

Railway Positioning - potential for enhanced traffic information systems for road and rail

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Institute of Transportation Systems

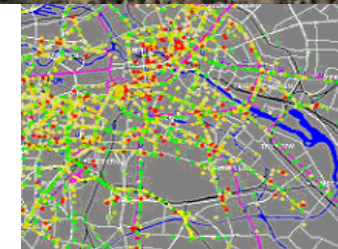
Residence: Braunschweig and Berlin
Since: March 2001
Director: Prof. Dr.-Ing. Karsten Lemmer
Employees: Presently 100 employees
from various scientific disciplines

Range of tasks

- Basic research
- Creating concepts and strategies
- Prototype development

Fields of research

- Automotive
- Railway systems
- Traffic management





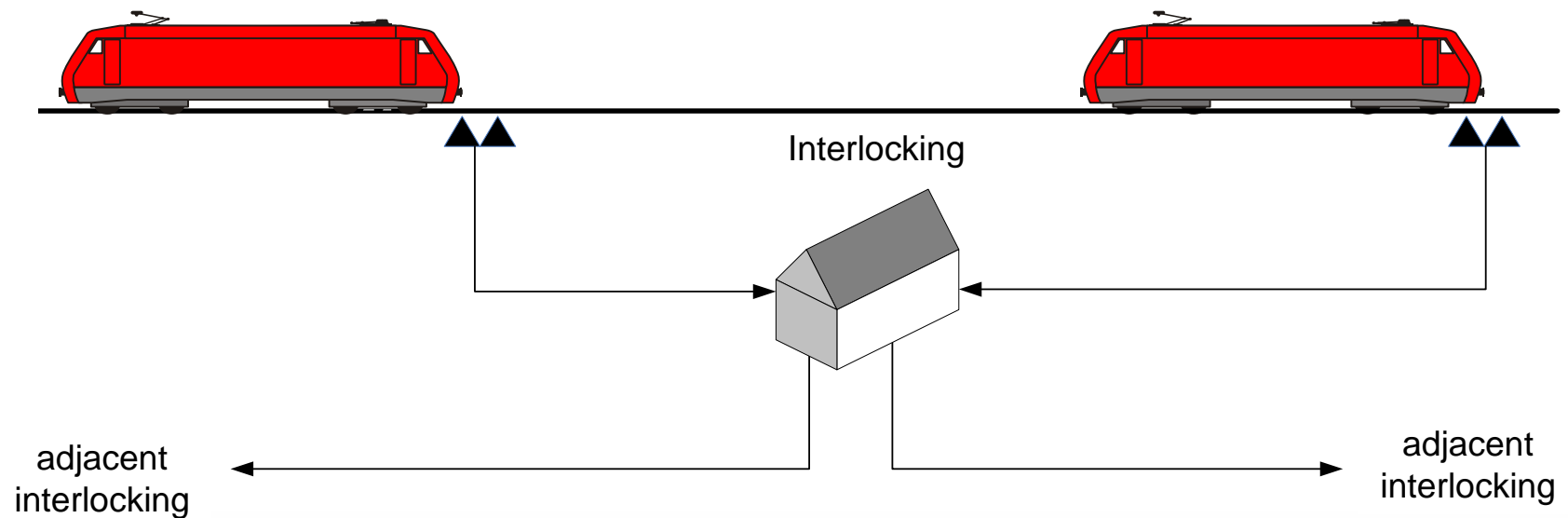
Transport Research and Development in Niedersachsen

- Research Airport Braunschweig
- Satellite Positioning Center GAUSS
- Innovation Center of Niedersachsen occupies itself with subjects for Transport R+D:
 - Telematics
 - Logistics



Positioning Systems in the railway domain operation of infrastructure – control system

- Track sections
- Train control
- Warning systems (e.g. hot box detector)
- Train number information system
- Train management to avoid bottlenecks





Positioning Systems in the railway domain operation of vehicles

- Fleet management
- Train management concerning connections
- Passenger Information Systems
 - Passenger Connection Systems
 - Announcements on platforms
- Freight Information Systems
- Protection of vehicles
 - ➔ Non-safety relevant



