

THE GERMAN PERSPECTIVE ON THE DEPLOYMENT OF AUTOMATED VEHICLES

Bc. Stela Košťálová

Comenius University in Bratislava, Faculty of Law
Institute of Information Technology Law and Intellectual Property Law¹
kostalova49@uniba.sk

Abstract: Automated mobility is an increasingly important area in road transport primarily due to high accident rates caused by human failure, the need for inclusion, and the emergence of sustainable transport. Road transport makes a major contribution not only to getting from point A to point B but also has a significant impact on the economy and employment. The purpose of this paper is an analysis of the different legal approaches to the deployment of automated vehicles in Germany and Slovakia. This paper first gives a brief overview of the functional safety legislation of automated vehicles, then focuses on its market surveillance and the role of the driver in automated vehicles.

Key words: automated vehicle, functional safety, market surveillance, Digital Single Market, human driver

Introduction

Road transport depends on multiple factors to ensure the safety of all road traffic participants, such as drivers, passengers in vehicles, and vulnerable road users² (cyclists, pedestrians, and users of powered two-

¹ Student research assistant at the Institute of Information Technology Law and Intellectual Property Law, Faculty of Law, Comenius University in Bratislava.

² Art. 3 Sec. 1 Regulation (EU) 2019/2144 of the European Parliament and of the Council of 27 November 2019 on type-approval requirements for motor vehicles and their trailers, and systems, components and separate technical units intended for such vehicles, as regards their

wheelers). Digital development is fast becoming a key instrument in the fourth industrial revolution³ and raises variety of questions regarding automated vehicles.

In recent years, there have been numerous accidents caused by human failure. In 2021, driver failure was the most common cause of traffic accidents in Germany. According to statistics published by the Statistical Office of Germany, up to 88% the total number of traffic accidents with personal injuries were caused by human failure.⁴ Despite the lack of statistics in Slovakia with regards to the total number of traffic accidents with personal injuries caused by human failure, it can be stated that in 2021 there were at least 10,812 traffic accidents caused by human failure out of the total of 11,886 traffic accidents in Slovakia. According to the available data, accidents caused by human failure account for at least 90% of all road accidents in Slovakia.⁵ It is clear from the above that the most road accidents are the result of human failure. These accidents are preventable through the sensitive use of technology.

Technology driving aids are improving to help the driver or replace the driver for certain tasks. Those improvements on a daily basis come along with the related legal aspects. One of the greatest challenges in automated mobility is the safety⁶ and security⁷ of the driving systems. It is established that 100% safety and security cannot be achieved.⁸ Automated vehicles raise a natural scepticism in society mostly about their safety and it is therefore needed to have market surveillance to ensure road safety and rethink the role of the driver. There is also an

general safety and the protection of vehicle occupants and vulnerable road users (General Safety Regulation).

³ See SCHWAB, K. *The Fourth Industrial Revolution: what it means, how to respond*. [online]. [s.l.] World Economic Forum, 14.01.2016. [last accessed 2023-08-08]. Available at: <https://www.weforum.org/agenda/2016/01/the-fourth-industrial-revolution-what-it-means-and-how-to-respond/>

⁴ Destatis. Verkehrsunfälle 2021, Fachserie 8, Reihe 7, p. 50.

⁵ *Vyhodnotenie dopravnno-bezpečnostnej situácie za 12 mesiacov 2021 (definitívne štatistické údaje)*. [online]. [s.l.] Prezídium Policajného zboru, odbor dopravnej polície [s.a.]. [last accessed 2023-08-08]. Available at: <https://www.minv.sk/?statisticke-ukazovatele-služby-dopravnej-polície&subor=471269>

⁶ The term „safety“ will be used in this paper to refer to functional safety.

⁷ The term „security“ refer to cyber security.

⁸ See GALINSKI, M. *Kybernetická bezpečnosť automatizovaných vozidiel – technické aspekty*. In: ANDRAŠKO, J. et al. *Právne a technické aspekty kybernetickej bezpečnosti automatizovaných vozidiel*. Bratislava: Wolters Kluwer SR s.r.o., 2022. p. 36. ISBN 978-80-571-0554-1.

ethical conflict between safety and responsibility (other Trolley Case) in automated mobility. What is more important?

Germany and Slovakia are at the forefront of automotive production within the European Union. However, they have contrasting approaches to implementing automated vehicles on a national level.

This paper has been divided into three parts, starting with a brief overview of the functional safety legislation for automated vehicles, then focusing on market surveillance, and finally, we will have a look at the role of the driver in automated vehicles. These parts are crucial for safe and secure driving in road traffic.

