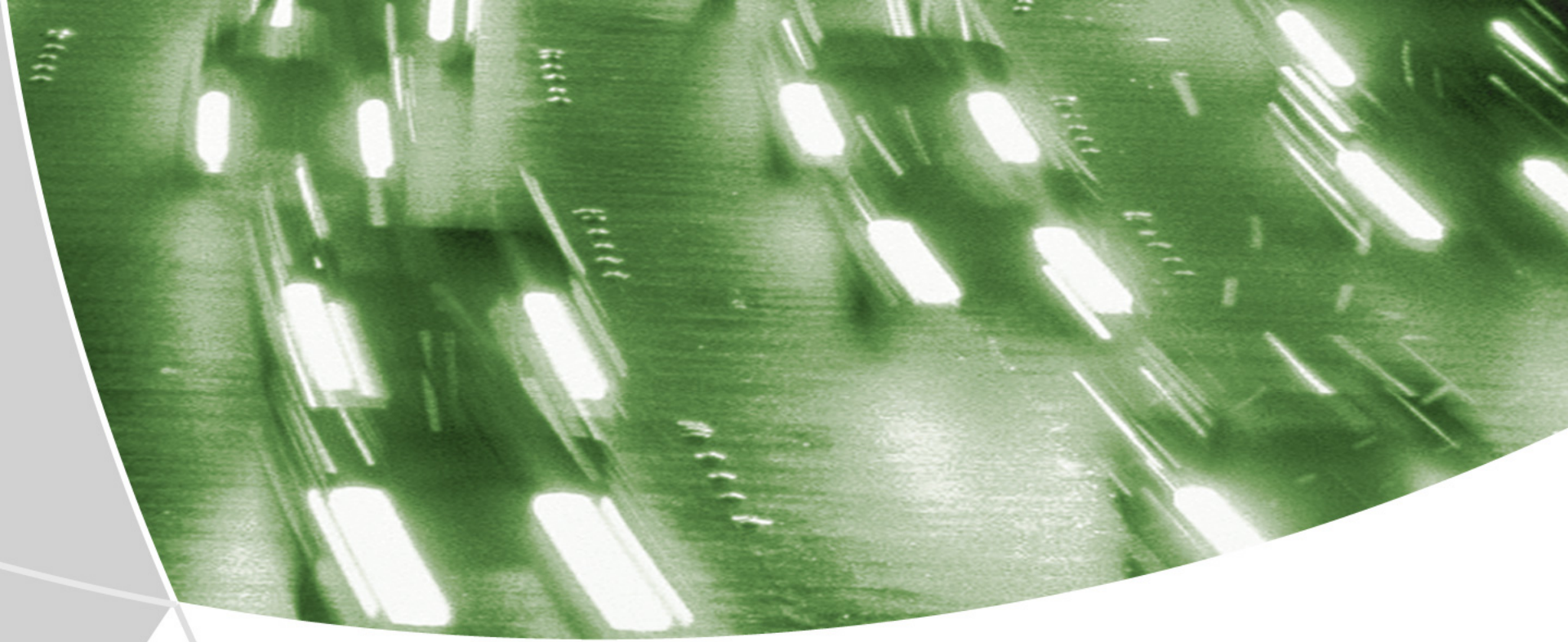


Satellite Navigation in Intelligent Transportation Systems

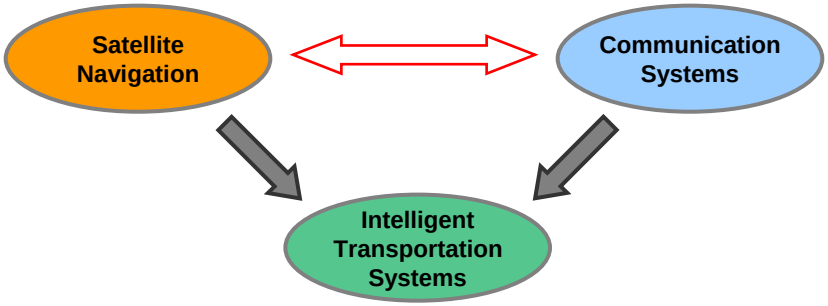
Matthias Röckl, Thomas Strang

Institute of Communications and Navigation

Deutsches Zentrum
für Luft- und Raumfahrt e.V.
in der Helmholtz-Gemeinschaft

Satellite Navigation in Intelligent Transportation Systems

Satellite navigation in combination with communication systems is a key enabler for a variety of Intelligent Transportation Systems

