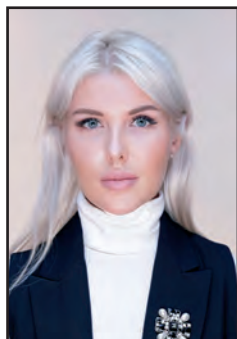




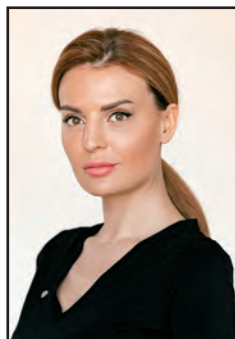
Problem Issues of Legal Regulation of the Operation of Cars with an Automated Driving System



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ABSTRACT

In the context of a fundamental change in the fundamental approaches to building a traffic management system, traditionally based on establishing the driver's duty to ensure constant control over the traffic situation and, accordingly, presuming his responsibility for harm caused by a source of increased danger, the problem of legal regulation of the use of highly automated vehicles equipped with an automated driving system that does not provide for participation of the driver in the dynamic control of the car becomes not only relevant in theoretical, but also especially significant from practical aspects.

The objective of the comprehensive study being conducted by the authors was to identify and visualise key groups of problems of legal regulation of the operation of cars with an automated driving system, to formulate proposals for their solution as part of a subsequent systemic legal study. This article is devoted to the results of consideration of the first block of the identified issues.

Using the methods of the system-legal approach, formal-logical and formal-dogmatic analysis, the authors have identified the most problematic issues of legalising the terminology used in positive law and scientific sources. In particular, options for identifying the essential features of highly automated cars are proposed with the purpose to further legislatively determine the cars

that should be classified as highly automated, to reveal which software and hardware complex can be considered an automated driving system, etc.

Based on the results of solving the scientific problem, which consists in determining the directions for adapting the legislation governing the requirements for safety of vehicles and the procedure for their admission to operation for the needs of the widespread introduction of highly automated vehicles, the research can be carried out in two directions at the same time: to develop upper-level, essential requirements to safety and to develop specific, purely technical requirements for automated driving systems, as well as to develop a methodology for testing them.

As a part of the taxonomic analysis carried out by the authors to determine, on a fundamentally new basis, the range of rights and obligations of the participants in the relations under the study, it is proposed to highlight the problem of distinguishing between situations in which the driver needs to take an active part in driving a car from situations in which he is not required to be actively involved into this process.

When considering issues of liability for harm caused by a car with an automated driving system, the article focuses on the need to solve the problem of balancing the responsibility of the car owner and the manufacturer, which can be facilitated by the application of methods of comparative legal analysis.

Keywords: unmanned vehicle, driverless car, highly automated vehicle, legal support, driver assistance system, automated driving system, automated driving, autonomous driving.

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INTRODUCTION

Self-driving technologies are becoming more widespread in the world and gaining a stronger regulatory basis. In foreign legal systems, there is an active transition from the stage of experimental regulation («regulatory sandboxes») to the stage of limited introduction of universal regulation.

So, from July 6, 2022, Regulation (EU) of the European Parliament and of the Council 2019/2144 on vehicle safety requirements¹ came into force in the European Union, which, among other things, puts forward basic safety requirements for highly automated and fully automated vehicles (Article 11). On August 1, 2022, the Shenzhen Special Economic Zone (China) Regulation on Smart and Connected Vehicles also came into effect, introducing permanent regulation for highly automated vehicles with a driver behind the wheel, and also allowing the use of fully automated vehicles in specially designated areas². On March 11, 2022, the US National Highway Traffic Safety Administration revised the requirement of the Federal Motor Vehicle Safety Standards for the mandatory presence of a steering wheel in a car, thus removing a key regulatory obstacle to the introduction of fully autonomous vehicles³.

The Russian system of legal regulation of cars equipped with automated driving systems is still in the experimental stage. The key regulatory act regulating the testing of highly automated vehicles is Decree of the Government of the Russian Federation of March 9, 2022, No. 309 «On the establishment of an experimental legal regime in the field of digital innovations and the approval of the Program for the experimental legal regime in the field of digital innovations for the operation of highly automated vehicles».

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 general safety and the protection of vehicle occupants and vulnerable road users. [Electronic resource]: <https://eur-lex.europa.eu/legal-content/EN/LSU/?uri=CELEX%3A32019R2144>. Last accessed 10.08.2022.

² Shenzhen unveils China's first regulation on intelligent connected vehicles. [Electronic resource]: <https://www.globaltimes.cn/page/202207/1269924.shtml>. Last accessed 10.08.2022.

