April 4th 2017
Socio-economic impact assessment

Spatial and Transport Impacts of Automated Driving

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Dutch society and economy depend on transport

- Dense road network
- Port of Rotterdam
- High traffic volumes
- Schiphol airport
Strong governmental support

Automated vehicles can improve traffic efficiency and safety

Netherlands to facilitate large scale testing of automated vehicles
**Driver assistance/ Partial automation**

- Driver needs to be able to intervene at all times
- Automated parking, autocruse

**Conditional/ High automation**

- Vehicle in control in special conditions
- Taxibots, platooning, automated highways

**Comfort, efficiency, safety, costs**

**Mode choice, location choice, urban and transport planning**
Car driving more attractive!

- Partial automation
  - Better comfort,
  - Less accidents
  - Less congestion

- High automation
  - Travel time can partially be used for other purpose

- Full automation
  - Travel time can fully be used for other purposes
Spatial implications

- Geometric redesign of roads and junctions
- Increasing sprawl residential and employment locations
- Concentration activities by better accessibility
- Redesign of urban, commercial, touristic areas
- No on street parking
- Combinations with car sharing, electric driving
Much progress short term and small scale impacts on driver behaviour and traffic flow.

Research on longer term, indirect, wider scale impacts on mobility, logistics, residential patterns and spatial-economic structure in its infancy.

Policy relevance

• Congestion and accessibility
• Safety
• Travel patterns
• Freight transport
• Public transport
• Socio-economic development
• Urban design
• Spatial structure
• Investment policies

National, regional, city authorities, public transport operators, **Multimodal hubs** (ports, airports)
Exploration using LMS

Automated Autonomous
5% capacity decrease on primary road network

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<thead>
<tr>
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<th>Index km travelled</th>
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<tbody>
<tr>
<td>Train</td>
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<tr>
<td>Car driver</td>
<td>99.8</td>
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<tr>
<td>Car passenger</td>
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<tr>
<td>Bus, tram, metro</td>
<td>100.2</td>
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<tr>
<td>Cycling</td>
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<tr>
<td>Walking</td>
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<tr>
<td>Total</td>
<td>99.98</td>
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Index congestion 115.7

Automated Cooperative
15% capacity increase primary road network
10% capacity increase secondary road network
10% decrease value of time commuting and business car trips

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Index congestion 69.1
Scientific challenges: understanding the spatial and transport changes?
Scientific challenges: understanding the spatial and transport changes

- Automated Driving
- Travel and location choice behaviour
  - Freight and Logistics applications
- Infrastructure service networks
- Spatial structure and economy
- Urban design and traffic safety
- Integral spatial and transport modelling
  - Case studies and demonstrators
- Accessibility
  - Economy
  - Traffic Safety
  - Urban quality
Data, theories and models

Specifications of Automated Driving
Behavioral response of traveller and companies
Spatial and transport data

Pilots, experiments, SP/RP surveys, public authority data

Travel and driver behavioral theories and models
Supply chain and business theories and models

Spatial and transport network models

STAD Integrated Model

Scientific partners, Consultancy firms, Public authorities
Applications

Regional case studies: passenger cars, freight, public transport, parking

Spatial impacts, urban design, agglomeration

Business cases

Modelling tools, impacts, risks, benefits

Metropoolregio Rotterdam-The Hague
Province Zuid-Holland
Province North-Holland
Municipality of Amsterdam
Rotterdam The Hague Airport
Municipality of The Hague
Municipality of Rotterdam
AMS Advanced Metropoliton Solutions
SmartPort
SWOV Institute for Road Safety Research
RET NV
Mobycon
Province Gelderland
DTV Consultants
Connekt ITS Netherlands
Municipality of Delft
Rijkswaterstaat
KiM
CROW
Transdev-Connexxion
RDW
TNO
Goudappel Coffeng
Challenges
- Agglomeration
- Accessibility
- Liveability

Automated driving
- Safe, convenient, efficient, cheaper mobility

Instruments
- 2016-2020
- 2,3M€
- 27 person year

National Science Foundation NWO
Sustainable Urban Regions of the Future
SURF Programme

03-04 April 2017
Brussels

Spatial and Transport Impacts of Automated Driving

TU Delft

European Commission
Stay tuned!

Internal STAD activities

- 3 monthly consortium sessions
- Alignment of practical and academic partners

External activities

- Yearly STAD event
- Newsletters & website
- International collaboration

Dissemination tools

- Risk assessment and business case tools

The STAD project is part of the VeRDuS program

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