

Press Release

DEKRA presents Road Safety Report 2023 “Technology and People”

Changes in the human-machine interface in the car can cause new problems

- Potential for accident prevention should be utilized better
- System complexity must remain manageable in every traffic situation
- Modern operating concepts must not lead to more distraction

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With the increasing digitalization of road traffic, society is on the threshold of what is probably the greatest mobility revolution since the invention of the automobile. Software and electronics are taking over more and more tasks, turning the car into a rolling high-tech machine. Expectations of technological developments in terms of safety are enormous. At the same time, however, concerns are also expressed with regard to potential new risks. “It is important to keep the entire mobility system in mind, as well as the reciprocal dynamics of effects. The role of the driver will change, and with it the overall system of the human-machine interface in the vehicle”, emphasizes Jann Fehlauer, Managing Director of DEKRA Automobil GmbH, talking about the DEKRA Road Safety Report 2023 “Technology and People”. The 16th report of its kind highlights numerous problem areas from the perspective of accident research, traffic psychology, vehicle technology, infrastructure design and legislation.

Distractions, fatigue, overwhelming situations – the list of common causes of traffic accidents goes on and on. Conversely, it could, however, also be distilled down to one common denominator: The human factor. According to police traffic accident reports, almost all traffic accidents can be explained by human (mis)behavior. Deficiencies in infrastructure or even technology are only rarely cited as causal or contributory factors. Transferring as many driving tasks as possible to the vehicles is therefore considered by many to be the best means of preventing accidents. “Advanced driver assistance systems (ADAS) are the basis for the increasing automation of road traffic and can prevent many accidents or at least minimize the consequences of accidents. At the same time, automated driving functions can also cause new problems”, says Fehlauer.

In terms of crash prevention, there is still a lot to be done to reach “Vision Zero”, which many countries around the world are pursuing by 2050 – in other words, the goal of safe road traffic in which there are no more fatalities and serious injuries in

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accidents. A look at developments in the EU alone shows this. As Fehlauser explained, the number of traffic fatalities in the EU fell by almost 63.5 percent between 2001 and 2020, from 51,400 to 18,800. However, the figures have been stagnating since around 2012, and the historic low in 2020 can be explained primarily by the effects of the pandemic. Since then, the numbers have been rising again – to 19,900 in 2021 and 22,600 in 2022, shrinking the percentage decline from 2001 to 56 percent.

The figures from the U.S. show a very different picture. Between 2010 and 2020, the number of road users killed in a crash rose from 32,999 to 38,824, thereby increasing to 118 percent of the original figure. The numbers for all types of road user analyzed rose, but those for pedestrians and cyclists increased disproportionately, in line with both forms of mobility becoming more popular.

Worldwide, the World Health Organization (WHO) estimates the number of annual traffic fatalities at around 1.3 million.

Game changer for mobility – but in a safe way

According to Kristian Schmidt, European Coordinator for Road Safety, automated driving systems are a game changer. “Connected and automated driving has great potential to help make mobility safer and more accessible”, Schmidt writes in the DEKRA Road Safety Report. In his view, however, new challenges are emerging – for example, with regard to cyber security as well as the safe operation of highly automated vehicles in mixed traffic. “We need to make sure that automated vehicles are safe before we allow them to circulate on Europe’s roads. If type approval fails here the whole technology might be discredited”, Schmidt writes.

Mark Chung, Executive Vice President Roadway Practice with the National Safety Council (NSC), points out that many U.S. drivers deactivate assistance systems features because they don’t trust their capabilities. “Worse yet, there are also those who over-rely on these features due to misunderstanding their capabilities. Adding to all this confusion are OEMs who view ADAS features as brand differentiators and deploy overly creative ADAS marketing nomenclature. In short, ADAS should make driving safer and less complex. To date, we are seeing quite the opposite” writes Chung in his contribution to the DEKRA report.

Assistance systems must not be distracting or overwhelming

As DEKRA expert Fehlauser explains, for all helpful technology it must always be ensured in particular that it does not distract or overtax the driver: “The basic prerequisite for the use of assistance systems is that they are easy for all users to understand.” Their operation must not lead to new risks or dangers that could jeopardize the successes achieved in road safety.

