Law Commission
Reforming the law

Remote Driving

Issues Paper

24 June 2022

THE LAW COMMISSION – RESPONDING TO THIS ISSUES PAPER

Topic of this issues paper: The Law Commission of England and Wales is considering the law surrounding remote driving, where a person outside a vehicle uses wireless connectivity to control a vehicle on a public road. The Centre for Connected and Autonomous Vehicles (CCAV) and International Vehicle Standards of the Department for Transport have asked us to clarify the current legal status of remote driving and consider whether reforms are needed.

This issues paper presents both short-term options to address problems with existing law as applied to remote driving (which do not need primary legislation) and longer-term options for reform that would require primary legislation.

Duration of the response period:

We invite responses from 24 June 2022 to 2 September 2022.

Comments may be sent:

Using an online form at:

https://consult.justice.gov.uk/law-commission/remote-driving

We have also produced a questionnaire in word format available on request. We are happy to accept comments in other formats. Please send your response:

By email to	remotedriving@lawcommission.gov.uk
OR	
By post to	Remote Driving Team, Law Commission, 1st Floor, Tower, 52 Queen Anne's Gate, London, SW1H 9AG.

If you send your comments by post, it would be helpful if, whenever possible, you could also send them by email.

Availability of materials: We are committed to providing accessible publications. If you require this issues paper to be made available in a different format please email remotedriving@lawcommission.gov.uk or call 020 3334 0200.

After the response period: The responses to this issues paper will inform the next stages of this project. We aim to produce advice to UK government with options for reform in the first quarter of 2023.

Consultation Principles: The Law Commission follows the Consultation Principles set out by the Cabinet Office. The Principles are available on the Cabinet Office website at: https://www.gov.uk/government/publications/consultation-principles-guidance.

Information provided to the Law Commission: We aim to be transparent in our decision-making, and to explain the basis on which we have reached conclusions. This means that

we may publish or disclose information you provide, including personal information. For example, we may publish an extract of your response in the Law Commission's publications, or publish the response itself. Additionally, we may be required to disclose the information in accordance with the Freedom of Information Act 2000. We will process your personal data in accordance with the UK General Data Protection Regulation.

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About the Law Commission: The Law Commission was set up by the Law Commissions Act 1965 for the purpose of promoting reform of the law.

The Law Commissioners are: The Right Honourable Lord Justice Green, *Chair*, Professor Sarah Green, Professor Nick Hopkins, Professor Penney Lewis and Nicholas Paines QC. The Chief Executive is Phil Golding.

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GLOSSARY

Automated Driving System (ADS): A term used in the SAE Taxonomy to describe a vehicle system that uses both hardware and software to perform the entire dynamic driving task on a sustained basis.

Automated and Electric Vehicles Act 2018: An Act designed to facilitate the payment of compensation to persons injured by automated vehicles. The Act establishes a listing procedure for automated vehicles and requires that each listed vehicle carry insurance. Section 2(1) requires the insurer to pay compensation for any damage caused by an automated vehicle driving itself.

Automated vehicles: A general term used to describe vehicles which can drive themselves without being controlled or monitored by an individual for at least part of a journey.

Automated Vehicles report: The report published by the Law Commission of England and Wales and the Scottish Law Commission in January 2022, which recommended new laws for the safe and responsible introduction of automated vehicles onto roads in Great Britain. It is available at: https://www.lawcom.gov.uk/project/automated-vehicles/.

Construction and use regulations: regulations made under section 41 of the Road Traffic Act 1988 and its predecessors to regulate the construction, weight, equipment and use of vehicles. Currently, the main regulations are the Road Vehicles (Construction and Use) Regulations 1986 as amended.

Consultation Paper 1 (CP1): The first consultation paper in the joint review of automated vehicles by the Law Commission and Scottish Law Commission. It was published in November 2018 and is available at: https://www.lawcom.gov.uk/project/automated-vehicles/.

Consultation Paper 2 (CP2): The second consultation paper in the joint review of automated vehicles by the Law Commission and Scottish Law Commission. It was published in October 2019 and is available at: https://www.lawcom.gov.uk/project/automated-vehicles/.

Consultation Paper 3 (CP3): The third consultation paper in the joint review of automated vehicles by the Law Commission and Scottish Law Commission. It was published in December 2020 and is available at: https://www.lawcom.gov.uk/project/automated-vehicles/.

Dynamic driving task (DDT): A term used in the SAE Taxonomy to describe the real-time operational and tactical functions required to operate a vehicle in on-road traffic. It includes steering, accelerating and braking, together with “object and event detection and response” (OEDR). In turn, OEDR includes detecting, recognising and classifying objects and events, and executing an appropriate response.

Entity for Remote Driving Operation (ERDO): A new term proposed in Chapter 10 to describe a licensed organisation that employs remote drivers and is subject to a range of statutory duties.

HF-IRADS: The position paper submitted by the Human Factors in International Regulations for Automated Driving Systems group to the Global Forum for Road Traffic Safety on 18 September 2020.

Lateral control: Control of a vehicle's side-to-side or sideways movement. The SAE Taxonomy refers to this as "lateral vehicle motion control" and explains that the term includes detecting a vehicle's position in relation to lane boundaries and applying both steering controls and "differential braking inputs" to keep the correct position in lane. See SAE Taxonomy, paragraph 3.14.

Longitudinal control: Control of a vehicle's movement along its longitudinal axis (the axis running along the length of a vehicle through its centre of gravity). This includes applying and removing the brakes, accelerating and reversing. The SAE Taxonomy refers to longitudinal control as "longitudinal vehicle motion control".

Minimal risk condition: A term used in the SAE Taxonomy to describe a stable, stopped condition to which a user or an ADS may bring a vehicle to reduce the risk of a collision when a given trip cannot or should not be continued.

No user-in-charge (NUIC) vehicle: A new category of vehicle recommended in the Law Commissions' Automated Vehicles report. It refers to a vehicle equipped with one or more ADS features designed to perform the entire dynamic driving task without a user-in-charge (that is, without requiring a fit and qualified person to be in the vehicle).

Operational design domain (ODD): A term used in the SAE Taxonomy to describe the domain within which an automated driving system can drive itself. It may be limited by geography, time, type of road, weather or by other criteria.

Remote assistant: A person who performs remote assistance in relation to an automated vehicle in self-driving mode. Remote assistants do not control vehicles directly. Instead they provide information and advice to an ADS. The ADS uses that information to make its own decisions about the safe path ahead and performs the entire DDT.

Remote driver: An individual who performs all or any one of the following tasks: steering, braking, removing a brake or accelerating. An individual is also a remote driver if they monitor the driving environment because it is safety critical to do so, with a view to responding to objects or events by braking, steering or accelerating when necessary.

Remote operations centre: A building or facility which oversees, assists and/or drives vehicles using remote technology.

SAE Taxonomy: Definitions produced by the Society of Automotive Engineers International, a global association of engineers and technical experts in the aerospace, automotive and commercial-vehicle industries. Its sets out six levels of driving automation. The full reference is J3016 Taxonomy and Definitions for Terms Related to Driving Automation Systems for On-Road Motor Vehicles. It was first published in 2014 and last revised, in collaboration with the International Standards Organisation (ISO), in April 2021.

Safety driver: A person who is employed to test drive vehicles equipped with driving automation technologies.

Small series type approval: A vehicle approval scheme with technical and administrative requirements commensurate with smaller production runs. The UK's approval authority for small series type approvals is the Vehicle Certification Agency (VCA).

Special Types General Order (STGO): The Road Vehicles (Authorisation of Special Types) (General) Order 2003, made under section 44 of the Road Traffic Act 1988, which provides for "special types" of motor vehicles and trailers to be exempt from construction and use requirements. The exemptions apply to vehicles which fall within the General Order without the need for an individual application.

Type approval: Confirmation that production samples of a type of vehicle, vehicle system, component or separate technical unit meet specified requirements. The process involves the testing of production samples and the evaluation of the measures in place to ensure conformity of production. Once type approval is given by an approval authority it allows the manufacturer to produce the vehicle type in an unlimited series, provided that vehicles continue to meet the specified requirements.

United Nations Economic Commission for Europe (UNECE): An organisation established in 1947 to promote economic cooperation and integration among its member states. The UNECE provides a multinational platform for policy dialogue, negotiation of international legal instruments and development of regulations and norms.

User-in-charge: An individual who is in an automated vehicle and in position to operate the driving controls while a self-driving ADS feature is engaged. A user-in-charge must be in the vehicle and cannot be a remote assistant. Unlike a remote driver, a user-in-charge is not responsible for the dynamic driving task. However, a user-in-charge must be qualified and fit to drive as they may be called on to take over driving. See Automated Vehicles (2022) Law Com No 404; Scot Law Com No 258, Chapter 8.

Vehicle Special Order (VSO): An order made on a case-by-case basis under section 44 of the Road Traffic Act 1988 to exempt individual vehicles or fleets from construction and use requirements created under section 41 of the Act, if the applicant can show that they reach a comparable level of safety. VSOs also allow the Secretary of State to impose conditions upon how vehicles are used.

Chapter 1: Introduction

1.1 The Law Commission of England and Wales is considering the law surrounding remote driving, where a person outside a vehicle uses wireless connectivity to control a vehicle on a public road. The Centre for Connected and Autonomous Vehicles (CCAV)[1] and International Vehicle Standards of the Department for Transport have asked us to clarify the current legal status of remote driving and consider whether reforms are needed.

1.2 The legal framework for driving was designed on the assumption that a human driver would be in the vehicle.[2] Remote driving raises new challenges. In this paper we seek views on whether the current law causes problems in practice and on options for reform. In the light of the responses received, we aim to publish advice to Government early in 2023, setting out possible reforms.

1.3 Remote driving technology is available on the market today, and the need for reform may be urgent. We are therefore working to a shorter time frame than is usual for Law Commission projects. We present both short-term options (which do not need primary legislation) and longer-term options for introducing a new regulatory framework.

1.4 We seek responses to the questions asked in this paper by **2 September 2022**.[3] Although we are happy to receive responses in any form, stakeholders may find it most convenient to use the online response portal at https://consult.justice.gov.uk/law-commission/remote-driving.

1.5 A glossary of the terminology used in this paper is at page vii.

AUTOMATED VEHICLES PROJECT

1.6 This project follows on from the Law Commission's report with the Scottish Law Commission on Automated Vehicles, published in January 2022. The report recommended new laws for the safe and responsible introduction of automated vehicles on GB roads.

1.7 Remote driving is not the same as automated driving and has its own unique challenges. However, some of the issues are similar. Therefore, in this paper we draw on the Automated Vehicles report and the three consultation papers which preceded it. For further information on our previous work, please see https://www.lawcom.gov.uk/project/automated-vehicles/.

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1 CCAV is an expert unit set up by the UK Department for Transport and Department for Business, Energy and Industrial Strategy, reporting to the Secretary of State for Transport.

2 There is a rare exception in the case of "pedestrian-controlled vehicles", which are sometimes used for road maintenance and are discussed at para 2.33.

3 We are aware that this is a relatively short deadline. If it causes particular problems, respondents should contact us at automatedvehicles@lawcommission.gov.uk for a possible extension.

HOW IS REMOTE DRIVING CURRENTLY BEING USED?

1.8 There are three main reasons why a vehicle operator may wish the driver to be outside a vehicle rather than in it:

(1) *To deal with hazardous or uncomfortable surroundings*. Remote driving is most advanced in off-road settings, such as mines or quarries, where the driver is kept at a distance from heavy machinery primarily for safety.

(2) *To overcome logistical difficulties in moving the driver from one vehicle to another*. There is, for example, considerable interest in using remote drivers to deliver rental cars.

(3) *As an adjunct to automated vehicles*. A remote driver may, for example, be used as a safety driver for vehicles that do not have driving seats. Remote drivers may also intervene if an automated vehicle encounters a situation it cannot handle. As we discuss in Chapter 2, in these cases the remote driver may perform some (but not all) of the dynamic driving task.

1.9 Remote driving is now common in off-road environments and is increasingly being trialled for on-road use.[4] Below we give some examples of how remote driving is being used. As the examples make clear, the way that remote driving is used varies widely, depending on the operating environment, the speed of travel and the purpose of the vehicle (such as whether it carries goods or passengers).[5]

Off-road vehicles

1.10 In the UK, there is growing use of remote driving in respect of off-road vehicles, particularly in farming. Off-road vehicles operate on private land, often in high-risk environments, and perform specialist commercial functions such as crop fertilisation or verge mowing. Examples include the McConnel remote control mowers[6] and the Hands Free Farm project.[7]

1.11 In other countries, remote driving has successfully been deployed in the mining industry, particularly in Australia and South America.[8] In the US, logistics companies have invested in thousands of remotely driven forklift trucks to overcome labour shortages.[9] There are also trials of the use of remote driving to improve efficiency and safety in dockyards. One example seeks to optimise the loading and unloading of

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4 We would like to thank Zeina Nazer, Doctoral Researcher at University of Southampton, for her insights on how teleoperation is developing in the UK.

5 J McNicol and BSI, *Standardizing Remote Operation of Vehicles*, BSI (forthcoming), para 2.1, https://www.bsigroup.com/en-GB/CAV/cav-resources/. The report is due to be published in July 2022.

6 https://www.mcconnel.com/.

7 https://www.handsfree.farm/.

8 https://www.mining-technology.com/features/could-covid-19-spark-an-autonomous-revolution-in-mining/; https://www.australianmining.com.au/features/remote-control-mining-in-a-time-of-need/; https://www.teleo.ai/.

9 https://www.reuters.com/technology/with-us-labor-scarce-logistics-firms-turn-remote-forklifts-2022-01-19/.

heavy goods vehicles (HGVs) using a remotely controlled mobile harbour crane and yard tractor.[10]

Road maintenance

1.12 Remote driving has also been used for road construction and maintenance, including road rolling. For example, the Robomag tandem roller can be automated in a defined work area or operated manually by remote control.[11]

1.13 In this project, we are not directly concerned with either off-road or road maintenance use. However, the learning and development of remote driving in these environments is likely to contribute to informing and increasing understanding of vehicles using remote driving to complete journeys or deliver goods on public roads.

Vehicle hire

1.14 In Consultation Paper 2 of the Automated Vehicles project we drew attention to the potential for greater use of car clubs and car rental to reduce dependency on car ownership. This could free up the space currently used for parking, match car size to the journey and lead to better choices between private cars and public transport.[12]

1.15 One problem, however, is the difficulty of bringing the vehicle to where it is needed. We noted that this was a particular problem with using shared cars for commuting: once a car club car has been driven to the town centre it is no longer available to people in the suburbs.[13] Increasingly, rental companies are employing drivers to bring the car to the customer. However, this is expensive, as the delivery driver then has to return to base.

1.16 Trials are taking place to overcome this issue. The idea is that a user can summon an empty vehicle through a mobile application, which is delivered by a remote driver. The customer then drives the car normally to their destination. When they have finished using it, a remote driver takes over and drives the car back to base or to the next user.

1.17 This service is being trialled by Imperium Drive's Fetch in Milton Keynes.[14] There are currently safety drivers within the vehicles, but the hope is to remove them by the end of 2022. The same use case has also been trialled in Berlin.[15]

Trialling automated vehicles

1.18 Most automated vehicle trials rely on a safety driver in the vehicle. However, passengers, customers and other road users may act differently when they see a

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10 https://www.5gblueprint.eu/.

11 https://www.bomag.com/ww-en/press/news-videos/future-study-fully-autonomous-tandem-roller/.

12 Automated Vehicles: Consultation Paper 2 on Passenger Services and Public Transport (2019) Law Commission Consultation Paper No 245; Scottish Law Commission Discussion Paper No 169 (CP2), paras 2.31 to 2.86.

13 Above, para 2.60.

14 https://uk5g.org/connect/the-organisations/imperium-drive/. Trilvee is another company offering the same service: https://www.trilvee.com/.

