Who is in control?

Automation in road traffic

10 February 2020

Working party on Automated and connected vehicles (GRVA)
Dutch Safety Board

Purpose:

- To learn from incidents
- To make recommendations in order to improve safety
- Criminal investigations and prosecution
Why did the DSB start this investigation?

New risks

Due to technological developments:
- driving computer
- new role of driver and new type of interactions

Responding to new risks by manufacturers and the government

Revelation of new risks through the use of automation
Focus

- Management of the risks
- Introduction and use of ADAS
- by manufacturers, suppliers, supervisors, legislators, interest groups.
Research questions

How do users, the automotive industry, sector parties and the government manage the risks associated with the introduction and deployment of advanced driver assistance systems (ADAS)?

To what extent can this risk management be improved?
Examples of risks that aren’t managed well

Accidents

Hacks
Set up investigation

- Accident investigation
- Ethical hacks
- Literature / experts
- Interviews and internal documents
- Risk management
- Types of risks related to ADAS
New types of risks

- Immaturity of systems
- Drivers as operators
- Interaction between vehicles and drivers
- Dynamic development of automation (updates)
- Cybersecurity
New role of the driver

- Longer response times
- Reduced alertness

Operating errors of ADAS:
  - Foolproof design
  - Clarity who is in control
Lack of knowledge driver

- Users have only limited insight into the operation and limitations of ADAS
- Communication in advertisements and media is inadequate
- Provision of information and instruction is often lacking
- Driving test does not include ADAS
- Diversity of ADAS
- Users rely on ADAS
Conclusion: Driver not the central point of focus

- Driver legally responsible
- New role driver
- Lack of knowledge driver
Improving ADAS

- Design
- Adjustment
- Monitoring
- Approval
Conclusion: more improvement of safety ADAS possible

- Continuous development of systems
- Improvement during lifetime or only for newly produced cars
- No transparency about improvements based on monitoring and evaluation
- Manufacturers do not learn to the same degree of accidents
- Most manufacturers do not share the results of their accident investigations
Regulation

- Technological changes are going faster while the legislative process is slow
- No improvement of safety level required for new ADAS
- Unclear how the level of safety must be assessed
- Manufacturers are not obliged to learn from accidents
- Legislation has little focus on interaction with users
- Oversight not set up for changes during lifetime

Legislation in development only for SAE3+:
- Validation (including a risk analysis and risk assessment)
- Data storage
- Human factors (no working group)
- Instruction of drivers (no working group)
No responsible innovation

Reference framework: Principles for safe introduction of new technology

Manufacturers
- Driven by technical possibilities
- Safety and security during the life cycle
- Do not ensure that drivers (can) understand what the technology is doing
- Accident investigation is limited
- Do not provide insight into technology and accident rates

Government
- Accessing the safety level is insufficiently operationalized (Directive 2007/46/EC, Article 20)
- No policy adjustment based on monitoring and evaluation
Extra’s
Learning from accidents

Lack of information:

- No insight into the number of cars with ADAS
- No insight into usage of ADAS
- Lack of empirical data about accidents (data not saved or hard to read-out)
- Severe accidents not (always) investigated

Consequence: Evaluation and adjustment do not take place
Conclusion: Driver not the central point of focus

- Functionality unclear
- Sometime unclear ‘who is in control?’
- Updates which may change functionality
- New role as operator: longer reaction times and reduced alertness
- Not trained
- Inadequate communication
- Subject in a living lab without realizing