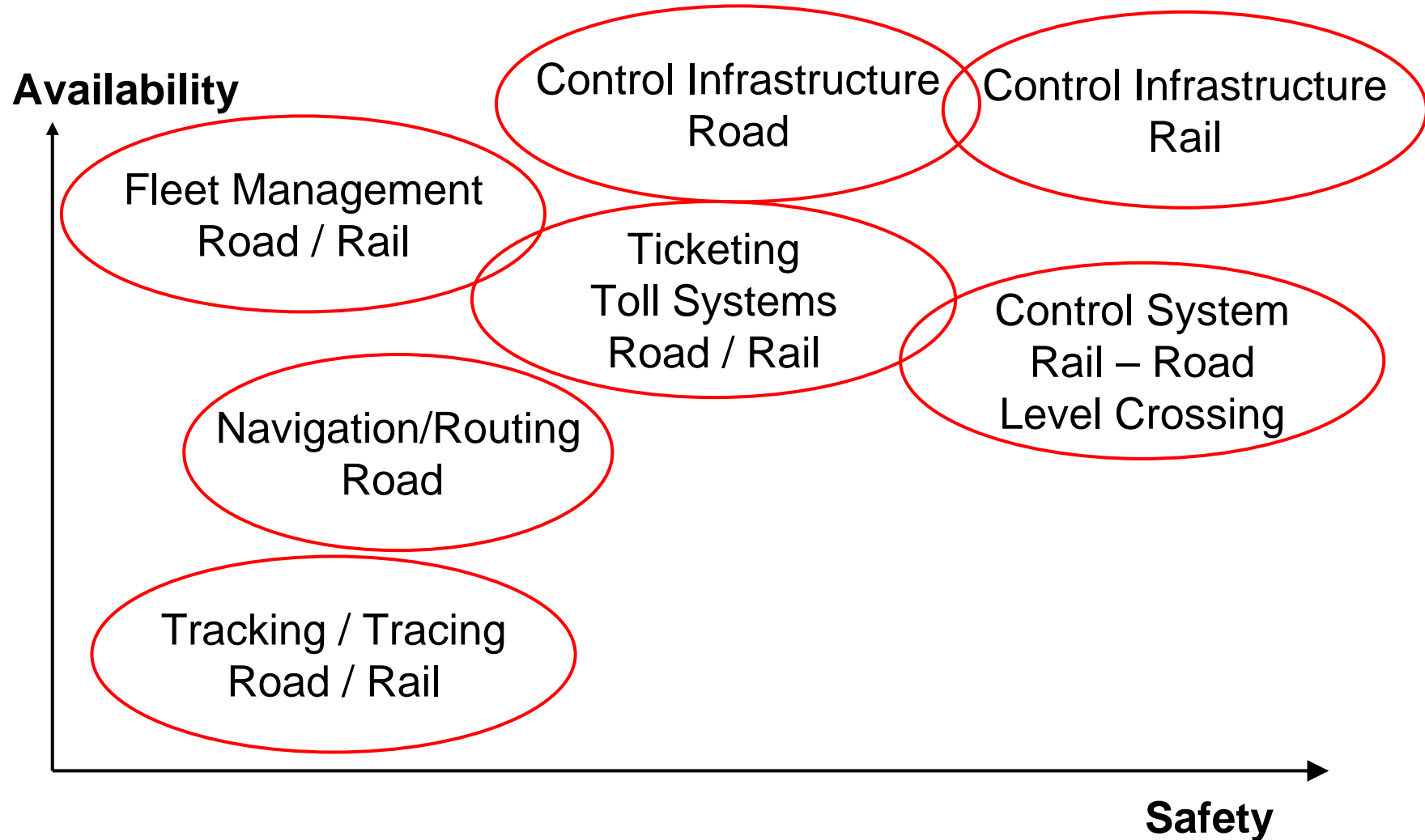


How to use rail positioning data for further transports

- There are a lot of data generated in the infrastructure operation which could be used for information systems.
- Some examples
 - Intermodal transport: Improvement of feeder services in case of tardy train runs
 - Intermodal transport: Detection of misrouted waggons
 - Rail Transport: Information about route diversion
 - Rail Transport: Enhancement of information for passengers about connecting trains in case of delays
 - Road: Enhancement of information about operational disturbances for passengers who cover the last mile by individual and public transports on roads
 - Road: Enhancement of information systems (navigation, traffic management)