15 https://vay.io/.

human in the driving seat. As trials become more advanced, there is increasing interest in using remote safety drivers. In the short term, this can provide a more realistic demonstration of how vehicles will operate without driving seats. In the longer term, remote drivers will be on hand to intervene when needed.

1.19 There are many trials of passenger shuttles without driving seats.[16] For example, EasyMile's EZ10 has been authorised for deployment in Toulouse on a public road and in mixed traffic, without a human driver on board.[17] It can carry up to 12 people. DriveU.auto's remote supervision technology has been integrated into a fleet of EZ10 shuttles in France and will be installed into the entire EasyMile fleet.[18] Alon Podhurst, the CEO of DriveU.auto explained that:

> To get to market faster and increase public acceptance of driverless vehicles, AV companies are turning to teleoperations, where a remote driver can swoop in to pilot the vehicles in the event of an emergency, anomaly or safety incident.

1.20 There is currently a trial using remote driving to move goods in a car manufacturing setting. The trial is taking place in the Nissan Sunderland plant, using the 5G Connecting Automated Logistics (CAL) testbed.[19] The North East Automotive Alliance is working towards automating a 40-tonne HGV to distribute parts and assemblies across the plant. The automated truck will be capable of being remotely controlled if it encounters a situation which the automated features cannot manage.

1.21 The most widespread deployment of on-road vehicles using remote driving technology in the UK is of last-mile delivery pods. The pods deliver goods and groceries to consumers from a local store. For example, Starship started offering a delivery pod service in Milton Keynes in 2018, followed by Northampton in 2020.[20] The pods are small, lightweight, travel at low speeds and use pavements like pedestrians. The pods

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16 In the US, Designated Driver has commercially deployed shuttles in downtown Bryan, Texas: https://designateddriver.ai/2019/08/first-of-its-kind-safety-net-for-texas-am-self-driving-shuttles/; In the UK, the GATEway project invited the public to take part in a driverless pod shuttle service around Greenwich: https://trl.co.uk/projects/gateway-project/.

17 https://easymile.com/news/easymile-first-authorized-level-4-autonomous-driving-public-roads.

18 https://techcrunch.com/2022/01/04/driveu-auto-to-power-remote-piloting-of-easymiles-autonomous-shuttles-cocos-sidewalk-robots.

19 https://uk5g.org/discover/5G-projects/testbeds-and-trials/5g-cal/. Another example using the 5G CAL testbed is StreetDrone remotely driving its electric van (e-NV200) test mule around the site to measure the quality of the 5G connection: https://www.streetdrone.com/streetdrone-5gcal-testing-nissan-sunderland/. 5G is the fifth generation of wireless technology. It has greater capacity than previous generations. 5G is also more responsive, due to a reduction in latency (the time between instructing a wireless device to perform an action and that action being completed): https://www.ofcom.org.uk/phones-telecoms-and-internet/advice-for-consumers/advice/what-is-5g.

20 https://www.starship.xyz/company/; https://www.easthunsburyparishcouncil.gov.uk/uploads/starship-members-briefing-note.pdf.

are automated but are monitored by humans who can take control if a pod encounters an issue or obstacles in its path.[21]

1.22 Similarly, Oxbotica and AppliedEV have developed a low-speed, multi-purpose electric vehicle which can be deployed both off-road and on-road in a range of commercial settings.[22] The vehicle is nicknamed a "skateboard" for its flat body with four wheels to which custom builds can be added, depending on the deployment setting. The initial focus will be on off-road industrial logistics and on-road goods delivery. The aim is for the vehicle to be fully automated and to use remote driving during testing and trialling for safety purposes.

Automated driving does not necessarily involve remote driving

1.23 Not all developers plan to use remote driving in automated vehicle trials. Waymo and Mobileye have told us that they do not see a role for remote driving in the development of their automated driving technology. Mobileye observed that there are two main use cases for remote driving. The first is for remote drivers to act as safety drivers. In their view, it is safer to keep the safety driver in the vehicle. The second is the performance of low speed driving tasks, such as precision parking. However, Mobileye's self-driving technology is already designed to be capable of performing all such manoeuvres.

1.24 In a similar vein, Waymo urged the Law Commissions:

> to ensure that companies like Waymo that use remote assistance are not required to use remote driving, since the Level 4 ADS is responsible for the entire dynamic driving task rather than a human being.[23]

1.25 In this paper we seek to avoid making assumptions about remote driving. Instead we explore the role of regulation in maximising potential benefits while reducing the risks.

GEOGRAPHIC EXTENT

1.26 As the Law Commission for England and Wales, our remit is to recommend reforms to the law of England and Wales only. We are not concerned with Scots law. While many rules affecting remote driving are the same in both jurisdictions, there may be some differences. Under the Scotland Act 1998, the subject matter of the Road Traffic Act 1988 (along with regulations on road vehicle construction and use) is reserved to the Westminster Parliament.[24] It is therefore possible that if the UK Government were to

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21 https://www.starship.xyz/contact/faq/. The Co-op and Starship have confirmed plans to increase the total fleet to 500 pods, and launch in five further UK towns and cities: https://www.starship.xyz/press_releases/co-op-and-starship-technologies-to-expand-partnership-to-500-robots-across-five-new-towns-and-cities-to-cut-carbon-on-last-mile-deliveries/.

22 https://www.oxbotica.com/insight/oxbotica-and-appliedev-to-develop-fully-autonomous-multi-purpose-vehicle/.

23 See Waymo's response to the Law Commissions' CP3. Under "Level 4" of the SAE Taxonomy, an automated driving system conducts the entire dynamic driving task. While the ADS is engaged, the user does not need to supervise the feature or be receptive to a request to intervene. See *J3016 Taxonomy and Definitions for Terms Related to Driving Automation Systems for On-Road Motor Vehicles* (April 2021), para 5.5.

24 Scotland Act 1998, sch 5, head E1(d).

accept the reforms that we recommend for England and Wales, it may decide to apply the same or similar reforms to Scotland. Our hope is that the UK Government will do so in consultation with the Scottish Government.

1.27 For this reason, we are keen to receive responses from stakeholders in England, Wales and Scotland.

STRUCTURE OF THIS PAPER

1.28 The report is divided into 11 chapters:

(1) Chapter 1 is this introduction.

(2) Chapter 2 looks at the meaning of the phrase "remote driving". For the purposes of this project, we have defined a driver as an individual who exercises lateral or longitudinal control or who monitors the driving environment with a view to exercising such control. A "remote" driver is a driver outside the vehicle who use some form of wireless connectivity to control the vehicle. We seek views on these definitions.

Current law

1.29 Two chapters consider the current law on remote driving. We ask whether the current law is causing any difficulties in practice or presenting any obstacles to testing remote driving technology.

(3) Chapter 3 focuses on construction and use regulations and identifies four potentially problematic provisions.[25] It also considers exemptions to these provisions and asks how exemption procedures work in practice.

(4) Chapter 4 considers civil liability.

The case for reform

1.30 The next chapters look at the challenges associated with remote driving and the reasons why reform may be necessary.

(5) Chapter 5 sets out the main challenges associated with remote driving. These include connectivity, cybersecurity and situational awareness.

(6) Chapter 6 considers the possibility of remote driving from another jurisdiction and the accountability issues it raises. We ask if it should be prohibited.

(7) Chapter 7 summarises why legal reform may be needed. We identify three main problems with the current law. First, the uncertainties of the existing law may have a chilling effect, deterring some worthwhile projects. Second, the same uncertainties could be exploited to put unsafe systems on the road. Third, there is an accountability gap.

[25] Road Vehicles (Construction and Use) Regulations 1986 SI 1986 No 1078.

Regulating remote driving

(8) Chapter 8 looks at how other jurisdictions have regulated remote driving.

Options for reform

1.31 The final chapters summarise potential options for reform.

(9) Chapter 9 sets out options for short-term reform.

(10) Chapter 10 sets out options for longer-term reform.

(11) Finally, Chapter 11 lists all the questions we are asking in this paper.

Appendices

1.32 The paper has two appendices:

(1) Appendix 1 relates to Chapter 2. It sets out the definitions used in current literature on remote driving.

(2) Appendix 2 relates to Chapter 3. It considers the prohibition on hand-held devices under regulation 110 of the Road Vehicles (Construction and Use) Regulations 1986 in more detail.[26]

NEXT STEPS

1.33 Publication of this paper starts a two-month invitation for responses to be submitted ending on 2 September 2022. We propose to publish our advice to Government and an analysis of responses in early 2023.

[26] SI 1986 No 1078.

Chapter 2: What is "remote driving"

2.1 There is considerable debate over the meaning of the phrase "remote driving". Several recent reports have highlighted confusion in this area. As TRL put it, the terminology "remains largely undefined and companies across the industry apply terms inconsistently".[27]

2.2 Three documents have attempted to bring clarity to the terms used to describe remote driving. These are: the SAE Taxonomy, updated in April 2021; TRL's report, published in August 2021, and BSI's CAV Vocabulary, published in March 2022. In Appendix 1 we summarise these reports, together with the current law.

2.3 There remain significant differences in how terms are defined. The issue is particularly difficult where automation requires "assistance" from an individual, or where an individual carries out only part of the normal driving task. For example, driving automation may steer the vehicle, but a human driver may be required to monitor the driving environment and apply an emergency brake if a hazard arises.

2.4 In the absence of generally agreed definitions, we have considered how to define remote driving in a way that reflects the purposes of this project and the legal categories involved. There are two elements to the phrase "remote driving": "remote" and "driving". We look first at "driving" and then "remote".

EXISTING DEFINITIONS OF "A DRIVER"

The Road Traffic Act 1988

2.5 The Road Traffic Act 1988 does not provide a full definition of a driver. However, it states that "where a separate person acts as a steersman of a motor vehicle", the word driver includes that person "as well as any other person engaged" in driving the vehicle.[28]

2.6 We explain the background to this provision in Appendix 1. It relates to early steam vehicles which required one person to brake/accelerate and another to steer. In today's terminology, one person exercised "longitudinal" control and another person exercised "lateral" control. Where this occurs, the Road Traffic Act 1988 provides that the person with longitudinal control has full responsibility for all aspects of driving. Similarly, the person with lateral control shares responsibility for everything except for the most serious offence - causing death by dangerous driving.

2.7 In other words, an individual does not have to perform all aspects of the driving task to be regarded as a driver. It appears that under the Road Traffic Act 1988, a person

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27 A Kalaiyarasan and others, *Remote operation of Connected and Automated Vehicles (summary report)* (TRL Project Report PPR1012, November 2021) (TRL Project Report PPR1012), para 3, https://trl.co.uk/uploads/trl/documents/PPR1012-Remote-operation-of-CAVs---Project-Endeavour---Summary-Report.pdf.

28 Road Traffic Act 1988, s 192(1).

who is required to monitor the driving environment and respond by activating brakes would be regarded as a driver. They would carry all the responsibilities of a driver.

Case law

2.8 In Appendix 1 we consider the approaches to defining a driver taken by courts in England and Wales and in Scotland. The courts have tended to take a pragmatic approach to reach a just result in the case in front of them and decisions are not always consistent. Nor have there been any cases which consider the definition of a driver in the context of remote driving.

2.9 However, the courts have held that there can be more than one driver at any given time. For example, in one case, both a person in the passenger seat with both hands on the wheel and the person in the driving seat were held to be driving.[29] Similarly, a learner driver and an instructor with one hand on the steering wheel and one hand on the parking brake were both found to be drivers at the same time.[30]

2.10 In some cases, a person has been held to be driving even though they conduct only part of the driving task. For example, in *Burgoyne v Phillips* the defendant was drunk.[31] He sat behind the steering wheel, removed the parking brake and allowed the car to roll 30 feet. The keys were not in the ignition and the steering was locked. The court held this to be driving. By removing the parking brake, the defendant had acquired full driver responsibilities.

The SAE definition

2.11 The SAE Taxonomy defines remote driving as "real-time performance of part or all" of the dynamic driving task (DDT) by a remote driver.[32] This takes a similar approach to the Road Traffic Act 1988: a person is a driver if they carry out only *part* of the DDT.

2.12 In SAE terms, object and event detection and response followed by braking would be sufficient to amount to remote driving. This point emerges clearly from an example the SAE give, in which a person exits the vehicle and uses a key fob to remotely park it. Although the vehicle steers itself into the parking place, the person must monitor the driving environment for hazards:

> If, during the maneuver, a dog enters the pathway of the vehicle, the remote driver releases the button on the key fob in order to cause the vehicle to stop automatically.[33]

2.13 The SAE state that this person is a remote driver.

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29 *Tyler v Whatmore* [1976] RTR 83.

30 *Langman v Valentine* [1952] 2 All ER 803.

31 [1983] RTR. 49.

32 Society of Automotive Engineers International (SAE), *J3016 Taxonomy and Definitions for Terms Related to Driving Automation Systems for On-Road Motor Vehicles* (April 2021) (SAE Taxonomy J3016), para 3.24. A "remote driver" is defined in para 3.31 as "a driver who is not seated in a position to manually exercise" the vehicle controls. For discussion, see Appendix 1, para 1.13.

33 Above, para 3.31, Example 1.

THE LAW COMMISSIONS' AUTOMATED VEHICLES REPORT

2.14 The Law Commissions' report on Automated Vehicles took a similar approach. Under Recommendation 2, a vehicle is not self-driving if it is not fully reliable but requires a human to monitor the driving environment and respond to objects and events. Instead, the starting point is that a person who needs to monitor the vehicle to ensure that it drives safely and legally is a driver and bears the full responsibilities of a driver.[34]

2.15 In Consultation Paper 3, the Law Commissions asked if this test should be amended to deal with some forms of remote operation.[35] In the light of responses received, the Law Commissions concluded that the same test for "self-driving" should apply to both to vehicles with a user-in-charge and to those which rely on assistance from staff in a remote operations centre.[36] An ADS feature is only self-driving if it can control the vehicle so as to drive safety and legally, even if an individual is not monitoring the driving environment, the vehicle or the way it drives.[37]

2.16 That said, not all forms of "monitoring" amount to driving. The issue is needs to be considered in more detail.

"Remote assistance"

2.17 The Automated Vehicles report stated that self-driving would be compatible with "remote assistance". The SAE define remote assistance as:

> event-driven provision, by a remotely located human of information or advice to an ADS-equipped vehicle in driverless operation in order to facilitate trip continuation when the ADS encounters a situation it cannot manage.[38]

2.18 The SAE explain that remote assistance is not driving.[39] Instead, they give the following examples of how it might work:

(1) The ADS encounters "an unannounced area of road construction" which the system cannot navigate: the "remotely located human provides a new pathway for the vehicle to follow around the construction zone".

(2) The ADS "detects an object in its lane that appears to be too large to drive over and stops. A remote assistant uses the vehicle's cameras to identify that the object is an empty bag that can be safely driven through/over" and instructs the vehicle to proceed.

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34 Automated Vehicles (2022) Law Com No 404; Scot Law Com No 258, Recommendation 2, para 3.67.

35 Automated Vehicles: Consultation Paper 3 – A regulatory framework for automated vehicles (2020) Law Commission Consultation Paper No 252; Scottish Law Commission Discussion Paper No 171 (CP3), para 13.68.

36 Automated Vehicles (2022) Law Com No 404; Scot Law Com No 258, para 3.64.

37 Automated Vehicles (2022) Law Com No 404; Scot Law Com No 258, Recommendation 2, para 3.67.

38 SAE Taxonomy J3016, para 3.23.

39 As the SAE put it, it "does not include real-time DDT or fallback performance by a remote driver" (SAE Taxonomy J3016 para 3.23 Note 1).

2.19 As discussed in the report, consultees stressed that such assistants do not control the vehicle directly. The vehicle makes its own decisions on how to negotiate the obstacle after receiving information from the assistant.[40] And if the assistant fails to intervene, the vehicle will reach a minimal risk condition.