The fact that this danger does exist is shown by research carried out by DEKRA exclusively for the Road Safety Report – a study with test subjects on operating concepts in the vehicle and a survey among drivers in Germany. The results are

presented in detail in the report. In driving tests at the DEKRA Technology Center at the Lausitzring in Brandenburg, Germany, experts also investigated the consequences of so-called sensor misalignments for road safety. With further driving tests, DEKRA showed that the technical potential of emergency brake assistants in trucks is not fully exploited by all manufacturers and that some systems can be unintentionally impaired in their effect by the behavior of the driver.

Responsibility remains with the driver

However, no matter which assistance systems are installed in a vehicle, the responsibility remains with the driver. Drivers must always pay full attention to the road and intervene or override the systems if necessary. “However, systems that function very well and reliably, particularly in the areas of distance control and lane keeping, tempt many road users to turn their attention to tasks other than driving”, Jann Fehlauer pointed out. Several serious accidents had already been the result of such a misjudgment regarding the system design. Such systems could also become critical if the driver develops health problems and this is not recognized. As the level of automation continues to increase, everyday driver experience is also declining. “But it is indispensable, especially in the critical driving situations in which an automated system hands back over to the driver”, says Fehlauer. There is currently no satisfactory solution to this challenge, he said.

In the opinion of the DEKRA Automobil Managing Director, despite all the technical developments in the motor vehicle sector, it must never be forgotten that acceptance of and compliance with the relevant traffic regulations are essential safety components for any kind of traffic participation. At any moment, he said, participation in road traffic requires constant caution and mutual consideration. “For the time being, it is and remains the human being who makes the essential contribution to road safety through his or her behavior.”

The DEKRA Road Safety Report 2023 “Technology and People” is available for download online at www.dekra-roadsafety.com. All previous reports can also be found there, including additional content, for example in the form of videos or interactive graphics.

Ten DEKRA demands for more road safety

- The prioritized approach should be one of cooperative assistance, where the technology assists the human driver and compensates for their weaknesses, rather than one of technology-heavy solutions that only require the human to intervene in a troubleshooting capacity.
- To leverage the full benefits of assistance systems, drivers must be better informed about their design domains, their limitations, and how to operate them. This information must be available not only to primary users of a vehicle, but also to secondary and further users.

- Highly automated systems in motor vehicles must be able to adequately decode, interpret, and draw conclusions about complex traffic situations, including interactions with other road users (cyclists, pedestrians, children).
- If a system has taken over or handed back control of the driving, this must be clearly indicated to the person behind the wheel.
- There must be clear regulations governing the minimum requirements for the automated vehicle Operational Design Domains defined by the manufacturers. These regulations must include clearly defined parameters such as speed, road category, and weather conditions, among others.
- The cockpit must be ergonomic and effective in design and display the respective information in a manner that is timely, relevant, situation-specific, and easy to understand.
- There is an urgent need for manufacturer-independent standardization of safety-relevant operating functions with regard to arrangement, location, and operation of the controls in the vehicle cockpit.
- Even with today's systems of active and passive safety, we need to thoroughly tap into the unrealized potential for preventing accidents or mitigating their consequences. Automation is not a silver bullet.
- The functional capability of any mechanical and electronic vehicle safety components must be ensured throughout the entire service life of the vehicle and systematically tested as part of technical vehicle inspection, and the required information for this must be provided.
- In the context of Vision Zero, it is important to actively look for hazardous areas, in order to mitigate these as quickly as possible using structural and/or meaningful traffic-regulatory measures. In this respect, it is essential to ensure the requirements of modern assistance systems are taken into consideration.

About DEKRA

DEKRA has been active in the field of safety for almost 100 years. Founded in 1925 in Berlin as Deutscher Kraftfahrzeug-Überwachungs-Verein e.V., it is today one of the world's leading expert organizations. DEKRA SE is a subsidiary of DEKRA e.V. and manages the Group's operating business. In 2022, DEKRA generated sales totaling nearly EUR 3.8 billion. The company currently employs almost 49,000 people in approximately 60 countries on five continents. With qualified and independent expert services, they work for safety on the road, at work and at home. These services range from vehicle inspection and expert appraisals to claims services, industrial and building inspections, advisory and training services, testing and certification of products and systems, also in the digital world, as well as temporary work. The vision for the company's 100th birthday in 2025 is that DEKRA will be the global partner for a safe, secure, and sustainable world. With a platinum rating from EcoVadis, DEKRA is now in the top one percent of sustainable businesses ranked.