Efficient Operation of Railway Systems

In close cooperation with national and international partners from research and industry we carry out research in the following fields:

- Increase energy efficiency of railway systems
  - With driver assistance and information systems
  - By coordinating accelerating and braking trains for a better use of regenerative energy

- Flexible Operation of Mass Rapid Transit Systems
  - Optimal temporal and spatial adaptation of train headway and capacity to transport demand
  - Automatic timetable design
  - Simulation

- Application of state of the art positioning and communication technology

- Operational intermodal traffic management within the centre of excellence on operational traffic management. This centre brings together more than 20 partners from several countries: from the industry, from public authorities as well as research institutes and transport planning offices.

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A Driver Assistance System for energy efficient train control

Energy saving train control combined with anticipating driving to guarantee intermodal connections

Chair of Traffic Control Systems and Process Automation
Driver Assistance System ENAflex-S
Trials at Driving Simulator and in Real Operation

**Goal**
Efficient use of running time reserve for long coasting phases reducing traction energy consumption

**Driving Simulator**
- Tests of the developed Driver Assistance System on different lines and in different connection situations
- Comparison between manual train control and assisted driving

**Real-world test on suburban railway**
Equipment of electrical locomotive BR 143 with GPS receiver and use of existing speed signal for positioning, GSM-R-mobile phone for communication with background system, Driver Assistance System prototype on laptop or PDA

**Optimal coordination between suburban railway and street-bound public transport to guarantee a seamless multimodal transport chain for passengers**

**Realisation:**
- Original train control console BR 423-426 with multi-purpose display MFA
- EBULa-device (electronic timetable)
- GSM-R
- Video simulation of the track, simple extension of the simulator with new tracks
- Simulation of different train characteristics
- Simulation of connections with street-bound public transport (tramway, bus)

15% reduction of energy consumption as well as reduction of variance

Development and tests of the Driver Assistance System have been funded by the German Federal Government within the research project “Intermobil Region Dresden”. The real operation tests have been carried out in cooperation with DB Regio AG.