³ The Deputy Administrator of the National Highway Traffic Safety Administration, Steven S. Cliff. [Electronic resource]: <https://www.nhtsa.gov/sites/nhtsa.gov/files/2022-03/Final-Rule-Occupant-Protection-Amendment-Automated-Vehicles.pdf>. Last accessed 10.08.2022.

In accordance with the said resolution, an experimental legal regime for the operation of highly automated vehicles was established on the territory of Moscow, Innopolis and the federal territory «Sirius», within the framework of which the limited operation of highly automated and fully automated vehicles is allowed.

It should be noted that the transition from experimental to universal regulation requires the solution of a number of new problems of a legal nature, the solution of which is impossible without theoretical understanding. The central topics of Russian legal research published to date include the problems of ensuring the safety of vehicle operation [1–3] and the problem of liability for harm caused by a highly automated car [4–6].

Attention to the legal regulation of the use of highly automated vehicles increased significantly during the period of the spread of coronavirus infection, since the use of unmanned vehicles made it possible to minimize the so-called «cross-contamination», ensured the delivery of medicines, food, and other things to areas with a high level of risk of infection [7–9].

At the same time, in the domestic literature, with rare exceptions, there is no systematic description of the legal problems that arise in connection with the use of cars with an automated driving system [10]. In general, in a certain sense, we are talking about the development of a legislative novelty, which, however, in relation to other problems of legal regulation of transport, was also characteristic of other stages in the development of transport education and science [11–13].

In this regard, the authors aim to give an overview of the key problems facing the legislator on the way to the formation of a full-fledged legal regulation of the use of cars with an automated driving system.

RESULTS

Problem Issues of Legalisation of Concepts and Terminology

One of the most basic problems in the field of legal regulation of cars equipped with an automated driving system is the problem of terminology. The problem of defining key concepts in any scientific field is the initial problem for starting research [14, p. 189]. Thus, there is no consensus in the scientific literature regarding the preferred terminology that should be used for both all cars equipped with an

automated driving system, and for cars whose automated driving system allows driving in the absence of a driver in the cabin.

At present, neither the legislation nor the scientific literature has developed a unified understanding of which software and hardware systems should be considered automated driving systems, and which should be attributed only to driver assistance systems⁴. This distinction has great practical meaning. For example, there is growing concern among manufacturers of highly automated vehicles that consumers and regulators often overestimate the capabilities of advanced driver assistance systems and mistake them for full-fledged automated control systems⁵. In addition, the resolution of this issue will also have important regulatory implications for establishing differentiated requirements for drivers, the process of assessing the technical conformity of highly automated vehicles, as well as setting the standard for driver liability.

Problems of Admission to Operation of Cars with an Automated Driving System

A significant layer of problems at the intersection of technology and law arises in connection with the need to revise existing approaches to the procedure for allowing highly automated vehicles to operate and assessing their safety. Thus, in comparison with the use of cars not equipped with an automated driving system, the use of highly automated cars carries a greater number of potential risks associated with operation of an automated driving system, which in the current conditions begins to perform the widest range of dynamic driving tasks. In this regard, the variety of test scenarios increases significantly, which require verification as part of the vehicle conformity assessment procedure and, in particular, testing of test samples⁶. At the same time, the traditional issues of admission to driving a car, medical examination [15, pp. 103–105;

16, p. 284], assessments of professionally important qualities [17] and the psychological readiness of drivers for the profession remain on the agenda [18].

It seems that the identified problem requires a comprehensive review of the current procedures for assessing the conformity of vehicles with the mandatory requirements of technical regulations, as well as the requirements themselves contained in technical regulations. Regulatory work in this direction can be based on at least two vectors.

On the one hand, essential requirements for safety of vehicles with an automated driving system can be developed and systematized. These requirements, in particular, include the requirements for the ability of an automated driving system to signal the exit from its normal operation environment or other circumstances indicating the need for the driver to take control of the car, the availability of systems for monitoring and recording road events and driver activity, and others, systems for visualizing the perception of the road situation by a hardware complex of an automated driving system in real time.

On the other hand, in parallel with this, work should be carried out to develop specific, purely technical requirements for automated driving systems, as well as to develop a methodology for testing them. This work may include, among other things, the systematization of test scenarios for the use of vehicles with an automated driving system, the establishment of requirements for simulation testing procedures, testing on the track and on public roads.

Problems of Determining the Range of Rights and Obligations of Road Users

The increasing automation of driving functions raises the question of the need to revise the range of rights and obligations of road users, which involves cars with an automated driving system. The most problematic is the question of the extent to which the driver of a car should maintain control over the traffic situation along the entire route of a car equipped with an automated driving system, depending on the degree of autonomy of such a car.