1. Technical requirements

It is necessary here to clarify exactly what is meant by the automated vehicle and fully automated vehicle under the European Law and the standard SAE J 3016 last revised in April 2021. On the level of European Law, the **automated vehicle** is defined as a *motor vehicle designed and constructed to move autonomously for certain periods of time without continuous driver supervision but in respect of which driver intervention is still expected or required* and regarding the standard SAE J 3016, this falls under SAE level 0 – 4. **The fully automated vehicle** means a *motor vehicle that has been designed and constructed to move autonomously without any driver supervision* and which falls below SAE level 4 - 5, where the presence of a driver is not required.⁹

Slovak national legislation refers to the General Safety Regulation.¹⁰ In contrast, the German definition of the highly or fully automated vehicle goes into more detail and presents **motor vehicles with a highly or fully automated driving function** as *those that have technical equipment:*

1. capable of controlling the vehicle in order to **perform the driving task** – including longitudinal¹¹ and lateral guidance¹² – after activation (vehicle control),

⁹ Art. 3 Sec. 21-22 of the General Safety Regulation; *SAE J3016 Levels of driving automation*. [online]. [s.l.] SAE, 03.05.2021. [last accessed 2023-08-08]. Available at: https://www.sae.org/binaries/content/assets/cm/content/blog/sae-j3016-visual_chart_5.3.2_1.pdf

¹⁰ § 2 Sec. 2 Subsec. ac - ae of Act No. 106/2018 Coll. on the Operation of Vehicles in Road Traffic. [Zákon č. 106/2018 Z. z. o prevádzke vozidiel v cestnej premávke]

¹¹ Longitudinal guidance means accelerating, maintaining speed, or braking.

¹² Lateral guidance includes for instance steering.

2. capable of complying with the **traffic regulations addressed to the vehicle control** during highly or fully automated vehicle control,
3. capable to be manually overridden or deactivated by the driver of the vehicle at any time,
4. detection of the need for the driver to manually control the vehicle,
5. capable of indicating to the driver the need for manual control of the vehicle with a sufficient time reserve before the driver is given control of the vehicle by optical, acoustic, tactile or other perceptible signals, and
6. warns of any use contrary to the system description.¹³

German national legislation goes further and defines the **motor vehicle with an autonomous driving function** as the motor vehicle:

1. capable of *performing the driving task independently, within a defined operating area, without a person driving the vehicle*, and
2. *has certain technical equipment*.¹⁴

The Geneva Convention on Road Traffic and the Vienna Convention on Road Traffic are the fundamental part of the international transport law. The conventions have brought order to the rapidly developing road transport sector in the 20th century. The Geneva Convention in 1949 established standardised road traffic regulations, driver's eligibility criteria and international driving permit, which was followed by the Vienna Convention in 1968 amending the standardised road traffic regulations and requirements for the driver.

Given the diversity of mentalities and customs in various regions of the world, it was necessary to harmonise technical norms on the international level. International technical harmonisation has taken place based on the 1958 Agreement and the 1998 parallel Agreement. The 1958 Agreement was made by UNECE¹⁵ to which are annexed UN No. 1 - 164 Regulations. The 1998 parallel Agreement was established to strengthen the process of existing international technical harmonisation by the development of Global Technical Regulations

¹³ § 1a sec. 2 of the Autonomous Driving Act. BGBl. I p. 986. [Verordnung zur Genehmigung und zum Betrieb von Kraftfahrzeugen mit autonomer Fahrfunktion in festgelegten Betriebsbereichen]

¹⁴ § 1d sec. 1 of the Autonomous Driving Act. BGBl. I p. 986. [Verordnung zur Genehmigung und zum Betrieb von Kraftfahrzeugen mit autonomer Fahrfunktion in festgelegten Betriebsbereichen]

¹⁵ United Nations Economic Commission for Europe.

(GTRs)¹⁶. The European Union, as a contracting party, aims to ensure applicability of all these regulations under the European Law with *direct reference in European Union legislation*¹⁷, extending the scope of harmonisation within the European Union.

European Union is progressively developing the legal regulations on automated mobility, the most important of these are Regulation on approval and market surveillance of the motor vehicle¹⁸ complementing the type-approval requirements, the General Safety Regulation¹⁹, Commission Implementing Regulation for the type-approval of the automated driving system (ADS)²⁰ and NIS 2²¹ Directive on cybersecurity, which is relevant to systems of automated vehicle as well.

Member States of the European Union are obligated to establish their own type-approval authorities. Member States shall ensure that their own approval authorities and market surveillance authorities adhere **to a strict separation of roles and responsibilities** and that **they each function independently from each other**.²²

The Federal Motor Transport Authority is the national type-approval authority²³ in Germany, including for highly or fully

¹⁶ Art. 6 of the 1998 Parallel Agreement.

¹⁷ See Recital 21 of the General Safety Regulation; Council Decision No. 2013/456/EU of 22 July 2013 amending Decision 97/836/EC with a view to accession by the European Community to the Agreement of the United Nations Economic Commission for Europe concerning the adoption of uniform technical prescriptions for wheeled vehicles, equipment and parts which can be fitted to and/or be used on wheeled vehicles and the conditions for reciprocal recognition of approvals granted on the basis of these prescriptions (Revised 1958 Agreement) In: *Official Journal of the European Union* L 245, p. 1; Council Decision No. 2013/454/EU of 22 July 2013 amending Decision 2000/125/EC concerning the conclusion of the Agreement concerning the establishing of global technical regulations for wheeled vehicles, equipment and parts which can be fitted and/or be used on wheeled vehicles (Parallel Agreement) In: *Official Journal of the European Union* L 245, p. 25;

¹⁸ Regulation (EU) 2018/858 of the European Parliament and of the Council of 30 May 2018 on the approval and market surveillance of motor vehicles and their trailers, and of systems, components and separate technical units intended for such vehicles.

