Automated Driving Research in the Netherlands (PPT)

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Publication date
2016

Citation (APA)

Important note
To cite this publication, please use the final published version (if applicable). Please check the document version above.
AUTOMATED DRIVING RESEARCH IN THE NETHERLANDS

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Outline

• Policy framework and projects by the ministry of Infrastructure and Environment
• Projects at Delft University of Technology
• Outlook
Our ambition
The Netherlands is a suitable country for these innovations

- High quality infrastructure and dense use of infrastructure
- Positive cooperation between business (automotive industry), knowledge institutes (research) and government:
  - Dutch integrated test site for cooperative mobility (DITCM)
  - Dutch Automated Vehicle Initiative (DAVI)
- Experience with autonomous driving and vehicle to vehicle communication:
  - Demo '98
  - Cooperative ITS Corridor Rotterdam-Frankfurt-Vienna
  - Practical Trial Amsterdam
Working group “the Self Driving Car”

- Ministry of Infrastructure & the Environment
- Rijkswaterstaat, national road operator
- RDW, type approval authority

1. Adjustment of (inter)national law
2. Facilitate large-scale practical tests
3. International efforts to make deployment a reality
4. Stimulating and developing knowledge

People

- 20,000 BSc and MSc students
- 2,700 Scientific staff members

Faculties

- Physics
- Mathematics, electronics, information science
- Civil Engineering and Geosciences
- Mechanical, Maritime and Materials Engineering
- Aerospace Engineering

Ranking

- Times Higher Education ranking 71
- Part of Leiden (64) –Delft – Erasmus (Rotterdam, 72) federation

- Industrial design
- Architecture
- Technology, policy and management
Dutch Automated Vehicle Initiative (DAVI)

Stimulates research and development of automated vehicles on public roads.

Focus on traffic and system safety, human factors and impact assessment.

Network organization open for parties that want to work together to achieve DAVI goals.

Instruments:
- Thematic meetings (human factors, ethics, insurance, infrastructure,...)
- Project initiation and execution
- Liaison with public authorities

DAVI Demo 2013
Human Factors and Automated Driving (HF Auto)

- Transitions of control
- Acceptance, trust
- Use & misuse
- Interaction with other road users

Legal and market perspectives

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<td>Volvo Car Corporation</td>
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3.6 M € ITN Marie Curie FP7 2013-2017
Driverless shuttles

World first automated shuttle in mixed traffic with cyclists and pedestrians.


- Experimental driverless last mile transport between Train Station Delft-Zuid and TU Delft campus
- Dual mode: manual operation, automatic relocation on cycling paths
Cooperative Motorway Driving

radar, camera, localization, telematics and drive-by wire
experimental research into cooperative motorway driving

Duration 2014-2019; Budget 3M€

Societal impacts of Automated 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.
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
- Accessibility
- Economy
- Traffic Safety
- Urban quality

Regional spatial and transport system

STAD: Spatial and Transport Impacts of Automated Driving

Duration 2016-2020; Budget 2.5M€
Experience
Experience
EU Truck Platooning Challenge
Knowledge agenda

Legal
Technical
Human Factors
Impact
Deployment

http://knowledgeagenda.connekt.nl/engels/

Declaration of Amsterdam

Joint effort

• Shared conceptual framework and phasing on (highly) automated/autonomous and connected/cooperative driving

• Adapt and make compatible international legislation so that it allows automated, autonomous and connected driving
  – E.g. Vienna Convention, traffic law, liability, privacy laws.
  – Informal working groups?

• Focused investments in research, infrastructure, technology, ..

• Set (research) agenda for:
  – Legal issues (privacy, liability, traffic law,...)
  – Data (ownership, exchange, infrastructure, harmonisation, security, maps, ...)
  – ....

Facilitate a continuous dialogue

– Member States, European Commission, Industry and knowledge institutes
– on (highly) automated, autonomous systems and its integration with C-ITS.
– linking together existing platforms and give them a joint focus Eg. C-ITS platform DG Move
– allow flexibility and a plurality of approaches

Learning by doing: provide large scale cross border possibilities to test on public roads across Europe

– define cross border corridors + urban networks (cities) to test
– guiding principles on a joint exemption (procedure), agreements on mutual recognition,
– give insight in the possibilities within Europe to test.

Develop joint agenda/ learning on relevant topics:

– Ensure new services and systems are compatible on a EU level
– Ensure privacy and data ownership
– Harmonize security policies
– Focus investment strategies for industry and Member States attuned to these developments

Connecting to current activities

– C-ITS platform, Amsterdam Group, various (inter)national activities
The road to automated driving...

- Develop efficient and reliable technology
- Collect, analyse and publish large scale real-world experience
- Study spatial, transport and societal impacts
- Regulations, type approval
- Awareness, ambitions, expectations, reality checks
- International cooperation

THANK YOU!