2.20 The discussion paper presented by the UK to the UNECE's Global Forum for Road Safety in September 2021 also identifies several assistance roles that remote staff may have in connection with an automated vehicle. In particular, for "tactical" remote assistance, the "operator has no direct longitudinal or lateral control, acceleration or deceleration, but can instruct an ADS to perform specific manoeuvres".[41] Again, this is considered to fall short of (remote) driving.

2.21 In April 2022, the EU Commission consulted on a draft regulation to type-approve fully automated motor vehicles.[42] As discussed in Appendix 1, the draft makes a similar distinction between a "remote intervention operator" and a remote driver. It specifies that a person is a "remote intervention operator" and not a driver if they give:

> instruction to the ADS to perform a minimum risk manoeuvre, provides additional contextual information to the ADS in case of an unclear situation or validates manoeuvres proposed by the ADS.[43]

Unnecessary monitoring

2.22 Under the Law Commissions' definition, a self-driving feature must be capable of driving the vehicle safety and legally "even if an individual is not monitoring the driving environment, the vehicle or the way that it drives".

2.23 The implication is that monitoring is only "driving" if it is needed for the vehicle to be safe and legal. Unnecessary monitoring is not driving. To take a (perhaps overly) simple example: a nervous passenger might scan the road ahead to look for hazards and respond (by screaming) whenever they see one. Although the passenger is monitoring the driving environment and responding, they are not a driver.

2.24 We have considered a similar, more realistic, example:

> An AV is authorised as safe without any human intervention, but passengers are still provided with a button to stop the car if they wish. A passenger looks out of the windscreen, is worried about what they see, and presses the button.

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40 Automated Vehicles (2022) Law Com No 404; Scot Law Com No 258, para 9.16.

41 UNECE Global Forum for Road Traffic Safety (WP1) Informal Paper on Remote Driving (United Kingdom of Great Britain and Northern Ireland) (September 2021), para 20.d, https://unece.org/sites/default/files/2021-09/ECE-TRANS-WP1-2021-Informal%20document-1e_2.pdf.

42 Draft regulation for the application of Regulation (EU) 2019/2144 as regards uniform procedures and technical specifications for the type-approval of the automated driving system (ADS) of fully automated motor vehicles. Available at https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12152-Automated-cars-technical-specifications_en.

43 Above, Article 2 (Definitions), para 25.

2.25 The passenger is not a driver when looking out of the window. Even though they are in fact monitoring the environment, this is not a necessary part of vehicle operation.

2.26 When the passenger pushes the button, they would become a driver if the button operated the brakes directly. However, this is unlikely to be safe. The more likely scenario is that the passenger would merely instruct the ADS to bring the vehicle to a halt when circumstances allow. Providing mere instruction of this type would not be enough to constitute driving.

Monitoring other things

2.27 A person is not driving if they monitor things other than the driving environment, the vehicle or way the vehicle drives. For example, a remote assistant might monitor the passengers for safeguarding purposes, or monitor that the vehicle is not being stolen or interfered with. They might also monitor the weather forecast to see if it is about to snow (where snow would not be compatible with the operational design domain). An assistant might also monitor the rest of the route - by, for example, noticing that there are road works or traffic jams two miles ahead, so as to re-route the vehicle.

2.28 None of these activities would amount to driving. They are all fully compatible with self-driving.

OUR WORKING DEFINITION OF A REMOTE "DRIVER"

2.29 On the basis of this discussion, we have defined a driver as an individual (that is a human) who performs all or any one of the following tasks: steering; braking; removing a brake; or accelerating.[44] An individual is also a driver if they monitor the driving environment because it is safety critical to do so, with a view to responding to objects or events by braking, steering or accelerating when necessary. In these circumstances, the person who monitors the vehicle would be a driver, whether or not they do in fact operate any of the controls.

2.30 This is similar to the SAE definition, as it involves all or part of the DDT. It clarifies that simply monitoring the environment is not driving unless it is required for safety. Furthermore, under our definition, the monitoring must be with a view to intervening by exercising the vehicle controls. If one merely scans the environment with a view to alerting the ADS to possible future hazards, this is not driving provided the ADS exercises choice over how to respond to the information given to it.

DEFINING "REMOTE" IN THE CONTEXT OF REMOTE DRIVING

2.31 In the SAE taxonomy, a remote driver may be within the vehicle (but not in the driving seat); within line-of-sight of the vehicle; or beyond line-of-sight of the vehicle. The BSI CAV Vocabulary by and large follows the SAE definition of remote driving - but with

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[44] The SAE definition of driving also includes "enhancing conspicuity" by signalling, turning on lights or sounding a horn. Although a driver is responsible for these tasks, if someone only turned on lights or sounded a horn (with no other form of control or monitoring) we do not think that this alone would be sufficient to make them a remote driver (with all the onerous responsibilities that involved).

one major change. BSI use the term “remote” to indicate “beyond visual line-of-sight” of the subject vehicle.[45]

2.32 For the purposes of this project, we do not intend to cover drivers in or on vehicles. A driver in the vehicle would be subject to normal driving laws, including the requirement in regulation 104 that they must be in a position to have proper control of the vehicle and have a full view of the road and traffic ahead.[46] This would normally mean being in the driving seat, though the concept of “proper control” would appear to be sufficiently flexible to allow for variations.

2.33 Nor do we intend to cover “pedestrian controlled vehicles”, where a person walks alongside the vehicle with their hands on controls which are physically attached to the vehicle.[47] These vehicles are sometimes used for highway maintenance, such as clearing snow or painting white lines.

2.34 Instead, this project is only concerned with drivers outside the vehicle who use some form of wireless connectivity to control the vehicle, whether within or beyond line of sight.

2.35 Although we consider both line-of-sight and beyond line-of-sight driving in this paper, we reach the tentative conclusion that they will need to be regulated differently, at least in the long term. A driver who operates a remote parking or summons feature may be an ordinary individual. They will retain the normal responsibilities of a driver for both dynamic and non-dynamic purposes, and do not require an organisation to oversee what they are doing. By contrast, it is likely that beyond line-of-sight driving will always need a licensed organisation to maintain safety - with onerous responsibilities to ensure connectivity and all other aspects of safety.

2.36 We have considered the dividing line between line of sight and beyond line of sight. Someone within line of sight would not rely on connectivity to perceive the driving environment: they may use some form of aids and enhancements (such as parking cameras) but would be able to drive competently even if these failed. However, a person who relied on connectivity would be considered beyond line of sight. We illustrate this with the following example:

> A delivery pod does not have a driving seat. During trials, it requires a remote driver to follow in a vehicle behind it, observing the environment and stopping the pod in the event of unexpected events. The remote driver is able to see the back and sides of the pod in direct line of sight but can only see the road ahead through a camera mounted on the pod which sends a video to a screen in the follow vehicle.

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45 BSI’s CAV Vocabulary (BSI Flex 1890 v 4) (March 2022), paras 2.1.58 and 2.1.59.

46 Road Vehicles (Construction and Use) Regulations 1986 SI 1986 No 1078, reg 104.

47 Pedestrian-controlled road maintenance vehicles that are not constructed or used to carry a driver or passenger are a recognised category of special vehicles: see Road Vehicles (Authorisation of Special Types) (General) Order 2003, reg 50(1).

2.37 In our view this would count as “beyond visual line of sight”. The driver would rely on crucial information which they could not see directly with their own eyes.

Conclusion: the meaning of remote

2.38 A remote driver is a driver outside the vehicle who use some form of wireless connectivity to control the vehicle. In this paper we consider both line-of-sight and beyond line-of-sight remote driving. However, the long-term options for reform, discussed in Chapter 10, would apply only to beyond line-of-sight driving.

Questions

2.39 **Q1**: Do you agree with the following tentative definitions?

(1) A driver is an individual who performs all or any of the following tasks:

(a) steering (lateral control);

(b) braking, removing a brake, or accelerating (longitudinal control); or

(c) monitoring the driving environment with a view to responding to objects or events by exercising lateral or longitudinal control (provided that this activity is safety critical).

(2) A remote assistant is not a driver if they do not exercise direct longitudinal or lateral control, but only advise an automated driving system to undertake a manoeuvre.

(3) For the purposes of this project, a “remote driver” is a driver who is outside the vehicle and who uses some form of wireless connectivity to control the vehicle (covering both in or beyond line of sight).

Chapter 3: The current law: construction and use

3.1 Under the current law, there is no express legal requirement for a driver to be within the vehicle being driven. Nor are there any provisions which completely prevent remote driving. However, questions have been raised that some construction and use regulations might prevent particular types of remote driving. Here we provide a brief introduction to construction and use regulations, before considering four potentially problematic provisions:

(1) Regulation 104, which requires "proper control" and a "full view of the road and traffic ahead";[48]

(2) Regulation 107, which concerns leaving a vehicle "unattended";[49]

(3) Regulation 109, on the use of screens for non-driving related activities;[50] and

(4) Regulation 110, which prohibits the use of mobile devices whilst driving.[51]

3.2 We then discuss the procedures for granting exemptions from construction and use regulations, both through a General Order and Vehicle Special Orders. Exemptions from construction and use are in addition to any exemptions needed from approval certification. We ask whether the multiple steps required to register and use a novel vehicle on the road cause any problems in practice.

3.3 As we discuss in Chapter 7, there is an absence of legal regulation of how remote driving is carried out. In January 2022, CCAV updated its Code of Practice on Automated Vehicle Trialling.[52] This provides some guidance on remote driving as part of an automated vehicle trial but does not have the force of law.

CONSTRUCTION AND USE REGULATIONS: A BRIEF HISTORY

3.4 Much of the current structure of road traffic law dates from the Road Traffic Act 1930. Importantly, under the 1930 scheme, the regulation of construction and use was put into secondary legislation so that it could be amended by the Minister of Transport:

> the Road Traffic Act 1930 … gave the Minister power to make Regulations about the construction and use of mechanically propelled vehicles and provided for the installation of traffic signs and signals by highway authorities subject to the approval of the Minister. The Act also provided for the Highway Code,

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48 Road Vehicles (Construction and Use) Regulations 1986 SI 1986 No 1078, reg 104.

49 Above, reg 107.

50 Above, reg 109.

51 Above, reg 110.

52 Centre for Connected and Autonomous Vehicles (CCAV), Department for Business, Energy & Industrial Strategy and the Department for Transport (DfT), *Code of Practice: automated vehicle trialling* (Updated January 2022), https://www.gov.uk/government/publications/trialling-automated-vehicle-technologies-in-public/code-of-practice-automated-vehicle-trialling. For a discussion of its main provisions, see Ch 5.

> driving licences, third party insurance, penalties, offences for dangerous driving and other driving offences.[53]

3.5 The current law on construction and use is found in the Road Vehicles (Construction and Use) Regulations 1986, as amended. Breach of the regulations is an offence under the Road Traffic Act 1988.[54]

3.6 The regulations apply to vehicles on "roads".[55] Unlike most criminal offences under the Road Traffic Act 1988, they do not apply to "other public places". The definition of a road is considered in detail in Consultation Paper 3 of the Automated Vehicles project.[56] Essentially a road must be "identifiable as a route or a way" to which the public has access.[57]

3.7 The regulations are amended often, on a roughly annual basis. However, they have never been completely re-written. Many provisions have a long history. In particular, the Motor Vehicles (Construction and Use) Regulations 1931 included the following:

> No driver shall be in such position that he cannot have control over his vehicle or retain a full view of the road and traffic ahead, nor may he quit it without having stopped the engine and applied the brake. [58]

3.8 This provision has survived for the last 90 years, with only small changes. It is now to be found in regulation 104 and regulation 107. The long history of the provision makes it difficult to apply to connected technology, which was not envisaged in 1931.

3.9 As the name implies, the Road Vehicles (Construction and Use) Regulations 1986 deal both with how vehicles are constructed and how they are used. Here we are concerned with Part IV, "conditions relating to use". However, a developer who wishes to use a novel design of vehicle on public roads will also need to negotiate the construction requirements.

REGULATION 104: PROPER CONTROL AND A FULL VIEW

3.10 Regulation 104 now reads as follows:

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53 The National Archives, *Road Traffic and Safety Correspondence and Papers* (ref: MT 34, 1879-1961), https://discovery.nationalarchives.gov.uk/details/record?catid=9865&catln=3.

54 Road Traffic Act 1988, ss 41A, 41B, 41C, 41D and 42.

55 The power to make construction and use regulations is limited by section 41(1) of the Road Traffic Act 1988, which refers to "the use of motor vehicles and trailers on roads".

56 Automated Vehicles: Consultation Paper 3 – A regulatory framework for automated vehicles (2020) Law Commission Consultation Paper No 252; Scottish Law Commission Discussion Paper No 171 (CP3), Appendix 2.

57 *Clarke v General Accident Fire and Life Assurance Corporation Plc* and *Cutter v Eagle Star Insurance Co Ltd* [Conjoined Appeals] [1998] 1 WLR 1647, pp 1651H to 1652A and 1652G.

58 Regulation 74(ii): see the Commercial Motor Archive (27 January 1931), p 63, https://archive.commercialmotor.com/article/27th-january-1931/63/the-construction-and-use-regulations.

> No person shall drive or cause or permit any other person to drive, a motor vehicle on a road if he is in such a position that he cannot have proper control of the vehicle or have a full view of the road and traffic ahead.

Penalty

3.11 Breach of regulation 104 is an offence under section 41D of the Road Traffic Act 1988. It is a relatively minor offence, which carries a maximum fine of £2,500 in respect of goods vehicles or vehicles which can carry more than 8 passengers, or £1,000 for other vehicles. Disqualification from driving is discretionary.[59]

3.12 Drivers may be issued with a fixed penalty notice of £100 rather than prosecution and have their driving licence endorsed with three points.

Analysis

3.13 In Consultation Paper 1 of the Automated Vehicles project, we explained that this provision does not necessarily require every vehicle to have a driver. Instead, it simply provides that if a vehicle has a driver, the driver must be in a position to have proper control and a full view. We pointed out that if a vehicle did not have a person driving it, no-one would be liable for the offence.[60]

3.14 The provision does not necessarily require the driver to be in the vehicle. It does not explicitly prevent the driver from using connectivity to ensure a full view of the road and traffic ahead, so long as the driver is substantively able to see what they need to see. However, some stakeholders have expressed concern that the issue is uncertain.

3.15 The phrase "full view of the road ahead" is not defined in regulation 104. However, type approval[61] requires passenger cars (M1 vehicles) to be constructed with a "clear and unobscured view of the road ahead and to the side (180° forward)".[62] In response to Consultation Paper 1, it was suggested that the provision should be made more demanding, for example by requiring a view behind or to the sides. For example, ABI and Thatcham envisaged a scenario in which an automated vehicle had turned into a blind alley and handed over to a remote operator:

> *In this case, a view of the road and traffic behind would be required.*[63]

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59 Road Traffic Offenders Act 1988, sch 2.

60 Automated Vehicles: A joint preliminary consultation paper (2018) Law Commission Consultation Paper No 240; Scottish Law Commission Discussion Paper No 166 (CP1), para 7.11.

61 Type approval describes the regulatory process for the technical approval of most vehicles. For a full description, see CP3, Ch 6.

62 Road Vehicles (Approval) Regulations 2020 SI 2020 No 818, sch 1, pt 2, para 1, col 1 requirement 32. For M1 vehicles, the A pillars, mirrors and vents are all allowed obstructions under Type Approval Regulation. Regulation 30 of the Road Vehicles (Construction and Use) Regulations 1986 also requires that every motor vehicle "shall be so designed and constructed that the driver thereof while controlling the vehicle can at all time have a full view of the road and traffic ahead of the motor vehicle".

63 ABI and Thatcham Research joint response to CP1, p 23, Consultation Question 21, https://s3-eu-west-2.amazonaws.com/lawcom-prod-storage-11jsxou24uy7q/uploads/2019/06/AV001-ABI-and-Thatcham-Research-joint-response.pdf.

