HOW SAFE IS SAFE ENOUGH? – AUTOMATED MOBILITY FROM A LEGAL PERSPECTIVE
How safe is safe enough? – Automated mobility from a legal perspective

Abstract

The main goal of this paper is to give up-to-date information about the legal regulations on autonomous vehicles (AVs) in Europe by comparing national traffic laws of three European member states, pioneers in the field of automated driving, and therefore outline differences as well as common grounds. By focusing on the common aspects, we might get an idea of what safety can mean in today’s Europe with respect to automated mobility. This legal overview is not primarily intended for legal experts, it is a holistic approach dedicated to all experts working on the implementation of AVs. While dealing with new technologies, all kinds of professionals should be aware of the legal regulations and challenges a certain technology will imply in order to discuss the feasibility of different legal statements. Furthermore, this article gives an answer to whether minor legal adjustments on a national level will be enough or if some major changes on an international level will be necessary to implement that new technology in a successful, safe and sustainable way into the existing systems.

Keywords: autonomous vehicle; international law; traffic law; legal challenges

1. Introduction

Automated mobility is seen as one of the key technologies and major technological advancements influencing and shaping the future of mobility and the quality of life, as it is expected to be safer, more eco-efficient and accessible to everyone. New technologies, however, also trigger new legal issues and automated and autonomous driving is no exception. As automated mobility is expected to play a key role in future transportation, different working groups on a national and international level are constantly trying to pave the way for it. Meeting today’s mobility challenges will require new solutions, new laws and amendments and a new quality in research. However, many more challenges, such as technical problems, consumer acceptance financial profitability, will have to be taken into consideration on the path towards a successful implementation of autonomous vehicles. This paper will only focus on the legal aspects authorities will face while implementing a new technology into an existing framework. There are still many unsolved and unpredictable legal issues regarding automated mobility but in addition to the technical and societal challenges, legal issues need to come to the forefront when debating the roll-out of AVs. The key question is less about when automated or autonomous mobility will hit our streets and more about how they will do it. Therefore, the major challenge for public authorities is to create a (legal) environment where the conditions are met for automated mobility to keep its promise of being safer, more eco-efficient and accessible to everyone.

2. The hierarchy of the legal system

At an international level, there are several agreements that specify the legal framework for national road traffic legislation and among the most important ones is the Vienna Convention.
Nearly all EU members (with the exception of Spain and the United Kingdom) are parties to the Convention on Road Traffic, also known as the Vienna Convention. The Convention is an international treaty designed to facilitate international road traffic and to increase road safety by establishing standard traffic rules among the contracting parties. Until a recent amendment introduced in 2016, any legislation adopted by a signatory of the Convention had to require a human driver to be in control of the moving vehicle at all times (see Article 8 and Article 13). After the 2016 amendment, a new paragraph called ‘5bis’ was added and as a result automated vehicles are now compliant with the Vienna Convention provided that the system can be overridden by the driver or fulfills the requirements of the UN/ECE regulations\(^1\). UN/ECE Regulations set out standards for type approval of vehicles and are considered European laws, as Art. 35 of the European Regulation No. 2007/46 EG declares that UN/ECE Regulations for type approval are directly applicable under European law. In connection with automated driving, ECE Rule No.79 is particularly important as it states that driver assisted systems (hereinafter DAS) can get an EU wide type approval as long as they can be switched off or overridden at any time by a human driver. Therefore, highly or fully automated driving functions became legal under international law, but the use or even the testing of fully autonomous vehicles (SAE 5) is currently still illegal as international law still specifies the need for a driver as it requests a human to switch off or override the system.

Legal issues about AVs belong to three different hierarchy levels of law: International law, European law and national law. This paper will focus on the third and last level: the national traffic law. Nonetheless, binding international and supranational (European) law should always be taken into account when comparing national regulations.