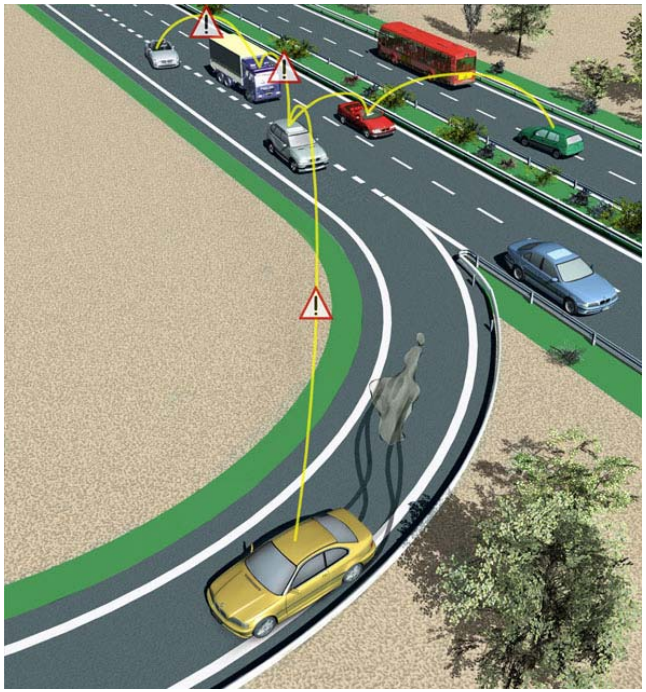


Assistance for traffic participants (e.g. *Assistenz für Verkehrsteilnehmer*)

- In different environments and their transitions:
  - Road (e.g. *Car-2-Car Communication Consortium*)
  - Rail (e.g. *Railway Collision Avoidance System*)
  - Pedestrian (e.g. *FAMOUS*)
- For different application areas:
  - Safety
  - Efficiency
  - Infotainment and comfort

Satellite navigation as enabler for various Cooperative Systems in road traffic

- Safety:
  - Traffic Jam Ahead Warning
  - Curve Speed Warning
  - Intersection Assistance
  - Emergency Call
- Efficiency:
  - Decentralized Floating Car Data
  - Optimal Speed Advisory
- Infotainment:
  - Free Flow Tolling
  - Point-of-Interest Notification



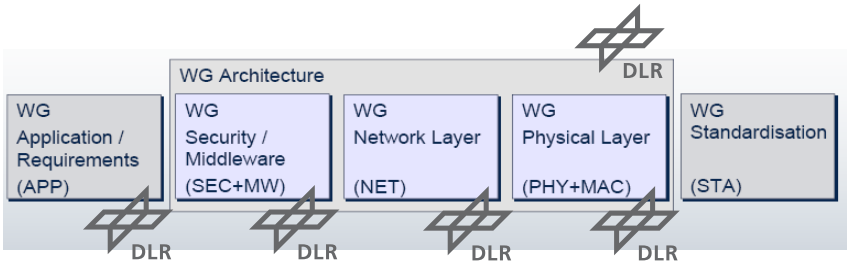
Source: Car-2-Car Communication Consortium

