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Connected Driving: What Remains to Be Done?

Hardly a week goes by without a vehicle manufacturer or another organisation making some kind of statement about automated driving. It is possible that driverless cars will start to appear on our roads by the end of the decade. Although the digitisation of the car began more than 20 years ago, it is only now that digital ecosystems are making new business models possible. Will this upheaval represent an opportunity for the traditional automotive industry that it can successfully exploit or will the industry go the way of many areas of the old economy that have now almost disappeared? One thing is clear: the traffic and the cars on the roads will change. We will be able to use the time we gain during car journeys to do other things. The roads will become safer and travelling will be easier.

What remains to be done? Rapid progress is being made in developing the technology and many companies are now devoting considerable resources to the field of connectivity. Artificial intelligence and deep learning are opening up previously undreamt of opportunities. The latest generation of processors points towards ways in which the considerable amount of computing power required can be integrated into cars. New sensors will be able to create a comprehensive model of the vehicle's environment.

Cars' own sensors should be able to ensure that they remain safe at all times, which means accident-free driving. So why is

everyone talking about automated and connected driving?

Unless cars are aware in advance of the situation on the roads ahead of them, which will require a highly accurate map that is constantly updated, they will not be able to travel smoothly and predictively. A map of this kind can be created by a fleet of connected vehicles and kept up-to-date and distributed via mobile online services. Currently drivers cooperate in a number of subtle ways to keep the traffic flowing. We now need new procedures for ensuring that this cooperation between manually driven and autonomous cars functions effectively.

Automated driving will undoubtedly bring benefits for society in areas such as the environment, demographic change, business and road safety. Technical systems will generally be able to manage potentially dangerous situations within their functional and usage limits more quickly, more rationally, more predictively and, therefore, more effectively than many human drivers. However, the perfect, accident-free technical system remains a vision. There are likely to be hazardous areas in urban environments, in particular those involving vulnerable road users. For this reason, we need to hold a wide-ranging social debate that will lead to the development of guidelines and codes of conduct for all the possible risk situations. The German federal government has already established an ethics commission for this purpose.