3.16 The more difficult issue is what amounts to "proper control". If, for example, a remote driver is only able to apply the brakes and cannot steer, does this amount to proper control? On one view, proper control implies the type of control which is normally available to a conventional driver. On an alternative view, it refers to sufficient control in the circumstances: for example, if the vehicle is able to steer itself safely, then having an emergency operative who is only able to brake may amount to "proper control".

3.17 It is difficult to be sure how a court would interpret "proper control". It is likely to depend on the circumstances that have arisen. The courts are more likely to conclude that a driver was able to exercise proper control if the vehicle operated safely than if it caused an accident. If regulation 104 were found to have been breached, an offence would be committed both by the individual "driver" and by the employer who caused or permitted the breach.[64]

3.18 Given these uncertainties, it has been suggested that "an amendment of this Regulation is desirable" to clarify whether a person undertaking only part of the driving task has proper control.[65]

REGULATION 107: LEAVING A VEHICLE "UNATTENDED"

3.19 Regulation 107 prohibits a person from leaving a motor vehicle on a road where the vehicle:

> is not attended by a person licensed to drive it unless the engine is stopped and any parking brake with which the vehicle is required to be equipped is effectively set.

3.20 In other words, a duly licensed person must continue to "attend" a vehicle whose engine is running.[66]

Penalty

3.21 Breach of this requirement is an offence under section 42 of the Road Traffic Act 1988. It is also relatively minor offence, which carries a maximum penalty of a £1,000 fine (or £2,500 if committed in respect of a goods vehicle or a vehicle adapted to carry more than 8 passengers).[67] Under this section, a driver cannot be disqualified from driving. Nor can their driving licence be endorsed with penalty points.

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64 Road Traffic Act 1988, s 41D(a).

65 Adam King, "Criminal Law" in M Hervey and M Lavy, *The Law of Artificial Intelligence* (2021, 1st edn), p 500, para 11-037.

66 *Encyclopaedia of Road Traffic Law and Practice* (Sweet & Maxwell, 2021), para 7-1017.5.

67 Road Traffic Offenders Act 1988, sch 2.

Meaning of "attended"

3.22 An authoritative text on road traffic offences comments that for a vehicle to be "attended", there must be a person able to keep it under observation, see any attempt to interfere with it and have a reasonable prospect of preventing interference.[68]

3.23 The issue of when a vehicle is attended normally arises in the context of insurance. Many policies exclude theft from unattended vehicles. This has led to a series of cases in which the courts have held that a vehicle is not attended unless the driver is in a position to observe it, with a reasonable prospect of preventing any unauthorised interference with it.[69]

3.24 In *Bulman v Godbold*,[70] the courts considered the meaning of "attended" in the context of regulation 107. Here the defendant left his van with the engine running in a street where waiting was permitted only for so long as necessary to enable goods to be unloaded. He unloaded frozen fish and took it into a hotel where he spent 10 minutes loading it into a refrigerator.

3.25 The defendant was charged with (1) leaving the van unattended and (2) unlawful waiting. He was acquitted on both counts. However, an appeal in relation to the first count was allowed. As the defendant had left the van and spent 10 minutes in the hotel, the van could not be regarded as "attended". Lord Justice Donaldson described the test as whether a licensed driver was "in it or in close attendance on" the vehicle.[71]

Analysis

3.26 Regulation 107 is incompatible with some forms of automated vehicles, such as where the vehicle has no user-in-charge or remote supervision.[72]

3.27 On the other hand, regulation 107 would appear to be compatible with remote driving. The courts have held that the driver does not need to be in the vehicle if they are in a position to observe it. This suggests that a vehicle may still be "attended" by a person who is near the vehicle or in a remote-control centre. However, the issue is not beyond all doubt. If in practice a remote driver could not see the vehicle or was not in a position to prevent interference with it, the courts might consider the regulation to have been breached.

3.28 If regulation 107 were to be breached, an offence would have been committed by any person who "left" the vehicle on the road.[73] "Leaving" a vehicle normally implies that the

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68 *Wilkinson's Road Traffic Offences* (30th edn 2021), para 8-54.

69 See *Starfire Diamond Rings Ltd v Angel* (1962) 106 SJ 854 and *Ingleton of Ilford v General Accident Fire and Life Assurance Corp* [1967] CLY 2033. In *Plaistow Transport v Graham* 115 NLJ 1033, a vehicle was considered to be "attended" when the driver was asleep in the cab.

70 [1981] RTR 242.

71 *Bulman v Godbold* [1981] RTR 242, 244.

72 Matt Hervey and Matthew Lavy, *The Law of Artificial Intelligence* (2021, 1st edn), p 500 para 11-038. In response to CP1, two thirds of consultees thought that regulation 107 should be amended. (See Analysis of Responses to CP1).

73 Road Traffic Act 1988, s 42(a).

defendant had previously been in or near it. It is unclear whether causing an unattended vehicle to drive on a road amounts to "leaving" it for these purposes.

REGULATION 109: SCREEN DISPLAYING NON-DRIVING INFORMATION

3.29 Regulation 109 prohibits a driver from being in a position to see a screen which displays non-driving related information. It states that:

> (1) No person shall drive, or cause or permit to be driven, a motor vehicle on a road, if the driver is in such a position as to be able to see, whether directly or by reflection, a television receiving apparatus or other cinematographic apparatus used to display anything other than information—
>
> (a) about the state of the vehicle or its equipment;
>
> (b) about the location of the vehicle and the road on which it is located;
>
> (c) to assist the driver to see the road adjacent to the vehicle; or
>
> (d) to assist the driver to reach his destination.

Penalty

3.30 Breach of this requirement is also an offence under section 42 of the Road Traffic Act 1988. It carries a maximum penalty of a £1,000 fine (or £2,500 if committed in respect of a goods vehicle or a vehicle adapted to carry more than 8 passengers).[74] A driver cannot be disqualified or have their licence endorsed with penalty points.

Analysis

3.31 A beyond line-of-sight driver will receive all the information they need to drive through the medium of a screen, including a view of the road ahead and behind, the vehicle speed and acceleration, and the route the driver is expected to follow. The screen might also show the speed limit or other regulations for the road and diagnostic information for the vehicle.

3.32 In our view, all this information is permitted under regulation 109. The speed, acceleration and diagnostic information is information about the state of the vehicle. Video feeds of the road ahead and behind provides information about the road on which the vehicle is located and "assists the driver to see the road adjacent to the vehicle". Similarly, route information "assists the driver to reach his destination".

3.33 It is possible, however, that the list of permitted information may not cover all information that developers wish to display. We would be interested to hear from anyone working in the field who is concerned that some useful or necessary information may not be permitted under regulation 109.

3.34 Regulation 109 would appear to prevent a remote driver from being in a position to see screens displaying information relating to vehicles other than the one they are driving. At first sight this seems appropriate, as such screens are likely to prove an

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74 Road Traffic Offenders Act 1988, sch 2.

unnecessary distraction. However, we welcome views on whether this might cause problems in some circumstances.

REGULATION 110: USING A HAND-HELD DEVICE WHILE DRIVING

3.35 Regulation 110 was first introduced in December 2003 to prevent distraction through the use of mobile phones while driving.[75] Initially, the offence covered using a hand-held device to "perform an interactive communication function". However, to respond to the ever-changing nature of mobile devices, it has since undergone two amendments.

3.36 The first amendment, in June 2018, allowed mobile devices to be used for the purposes of remote-controlled parking.

3.37 The second amendment came into effect in on 25 March 2022. It responded to the loophole identified in *DPP v Barreto*.[76] Here the respondent had been convicted in a magistrates' court for using his mobile phone to film a road traffic accident as he drove past. The High Court found that regulation 110 did not prohibit *any* use of a hand-held device while driving. Instead, it prohibited only the marking and receiving of calls and the use of interactive communication.[77] Filming was not covered.

3.38 The March 2022 amendment makes it an offence to use "a hand-held device… which is capable of transmitting and receiving data, whether or not those capabilities are engaged". The public consultation which preceded this change explained that: [78]

> In practical terms, this means that use of hand-held tablets, electronic notepads, gaming equipment etc. which are capable of interactive communication will be covered by the revised offence, regardless of whether the device is connected to the internet or in flight mode or other offline mode.[79]

Penalty

3.39 Breach of regulation 110 is an offence under section 41D of the Road Traffic Act 1988. It carries a maximum fine of £2,500 for goods vehicles or vehicles which can carry more than 8 passengers, or £1,000 for other vehicles. Disqualification from driving is discretionary.[80]

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75 Road Vehicles (Construction and Use) (Amendment) (No. 4) Regulations 2003 SI 2003 No 2695.

76 [2019] EWHC 2044 (Admin), [2020] 1 WLR 599.

77 This contrasts with *Bendt v Crown Prosecution Service* [2022] EWHC 502 (Admin) where a driver used his mobile telephone to change the music he was listening to over his car's sound system, via Bluetooth. Here the conviction was upheld. The court found the ordinary and natural meaning of "interactive communication function" did not require the communication to be with or from another person. Instead, the communication could be with another device, including via Bluetooth.

78 Issued by Department for Transport on 17 October 2020. See Department for Transport, *Using a mobile phone while driving: Consultation on changing the law* (October 2020), https://www.gov.uk/government/consultations/expanding-the-offence-of-using-a-hand-held-mobile-phone-while-driving-to-include-non-connected-mobile-application-actions.

79 Above, p 13.

80 Road Traffic Offenders Act 1988, sch 2.

3.40 Drivers may be issued with a fixed penalty notice of £200 and have their driving licence endorsed with six points.

Analysis

3.41 Regulation 110 is complex and is set out in full in Appendix 2. It states that "no person shall drive a motor vehicle on a road" while using "a hand-held mobile telephone" or "a hand-held device". It is also an offence to cause or permit another person to use a hand-held telephone or device while driving.[81]

3.42 A "device" for these purposes is "a device other than a two-way radio, which is capable of transmitting and receiving data, whether or not those capabilities are enabled".[82]

3.43 The term "hand-held" is also defined. Under regulation 110(6), "a mobile telephone or other device is to be treated as hand-held if it is, or must be, held at some point while being used". In *DPP v Barreto*,[83] the court pointed out that this was wider than the normal dictionary definition of hand-held device, which is something "designed to be used while held in the hand". Instead, a device is hand-held if it is in fact held at some point while being used.[84]

3.44 Regulation 110 then makes exceptions for emergency phone calls, remote-controlled parking and making contactless payments while stationary.

The application of Regulation 110 to line-of-sight driving

3.45 Regulation 110 has the potential to be problematic for "line-of-sight" driving, where a person walks alongside a vehicle at low speeds, controlling its speed or direction through a hand-held device. As discussed previously, such a person would be a driver, and could therefore be considered to be using a hand-held device whilst driving. Although there is an exemption for remote-controlled parking conducted at a distance of no more than six metres, this exemption is relatively narrow and may not apply to all the possible uses of hand-held devices to manoeuvre a vehicle.

3.46 In Appendix 2 we discuss whether it would be legal to use a "game controller-type" device to manoeuvre a vehicle out of a garage and park it on the road. We conclude that this is probably legal, so long as the primary purpose is to park the vehicle; there is continuous activation of the device by the driver; and the distance is no more than six metres.

3.47 The issue has the potential to be problematic. However, it is not a problem in tests and trials. As we discuss below, the Road Vehicles (Authorisation of Special Types) (General) Order 2003 provides tests and trials with an exemption from regulation 110.

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81 See Road Vehicles (Construction and Use) Regulations 1986 SI 1986 No 1078, reg 110(2) and Road Traffic Act 1988, s 41D(b).

82 Road Vehicles (Construction and Use) Regulations 1986 SI 1986 No 1078, reg 110(4).

83 [2019] EWHC 2044 (Admin), [2020] 1 WLR 599.

84 Per Thirlwall LJ at [40] to [44].

EXEMPTIONS FROM CONSTRUCTION AND USE REGULATIONS

3.48 The general rule is that vehicles must comply with the Road Vehicles (Construction and Use) Regulations 1986 and the Road Vehicles Lighting Regulations 1989.[85] However, section 44 of the Road Traffic Act 1988 gives the Secretary of State powers to make orders providing exemptions from these requirements. Section 44 powers are wide and flexible, and include the power to modify rules for certain classes of vehicle or impose conditions.

3.49 In practice, section 44 powers have been used in two ways:[86]

(1) The first is through a statutory instrument which applies to all vehicles within a listed class, without the need to make an application. The main statutory instrument is the Road Vehicles (Authorisation of Special Types) (General) Order 2003.[87] This is known as the Special Types General Order, or STGO.

(2) The Secretary of State for Transport may also make individual orders, which apply to specified vehicles or to vehicles of specified persons. These are referred to as Vehicle Special Orders (VSO). They have the potential to be wider than under the STGO, but the owner or operator must apply to the Vehicle Certification Agency to obtain one.

3.50 Here we give a brief overview of each of these exemptions.

The Road Vehicles (Authorisation of Special Types) (General) Order 2003 (STGO)

3.51 The STGO lists "special types" of motor vehicles and trailers. These include track-laying vehicles; straddle carriers;[88] vehicles with moveable platforms; pedestrian-controlled road maintenance vehicles and many more.

3.52 For the purposes of the current discussion, the key types of "special vehicle" are those used for tests and trials, or those equipped with "new or improved equipment". Article 36(1) states that the following are recognised categories of special vehicles—

> (c) any new or improved type of motor vehicle or trailer which is constructed for tests or trials;
>
> (d) any motor vehicle or trailer which is equipped with new or improved equipment;

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85 SI 1986 No 1078 and SI 1989 No 1796 as amended.

86 These two methods are referred to in s 44(3) of the Road Traffic Act which states that the powers "shall be exercisable by statutory instrument" except in the case of "orders applying only to specified vehicles or to vehicles of specified persons".

87 SI 2003 No 1998. Another example is the Road Vehicles (Construction and Use) (Automated Vehicles) Order 2022 SI 2022 No 470, which was made under section 44 and modifies the Road Vehicles (Construction and Use) Regulations 1986, regulation 109 (use of screens) as it applies to "automated vehicles".

88 A straddle carrier is a freight-carrying vehicle that carries its load underneath by "straddling" it, rather than on top. This enables it to load and unload without the assistance of forklifts or cranes.

(e) any motor vehicle or trailer which is equipped with new or improved types of equipment.

3.53 A vehicle which belongs to one of these categories may only be used for tests, demonstrations or ancillary purposes. Paragraph 2 of Schedule 11 provides that relevant vehicles may only be used on roads for—

(a) testing;

(b) demonstration;

(c) delivery on sale; or

(d) proceeding to, or returning from, a manufacturer or repairer for construction, repair or overhaul.

3.54 Paragraph 5 of Schedule 11 also prohibits a vehicle in these categories from carrying "any load" or transporting "goods or burden", other than its own necessary gear and equipment and any "apparatus or ballast" needed to carry out tests or trials of the vehicle.[89]

3.55 There is no application process. If a vehicle meets the criteria, the STGO provides an exemption from any construction and use requirement not listed in the order.

3.56 The STGO does not exempt special vehicles from all construction and use regulations. For vehicles intended for tests or trials, the STGO lists 35 regulations which continue to apply, including regulations 104, 107 and 109.[90] Furthermore, special vehicles must comply with regulation 100. This states that the vehicle must "at all times be in such condition … that no danger is caused or is likely to be caused to any person in or on the vehicle … or on a road".

3.57 However, regulation 110 on the use of handheld mobile devices is not listed as continuing to apply. Provided that a vehicle falls within the definition of a special type, and is used in tests and trials, using a mobile device to drive the vehicle would appear to be lawful. This does not necessarily reflect a policy decision. Instead, it may reflect the fact that the prohibition on hand-held devices was not introduced until December 2003, following the STGO.

