



# Steps Towards Road Cooperative Traffic Management: a NEARCTIS Perspective

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- o Current situations of Traffic Management
- o Current trends relevant for TM
  - Key issues
  - Important trends
- o What Networked Cars can bring to TM?
  - Cooperative TM: the NEARCTIS agenda
  - Knowledge gap & Paradigm Shift
  - Communication Issues & applications

## o Improving the efficiency of the transport system by:

1. Providing real-time information with predictive capabilities
2. Active traffic management
3. Demand management (pricing)
4. Parking management
5. Improved public transport
6. Managing large-scale events and emergencies
7. Photo / radar enforcement



- o Key issues of current situation
  1. Serious accessibility issues & substantial congestion levels
    - Road traffic congestion costs Europe 1% of GDP!
  2. TM has been deployed for a long time, but traffic and societal impacts of TM are still unclear to policy makers
  3. Traffic Management (road authorities) and Traffic Information (private parties) function isolated which is sometimes counterproductive

- o Some important trends:
  1. Increasing focus on societal objectives (accessibility, livability & sustainability)
  2. Impact of ITS in energy efficiency and emission
  3. Increasing focus on network-wide deployment of measures (Integrated Network Management)
  4. Multimodal vision
  5. Technological /methodological innovations: e.g. cooperative systems, ubiquitous sensing, data fusion,...)

# WHAT'S NEXT?

## Fully Networked Cars



«A modern vehicle will be a connected computer on wheels»

- One prominent feature in recent years is the emergence of C2X communication
  - as a response to increasing safety concerns
  - projected deployment of automatic highways
- This evolution opens the prospect of information being shared and exchanged between vehicles,
  - devising TMS based on these new capabilities.
  - Accurate traffic, weather and road surface status
  - Faster response in emergency situations
    - depend on the market penetration rate

## Network of Excellence on Advanced Road Cooperative Traffic management in the Information Society



The Fully Networked Car  
Geneva, 2-3 March 2011





## o NEARCTIS in brief:

- Academic network gathering partners from the whole Europe on the subject of traffic management and optimisation, with a focus on cooperative systems

## o NEARCTIS goal:

- building a consistent research program (JPA) by harmonising the research program of all partners
- defining a set of shared resources (data, platforms, experimental means, bibliographical databases),
- elaboration of a dissemination and training program for researchers and professionals

## o Half-way through the project period

- Crucial groundwork has been undertaken

## o Associated Partners:

- Three classes of associate partners are considered, and will correspond to different involvements into NEARCTIS:
  1. **Research Partnership:** the international academic community concerned with the research topics studied in the network
  2. **Industry Partnership:** the professional community concerned by traffic optimisation: car manufacturers, traffic systems manufacturers, consultants
  3. **Operators Partnership:** the traffic management authorities : local authorities, motorways operators

## o You can still join NEARCTIS

JOIN  
TODAY

- Traffic modelling for cooperative TM
  - integrating advanced vehicle technology
  - Models for C2X comm. & information flow
  - models of user behaviour when provided with different levels of information, mixed users
  - structures of models of the coupling between traffic, information and users.
- Paradigm shift from TM to Mobility Management
  - Aligning divergent goals of actors, stakeholders
  - “Pay as you move” concept (multimodal)

- Network support for cooperative systems
  - Communication is always a limiting factor
    - amount of data possibly exchanged
  - Accurate positioning (lane-based)
- Illustrative examples:
  - C2C communication
    - weather-sensitive traffic management

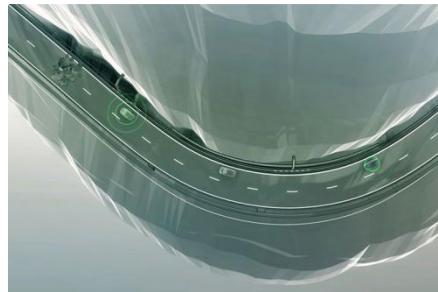


Photo credit: motortrend.com

- I2C communication

- Signalised intersection communication towards upstream vehicles

- Anticipatory stop at red
- Remaining green time (green wave)

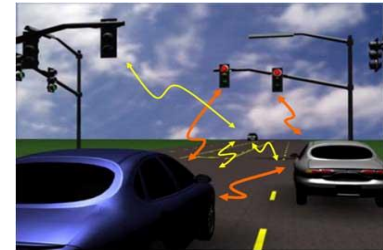


Photo credit: motorauthority.com

- Other applications:

- Data collection & traffic monitoring: Ubiquitous sensing tech. for traffic, road conditions, weather
- Information & guidance: In-vehicle information, guidance and signage (speed, incident)
- Cooperative traffic network management & control
- Integrated Mobility pricing.

# ➤ Thank you for your kind attention

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