Up to now more than 120 potential use cases have already been identified

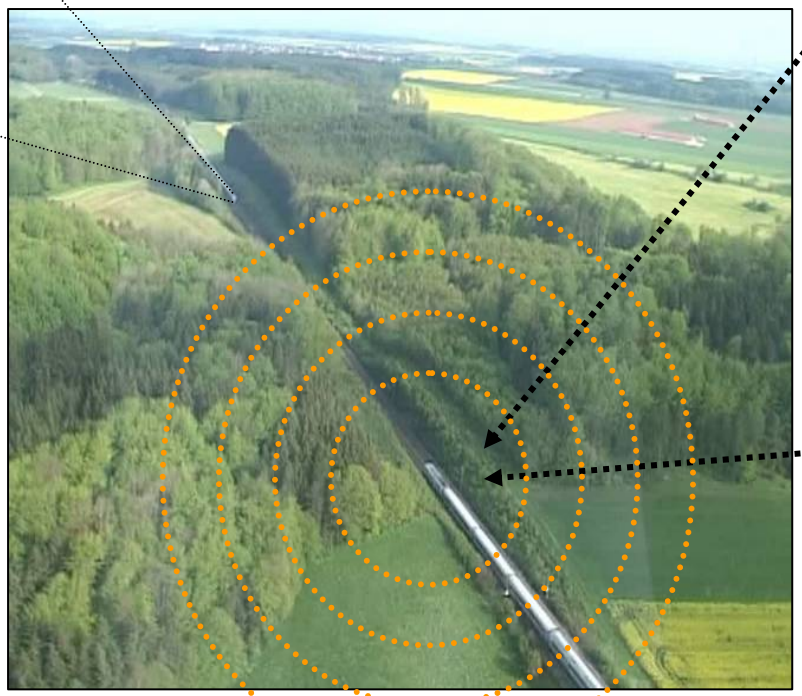
Car-2-Car Communication Consortium

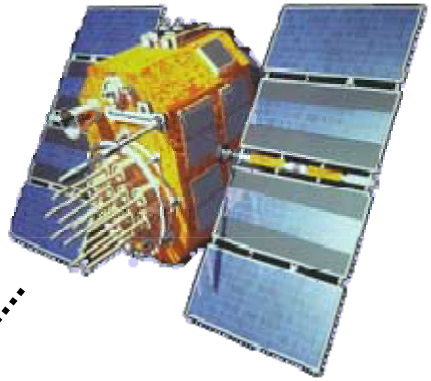
- Non-profit organisation initiated by European vehicle manufacturers joined by suppliers and research organisations

- Mission of the C2C-CC is to:
  - establish an open European **industry standard** for Car-2-Car Communication systems
  - promote the allocation of **royalty-free European-wide frequency band** for Car-2-Car applications
  - force the **harmonisation** of the Car-2-Car Communication standard worldwide
- Working Groups:



Satellite navigation as enabler for various Cooperative Systems in rail traffic



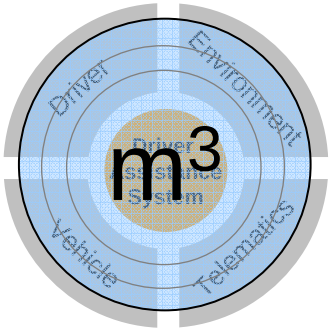


GNSS

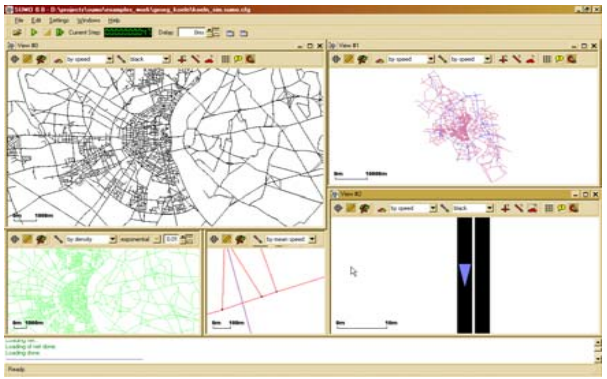
RCAS
Railway Collision Avoidance System

Example: DLR Simulation Environment m³

multi-modal **m**ulti-vehicle **m**obility simulation



- Integrated tailorable simulation and test environment
- From course-grained to high-fidelity model selection
- Application areas:
  - Performance simulation
  - Impact evaluation
  - Conformance and interoperability testing
- Joint project of *Institute of Communications and Navigation* and *Institute of Transportation Systems*



Thank you for your attention!

Questions?

Matthias Röckl

German Aerospace Center (DLR)
Institute of Communications & Navigation

Matthias.Roeckl@dlr.de