Vehicle Special Orders (VSOs)

3.58 Section 44 allows the Secretary of State to make orders applying "to specified vehicles or to vehicles of specified persons". These are discretionary and provided on a case by case basis to individual vehicles or individual fleets. To obtain a VSO, the operator or owner should apply to the Vehicle Certification Agency (VCA).[91] They must state the reasons why they are seeking exemptions from construction and use regulations for their particular vehicle or fleet.

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89 Subject to weight restrictions STGO, sch 11, paras 5-7.

90 STGO, sch 11, para 10, Table 16.

91 https://www.vehicle-certification-agency.gov.uk/other-certification/vehicle-special-orders/.

3.59 Guidance on the VCA website notes that when applying for a VSO an operator or owner must first consider whether the vehicle or type of vehicle meets the criteria of a special use vehicle under the STGO. If not, they may apply to the VCA, by providing:

(1) suitable information which sets out the processes which will be in place to ensure that appropriate safety issues and requirements are met; and

(2) when and if the reasons for non-compliance with construction and use regulations are justified and supported.[92]

3.60 The owner or operator should provide information as requested by VCA, such that VCA can make an informed decision.[93]

3.61 If a VSO is issued, it will authorise an individual vehicle or individual fleet for use on roads, notwithstanding that it does not meet all the provisions of construction and use regulations. The VSO may also specify restrictions and conditions as part of the order. These may include, for example, the area in which the vehicles are allowed to operate.[94]

3.62 In theory, a VSO may provide an exemption or modification to regulations 104 and 107. However, we have been told that the uncertainties over these two regulations also make it challenging to obtain one. It is difficult to show why non-compliance is justified if one is not sure that there is non-compliance.

A TWO-STEP EXEMPTION PROCEDURE FOR NOVEL VEHICLES

3.63 In practice, a developer who wishes to place a novel vehicle on the road may require multiple exemptions in addition to any concerns over regulations 104 and 107. The law in this area is complex.[95] We seek views on whether it causes problems in practice.

3.64 A developer who wishes to put a vehicle on the road will need to clear two separate hurdles.

(1) First, to be used on public roads or in a public place, vehicles must be registered with the Driver and Vehicle Licensing Authority (DVLA) and receive a registration number. The normal rule is that to be registered a vehicle requires an approval certificate.[96] However, there are different categories of approval, and some exemptions.

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92 https://www.vehicle-certification-agency.gov.uk/other-certification/vehicle-special-orders/.

93 http://www.dft.gov.uk/vca/other/vehicle-special-orders.asp

94 See the Oxfordshire County Council E-scooter Trial Order 2022 (Vehicle Special Order No VS 127/2022): https://www.oxfordshire.gov.uk/sites/default/files/file/roads-and-transport-connecting-oxfordshire/e-scotter_cover_letter_and_VSO_Voi.pdf.

95 For a description of how it works, see the Annex C to CCAV, the Department for Business, Energy & Industrial Strategy and DfT's *Code of Practice: vehicle authorisations and exemptions for more complex CAV trials* (Updated January 2022), https://www.gov.uk/government/publications/trialling-automated-vehicle-technologies-in-public/code-of-practice-vehicle-authorisations-and-exemptions-for-more-complex-cav-trials.

96 It is a criminal offence to use a vehicle on a road without a certificate to show that the vehicle complies with the approval requirements, under Road Traffic Act 1988, s 63(1) and regulation 21 of the Road Vehicles

(2) Second, even once a vehicle has been registered, it must still comply with construction and use requirements to be used on a road,[97] unless an exemption applies. As we have seen, exemptions may be under either a General Order or a VSO.

3.65 Thirdly, if the vehicle is a public service vehicle (PSV) designed to carry eight or more passengers, it normally requires a certificate of initial fitness (or equivalent). A novel vehicle that falls within the definition of a PSV may need an additional exemption from this requirement.[98]

3.66 We outline the main steps below.

Step 1: Registration

3.67 Most vehicles intended for use on a public road or in a public place must obtain an approval certificate before they can be registered. Approval certificates can be obtained through:

(1) type approval;

(2) national type approval of vehicles produced in a small series (NSSTA); or

(3) individual vehicles approval (IVA).[99]

3.68 Before the UK's exit from the European Union, type approval was governed by EU law, most notably by Regulation 2018/858. Regulation 2018/858 now forms part of "retained" EU law. It is detailed and onerous, and applies in full to vehicles which are Type Approved.

3.69 For NSSTAs and IVAs, *some* exemptions from technical requirements are permitted, provided that the vehicle adheres to the alternative requirements set out in the Road Vehicles (Approval) Regulations 2020. These alternative requirements aim to ensure an equivalent level of road safety and environmental protection to the greatest extent practicable. As an example, the regulations allow an exemption in relation to "steering effort" for M1 vehicles where a steering control system is designed to meet the needs of a driver with a physical disability.[100]

Approval Regulations 2020 SI 2020 No 818. It is also an offence to use a vehicle which is incorrectly registered (Vehicle Excise and Registration Act 1994, s 43C) or which does not display a valid registration number (Vehicle Excise and Registration Act 1994, s 42).

97 Note that registration requirements apply to "a public road or public place" while construction and use regulations only apply to roads.

98 Public Passenger Vehicles Act 1981, s 6.

99 There is also a Motor Cycles Single Vehicles Approval scheme which we do not consider here.

100 See Road Vehicles (Approval) Regulations 2020 SI 2020 No 818, sch 1, Part 2, para 1, col 1 requirement 5. An M1 vehicle is a passenger vehicle with no more than eight seating positions in addition to the driver's seating positions and without space for standing passengers.

Exemptions from the need for approval certification

3.70 Certain vehicles are exempt from the need for approval and can be registered without an approval certificate. For the present purposes, three exemptions are relevant:

(1) prototypes of vehicles used on the road under the responsibility of a manufacturer to perform a specific test programme, provided they have been specifically designed and constructed for that purpose.

(2) M and N category vehicles (that is passenger or goods vehicles), which are exempt if they have a maximum speed of less than 25km/h (15.6 miles an hour).[101]

(3) L category vehicles with a maximum design speed that does not exceed 6 km/h (3.7 miles an hour). This applies to a powered light vehicle, such a small "pod" or micro-car.[102]

3.71 If an exemption applies, the Department for Transport advises trialling organisations to complete the registration form by writing "EXEMPT" in the Type Approval number field and providing an explanation in the space provided:

> Evidence does not need to be provided at the time of applying for registration, but the applicant should be satisfied that the vehicle is out of scope for one of the permitted reasons, seeking legal advice where required.[103]

Step 2: Construction and Use Regulations

3.72 Once the vehicle has been registered, it must either comply with all construction and use requirements or be exempted from them. If the vehicle is specifically constructed for tests and trials, and is only being used for trials and demonstrations, it would appear to fall within schedule 11 to the STGO. This means that it will have exemptions from some construction and use requirements (including an exemption from the ban on use of hand-held devices under regulation 110).

3.73 However, some construction and use requirements are not disapplied by the STGO. In addition to the "use regulations" we have discussed (regulation 104, 107 and 109) some construction regulations continue to apply and have the potential to prove problematic. In particular:

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101 M and N class vehicles as defined in Regulation (EU) 2018/858 which has been retained by the UK following its exit from the EU.

102 These exemptions are complex and involve a particular understanding of Regulation 2018/858. The Secretary of State also has power to issue specific exemptions from requirements for approval certificates made under the Road Traffic Act 1988, ss 54-58 (see s 63(5)). However, only one scheme has been made these provisions: Motor Cycles Single Vehicles Approval. All other schemes are made under (retained) EU Regulations. The Road Traffic Act powers have been used in relation to e-scooters, but are unlikely to be of use in the context of four-wheeled vehicles.

103 CCAV, the Department for Business, Energy & Industrial Strategy and DfT's *Code of Practice: vehicle authorisations and exemptions for more complex CAV trials* (Updated January 2022), https://www.gov.uk/government/publications/trialling-automated-vehicle-technologies-in-public/code-of-practice-vehicle-authorisations-and-exemptions-for-more-complex-cav-trials.

(1) Regulation 30 requires that "every motor vehicle shall be so designed and constructed that the driver thereof while controlling the vehicle can at all times have a full view of the road and traffic ahead of the motor vehicle". This does not necessarily mean that a vehicle must have traditional windscreen, but the driver must have an equivalent view.

(2) Regulation 34 requires that "every vehicle fitted with a windscreen shall, unless the driver can obtain an adequate view to the front of the vehicle without looking through the windscreen, be fitted with one or more efficient automatic windscreen wipers capable of clearing the windscreen so that the driver has an adequate view of the road in front of both sides of the vehicle and to the front of the vehicle." As this only applies to vehicles fitted with windscreens, it does not apply directly. However, it suggests that the driver's view of the road should be adequate even if it is raining.

3.74 It would be open to the operator to apply to the VCA for a VSO before registration. However, the VCA is unlikely to agree that the driver does not need a full view of the traffic ahead or proper control of the vehicle. Indeed, the developer may not be seeking a full exemption. They may simply wish for reassurance that these requirements are met, albeit in an unconventional way. The current exemption procedure may not be well placed to provide such reassurance.

Experimental public service vehicles

3.75 Section 6(1) of the Public Passenger Vehicles Act 1981 (the 1981 Act) provides that a public service vehicle (PSV) adapted to carry eight or more passengers shall not be used on a road unless a certificate of initial fitness (or equivalent) has been issued for the vehicle.

3.76 To obtain a certificate of initial fitness, a PSV must meet the requirements specified in Part II of the Public Service Vehicles (Conditions of Fitness, Equipment, Use and Certification) Regulations 1981 as amended (the 1981 Regulations).[104] These requirements are in addition to the construction and use regulations which the vehicle must also meet. Conditions of fitness include requirements relating to the stability of a vehicle, its doors, luggage racks and the width of its entrances and exits.

3.77 However, section 11 of the 1981 Act provides that the Secretary of State may where it is "expedient to do so for the purpose of the making of tests or trials of a vehicle or its equipment"[105] dispense with the prescribed conditions of fitness. This allows the Secretary of State to make an order exempting an experimental PSV from the fitness requirements. The order may though impose conditions relation to construction, equipment or use of the vehicle.[106]

3.78 We would be interested to hear whether these separate steps cause any difficulties in practice.

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104 SI 1981 No 257.

105 Public Passenger Vehicles 1981, s 11(1).

106 Above, s 11 (3).

CONCLUSION

3.79 Under current road traffic law, a driver need not be in the vehicle. There is no clear prohibition on having a driver in line of sight of the vehicle, or in a remote operation centre. However, there are several "use regulations" which would need to be negotiated. The application of these regulations to remote driving is uncertain.

3.80 Four issues may cause concern to developers and to their insurers:

(1) Whether a "full view of the road ahead" under regulation 104 includes a view through a screen;

(2) Whether a device that brakes but does not steer amounts to "proper control" under regulation 104;

(3) Whether a vehicle is left unattended if a person in a remote location cannot prevent unlawful interference with it (under regulation 107); and

(4) Whether use of a hand-held device to drive a vehicle contravenes regulation 110.

3.81 The Secretary of State has powers to issue exemptions from construction and use regulations. Under the current law, exemptions are available without application for "special motor vehicles" used in trials and demonstrations. Special vehicles are exempt from regulation 110, but not from regulations 104 or 107. To obtain an exemption from regulation 104 and 107, a developer would need to apply for a VSO.

Questions

3.82 **Q2**: Do uncertainties surrounding construction and use provisions cause difficulties in practice? We are particularly interested in whether uncertainties over regulations 104, 107 or 110 are delaying trials or making it more difficult to obtain insurance.

Q3: Are the various exemptions easy to navigate, or do they put any unnecessary obstacles in the way of trialling new forms of vehicle?

Q4: We seek views on whether any particular construction and use provisions should be maintained in the interests of safety, even for trials and demonstrations.

Chapter 4: Civil liability

4.1 In this chapter we consider whether a person who suffered an injury caused by a fault in a remote driving system would face obstacles in obtaining compensation. The fear is that it might be difficult to show that the remote driver was at fault if the problem lay in connectivity (or some other latent defect) rather than in the behaviour of the driver.

CIVIL COMPENSATION OUTLINE

4.2 Road users owe a duty of care to fellow users to drive with reasonable care to avoid causing harm. A leading textbook observes:

> Reasonable care means the care which an ordinarily skilful driver or rider would have exercised, under all the circumstances, and connotes an "avoidance of excessive speed, keeping a good lookout, observing traffic rules and signals and so on". It includes keeping reasonable control over passengers. The standard expected of motorists is nevertheless a high one. In *Lunt v Khelifa*[107] Latham LJ observed that "[the Court of Appeal] has consistently imposed on the drivers of cars a high standard to reflect the fact that a car is a potentially dangerous weapon".[108]

4.3 How this standard will be applied to a remote driver is unclear. Controlling passengers could, for example, be particularly difficult from a distance. However, given the potential danger of the activity, the courts are likely to require a high level of care from remote drivers. As we discuss below, drivers and owners of vehicles also have a duty to use reasonable care to keep the vehicle in a roadworthy condition.

THIRD PARTY MOTOR INSURANCE

4.4 Since 1930, all those who use a motor vehicle on the road must take out compulsory third-party motor insurance.[109] The UK's compulsory motor insurance scheme is complex. It has been developed and amended many times since 1930 and was underpinned by successive EU Directives.[110]

4.5 The law is set out in Part 6 of the Road Traffic Act 1988. Under section 143(1), a person "must not use a motor vehicle on a road or other public place" without insurance for third party risks.[111] The policy must insure a person "in respect of any liability which may be

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107 *Lunt v Khelifa* [2002] EWCA Civ 801, at [20].

108 Charlesworth & Percy on Negligence 14th Ed, para 11-199.

109 Originally required by the Road Traffic Act 1930, s 35.

110 The five iterations of EU motor insurance directives are now to be found in the consolidated text of Directive 2009/103/EC, Official Journal L 263 of 7.10.2009, pp 11 to 31, at http://www.cobx.org/content/default.asp?PageID=58&DocID=27195.

111 Road Traffic Act 1988, s 143(1)(a). There are exemptions for Government vehicles, such as those owned by local authorities, the police or heath service: see the Road Traffic Act 1988, s 144(2).

incurred by him … caused by, or arising out of, the use of the vehicle".[112] The policy must provide unlimited cover for death or personal injury, and up to £1.2 million for property damage.[113]

WHO "USES" A VEHICLE?

4.6 A key question is who "uses" a vehicle for the purposes of section 143. Using a vehicle has the potential to be a broad test, involving an element of controlling, managing or operating a vehicle. As Mr Justice Megaw said in *Brown v Roberts*:

> a person does not "use ... a motor vehicle on a road" … unless there is present, in the person alleged to be the user, an element of controlling, managing or operating the vehicle at the relevant time. Precisely what the extent of that element may be, it is unnecessary to seek to define.[114]

4.7 In *R&S Pilling (t/a Phoenix Engineering) v UK Insurance Ltd*, Lord Hodge noted cases in which owners were convicted of failing to have third party insurance after having abandoned their vehicles on the road.[115] He stated:

> The good sense of having a broad interpretation of "use" in the requirement for compulsory third party insurance is clear as leaving an immobilised car on a public road may create a hazard for other road users, for example if the vehicle was left close to a blind corner.[116]

4.8 In practice, however, "using a vehicle" has been construed relatively narrowly. The main people held to be "users" are:

(1) the driver;

(2) the driver's employer, while it is being used on the employer's business;[117]

(3) a person engaged in a criminal joint enterprise with the driver;[118] and

(4) an owner who is in the vehicle and "using the vehicle directly for their own purposes". [119]

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112 Road Traffic Act 1988, s 145(3).

113 Road Traffic Act 1988, s 145(4)(b), as amended by Motor Vehicles (Compulsory Insurance) Regulations SI No 2016/1193 reg 2(2) (31 December 2016).

114 [1965] 1 QB 1 at p 15A to B.

115 [2019] UKSC 16.