So, it can be noted that the ultimate goal of creating unmanned technologies for unmanned driving is to delegate the functions of active driving from a person to a software and hardware complex, that is, in other words, to automate the driver's function. At the same time, at the current

⁴ Clarification of the boundaries between ADAS and ADS. [Electronic resource]: <https://unece.org/sites/default/files/2022-01/GRVA-12-17e.pdf>. Last accessed 11.08.2022.

⁵ AAI seeks to reduce 'persistent confusion' over levels of vehicle autonomy. [Electronic resource]: <https://www.repairedrivenews.com/2022/03/23/aai-seeks-to-reduce-persistent-confusion-over-levels-of-vehicle-autonomy/>. Last accessed 11.08.2022.

⁶ New Assessment/Test Method for Automated Driving (NATM) Guidelines for Validating Automated Driving System (ADS) – amendments to ECE/TRANS/WP.29/2022/58, pp. 1–2. [Electronic resource]: <https://unece.org/sites/default/files/2022-05/WP.29-187-08e.pdf>. Last accessed 19.08.2022.



stage of their development, highly automated vehicles may not provide the necessary level of safety guarantees, in which the driver may be allowed at the regulatory level to be distracted from traffic control in cases where he is under the control of an automated driving system within the environment of its normal operation.

However, increasing the safety level of highly automated vehicles and improving automated driving systems brings closer the need for a regulatory distinction between situations in which the driver needs to take an active part in driving a car from situations in which he is not required to actively participate in this process⁷.

Problems of Liability for Harm Caused by Cars with an Automated Driving System

As noted by domestic and foreign researchers, one of the most significant challenges for legislators and law enforcers in matters of tort liability for causing harm by highly automated cars is a significant shift in control over the risks of causing harm in the direction of the manufacturer of such a car⁸. Thus, with the development of unmanned driving technologies, the role of causality associated with failures in the software and hardware complex of an automated driving system increases, while the role of the human factor of a car driver decreases. In this regard, the problems of finding a fair and effective balance of responsibility between the car owner and the manufacturer are more acute, which will require a decision on the part of the legislator and law enforcers with the appearance of cases of harm caused by highly automated cars.

The authors believe that the solution to the problem of establishing the degree of responsibility of the owner of the car and the manufacturer for causing harm by highly automated vehicles, as well as the grounds for bringing the participants of the legal relations arising in this case to this liability, is in the plane of searching for possible options for combining public law measures (primarily, – administrative) and private law (civil

law) liability. At the same time, the issue of a clear and unambiguous establishment by the norms of legislation of the legal status of all categories of entities participating in the processes associated with the use of cars with an automated driving system is of particular importance.

CONCLUSIONS

Within the framework of this article, the authors identified key groups of problems of legal support for the use of cars with an automated driving system, and also formulated directions for their solution.

1. With regard to the problems of terminology, the most acute problem is the problem of determining which cars should be classified as highly automated. In turn, this problem stems from the problem of determining which software and hardware complex can be considered an automated driving system.

2. The authors note that for widespread introduction of highly automated vehicles, work is also needed to adapt the legislation governing the safety requirements for vehicles and the procedure for their admission to operation. This work can be carried out in two directions at the same time: on development of fundamental, essential safety requirements and on development of point, purely technical requirements for automated driving systems, as well as on development of a methodology for testing them.

3. As part of the analysis of the problem of redefining the range of rights and obligations of participants, the authors highlight the problem of distinguishing between situations in which the driver needs to take an active part in driving a car from situations in which he is not required to be actively involved in this process.

4. In turn, when considering the issues of liability for harm caused by a car with an automated driving system, the article focuses on the need to solve the problem of balancing the responsibility of the car owner and the manufacturer.

As stated, within the framework of this article, the problems of legal regulation of the use of cars with an automated driving system are identified and systematized. Naturally, the conclusions made by the authors, offered to the interested reader, are not absolute, complete, final, however, they can become a basis for a scientific discussion. More detailed, scientifically substantiated and practically substantiated conclusions, expressing the position of the authors on the problem raised in this article,

⁷ Law Commission, Scottish Law Commission. Automated vehicles: joint report. Law Commission Report No. 404. Scottish Law Commission Report No. 258, 26 January 2022, P. 36. [Electronic resource]: <https://www.scotlawcom.gov.uk/law-reform/law-reform-projects/joint-projects/automated-vehicles/>. Last accessed 11.08.2022.

⁸ Expert Group on Liability and New Technologies. Liability for Artificial Intelligence and Other Emerging Digital Technologies. European Union, 2019, P. 35. [Electronic resource]: <https://op.europa.eu/en/publication-detail/-/publication/1c5e30be-1197-11ea-8c1f-01aa75ed71a1/language-en>. Last accessed 11.08.2022.

will be presented in subsequent publications based on the results of currently ongoing research.

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