Self-driving Cars for Sustainable Mobility

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Volvo Cars
Possibilities from Technical Developments

Until 10 years ago – self-driving cars: for the long term future.

Development of active safety systems - created cars that can:

- Sense the surroundings, brake and steer automatically
- Communicate and transfer traffic information
- Adapt the speed
- Keep a distance
- Follow a lane
- Measure the state of the driver
Active Safety Technologies in Production

Driver State Measurements
- Drowsiness and distraction
- Alcohol interlocks

Information and Driver Support
- Traffic Sign information
- Blind spot detection
- Adaptive Cruise Control

Warnings and Automatic Activations
- LDW and LKA
- Automatic braking for pedestrians
- Automatic rear-end braking
- Automatic low speed braking
Near Term Active Safety Technologies

- Automatic braking for more objects
- Automatic braking in darkness
- V2V and V2I communication
- Road edge and barrier steer assist
- Distance and steering assist
- Auto brake in intersections
The 360° Car
(with some help from above)

Connectivity

Rear Zone Assist

Side Collision Avoidance

Side Collision Avoidance

Forward Collision Avoidance
Autonomous Driving / Opportunities

Autonomous driving creates opportunities on:

- Safety
- Fuel economy
- Traffic flow
- Improved mobility
- Infrastructure
- Comfort
- Urban planning
Autonomous driving faces challenges on:

- Public acceptance
- Safety
- Legality
- Liability
- Technology
- Business models
- Infrastructure
New Generations – New Challenges

• Young people grow up used to being constantly connected.

• Mobility in the future will require connectivity.

Self-driving cars: combine mobility and connectivity.
Self-Driving Cars for Sustainable Mobility – DriveMe Project

- The world’s first large-scale project for self-driving cars
- Project starts 2014
- Self-driving cars on public roads in 2017
- 100 customer cars
- 50 km highway/ max speed 70 kmh
- Automatic parking in 2015
- Project cost: 55 million Euros.
TEST ROUTE

- Typical commuter routes in and around Gothenburg
- Several lanes
- Frequent queues
- 4 tunnels
- Few intersections
- No on-coming traffic

NHTSA Level 3: Conditionally Autonomous / Highly Autonomous
The Technology

- Camera
- Radar
- Laser
- Map data
- Cloud connection
- Traffic Control Centre
Removal of Regulatory Hurdles

• The Vienna Convention and National Rules and Regulations / State Vehicle Codes largest obstacles for introducing AD.

• Essential not to create a patchwork of legislations.

• Liability:
  • Challenging for manufacturers.
  • May affect business models and market strategies.

• Governments and authorities have a major responsibility for not unduly restrict the possibilities to develop AD technologies.
Advanced Technologies/ Autonomous Driving

• Advanced technologies will be key in reaching zero fatalities.
• Self-driving cars offer many opportunities
• Create significant shift in individual mobility.
• May erase the boundaries individual mobility/public transportation
• Consequences for the insurance industry.
• May significantly change car ownerships ➔ large consequences for motor vehicle manufacturers.
• Co-operation between governments and industry essential.
Autonomous Driving
Offering time, connectivity and a safe ride!

Thank you!