116 *R&S Pilling (t/a Phoenix Engineering) v UK Insurance Ltd* [2019] UKSC 16, [2020] AC 1025, [34].

117 See K McCormac, P Brown, P Veits, N Watson and J Woodhouse (eds), *Wilkinson's Road Traffic Offences* (30th ed 2021), paras 1.176 to 1.179.

118 In *Leathley v Tatton* [1980] RTR 21, the defendant was found guilty of driving without insurance when he helped a friend to take a vehicle without consent, by push starting it and jumping into the passenger seat.

119 *Cobb v Williams* [1973] RTR 113. The owner was a passenger in the vehicle, being driven home by a friend. He was held to be a user and was therefore found guilty in respect of a failure to insure.

4.9 In the context of remote driving, both the driver and their employer would be "using" the vehicle on a road or other public place. They would therefore be obliged to be insured against any liability they might incur.[120]

LIABILITY FOR LATENT DEFECTS

4.10 Where an injury is caused by a defect in the vehicle, the insured person (that is the driver or their employer) is normally liable for the accident. However, where the defect is latent and not discoverable by the exercise of reasonable care, it is open to them to show that they took all reasonable care in the circumstances. For conventional vehicles, this is a high threshold.

4.11 The leading case dates from 1970: *Henderson v Henry E Jenkins & Sons*.[121] The brakes in a lorry failed suddenly, causing the lorry to kill a man. The failure was due to brake fluid escaping through a hole that could not have been detected visually during the lorry's weekly inspections. The defendants argued that they could not be held responsible for a latent defect in the lorry. Lord Donovan held that:

> The plea of "latent defect" made by [the defendants] had to be made good by them. It was for them to show that they had taken all reasonable care, and that despite this, the defect remained hidden.[122]

4.12 The House of Lords found that the defendants had failed to discharge "the evidential burden of proof" to show that they had exercised all reasonable care in the circumstances. In particular, the defendants had not provided evidence about whether the vehicle had been exposed to unusual risks of corrosion requiring the exercise of particular care, or that such care had been taken.

4.13 As vehicles become more complex, it is more difficult for drivers to understand and guard against latent defects. However, we have been told that, in practice, drivers' insurers continue to pay claims where a vehicle defect may be the cause of an accident, mainly because it is so difficult to prove that the driver took all reasonable care to discover the defect.

LIABILITY FOR AUTOMATED DRIVING

4.14 In 2016, the Government identified a need for new insurance provisions where an automated vehicle rather than a human driver causes an accident.[123] These provisions are set out in Part 1 of the Automated and Electric Vehicles Act 2018 (AEV Act). As the Government explained:

> In the case of an automated vehicle being operated in automated mode … accidents could take place not as a result of human fault, but because of a

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120 See K McCormac, P Brown, P Veits, N Watson and J Woodhouse (eds), *Wilkinson's Road Traffic Offences* (30th ed 2021), paras 1.176 to 1.179.

121 [1970] AC 282, [1969] 3 WLR 732.

122 Above, p 299A.

123 Department for Transport, *Pathway to Driverless Cars: proposals to support ADAS and automated vehicle technologies* (July 2016).

failure in the vehicle itself, for which the only recourse available to an otherwise uninsured victim might be to sue the manufacturer through the courts. [124]

4.15 The AEV Act therefore extended compulsory motor vehicle insurance to cover the use of automated vehicles in automated mode. The insurer is then liable to any victim for "an accident caused by an automated vehicle when driving itself".[125]

4.16 To prevent disputes about whether the driver or the automated driving system (ADS) was controlling the vehicle at the time of the incident, insurance of the driver's liability and the insurer's liability under section 2(1) must be provided for under the same policy.[126]

4.17 Once the insurer has settled a claim with the injured party,[127] it may then claim damages from any other party liable for the accident,[128] such as the driver of another vehicle or the vehicle manufacturer. If the accident or damage resulting from it was "to any extent caused by the injured party", the rules of contributory negligence apply in an adapted form.[129] In Chapter 10 we ask whether any similar change may be needed for remote driving.[130]

POSSIBLE PROBLEMS IN OBTAINING COMPENSATION

4.18 As discussed, an organisation that employs remote drivers would be obliged to carry compulsory insurance. The employer would be liable for their own faults in operating an unsafe system and vicariously liable for the driver's faults.[131] They would also be responsible for any defect with the vehicle or in the remote driving system (subject to the latent defect defence).

4.19 We have considered whether this principle is adequate to provide compensation to the victim without undue expense, delay or complexity, or whether problems might arise in some scenarios. We set out one possible scenario below:

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124 Automated and Electric Vehicles Act 2018 (AEV Act), Explanatory Notes, para 12.

125 AEV Act, s 2(1).

126 AEV Act, sch 1, para 19(2) amends s 145 of the RTA 1988. It provides that the policy required by s 145 "must also provide for the insurer's obligations to the insured person under s 2(1)" of the AEV Act 2018.

127 Section 5 of the AEV Act suggests that a secondary claim can only be brought by the insurer against a third party once the injured party's claim is settled. However, it is possible that, under Scots law (Court of Session rule 26.1(1)(a) or (b)(ii) as interpreted by *Findlay v NCB* 1965 SLT 328 at 330 – 221) and English law (Civil Liability (Contribution) Act 1978, s 1), an insurer could bring a third party into an existing claim using a third party notice.

128 AEV Act, s 5(1) states that "any other person liable to the injured party in respect of the accident is under the same liability to the insurer or vehicle owner".

129 AEV Act, s 3(1).

130 See Question 20(2).

131 The question of whether D2 can be held liable for the torts of D1 involves a two-stage test. The first stage entails considering "the relationship of D1 and D2 to see whether it is one that is capable of giving rise to vicarious liability". The second stage of the test requires there to be a sufficient "connection that links the relationship between D1 and D2 and the act or omission of D1". See *Various Claimants v Catholic Child Welfare Society* [2012] UKSC 56 [2013] 2 AC 1 at [21] (per Lord Phillips).

Injury is caused when a remotely driven vehicle loses connectivity and can no longer be controlled by the remote driver. The vehicle is fitted with software intended to bring the vehicle to a safe stop, but the software fails.

4.20 If the organisation developed the software, could it claim that it was not negligent on the grounds that it carried out sufficient tests, and the failure was unforeseeable? The courts are unlikely to be sympathetic to such an argument. Furthermore, in the event of personal injury or damage to an individual's property, the strict liability regime for defective products could apply, as set out in Part 1 of the Consumer Protection Act 1987.[132] However, product liability law is complex. Producers are likely to defend claims and establishing liability can be challenging.

4.21 The complexities would be aggravated if a driving automation feature were designed by one organisation and operated by another. If the driver and their employer argued that a "latent defect" remained hidden despite their reasonable care, the victim might need to sue the software producer instead, adding delay and expense to what should be a simple claim. The outcome could not be guaranteed.

4.22 There is also the possibility that victims may find it more difficult to obtain compensation if the organisation that sets up the system subcontracted for remote drivers. This may occur if remote driving is being used as an adjunct to automated driving, where external circumstances may cause many vehicles to require a remote intervention at the same time.[133] To provide sufficient staff to cover times of peak demand, organisations may put sub-contracting arrangements in place with other remote driving organisations so as to obtain more remote drivers when they need them.

4.23 If the remote driver is employed by one organisation, but the set-up is designed by another, the victim may be forced to bring an action against both organisations, which could end up blaming each other.[134]

4.24 Finally, there is the possibility of a cyber-attack. Although a remote driving organisation would be expected to take precautions against a cyber-attack, it may be difficult to show negligence. It might also lead to issues about whether the attacker was an untraced or uninsured "driver", so as to provide the victim with a claim against the Motor Insurers' Bureau.

4.25 We seek views on whether these possibilities are likely to cause problems in practice.

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132 For an account of product liability under the Consumer Protection Act 1987, see CP1, Ch 6.

133 The Automated Vehicles Report noted that, in Winter 2021, such external events included flash floods, queues at petrol stations and protestors on motorways: see para 9.31.

134 In some cases, the court might find that the operator and producer are jointly and severally liable. In this case, the claimant could bring a claim against either one, leaving the defendants to seek a contribution from each other. However, this outcome cannot be guaranteed,

Questions

4.26 **Q5**: Is remote driving likely to cause victims undue delay and expense in claiming compensation; or could it defeat claims altogether?

Chapter 5: The safety challenges of remote driving

5.1 In Consultation Paper 3, the Law Commissions described remote operation of vehicles as a step into the unknown.[135] For this paper we have been able to draw on several literature reviews describing the challenges posed by remote driving in its various forms. However, there is as yet little firm information about how these challenges can be overcome, or how safe remote driving will prove to be.

5.2 In Consultation Paper 3 we summarised work for the UNECE by a group of human factors experts known as HF-IRADS (Human Factors in International Regulations for Automated Driving Systems).[136] HF-IRADS concluded that "currently, there is a lack of evidence that remote vehicle operation on public roads can be performed safely".[137]

5.3 In October 2021, TRL published a detailed literature review on Remote operation of Connected and Automated Vehicles, which concluded that "the field of remotely-operated CAVs is in its infancy".[138] They emphasised the inconsistent use of terminology, lack of established standards and many challenges involved. More recently, BSI shared a report on Standardizing Remote Operation of Vehicles with the Law Commission, based on interviews with developers and others, and recommended that more standardization work should take place.[139]

5.4 In this chapter, we provide a brief summary of the many challenges associated with remote driving. The hope is that, as we gain more knowledge about how to overcome these issues, standards can be developed which can guide a regulatory framework.

CONNECTIVITY

5.5 The first challenge is connectivity. As HF-IRADS point out, remote vehicle operation places great demand on bandwidth and potentially leads to latency (delay) or loss of contact with the vehicle:

> There will probably be a need for a high-resolution video and audio feed from the vehicle, possibly in stereo. The greater the pixel resolution and the greater

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135 Automated Vehicles: Consultation Paper 3 – A regulatory framework for automated vehicles (2020) Law Commission Consultation Paper No 252; Scottish Law Commission Discussion Paper No 171 (CP3), , para 13.15.

136 Human Factors in International Regulations for Automated Driving Systems group position paper submitted on 18 September 2020 to the Global Forum for Road Traffic Safety (HF-IRADS): https://www.unece.org/fileadmin/DAM/trans/doc/2020/wp1/ECE-TRANS-WP1-SEPT-2020-Informal-8e..pdf.

137 HF-IRADS, p 7.

138 A Kalaiyarasan and others, *Remote operation of Connected and Automated Vehicles* (TRL Project Report PPR1011, October 2021) (TRL Project Report PPR1011), p 96, https://trl.co.uk/uploads/trl/documents/PPR1011-Remote-operation-of-CAVs---Project-Endeavour---Main-Report.pdf.

139 J McNicol and BSI, *Standardizing Remote Operation of Vehicles*, BSI (forthcoming), https://www.bsigroup.com/en-GB/CAV/cav-resources/. The report is due to be published in July 2022.

> the field of view required, the more the demand on bandwidth. Lags and judders in communication also become critical.[140]

5.6 Latency is a particular issue. TRL point out that connected vehicles:

> can be very sensitive to high latency, with data collected from on-board systems and external sources that must be analysed and transmitted in real-time without fail. Even the slightest delay can significantly impact the driving experience and have a significant impact on safety.[141]

5.7 The camera must process the image and transmit it to the screen, allowing the driver to send a command back to the vehicle and then receive visual confirmation that the command has been executed. There are possibilities for lags throughout this process. A fixed time lag can be a problem. However, variability in lag can be even more of a challenge to good performance than the lag itself.[142] As the HF-IRADS paper notes, "consistency of transmission could be a basic requirement".[143]

5.8 The recent BSI report on Standardizing Remote Operation of Vehicles revealed mixed views on network requirements. While some stakeholders assumed that a 5G network would be required for remote driving, others thought that there were ways of using a good 4G network to provide adequate performance.[144] The report concluded that further research was needed. It was too early to make a decision on the required network standard.[145]

5.9 The CCAV's Code of Practice on automated vehicle trialling notes:

> Those conducting remote-controlled vehicle tests should mitigate and safely respond to risks associated with network access. Remote-controlled operation may fail if there is wider communication network failure, or if access to the communication network is throttled. Trialling organisations should have a full understanding of connectivity in chosen operational domains.[146]

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140 HF-IRADS p 6.

141 TRL Project Report PPR1011, p 26.

142 J Davis, C Smyth and K McDowell (2010). The effects of time lag on driving performance and a possible mitigation. IEEE Transactions on Robotics 26(3): 590-593. This point also emerged from the stakeholder interviews conducted by TRL: all agreed on the importance of a consistent connection (p 70).

143 HF-IRADS p 6.

144 J McNicol and BSI, *Standardizing Remote Operation of Vehicles*, BSI (forthcoming), para 2.2.2, https://www.bsigroup.com/en-GB/CAV/cav-resources/.

145 J McNicol and BSI, *Standardizing Remote Operation of Vehicles*, BSI (forthcoming), para 4.3, https://www.bsigroup.com/en-GB/CAV/cav-resources/.

146 Centre for Connected and Autonomous Vehicles (CCAV), Department for Business, Energy & Industrial Strategy and the Department for Transport (DfT), *Code of Practice: automated vehicle trialling* (Updated January 2022), https://www.gov.uk/government/publications/trialling-automated-vehicle-technologies-in-public/code-of-practice-automated-vehicle-trialling.

5.10 The Code states that "safety drivers and safety operators should be trained to mitigate and safely respond to any connectivity or control issues". It also recommends that data on connectivity, network access and latency should be recorded.

MITIGATING THE RISK OF A CRASH IF REMOTE DRIVING FAILS

5.11 If there is a failure in the remote driving technology, it is essential that the vehicle should be able to mitigate the risk of a crash. A discussion paper on remote driving for the UNECE's Global Forum for Road Traffic Safety (authored by the UK) recommends that vehicles equipped with remote driving technology should be capable of achieving a minimal risk condition:

> A vehicle with a remote driving system should have the ability to reach a minimum risk condition any time a trip cannot or should not be completed, such as when:
>
> (a) The remote driver does not, or cannot, provide appropriate and timely input and the vehicle is unable to react in an appropriate and timely manner (cannot undertake the DDT).
>
> (b) The latency of the connection between the remote driver and vehicle has exceeded safety tolerances.
>
> (c) The connection between the remote driver and the vehicle fails or is degraded.[147]

5.12 Similar requirements appear in codes regulating remote driving in the US states of Louisiana and Alabama. These provide that a vehicle must be capable of achieving a "reasonably safe state, such as bringing the vehicle to a stop", if "a failure of the teleoperation system occurs that renders the remote driver unable to perform the entire dynamic driving task for the vehicle."[148]

5.13 On one view, risk mitigation may simply involve braking. Ideally, however, risk mitigation would do more than this, enabling the vehicle to drive to the next convenient stopping place and pull into the side of the road. The most complex systems would drive the vehicle on a sustained basis, carrying out manoeuvres such as lane changes. They would effectively be automated driving systems and would need to be regulated as such. We welcome views on the level of sophistication required for a suitable risk mitigation system and how it should be regulated.

CYBERSECURITY AND TERRORISM

5.14 Cybersecurity is an issue of acute public concern. The Society of Motor Manufacturers and Traders (SMMT) has noted that failure in this area may "undermine public

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147 UNECE Global Forum for Road Traffic Safety (WP1) Informal Paper on Remote Driving (United Kingdom of Great Britain and Northern Ireland) (September 2021), para 7, https://unece.org/sites/default/files/2021-09/ECE-TRANS-WP1-2021-Informal%20document-1e_2.pdf.

148 Louisiana Revised Statutes §400.7(A)(6) (2021); Alabama Code §32-9B-7(5) (2021).

confidence in the technology" and also "present genuine risks to public safety".[149] Cybersecurity will need to be considered by both the designers and manufacturers of remote driving technologies as well as the operator of such a system.