¹⁹ General Safety Regulation.

²⁰ Commission Implementing Regulation (EU) 2022/1426 of 5 August 2022 laying down rules for the application of Regulation (EU) 2019/2144 of the European Parliament and of the Council as regards uniform procedures and technical specifications for the type-approval of the automated driving system (ADS).

²¹ Directive (EU) 2022/2555 of the European Parliament and of the Council of 14 December 2022 on measures for a high common level of cybersecurity across the Union (NIS 2).

²² Art. 6 Sec. 1 of the General Safety Regulation.

²³ § 20 Sec. 2 of the Road Traffic Licensing Act. BGBI. I p. 679. [Straßenverkehrs-Zulassungs-Ordnung]

automated vehicles. The Federal Motor Transport Authority issues the following approvals regarding automated mobility:

- National type-approvals highly or fully automated vehicle corresponding to level 4,
- EU type-approvals for highly or fully automated vehicle corresponding to level 4 in small series production,
- Testing approvals for highly or fully automated vehicle from level 3 onwards,
- Type-approvals for highly or fully automated vehicle from level 3 onwards, which can be activated after registration of the motor vehicle.²⁴

The Autonomous Driving Act sets 4 requirements for the type-approval for vehicles with autonomous driving function. The initial requirement is Manufacturer's Declaration on Functional Safety of Autonomous Vehicles, the following are required documents including instruction manual, functional safety concept, IT security concept, functional specification of the vehicle, catalogue of test scenarios and environmental assessment. Fulfilling functional requirements and avoiding collisions in a prescribed manner is the third requirement. The last condition required by the Federal Motor Transport Authority is most crucial, it requires safety of road traffic and does not put human life at risk.²⁵

Act No. 429/2022 Coll. amending and supplementing certain laws relating to the development of automated vehicles²⁶, including the Act No. 575/2001 Coll. on the Organisation of Government Activities and the Organisation of the Central State Administration, to which it extended the competence of the Ministry of Transport of the Slovak Republic to the *creation and implementation of an intelligent mobility policy*.²⁷ The Ministry of Transport of the Slovak Republic is also

²⁴ *Erprobungsgenehmigung*. [online]. [s.l.] Das Kraftfahrt-Bundesamt, [s.a.]. [last accessed 2023-09-09]. Available at: https://www.kba.de/DE/Themen/Typgenehmigung/Autonomes_automatisiertes_Fahren/Erprobungsgenehmigung/erprobungsgenehmigung_node.html

²⁵ § 4 Sec. 1 of the Autonomous Driving Act. BGBl. I p. 986. [Verordnung zur Genehmigung und zum Betrieb von Kraftfahrzeugen mit autonomer Fahrfunktion in festgelegten Betriebsbereichen]

²⁶ Translated from the official name of the Act: Zákon č. 429/222 Z. z. ktorým sa menia a dopĺňajú niektoré zákony v súvislosti s rozvojom automatizovaných vozidiel.

²⁷ § 8 sec. 1 subsec. p of the Act No. 575/2001 Coll. on the Organisation of Government Activities and the Organisation of the Central State Administration. [Zákon č. 575/2001 Z. z. o organizácii činnosti vlády a organizácii ústrednej štátnej správy]

responsible for road transport, combined transport, and roads²⁸, in addition to the creation and implementation of an intelligent mobility policy. This long-awaited legislation was intended to *consider all aspects of smart mobility, which have been overlooked and absent from the regulation of various legal relationships*²⁹ in Slovakia. Despite the considerable sophistication of German legislation, Slovakia only incorporates the requirements of international and European law into its national law, without going beyond them. In **Slovakia**, the national type-approval authority is the **Ministry of Transport of the Slovak Republic**.³⁰

2. (Digital) Market Surveillance

There are two types of market surveillance, active and reactive market surveillance. Active market surveillance involves regular monitoring of the market, while reactive market surveillance includes investigation of violations reported by market participants.³¹

For autonomous vehicles, it is crucial to consider not only the interactions between the physical vehicle and subsequent actions but also to consider the evolving relationships within the various platforms that reside within the vehicle. The consumer must be protected from unfair practices not only in traditional legal relationships but also in those arising in the digital market. Identifying unfair practices in the digital market can be challenging but not impossible.