3. National Traffic Law

Even if after the recent amendment on an international level DAS (SAE 1-4) are permitted, on a national level highly or fully automated driving functions (SAE 3,4) are almost universally illegal without a special government permit for testing self-driving cars on public roads. The regulatory frameworks regarding the use of automated vehicles on public roads in the Netherlands, Austria, and Germany will be outlined in detail and compared in this paper. All of these countries have found a unique approach to address these legal issues and were among the first in the European Union where testing of automated vehicles on public roads became reality. Whenever a legal framework for new innovations is established, the question “how safe is safe enough?” arises. So far, each state has adopted its own approach. With the implementation of automated driving on public roads, most of the existing regulatory frameworks and technical standards will face major changes. This paper outlines some common grounds by comparing current regulations on the use and testing of AVs on public roads. On a national scale, some states have implemented legislation, regulations or rules that apply specifically to self-driving vehicles but the vast majority of states have just amended their road rules to facilitate the testing of partial and/or fully driverless vehicles in specific circumstances, on a case by case basis requiring approval. A specific government approval is necessary, as in the majority of jurisdictions current traffic laws do not contemplate driverless vehicles and using a highly automated vehicle may result in a material breach of drivers' general obligations under existing road rules.

\(^1\) ECE - Economics Commission for Europe
3.1 Austria

On December 19th, 2016, the Ordinance on Automated Driving (AutomatFahrV) came into force. The Ordinance regulates test drives on public roads with highly automated driver assistance systems in Austria and specifies in which traffic situations, on which types of roads, up to which speed ranges and in which kinds of vehicles it is allowed to use highly advanced assistance systems for test drives. The Austrian Ministry for Transport Innovation and Technology (hereinafter the Ministry) can issue a testing permit on a case by case basis for the following three use cases:

- **Autopilot** (longitudinal and lateral control): test with the autopilot systems are limited to highways and express roads. Before the system is approved for testing on public roads, it must have completed at least 10,000 km on a private test field, on a virtual test bed or on a test bench.

- **Autonomous Minibuses**: minibusses can only operate with the maximum speed of 20 km/h. Before the system is approved for testing on public roads, it must have completed at least 1,000 km on a private test field, on a virtual test bed or on a test bench.

- **Self-driving army vehicles**: before the system is approved for testing on public roads, it must have completed at least 300 km on a private test field, on a virtual test bed or on a test bench.

In Austria, only vehicle manufacturers, developers of systems and research facilities as well as the Ministry of Defense are currently entitled to make such an application. As a first step, the applicant has to complete an application form and send it to the country's contact point for automated driving (AustriaTech GmbH). The contact point evaluates the application and supports the applicant in the following application process. After the pre-assessment from the contact point, the application is sent to the Ministry. The Ministry can either decide on its own or consult the council of experts. The council of experts was established by the Ministry in 2016 to provide expertise in the field of automated mobility. The members of the council consist of representatives from the fields of economy, science, law, administration as well as representatives from automotive clubs. On the basis of the information derived from the test application, the expertise from the AustriaTech and the expert council, the Ministry can issue a temporary permit for testing one of the defined use cases.

The physical presence of a human test driver in the car is mandatory during all test operations. The driver may transfer certain driving tasks to these systems, but he or she is always responsible for taking back over the driving task at any time. Each test vehicle must be equipped with a data recorder to reconstruct critical situations or accidents. Furthermore, every test vehicle in Austria has to be covered by liability insurance. In addition to the ordinance, the Ministry itself also published a code of practice for test drives on public roads. The provisions of the code of practice are not legally binding but are intended to promote responsible testing in Austria.

3.2 Germany

On June 21st, 2017, the Act amending the Road Traffic Act entered into force in Germany. The new amendment entails special regulations for the use of common driver assistance systems (e.g. motorway pilot, parking assistant), but it does not regulate test drives on public roads in Germany. Under the new law, highly or fully automated driving functions may only be
used if the vehicle itself has been approved by the competent authority (licensing authority) in accordance with §1 Road Traffic Act (StVG). Additionally, also the highly automated or fully automated driving function must either comply with international regulations (ECE Regulations) or be type-approved in accordance with Article 20 of Directive 2007/46 / EC of the European Union. In case neither the vehicle nor the system fully complies with international law (ECE Regulations/or Directive 2007/46), the use of the vehicle and the system are still illegal in Germany without a special government permit.

Even though the new amendment to the German Road Traffic Act does not contain specific regulations for test drives with unauthorized systems or vehicles, tests with such vehicles and systems are still possible, but applicants need an individual approval. Therefore, German authorities can issue a temporary testing permit on the basis of § 70 of the German Highway Code. The implementation of federal road traffic regulations, like the Highway Code, is a matter for the local authorities, so the so-called temporary approval notification is issued by the local administrative authorities in each federal state and it is not valid throughout the federal territory.

