipment Process

In the context of intermodal transshipment between ship, rail and road, a particular focus is placed on the optimization of transshipment processes and technological advancements.

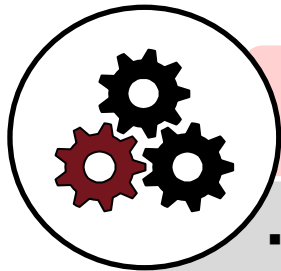
- Transshipment equipment and short-term storage
- Uncertainties in transshipment processes
- Robust planning strategies

This seminar focuses on the analysis of issues in transformation of transport



Objective

- Overview and analysis of the state of research on efficient transport modes and Combined Transport
- Compilation of an overview regarding current fields of application and research projects
- Identification of application potentials



Methodical approach

- Conducting a systematic literature research on various topics
- Practical research / market analysis on current applications of these technologies
- Use of simulation software if interested/required

Important Dates

16.10.2023

13:00 – 14:30

Kickoff - Meeting

Presentation and assignment of topics

06.11.2023

10:00 – 14:00

Excursion

Shunting yard Mainz-Bischofsheim

14.11.2023

9:00 – 12:00

Interim presentation/question session

Discussion of the work status

22.12.2023

Until 23:59 (via E-Mail)

Submission of the term papers

25.01.2024

09:00 – 15:00

Final presentation I

Group presentation, Q&A session and discussion

26.01.2024

09:00 – 15:00

Final presentation II

Group presentation, Q&A session and discussion

Grading of the seminar

Group performance

- Term papers (30-40 pages)
- Presentation materials

60 % of the grade

Individual performance

- Final presentation (20 minutes per group)
- Moderation of the following discussion (20 minutes)
- Participation in the discussions

10 % of the grade

Mandatory events

- Only one group member is allowed to be absent from each session
- In case of non-participation an excuse is necessary
- Each seminar participant should present content at least at one of the appointments

30 % of the grade

Organizational Information



Organizational information

Participants	Bachelor and Master students
Group size	3-4 students
Supervision	Prof. Dr. Ralf Elbert Chair of Management and Logistics

Contact persons

Raphael Hackober
hackober@log.tu-darmstadt.de

Yuerui Tang
tang@log.tu-darmstadt.de