*Special attention should be given to emerging technologies, taking into account that consumers are increasingly using connected devices in their daily lives. **The Union regulatory framework** should therefore **address the new risks to ensure the safety of the end users**, which could*

²⁸ § 8 sec. 1 subsec. b-d of the Act No. 575/2001 Coll. on the Organisation of Government Activities and the Organisation of the Central State Administration. [Zákon č. 575/2001 Z. z. o organizácii činnosti vlády a organizácii ústrednej štátnej správy]

²⁹ Explanatory memorandum to Act No.429/2022 Coll. amending and supplementing certain laws relating to the development of automated vehicles. [online] Bratislava: NRSR, 24.08.2022. [last accessed 2023-09-09]. Available at: <https://www.nrsr.sk/web/Dynamic/DocumentPreview.aspx?DocID=515513>

³⁰ §135 sec. 2 of Act No. 106/2018 Coll. on the Operation of Vehicles in Road Traffic. [Zákon č. 106/2018 Z. z. o prevádzke vozidiel v cestnej premávke]

³¹ *Marktüberwachung*. [online]. [s.l.] Bundesministerium für Umwelt, Naturschutz, nukleare Sicherheit und Verbraucherschutz. [s.a.]. [last accessed 2023-09-09]. Available at: <https://www.bmu.de/themen/kreislaufwirtschaft/marktueberwachung>

contribute to the effective market surveillance.³² Market surveillance can improve the functioning of the EU internal market by doing the activities carried out and measures taken by market surveillance authorities to ensure that products comply with the requirements set out and to ensure protection of the public interest.³³

In heterogeneous relationships, which prevail in the market, there is a natural inequality – asymmetry that arises to be balanced. In the case of the highly or fully automated vehicle, there is a significant information asymmetry. The manufacturers or distributors of the highly or fully automated vehicle have extensive knowledge of this type of vehicle, while the consumer³⁴ may have varying degrees of understanding. Consumer protection policy is addressing market failures caused by information asymmetry.³⁵ Misuse of information asymmetry can lead to unfair competition³⁶, where technologies will, for example, rank in favour of a pre-selected network of charging or petrol stations.

The example mentioned above is not futuristic, however, several services are currently being implemented. These services aim to provide comfort of passengers while simultaneously increasing the revenues of the individual market players. Mercedes-Benz drivers can already pay for refueling directly from the car via the Mercedes-me app.³⁷ Another giant - Volkswagen Group launched App Store for selected Audi³⁸ models this year. Downloading apps from the store

³² Recital 30-31 of the Regulation (EU) 2019/1020 of the European Parliament and of the Council of 20 June 2019 on market surveillance and compliance of products.

³³ Art. 1 Sec. 1 and Art. 2 Sec. 3 of the Regulation (EU) 2019/1020 of the European Parliament and of the Council of 20 June 2019 on market surveillance and compliance of products.

³⁴ Consumer is defined as a natural person entering a legal transaction outside the consumer's trade, business, or profession.

³⁵ KEBLER, W. Digital markets, data, and privacy: competition law, consumer law and data protection. In: *Journal of Intellectual Property Law & Practise*. November 2016, Volume 11, Issue 11, p. 861.

³⁶ Art. 5 of the Directive 2005/29/EC of the European Parliament and of the Council of 11 May 2005 concerning unfair business-to-consumer commercial practices in the internal market and amending Council Directive 84/450/EEC, Directives 97/7/EC, 98/27/EC and 2002/65/EC of the European Parliament and of the Council and Regulation (EC) No 2006/2004 of the European Parliament and of the Council (Unfair Commercial Practices Directive).

³⁷ LINDEN, M. *Mercedes verkauft Auto-Upgrades per Fingerabdruck*. [online]. [s.l.] golem.de, 06.03.2023. [last accessed 2023-09-09]. Available at: <https://www.golem.de/news/in-car-payment-mercedes-verkauft-auto-upgrades-per-finger-abdruck-2303-172404.html>

³⁸ Volkswagen Group brand.

requires an in-car SIM card.³⁹ The App Store is an open ecosystem supporting services also from the outside of the Volkswagen Group⁴⁰ which is the first step to contractual chaining between individual market subjects. The Digital Markets Act aims to ensure fairness and competition in the digital sector. *To ensure that the end-user has a choice, access controllers should not prevent end users from uninstalling any pre-installed software applications on their operating system. Restrictions on uninstallation should only occur if such software applications are essential to the functioning of the operating system or device.*⁴¹ *In ranking and related indexing and crawling, services and products offered for example by the Mercedes- me App or Volkswagen Group App Store shall not treat more favourably, pre-selected services or products than similar services or products of a third party and shall apply transparent, fair and non-discriminatory conditions to such ranking.*⁴²

If a high or fully automated control function is activated, decision-making is transferred to technology, thereby limiting the decision-making freedom of the driver. Under the Automated Driving Act, it must be possible for such a function to be overridden or deactivated.⁴³ This legal norm was enshrined in the Autonomous Driving Act as a contractual obligation⁴⁴ arising from the Amendment of the Convention on Road Traffic in force from 23rd March 2016.⁴⁵ Closely related to this is the question of what to do if a vehicle that is allowed to use automated driving functions in Germany goes to the neighbouring Czech Republic, which has different legislation? If the drivers were compelled to deactivate the system outside of Germany, this would present a long-term barrier to the single market within the EU, which would lead to competition in the legal systems. The question

³⁹ *VW-Konzern entwickelt Appstore.* [online]. [s.l.] Welt, 01.03.2023. [last accessed 2023-09-09]. Available at: <https://www.welt.de/motor/news/article244046833/Audi-startet-im-Juli-VW-Konzern-entwickelt-Appstore.html>

⁴⁰ *CARIAD launches application store for the Volkswagen Group.* [online]. [s.l.] Cariad, 01.03.2023. [last accessed 2023-08-08]. Available at: <https://cariad.technology/de/en/news/stories/launch-application-store-for-volkswagen-group.html>

⁴¹ Recital 49 of the Regulation (EU) 2019/1020 of the European Parliament and of the Council of 20 June 2019 on market surveillance and compliance of products.