5.15 At a high level, the UK Government has produced guidance on vehicle cybersecurity for connected and automated vehicles.[150] This emphasises security-by-design: as Principle 8 puts it, the system must be "designed to be resilient to attacks". CCAV's Code of Practice for trialling recommends that this guidance should be followed.[151] It also suggests that trialling organisations consider adopting the British Standards Institute's PAS 1885 standard on automotive cybersecurity.[152]

5.16 An allied concern is that a driver might find it easier to use a vehicle as a terrorist weapon if they are remote. This because they would not be involved in the crash and would be able to maintain some emotional distance from their victims. This suggests that employers may need to vet remote driving staff, both to maintain the integrity of their systems and to prevent terrorists from being attracted to the remote driver role.

SITUATIONAL AWARENESS

5.17 The literature in this field emphasises how difficult it is for a remote operator to maintain situational awareness. As TRL point out, "the vast majority of remote operation found in the literature used a video feed with or without other data sources".[153] The remote driver may have limited depth cues and limited aural or haptic information.[154]

5.18 TRL explain the work that is currently taking place to improve workstation set-ups, which they summarise in the following helpful figure (figure 5.1). [155]

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149 Society of Motor Manufacturers and Traders (SMMT), *Connected and Autonomous Vehicles: Position paper* (February 2017), p 29, https://www.smmt.co.uk/wp-content/uploads/sites/2/SMMT-CAV-position-paper-final.pdf.

150 HM Government, *Key Principles of Cyber security for Connected and Automated Vehicles* (2017), https://www.gov.uk/government/publications/principles-of-cyber-security-for-connected-and-automated-vehicles/the-key-principles-of-vehicle-cyber-security-for-connected-and-automated-vehicles.

151 CCAV, Department for Business, Energy & Industrial Strategy and DfT, *Code of Practice: automated vehicle trialling* (Updated January 2022), https://www.gov.uk/government/publications/trialling-automated-vehicle-technologies-in-public/code-of-practice-automated-vehicle-trialling.

152 British Standards Institute (BSI), *The fundamental principles of automotive cyber security – specification*, PAS 1885: 2018.

153 TRL Project Report PPR1011, p 31.

154 TRL Project Report PPR1011, p 36.

155 A Kalaiyarasan and others, *Remote operation of Connected and Automated Vehicles (summary report)* (TRL Project Report PPR1012, November 2021) (TRL Project Report PPR1012), p 6, https://trl.co.uk/uploads/trl/documents/PPR1012-Remote-operation-of-CAVs---Project-Endeavour---Summary-Report.pdf. .

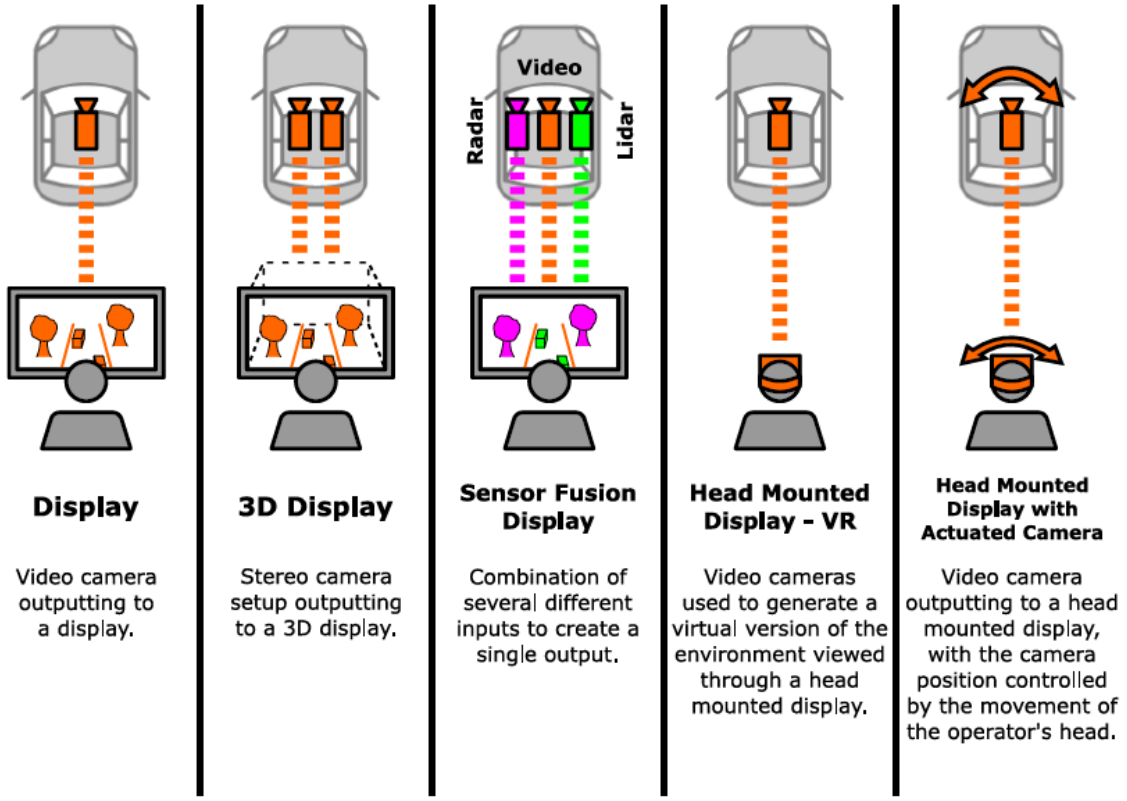

Figure 5.1 *Options for information display for remote workstations (adapted from TRL Project Report PPR1012)*

5.19 As figure 5.1 shows, there are many ways of improving the way that visual information is presented. However, as yet, regulators are not in a position to say which are acceptable. More is not necessarily better: complex displays put greater demands of the network, which may cause other issues. Drivers could also become overwhelmed by too much information. And even with better visual displays, a remote driver may lack other clues about the environment, such as the "subtle feeling of the steering wheel and brakes that might indicate an icy or oily road surface".[156]

[156] J McNicol and BSI, *Standardizing Remote Operation of Vehicles*, BSI (forthcoming), para 2.3.2, https://www.bsigroup.com/en-GB/CAV/cav-resources/.

5.20 The first problem is that it is difficult to judge depths from a two-dimensional image on a screen. The Civil Aviation Authority notes this concern with remote operation of drones:

> Images captured by a camera and displayed on a flat screen afford the pilot little by way of depth perception and no peripheral vision. This can make it difficult for the pilot to accurately judge speed and distance and to maintain sufficient awareness of the area surrounding the aircraft to effectively 'see and avoid' obstacles and other aircraft.[157]

5.21 The second problem is that of "detachment". Operators lack physical sensations: they are deprived of the sense of motion which those in the vehicle take for granted. This lack of physical "embodiment" can lead to a decreased sense of urgency and less empathy.[158] We have been told, for example, that it can be difficult to judge acceleration without haptic feedback. The driver may also have less instinctive understanding that what they do matters in the "real world". They may need to fight against the subconscious impression that they are involved in a video game rather than in something with real life consequences. TRL note ways to provide remote drivers with more haptic clues. It is also possible that virtual reality headsets could provide a more immersive and realistic experience.[159]

5.22 Thirdly, there are fears that remote driving could give rise to motion sickness. This is caused by a mismatch between visual signals and signals from the inner ear.[160] TRL note that in some circumstances, exposure to dynamic visual displays might lead to "sopite" syndrome, which consists of drowsiness, rather than the nausea more commonly associated with motion sickness.[161]

5.23 Finally, in some set-ups, boredom is a factor. If staff are required to monitor the environment and intervene only rarely, they may become inattentive and distracted. TRL suggest that if workloads are too light to sustain attention, staff could be encouraged to undertake "gameful" tasks, such as being instructed to look for hazards. [162]

TRAINING AND REST PERIODS

5.24 Remote drivers will need specific, targeted training, in addition to holding a driving licence for any vehicle they control. They will also need health checks[163] and regular breaks.

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157 See the Civil Aviation Authority website: https://www.caa.co.uk/Commercial-industry/Aircraft/Unmanned-aircraft/Small-drones/Regulations-relating-to-the-commercial-use-of-small-drones/.

158 TRL Project Report PPR1011, pp 40 to 41 and the discussion in HF-IRADS report (above).

159 TRL Project Report PPR1011, p 41.

160 Above.

161 TRL Project Report PPR1011, p 42.

162 TRL Project Report PPR1011, pp 38 to 39.

163 These, for example, will be needed to check for motion sickness, fatigue or intoxication through drink or drugs.

5.25 In Consultation Paper 3 of the Automated Vehicles project, we looked at how safety-critical control centres are regulated in other industries. Examples are air traffic control and railway operating centres. Rest breaks are crucial. For example, an air traffic controller must be given a half hour break during or after every two-hour period.[164]

5.26 On the railways, tasks such as signalling, dispatching or "receiving and relaying of communications" are defined as "safety critical work".[165] Controllers must ensure that people carrying out such work (including control centre staff) have been assessed as fit for that work;[166] and do not carry out these tasks if affected by fatigue.[167] The Office of Road and Rail (ORR) has issued guidance to avoid fatigue.[168] Among other things, this sets standards for breaks where tasks "require continuous sustained attention, with no natural breaks in the task and where a lapse in attention can lead to safety implications". Minimum breaks are 10 to 15 minutes every two hours during the day and every hour during the night.

INCIDENT PROTOCOLS

5.27 In the event of an adverse incident, staff will need to intervene promptly to assist passengers, alert emergency services and remove the vehicle. In some cases, they may need to talk to other road users who have been involved in collisions with the vehicle. They will then need to document the problem and retain data in accordance with the CCAV code.[169]

5.28 This process will involve communicating with multiple parties, often in emotionally fraught circumstances. Communicating with injured people may be particularly difficult. A remote driver is not in a position to offer first aid and cannot insist that an injured person moves near a microphone or makes a phone call. Furthermore, without face-to-face communication, it may be difficult to establish rapport with someone who is angry, dazed or in shock. Staff will need clear and effective protocols and training to deal with these situations.

CONCLUSION

5.29 There is no clear answer to the question of whether remote driving is "safe". Although it gives rise to many serious safety concerns, it may be safe enough in some limited circumstances, provided sufficient care is taken over each aspect of the operation.

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164 The Civil Aviation Authority has established a Scheme for Regulation of Air Traffic Controllers' Hours (SRATCOH). This also sets out rules for the maximum hours in a shift and for the hours which can be worked in a 30-day period. Rest breaks are expected to provide a certain detachment from the operation e.g. rest areas and quiet spaces. (CAP 670 – ATS Safety requirement, D27). Air traffic controllers are also subject to strict drink and drugs laws: see Railways and Transport Safety Act 2003, ss 92 to 94.

165 The Railways and Other Guided Transport Systems (Safety) Regulations 2006 SI 2006/599, reg 23. The regulations implement the European Railway Safety Directive 2004/49/EC 2004 into domestic law.

166 Above, reg 24(1)(a).

167 Above, reg 25(1).

168 ORR, *Managing Rail Staff Fatigue* (January 2012), https://orr.gov.uk/__data/assets/pdf_file/0005/2867/managing_rail_fatigue.pdf, pp 44 to 47.

169 See para 5.10 above.

Questions

5.30 **Q6**: We have identified that any system to regulate beyond line-of-sight driving needs to consider the following:

(1) the adequacy of the communication network;

(2) cybersecurity;

(3) workstation layouts;

(4) staff training;

(5) staff health, fitness and vetting;

(6) staff attention and rest periods; and

(7) incident protocols.

Apart from the above, are there any additional challenges to consider?

Q7: If remote driving fails (through loss of connectivity, for example), how sophisticated would a risk mitigation system need to be? Would it effectively need to be an automated driving system, and regulated as such?

Chapter 6: Remote driving from abroad

6.1 Remote driving brings with it the possibility that vehicles may be driven on British roads from another jurisdiction. In preliminary discussions, it was suggested to us that companies may drive vehicles from remote operation centres based (for example) in Estonia or Belarus. The advantage of basing operation centres abroad is that the cost of employing drivers may be lower. The disadvantage is that it may exacerbate the driver's sense of detachment. It also makes it more difficult to hold wrongdoers accountable for their actions.

6.2 Here we briefly consider the accountability issues raised by remote driving from abroad and whether the UK can insist that the driver holds a UK driving licence. We ask if remote driving from outside the jurisdiction should be prohibited.

GEOGRAPHIC SCOPE

6.3 As discussed in Chapter 1, the Law Commission of England and Wales is only able to make recommendations concerning the law of England and Wales. We therefore look primarily at how the issue would be dealt with within England and Wales. However, the legal and practical issues raised by driving on Scottish roads from outside the UK appear similar. We are therefore interested in views on how to regulate driving from outside the UK on roads situated anywhere in Great Britain.

6.4 By contrast, we are not concerned with driving in England and Wales from Scotland or vice versa. Here the legal and practical problems are far fewer.[170] Nor does the paper cover Northern Ireland. Different legal issues would be raised by driving in Northern Ireland from the Republic of Ireland (or from elsewhere in the EU). They are outside the scope of this project and we have not considered them.

ACCOUNTABILITY

6.5 We have considered how the law would respond to a vehicle driven on roads in England and Wales by a remote driver in a remote operations centre outside the UK. What would happen if the vehicle were found to be driven in a dangerous or inconsiderate way, or if the driver appeared to be under the influence of drink or drugs?

6.6 The first question is whether any wrongdoing would be prosecuted in England and Wales or abroad. The Crown Prosecution Service (CPS) explain that the principle of territoriality under public international law means that a crime should be prosecuted in the place where it occurred:

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[170] In *Robert Millar (Contractors) Ltd* [1970] 2 QB 54, a fatal road accident occurred on a motorway in England when a visibly worn and defective front tyre on a lorry blew out at speed. The driver admitted causing death by dangerous driving, and the appellants, a Scottish haulage company and its managing director, were convicted as secondary parties, on the basis that they knew of the defect when they despatched the lorry from its Glasgow depot.

> A preliminary presumption should be made that, if possible, a prosecution should take place in the jurisdiction in which the majority – or the most important part – of the criminality occurred or in which the majority – or the most important part – of the loss was sustained. Hence, both the quantitative ('the majority') and the qualitative ('the most important part') dimensions should be duly considered.[171]

6.7 The leading case, *Smith,* established that a crime may be prosecuted in England and Wales if "a substantial part of the offence" is committed there.[172] In our view, if the vehicle is driven on roads in England and Wales, this test would be met. Given that driving offences only arise from the manner or condition in which a vehicle is driven, the substantial part of the criminality occurs within England and Wales, and that is where any loss is sustained.[173]

6.8 The main problems would be practical.[174] It would, for example, be difficult to track down evidence of what happened in a foreign remote-control centre. For example, if the vehicle is driven in a way associated with drunk driving, it would not be possible to identify the driver and administer a breathalyser test sufficiently quickly before the driver sobers up.

6.9 Even if the driver is identified and evidence for a prosecution is obtained, the need to extradite the driver will lead to further delays and expense. And extradition cannot be guaranteed in respect of some jurisdictions.[175]

6.10 The effect of a failure to extradite those accused of driving offences is vividly illustrated by the death of the motorcyclist Harry Dunn in Northamptonshire on 27

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171 CPS, *Jurisdiction* (Legal guidance, updated 2 September 2020 and 26 July 2021), https://www.cps.gov.uk/legal-guidance/jurisdiction.

172 *Smith (Wallace Duncan) (No. 4)* [2004] EWCA Crim 631, [2004] QB 1418. The traditional approach in English law was that, in the absence of specific statutory provision, an offence was deemed to be committed where it was completed: *Harden* [1963] 1 QB. However, following *Smith*, the "substantial part" approach has been endorsed in *R (Purdy) v DPP* [2009] UKHL 45, [2010] 1 AC 345 and applied in *Sheppard* [2010] EWCA Crim 65, [2010] 2 All ER 850; see also *Blackstones Criminal Practice 2022,* para A8.5

173 However, the point has not yet been tested.

174 See, for example, *CPS Director's Guidance on the handling of cases where the jurisdiction to prosecute is shared with prosecuting authorities overseas* (17 July 2013) which notes practical issues including whether the prosecution can be divided into separate cases in two or more jurisdictions; the availability of admissible evidence; and the location and interests of the victim(s), witnesses, and the accused: https://www.cps.gov.uk/publication/directors-guidance-handling-cases-where-jurisdiction-prosecute-shared-prosecuting.