Positioning Systems: Requirements

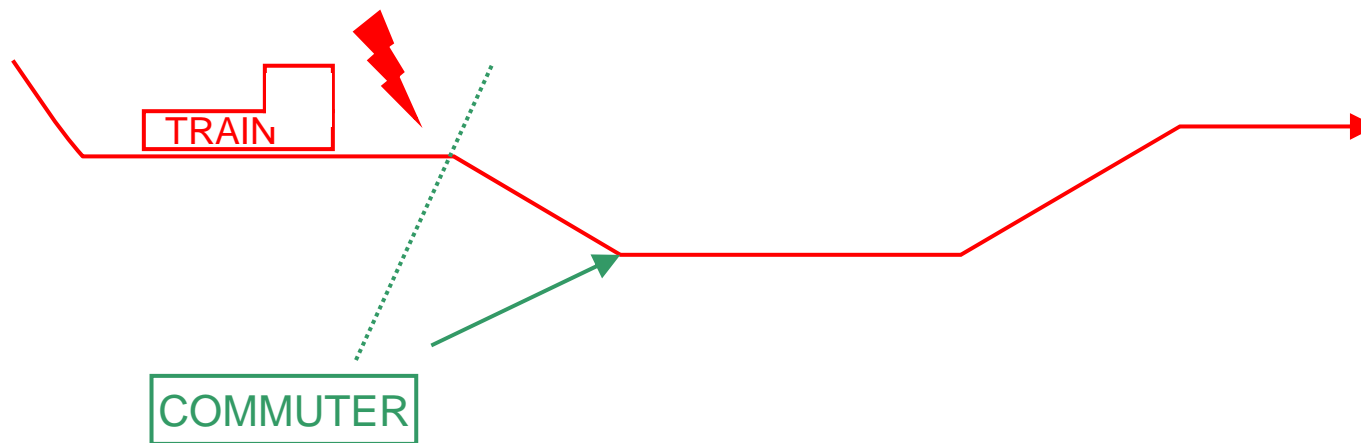




Proposal application: Enhancement of combined trips by train and car

➤ Potential:

- For long-distance trips: In case of reservations
- For short-distance trips: In case of registered daily trips for commuters





Proposal application: Enhancement of combined trips by train and car

- Positioning data must be processed for use in information systems e.g. in an operation center
- Information should be available for all usual kinds of communication
 - For navigation systems
 - For mobile phones (SMS)
 - For (portable) computer by email or internet
 - For radio (e.g. via RDS-TMC)
 - For further information services in traffic information centers



Proposal application: Enhancement of combined trips by train and car

- Next step: finding out alternative (individual) connections for the travellers concerned
 - Traveller information should be possible on the same transfer ways as shown before
 - Additional benefit for travellers: in some cases of information (e.g. email or SMS) customers have an official electronic document that allows to use another route or category of train
 - Important note: this service needs an neutral office or authority that provides the information independently of any train operator



Proposal application: Enhancement of combined transport in logistics supply chains

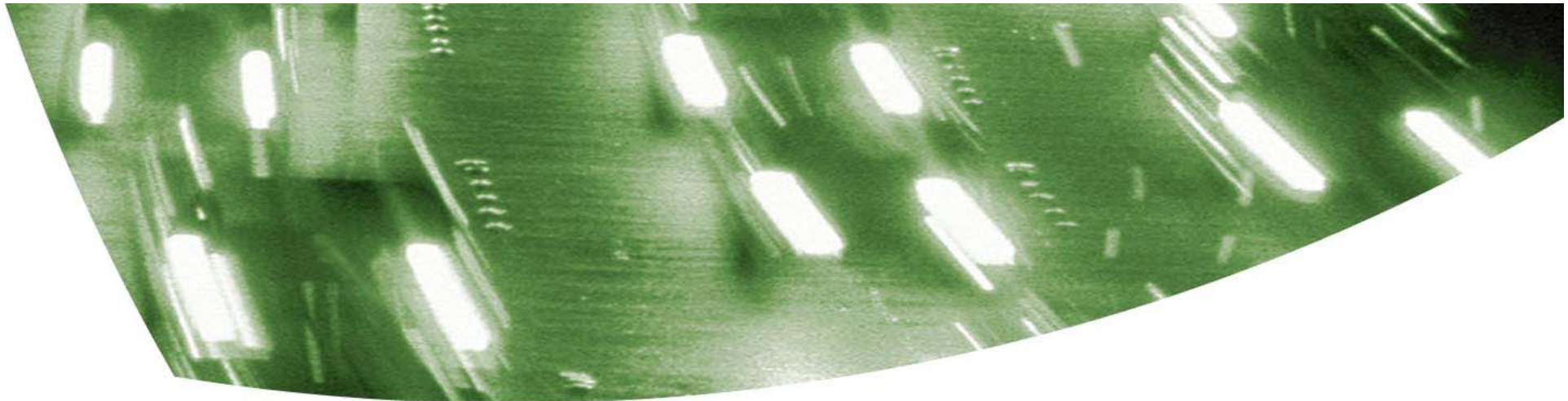
- Today a continuous data transfer between rail and road for transport of goods is often missed
- Real time train information (positioning data) for freight trains should be proceeded for use in road systems
 - The information should be able to be integrated in road logistics systems on all usual ways of information flow (e.g. email or SMS)
 - To optimize transport of goods the routing of trucks should be adjusted to the real arrival times of trains in goods stations or container terminals by using modern systems for trucking and tracing or fleet management
 - Information (e.g. about delayed trains or missing wagons) are used as early as possible to change routes of trucks efficiently



Resume

- Today a lot of information of train positions is available
- There is less interaction between different means of transport especially between rail and road
- This information can be used for enhanced information systems
- For this application it is necessary to prepare positioning data for use in individual passenger information systems or in road minded information systems





Thank you!

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