In order to comply with international law, also German traffic law requires the physical presence of a human test driver inside the vehicle while using a highly or fully automated driving function. According to the new amendment, the driver is now allowed to remove his hands from the wheel and perform simple tasks such as using smartphones while the car drives itself. However, also in Germany drivers are still required to remain ready to take control in order to handle possible emergencies. German legislation also requires data recorders for autonomous vehicles designed to record system data and actions to review in the case of an accident. Additionally, also in Germany, every test vehicle has to be covered by liability insurance.

3.3 Netherlands

In 2017, a new act on testing of autonomous vehicles on public roads came into force in the Netherlands. Under this act, the authorities have the power to deviate from individual provisions of the national road traffic regulations, as well as from other laws, for experimental purposes only. Testing highly automated vehicles on public roads is only legal if the Dutch Vehicle Authority ("RDW") grants a discretionary exemption for the specific test drive. The approval process for tests on public roads in the Netherlands is handled by the RDW and additionally requires the approval of the Minister of Infrastructure and the Environment. The procedure for issuing the letter of exemption in the Netherlands is as follows:

- **Written application**: mandatory information has to be provided by the applicant on an application form (specifying the number of vehicles, location, duration and the period etc).
- **Data Study**: the authority evaluates the technical information and risk analysis provided as well as the information about the test tracks. This is followed by a consultation with the road supervisor as well as with the security experts of the RDW. Afterward, a personal discussion with the applicant takes place. If the system complies on paper with the above-mentioned requirements, further tests will be conducted in a private testing facility.
- **Private testbed**: an inspection of the vehicles taking place at the private test track of the RDW as well as safety checks and an on-site performance stress test run by the RDW.
• **Test permit**: if all previous tests and evaluations have been satisfactory and the necessary consents have been granted, the RDW has the legal authority to issue a temporary exemption for testing on public roads. However, additional requirements may be imposed on the testing devices, e.g. certain insurance, or tests may be limited to day or night. In order to maintain safety on the public roads, the local road authorities where the test is taking place must be consulted.

• **Evaluation of test results**: evaluation of the data obtained by Dutch authorities (RDW). The evaluation of the data should help authorities to improve the test situations. After evaluating the data, the RDW draws up a report, which is forwarded to the Ministry of Innovation and the Environment.

In the Netherlands - like in Austria - the group of potential applicants is expressly restricted to international OEMs, manufacturers, research institutes, authorities and public institutions. Due to a less strict interpretation of international conventions, in the Netherlands, unlike in Germany or Austria, the driver can physically either be inside or outside the vehicle, as long as a human being is ready to take command via remote control. However, even if the driver can physically leave the vehicle, he or she must not be more than 6 meters away from the vehicle and the vehicle speed is limited to max. 10 km/h while the driver is not inside. Under Dutch law – like in Germany and Austria – every road user (whether a natural person or a legal entity) must have insurance, no matter if they are driving an automated vehicle or not.

### 4. Conclusion

While the potential of self-driving vehicles seems great, there are still many unknowns and upcoming challenges that public authorities will have to face in the future. On our way to a fully automated mobility, there will be certain prerequisites that national authorities must guarantee and a fitting legal framework is one of these. Legislation must keep up with technical progress, or paramount innovations for automated and autonomous driving will not be brought onto our roads. Currently, most European Union member states already have a legal framework that is equipped to address and adapt to most of today’s challenges, but it is not prepared for fully automated vehicles hitting our streets. Further technical progress will require further legislative adjustments. As today’s mobility does not know borders, international institutions are required to take action and set up new and harmonized regulations for automated vehicles. In this regard, the European institutions are already working on the development of a singular regulatory framework for automated mobility in the EU. Certainly, every adjustment of international law has to be followed by adjustments at a national level. Through the ongoing attempt for harmonization in the field of automated mobility, the currently existing legislative differences between states will be put aside and more emphasis will be given to the common grounds. By focusing on the common grounds emerged in these fields, we might have an idea of what safety can mean in today’s Europe with respect to automated mobility. On this basis, it might be easier to overcome the challenges and barriers towards the creation of the mobility of the future. One thing is certain, progress and – legal progress – must not stop at national borders. Therefore, the universal (legal) challenge is not only how to implement automated and autonomous vehicles in our transport systems, but also how to make sure that technology is really keeping its promises of being safer, eco-efficient and accessible to everyone.
References


Braun, Konitzer, Straßenverkehrszulassungsordnung (2016), §70.