⁴² Art. 6 Sub. 5 of the Regulation (EU) 2019/1020 of the European Parliament and of the Council of 20 June 2019 on market surveillance and compliance of products.

⁴³ Art. 1a Sec. 2 Subsec. 3 of Road Traffic Act. BGBl. I p. 310, 919. [Straßenverkehrsgesetz]

⁴⁴ Art. 59 Sec. 2 Para. 1 of Basic Law for the Federal Republic of Germany. [Grundgesetz für die Bundesrepublik Deutschland]

⁴⁵ Art. 8 Para. 5 bis. of the Vienna Convention on Road Traffic.

appears complicated at first sight, but the solution can be partly found in the case law of the Court of Justice of the European Union in conjunction with Article 36 of the Treaty on the Functioning of the European Union. A vehicle with highly or fully automated driving system is considered as good in the context of free movement within the single market of the European Union. According to Article 34 of the Treaty on the Functioning of the European Union, it is considered a measure with an equivalent effect if a Member State designs its legislation relevant to the market in a way that distorts the movement of goods, in particular those that have been lawfully authorized.⁴⁶ *Dassonville* and *Cassis de Dijon* case law lay the foundations for the proper functioning of the single market.⁴⁷ The European Court of Justice of the European Union has followed these decisions on cases related to the use of products and has identified three types of national rules prohibiting access to the market:

1. Discriminatory rules
2. Imposing product requirements
3. Hindering or inhibiting market access.⁴⁸

The European Court of Justice of the European Union stated in the case related to the use of product in context of the road safety *that a prohibition on the use of a product in the territory of a Member State has a considerable influence on the behaviour of consumers, which, in its turn, affects the access of that product to the market of that Member State. The prohibition to hinder access to the market of other Member State for use of product which is lawfully produced and marketed in other Member States, constitutes a measure having equivalent effect to quantitative restrictions on imports, unless it can be justified objectively.*⁴⁹ A potential buyer who is aware of the inability to use automated driving systems outside of the jurisdiction, which was sold,

⁴⁶ Dassonville formula: all trading rules enacted by Member States which are capable of hindering, directly or indirectly, actually or potentially, intra-Community trade are to be considered as measures having an effect equivalent to quantitative restrictions.

⁴⁷ Judgment of the Court of Justice of the European Union C-8/74 *Procureur du Roi v Benoît and Gustave Dassonville* from 11 July 1974; Judgment of the Court of Justice of the European Union C-120/78 *Rewe-Zentral AG v Bundesmonopolverwaltung für Branntwein* from 20 February 1979.

⁴⁸ CRAIG, P., DE BURCA, G. *EU Law. Text, Cases, and Materials*. p. 724. ISBN: 9780198856641; Judgement of the Court of Justice of the European Union C-110/05 *Commission v Italy* from 10 February 2009; Judgement of the Court of Justice of the European Union C-142/05 *Åklagaren v Percy Mickelsson a Joakim Roos* from 4 June 2009.

⁴⁹ Judgement of the Court of Justice of the European Union C-110/05 *Commission v Italy* from 10 February 2009.

could lead to discouragement from buying. According to Article 36 of the Treaty on the Functioning of the European Union, prohibitions and restrictions relating to the goods can be considered under enumerated grounds, in particular public policy, public security, and the protection of the health and life of human, as objectively justified grounds. If the prohibition or restriction is justified by the need to ensure road safety, there is an urgent reason in the general interest capable of justifying an obstacle to the free movement of goods. Transport is a shared competence between the European Union and the Member States competence⁵⁰ and *in the absence of fully harmonising provisions, it is for the Member States to decide upon the level at which they wish to ensure road safety in their territory, whilst taking account of the requirements of the free movement of goods within the single market.* However, considering the variety of automated driving systems, it is important to acknowledge that each may require a different approach. Furthermore, the current state of harmonising devices present in road traffic and road signs, which have a significant impact on the behaviour of these vehicles, needs to be taken into consideration.

Digital Single Market removing virtual borders within the EU is now a reality. According to the Proposal for a Regulation on horizontal cybersecurity requirements for products with digital elements *in a connected environment, a cybersecurity incident in one product can affect an entire organisation or a whole supply chain, often propagating across the borders of the internal market within a matter of minutes. This can lead to severe disruption of economic and social activities or even become life-threatening.*⁵¹ In order to meet market demands and to protect consumers from risky products and services, the Proposal leads to designation of *one or more market surveillance authorities and the market surveillance authorities shall cooperate with the national cybersecurity certification authorities, with other market surveillance authorities, or with the authorities supervising Union data protection law.*⁵²

⁵⁰ Art. 4 Sec. 2 Subsec. g of the Treaty on Functioning of the European Union.

⁵¹ Proposal for a Regulation of the European Parliament and of the Council on horizontal cybersecurity requirements for products with digital elements and amending Regulation (EU) 2019/1020 from 15.09.2022.

⁵² Art. 41 Para. 2-5 of Proposal for a Regulation of the European Parliament and of the Council on horizontal cybersecurity requirements for products with digital elements and amending Regulation (EU) 2019/1020 from 15.09.2022.

Each Member State of the European Union is required to establish, *inter alia*, their own independent market surveillance authorities.⁵³

In **Germany**, market surveillance authority for highly or fully automated vehicles is the responsibility of the Federal Motor Transport Authority, as is the type-approval authority. The Federal Motor Transport Authority verifies through regular inspections fulfilment of the necessary requirements for a highly or fully automated vehicle has been met and makes risk assessment.⁵⁴ Type-approval and market *authorities may be within the same organisation provided that their activities are managed autonomously as part of separate structures*⁵⁵, as in Germany.

In **Slovakia**, the market surveillance authority for all motor vehicles including highly or fully automated vehicles is the Slovak Trade Inspection.⁵⁶

3. The role of the driver in an automated vehicle

The Geneva Convention in 1949 established driver's eligibility criteria, which was followed by the Vienna Convention in 1968 amending requirements for the driver. Conventions differ mainly in the level of reflection on new technologies and human rights in international transport. The Vienna Convention acknowledges the impact of new technologies on human rights, resulting in more frequent amendments.

The conventions use the same definition of the driver of the vehicle as ***any person who drives a vehicle, including cycles, or guides draught, pack or saddle animals or herds or flocks on a road, or who is in actual physical control of the same***⁵⁷ or ***any person who drives a motor vehicle or other vehicle (including a cycle), or who guides cattle, singly or in herds, or flocks, or draught, pack, or saddle animals on a road***⁵⁸.

The conventions incorporate the concept of an “ever-present” driver inside the vehicle, which has been in force in the Vienna Convention

⁵³ Art. 6 Sec. 1 of the General Safety Regulation.

⁵⁴ § 5 of the Autonomous Driving Act. BGBl. I p. 986. [Verordnung zur Genehmigung und zum Betrieb von Kraftfahrzeugen mit autonomer Fahrfunktion in festgelegten Betriebsbereichen]

⁵⁵ Art. 6 Sec. 1 of the General Safety Regulation.

⁵⁶ § 135 Sec. 6 and §139 Subsec. e of Act No. 106/2018 Coll. on the Operation of Vehicles in Road Traffic. [Zákon č. 106/2018 Z. z. o prevádzke vozidiel v cestnej premávke]

⁵⁷ Art. 4 Para. 10 of the Geneva Convention on Road Traffic.

⁵⁸ Art. 1 Para. v of the Vienna Convention on Road Traffic.

on Road Traffic and the Geneva Convention on Road Traffic since its earliest inception. This involves the driver's ability to sustain control of their vehicle and adapt the speed to the traffic conditions.⁵⁹ The Geneva Convention on Road Traffic requires continuously the driver's control of the vehicle while driving.⁶⁰ Compliance with SAE automatization level 0 is not problematic but the use of adaptive cruise control (ACC) alone, classified as SAE level 1-2, means that the way the vehicle is driven is influenced by the use of a driver-assist function (automated function). In addition, the Vienna Convention adapts itself for automated mobility forehead and states *vehicle systems which influence the way vehicles are driven and are not in conformity with the aforementioned conditions of construction, fitting and, utilization, shall be deemed to be in conformity with paragraph 5 of this Article and with paragraph 1 of Article 13, when such systems can be overridden or switched off by the driver.*⁶¹ In either case, a driver must be present in the vehicle. However, what sets them apart is the consideration of new technologies. The Vienna Convention currently does not include the possibility of driverless driving, but it does allow automated driving functions that can be switched off by the present driver.

European law does not define a driver.

The **German legal framework** goes beyond all established definitions. The German Road Traffic Act defines the term driver of the highly or fully automated vehicle as *person who engages a highly or fully automated driving function and utilises it to control a vehicle, regardless of whether they are driving the vehicle themselves or not, with the intended use of this feature.*⁶² However, there is no legal definition of a “general” driver. Despite the absence of a driver definition, two requirements can be identified in the law concerning the person of a driver. Firstly, they must be authorized to drive a motor vehicle, and secondly, they must be in a suitable physical and mental condition to drive it.⁶³

On the other hand, the **Slovak legislation** outlines a “general” driver, but does not further specify the role of the driver in a highly or

⁵⁹ Art. 8 Para. 1,5 of the Vienna Convention on Road Traffic; Art. 8 Para. 1 of the Geneva Convention on Road Traffic

⁶⁰ Art. 8 Para. 5 of the Geneva Convention on Road Traffic

⁶¹ Art. 8 Para. 5 bis. of the Vienna Convention on Road Traffic.

⁶² § 1a Sec. 4 of the Road Traffic Act. BGBl. I p. 310, 919. [Straßenverkehrsgesetz]

⁶³ § 2 of the Road Traffic Act. BGBl. I p. 310, 919. [Straßenverkehrsgesetz]

fully automated vehicle. A driver is *a person driving or supervising a vehicle using an automated driving system*.⁶⁴ An automated driving system is defined as a *vehicle management system, utilizing both hardware and software, to provide continuous dynamic control of the vehicle*.⁶⁵ However, this definition lacks an explanation of the intended meaning of supervising a vehicle. *A driver must be present in every moving vehicle and carriage*.⁶⁶

The definitions of a driver in international law are consistent, however, they no longer reflect the requirements of the driver in light of new technologies. The Vienna Convention appears to have reached its limit and is waiting for the United Nations Economic Commission for Europe to present its new legal instrument on the use of automated vehicles in traffic, which will be able to define the appropriate regulation.

Conclusion

Computer or Software on wheels⁶⁷ as vehicles with automated driving functions are now called, require many sensor components, and use different combinations of them. It is important to remember that cybersecurity, in addition to functional security, must be maintained throughout the software lifecycle.⁶⁸ With the current pace of technological progress, there is a need for a flexible response to these changes and thus for the protection of fundamental rights and freedoms, not only technically but also from a legal point of view. It is important to show the interest of creating the foundations for automated mobility before it becomes a significant element of the road transport. Nowadays, automated driving systems are commonly available in vehicles classified under SAE Level 3, what corresponds to a highly automated vehicle. Germany timelessly regulates SAE level 5 of

⁶⁴ § 2 Sec. 2 Subsec. v of the Road Traffic Act No. 8/2009 Coll. [Zákon č. 8/2009 Z. z. o cestnej premávke]

⁶⁵ § 2 Sec. 2 Subsec. ae of the Act No. 106/2018 Coll. on the Operation of Vehicles in Road Traffic. [Zákon č. 106/2018 Z. z. o prevádzke vozidiel v cestnej premávke]

⁶⁶ § 3 Sec. 4 of the Road Traffic Act No. 8/2009 Coll. [Zákon č. 8/2009 Z. z. o cestnej premávke]

⁶⁷ See *Computers on Wheels: Vehicles and Cybersecurity Risks in Europe*. [online]. [s.l.] Carnegie Europe. 24.03.2022. [last accessed 2023-09-09] Available at: <https://carnegieeurope.eu/2022/03/24/computers-on-wheels-automated-vehicles-and-cybersecurity-risks-in-europe-pub-86678>; *Cars Are Just Software Now*. [online]. [s.l.] Wired, 20.10.2022. [last accessed 2023-09-09]. Available at: <https://www.wired.com/story/gadget-lab-podcast-571/>

⁶⁸ See Para. 7.2.2.1 of UN Regulation No. 155 Uniform provisions concerning the approval of vehicles with regards to cybersecurity and cybersecurity management system.

autonomous driving, even though there are no autonomous vehicles on the horizon that reach this level of performance. This may seem like redundant regulation, but Germany is setting the initial legislation for automated and later autonomous mobility in advance. Automated driving systems are now slowly becoming available. There is need to start thinking carefully about how to regulate these technologies without harming neither the potential of new technologies nor society at the same time. There is a need to consider that highly and fully automated vehicles raise entirely different set of regulatory challenges, which should be treated differently.

The proper technical requirements, consistent market surveillance and rigorous analysis of the driver's role in automated vehicles are the fundamental pillars of automated mobility. The technical specifications determine the construction and necessary capabilities of the automated vehicle. Compliance with the technical requirements is monitored by a market surveillance authority. Legal regulation should prevent information asymmetry through asymmetry management to eliminate unfair competition and protect the consumers. This paper discusses, among others, the possible prohibition of market access to the use of the product (automated vehicle) within the European Union's Single Market. Although the definition of the role of the driver's role in automated vehicles is consistent, it does not reflect the needs of today's vehicles alone. The driver's role in automated vehicles needs adjustment.

Bibliography

1. ANDRAŠKO, J. et al. *Právne a technické aspekty kybernetickej bezpečnosti automatizovaných vozidiel*. Bratislava: Wolters Kluwer SR s.r.o., 2022. 160 p. ISBN 978-80-571-0554-1.
2. Act No. 106/2018 Coll. on the Operation of Vehicles in Road Traffic. [Zákon č. 106/2018 Z. z. o prevádzke vozidiel v cestnej premávke]
3. Act No. 575/2001 Coll. on the Organisation of Government Activities and the Organisation of the Central State Administration. [Zákon č. 575/2001 Z. z. o organizácii činnosti vlády a organizácii ústrednej štátnej správy]
4. Act No.429/2022 Coll. amending and supplementing certain laws relating to the development of automated vehicles. [Zákon č. 429/222 Z. z. ktorým sa menia a dopĺňajú niektoré zákony v súvislosti s rozvojom automatizovaných vozidiel]

5. Autonomous Driving Act. BGBl. I p. 986. [Verordnung zur Genehmigung und zum Betrieb von Kraftfahrzeugen mit autonomer Fahrfunktion in festgelegten Betriebsbereichen]
6. Basic Law for the Federal Republic of Germany. BGBl. I p. 2478. [Grundgesetz für die Bundesrepublik Deutschland]
7. CARIAD launches application store for the Volkswagen Group. [online]
8. Cars Are Just Software Now. [online]
9. Commission Implementing Regulation (EU) 2022/1426 of 5 August 2022 laying down rules for the application of Regulation (EU) 2019/2144 of the European Parliament and of the Council as regards uniform procedures and technical specifications for the type-approval of the automated driving system (ADS).
10. Computers on Wheels: Vehicles and Cybersecurity Risks in Europe. [online]
11. CRAIG, P., DE BURCA, G. *EU Law. Text, Cases, and Materials*. 7th Edition. Oxford: Oxford University Press, 2020, 1344 p. ISBN: 9780198856641.
12. Destatis: Verkehrsunfälle 2021, Fachserie 8, Reihe 7, 364 p. ZDB-ID 2168808-4.
13. Directive 2005/29/EC of the European Parliament and of the Council of 11 May 2005 concerning unfair business-to-consumer commercial practices in the internal market and amending Council Directive 84/450/EEC, Directives 97/7/EC, 98/27/EC and 2002/65/EC of the European Parliament and of the Council and Regulation (EC) No 2006/2004 of the European Parliament and of the Council (Unfair Commercial Practices Directive).
14. Directive (EU) 2022/2555 of the European Parliament and of the Council of 14 December 2022 on measures for a high common level of cybersecurity across the Union (NIS 2).
15. Erprobungsgenehmigung. [online]
16. Ethik-Kommission: Automatisiertes und Vernetztes Fahren. [online]
17. Explanatory memorandum to Act No.429/2022 Coll. amending and supplementing certain laws relating to the development of automated vehicles. [online]
18. Geneva Convention on Road Traffic.
19. Judgment of the Court of Justice of the European Union C-8/74 *Procureur du Roi v Benoît and Gustave Dassonville* from 11 July 1974.
20. Judgment of the Court of Justice of the European Union C-120/78 *Rewe-Zentral AG v Bundesmonopolverwaltung für Branntwein* from 20 February 1979.
21. Judgement of the Court of Justice of the European Union C-110/05 *Commission v Italy* from 10 February 2009.
22. Judgement of the Court of Justice of the European Union C-142/05 *Åklagaren v Percy Mickelsson a Joakim Roos* from 4 June 2009.
23. ISO: 26262 - Road vehicles – Functional safety.

24. KEBLER, W. Digital markets, data, and privacy: competition law, consumer law and data protection. In: *Journal of Intellectual Property Law & Practise*. November 2016, Volume 11, Issue 11, p. 856-866.
25. LINDEN, M. Mercedes verkauft Auto-Upgrades per Fingerabdruck. [online]
26. *Marktüberwachung*. [online]
27. Official Journal of the European Union L 245 from 14.09.2013, Volume 56. 32 p. ISSN 1977-0677.
28. OPPERMANN, B. H. et al. *Autonomes Fahren*. München: C. H. Beck, 2020. 501 p. 2. Auf. ISBN 978-3-406-73285-0.
29. Prezídium Policajného zboru, odbor dopravnej polície: Vyhodnotenie dopravno-bezpečnostnej situácie za 12 mesiacov 2021 (definitívne štatistické údaje). [online]
30. Proposal for a Regulation of the European Parliament and of the Council on horizontal cybersecurity requirements for products with digital elements and amending Regulation (EU) 2019/1020 from 15.09.2022.
31. Regulation (EU) 2018/858 of the European Parliament and of the Council of 30 May 2018 on the approval and market surveillance of motor vehicles and their trailers, and of systems, components and separate technical units intended for such vehicles.
32. Regulation (EU) 2019/1020 of the European Parliament and of the Council of 20 June 2019 on market surveillance and compliance of products.
33. Regulation (EU) 2019/2144 of the European Parliament and of the Council of 27 November 2019 on type-approval requirements for motor vehicles and their trailers, and systems, components and separate technical units intended for such vehicles, as regards their general safety and the protection of vehicle occupants and vulnerable road users (General Safety Regulation).
34. Road Traffic Act. BGBl. I p. 310, 919. [Straßenverkehrsgesetz]
35. Road Traffic Act No. 8/2009 Coll. [Zákon č. 8/2009 Z. z. o cestnej premávke]
36. Road Traffic Licensing Act. BGBl. I p. 679. [Straßenverkehrs-Zulassungs-Ordnung]
37. SAE J3016.
38. SCHWAB, K. The Fourth Industrial Revolution: what it means, how to respond. [online]
39. The 1998 Parallel Agreement.
40. Treaty on Functioning of the European Union.
41. UN Regulation No. 155 Uniform provisions concerning the approval of vehicles with regards to cybersecurity and cybersecurity management system.
42. Vienna Convention on Road Traffic.
43. VW-Konzern entwickelt App store. [online]