175 The Extradition Act 2003 (EA) governs extradition proceedings. The EU-UK Trade and Cooperation Agreement, implemented domestically via amendments to the EA made by the European Union (Future Relationship) Act 2020, sets out the UK and EU's extradition agreement from 31 December 2020. Extradition to the UK from the EU is governed by EA, Part 3. For extradition to the UK from territories outside the scope of the EA, requests are issued under the Royal Prerogative. These can be made on the basis of a bilateral treaty, the 1957 European Convention on Extradition, any other multilateral convention to which the UK and extraditing country are both parties, or through an ad-hoc extradition request to a state seeking the return of a named individual for a specific offence.". See: https://www.gov.uk/guidance/extradition-processes-and-review#extradition-to-the-uk; https://www.gov.uk/government/publications/international-mutual-legal-assistance-agreements/mutual-legal-assistance-and-extradition-treaty-list-accessible-version.

August 2019.[176] The CPS sought an extradition warrant against a driver alleged to have caused the fatal accident while driving on the wrong side of the road, but the United States refused on grounds of diplomatic immunity. The case remains unresolved.[177] The failure to bring anyone to justice for Harry Dunn's death has raised acute public concern.[178] A failure to bring a remote driver to justice is likely to be met with similar concerns.

6.11 These factors combine to bring a real risk of injustice for victims of remote driving in Great Britain when the remote driving is performed by companies and individuals located outside the UK.

6.12 Further, if any regulatory requirements are imposed on remote driving in Great Britain, it will be difficult to monitor compliance with them if the remote driving facilities are located abroad. In Chapter 10 we discuss a compulsory licensing scheme for those engaged in remote driving, which grants regulators powers to sanction licensees and inspect their premises. It may be difficult to prosecute a foreign company for breach of a licensing system, or to enforce a penalty, if they do not have assets in the UK. Nor would it be possible to inspect centres to see if they are safe.

DRIVING LICENCES

6.13 We have also considered whether a remote driver who is driving vehicles on UK roads from another jurisdiction needs to hold a UK driving licence. Take an example of a vehicle driven from Country A (say, for the purposes of illustration, Albania) in Town B (say, Birmingham). Would it be sufficient for the driver to hold an Albanian driving licence?

6.14 The issue is dealt with by Article 41(2) of the Vienna Convention on Road Traffic 1968.[179] This states:

> (a) Contracting Parties shall recognize:

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176 See https://www.theguardian.com/uk-news/2021/dec/13/harry-dunn-anne-sacoolas-to-face-criminal-trial-in-the-uk-over-teenagers-death.

177 Whilst a civil settlement has been reached in the US, criminal proceedings in the UK are ongoing after the CPS vacated a hearing due to take place on 18 January 2022 to "enable ongoing discussions": https://www.bbc.co.uk/news/uk-england-northamptonshire-58642224, https://www.theguardian.com/uk-news/2022/jan/14/harry-dunn-hearing-vacated-to-enable-ongoing-discussions-with-anne-sacoolas.

178 Amongst other things, the death of Harry Dunn led to his parents meeting with President Trump: https://www.nytimes.com/2019/10/16/world/europe/donald-trump-harry-dunn-anne-sacoolas.html; an intervention from the Archbishop of Canterbury: https://www.theguardian.com/uk-news/2019/nov/30/archbishop-of-canterbury-demands-wife-of-us-diplomat-be-extradited-to-uk; protests outside RAF Croughton: https://metro.co.uk/2020/01/04/harry-dunn-protesters-blockade-us-base-demanding-diplomats-wife-returns-uk-12001935/; meetings between Prime Minister Boris Johnson and President Biden: https://www.bbc.co.uk/news/uk-england-northamptonshire-57436665, https://news.sky.com/story/joe-biden-personally-trying-to-move-things-along-in-harry-dunn-case-says-boris-johnson-12413924; and a review of the diplomatic immunity arrangements at RAF Croughton: https://www.theguardian.com/uk-news/2019/oct/21/raab-commissions-review-into-diplomatic-immunity, https://www.bbc.com/news/uk-england-53500449.

179 Vienna Convention on Road Traffic 1968 (adopted 8 November 1968, entered into force 21 May 1977) 1042 UNTS 17, art 41(2).

(i) Any domestic permit conforming to the provisions of Annex 6 to this Convention;

(ii) Any international permit conforming to the provisions of Annex 7 to this Convention…

as valid for driving in their territories a vehicle coming within the categories covered by the permits, provided that the permits are still valid and that they were issued by another Contracting Party…

(b) Driving permits issued by a Contracting Party shall be recognized in the territory of another Contracting Party until this territory becomes the place of normal residence of their holder.

6.15 In other words, the UK is obliged to recognise a driving licence issued by another contracting party as valid for driving on UK roads until the driver becomes normally resident in the UK.[180] As Albania is a contracting party to the convention, this means that the UK is obliged to recognise the driver's Albanian driving licence as valid, until such time as the driver became resident in the UK (which is never likely to happen).

6.16 This is potentially problematic. As we have seen, remote driving is difficult. The difficulties may be greater for a driver who has learnt to drive on the other side of the road and who is unfamiliar with British road layouts.

CONCLUSION

6.17 In our view, remote driving from outside the jurisdiction raises serious concerns. In the long term, it may be possible to agree international standards to ensure a minimum level of regulation, together with co-operation agreements on enforcement. At present, however, no such standards exist. There is no international consensus that remote driving can be performed safely.

6.18 We welcome views on how these problems can be addressed. One possible solution would be to prohibit remote driving on roads in Great Britain from outside the UK. To enforce this measure, the police could be given powers to seize a vehicle driven from abroad.

[180] There are exceptions under art 41(4) where recognition of a licence may be refused: (1) where a driver has a disability and a condition of their licence is to wear a device or for the vehicle to be equipped to their disability, and this condition is not met; (2) where a driver is under 18 years old and (3) where a driver does not meet the minimum age limits for the vehicle in question: see Annex 6, para 8C, CE, D and DE (vehicles with a maximum mass of more than 3,500 kg, vehicles carrying eight or more passengers, and/or both vehicle types with a trailer attached).

Questions

6.19 **Q8**: We welcome views on how the problems raised by remote driving from outside the jurisdiction can be addressed.

Q9: Should remote driving on roads in Great Britain from outside the UK be prohibited?

Chapter 7: The case for legal reform

7.1 Here we summarise why legal reform of remote driving may be needed, drawing on earlier chapters. We have identified three main problems with the current law:

(1) The uncertainties of the existing law may have a chilling effect, deterring some worthwhile projects;

(2) The same uncertainties could be exploited to put unsafe systems on the road. At present there is little regulation of how remote driving is conducted; and

(3) There are problems in accountability. At present, the main accountability for poor remote driving lies with the individual driver, even if the driver has little control over key aspects of the operation. The issue becomes particularly acute where vehicles are driven on UK roads from abroad.

7.2 We look at each issue in turn.

THE CHILLING EFFECT OF LEGAL UNCERTAINTY

7.3 In Chapter 3 we highlighted uncertainties over the effect of some construction and use regulations, particularly regulations 104, 107, and 110. These uncertainties might deter some worthwhile projects with the potential to bring significant benefits to society.

7.4 Some insurers told us they were reluctant to insure projects which involve remote driving, due to the risk that the project may be found to be illegal. This uncertainty could make insurance unnecessarily expensive. In some cases, it might deter insurers from providing insurance at all. The fear is that if something goes wrong the insurer could suffer reputational risk for having insured an illegal enterprise. Similarly, industry players might be deterred from investing in remote driving for lack of certainty over whether it is lawful.

7.5 Both fears over insurance and investments could have a chilling effect on trials and innovation.

A LACK OF APPROPRIATE SAFETY REGULATION

7.6 The uncertainty of the law is also a problem for public safety. At present there is no clear legal bar to stop a risk-tolerant organisation from setting up a remote driving centre, provided that the vehicles are not clearly unsafe.

7.7 An organisation that conducted remote operations in a clearly unsafe way would contravene the law. The organisation would, for example, breach regulation 100 of the Road Vehicles (Construction and Use) Regulations 1986,[181] which requires a vehicle to be "in such condition … that no danger is caused or is likely to be caused to any

[181] SI 1986 No 1078.

person in or on the vehicle … or on a road".[182] They would also breach section 3 of the Health and Safety at Work etc Act 1974. This requires employers to conduct their operation in such a way to ensure, as far as reasonably practicable, that persons are not exposed to risks to their health and safety.

7.8 However, where the risks are not obvious, there is relatively little law or regulation to comply with. The CCAV Code of Practice does not have the force of law.[183] There is no licensing system, and no checks to ensure that the organisation is meeting the many challenges outlined in Chapter 5.

ACCOUNTABILITY

7.9 The third major problem with the current law is that it places primary responsibility on the individual driver rather than on the organisation as a whole. In the event of a collision, the individual driver could face criminal prosecution, possibly for a serious offence (such as causing death by dangerous driving). Yet the individual driver may have little control over problems of connectivity or latency, failed sensors or a poor workstation. The main fault may lie with the organisation, for the way its operations have been managed.

7.10 Furthermore, under the current law, a remote driver bears responsibility for the roadworthiness of the vehicle. The individual driver would be liable if, for example, the tyres are bald, the number plate is obscured, or a lamp housing is cracked. Yet a driver in a remote location could have no way of knowing that these problems exist.

7.11 It is true that the driver's employer could also be prosecuted for an unroadworthy vehicle, either because they "use" the vehicle or because they cause or permit another to use it. However, the offences faced by employers are relatively minor.[184] By contrast, if it would be obvious to a competent and careful driver that the condition of the vehicle is dangerous, and the condition leads to a fatality, the driver could face life imprisonment for causing death by dangerous driving.[185]

7.12 A poor system of work could lead to an employer facing prosecution under section 3 of the Health and Safety at Work etc Act 1974.[186] However, this legislation is rarely used in response to road traffic accidents. Health and Safety Executive (HSE) guidance states that health and safety at work legislation generally should not be

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182 Road Vehicle (Construction and Use Regulations) 1986 SI 1986 No 1078, reg 100.

183 See Ch 9, paras 9.26 to 9.27.

184 Under section 40A of the Road Traffic Act 1988, for example, it is an offence to use or cause or permit another to use a vehicle in a dangerous condition. The maximum penalty is a £2,500 fine and three penalty points.

185 See Road Traffic Act 1988, s 1 and the definition of dangerous driving in s 2A(2). For further discussion of this point, see Automated Vehicles (2022) Law Com No 404; Scot Law Com No 258 (the Automated Vehicles report), paras 8.106 to 8.113.

186 For a detailed discussion of this offence, see Automated Vehicles: Consultation Paper 3 – A regulatory framework for automated vehicles (2020) Law Commission Consultation Paper No 252; Scottish Law Commission Discussion Paper No 171 (CP3), Appendix 3, paras 3.7 to 3.41.

enforced in respect of road traffic accidents when more specific and detailed legislation applies.[187]

7.13 In Chapter 10 we consider a possible new regulatory framework, to place greater legal responsibility on the organisation responsible for remote driving. Under these proposals, the individual driver would continue to be liable for most driving offences, such as careless or dangerous driving, or exceeding the speed limit. However, we tentatively suggest new defences where the matter is clearly outside the remote driver's control.

7.14 The lack of appropriate accountability becomes even more serious where a vehicle is driven on UK roads from abroad. In the event of an accident, it may be difficult to identify the driver, investigate the causes of the accident, or bring those responsible to justice.

CONCLUSION

7.15 For these reasons, the way that the current law applies to remote driving appears unsatisfactory. In the next chapters we consider options for reform, both in the short and longer term. Our tentative view is that the first issue (the chilling effect of legal uncertainty) can be addressed through secondary legislation. However, safety regulation and new forms of legal accountability will require provisions in a new Act of Parliament.

[187] HSE guidance expressly states that accidents involving roadworthiness of vehicles are a matter for the police, rather than the HSE, See HSE's role in the investigation of work-related road accidents and advice on responding to enquiries on managing work-related road safety, para 19, at https://www.hse.gov.uk/foi/internalops/oms/002.htm.

Chapter 8: International perspectives

8.1 This chapter gives a brief overview of the key elements of remote driving legislation in five other jurisdictions: the United States, Germany, Japan, Australia and Finland. Our focus is on how other jurisdictions regulate remote driving beyond line of sight.[188]

8.2 Understanding the approaches of other jurisdictions can reveal different ways of addressing legal issues and balancing public policy objectives. However, the lack of agreed terminology regarding remote driving makes it challenging to assess and compare regulatory landscapes. Where laws are silent on remote driving, it is not necessarily prohibited: it is often difficult to know how current laws would apply to the new technology.[189] In addition, many of the provisions we have found on remote driving only cover it peripherally, with the main focus on automated vehicle testing. Remote driving is not always distinguished from remote assistance.[190]

8.3 Such difficulties have been identified by Bryant Walker-Smith in relation to the automated driving legislation of some US states.[191] He observes that given their modest context, references to remote driving within these statutes do not represent the kind of policymaking that offers lessons for other jurisdictions "interested in affirmatively, deliberately and holistically regulating remote driving".[192]

DEFINITIONS

8.4 Several jurisdictions we have considered do not refer to "remote driving" but rather to "teleoperation". For example, in Florida a "teleoperation system" is defined as:

> the hardware and software installed in a motor vehicle which allow a remote human operator to supervise or perform aspects of, or the entirety of, the dynamic driving task.[193]

A "remote human operator" is "a natural person who is not physically present in a vehicle equipped with an automated driving system who engages or monitors the

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188 For remote driving within line of sight, see UN Regulation No 79 on uniform provisions concerning the approval of vehicles with regard to steering equipment. This provides a maximum distance of 6 metres and speed of up to 10km/hr (+ 2 km/h tolerance) for Automatically Commanded Steering Functions (ACSF) of Category A and for Remote Control Parking (RCP) in particular.

189 See Bryant Walker Smith, "Congress's automated driving bills are both more and less than they seem", (The Center for Internet and Society, October 2017), https://cyberlaw.stanford.edu/blog/2017/10/congress's-automated-driving-bills-are-both-more-and-less-they-seem.

190 Remote assistance falls short of remote driving. Although this mode of operation may fall within a broader category of "teleoperation", it falls outside of our definition of remote driving, which requires the direct exercise of lateral or longitudinal control over a vehicle. See Ch 2, paras 2.29 to 2.30 and 2.39.

191 We are very grateful to Professor Bryant Walker-Smith for his review and insights regarding federal and state rule-making in respect of remote driving.

192 Bryant Walker Smith, "On Remote Driving" (The Centre for Internet and Society, 16 May 2022), https://cyberlaw.stanford.edu/blog/2022/05/remote-driving.

193 Florida Statutes §316.003(93) (2021).

vehicle from a remote location".[194] As discussed in Chapter 2,[195] it is possible that references to "supervision" or "monitoring" are wider in scope than our definition of driving.

8.5 The definition of "remote operator" under the California Autonomous Vehicles Regulations has an even broader meaning. It not only encompasses monitoring the vehicle and performing the dynamic driving task but includes communicating with occupants.[196]

REMOTE DRIVING IN THE CONTEXT OF AUTOMATED DRIVING

8.6 At present, relatively few jurisdictions appear to regulate "pure" remote driving (that is, remote driving as an independent activity in its own right). Instead, most of the jurisdictions we have considered provide for remote driving as an emergency fallback measure in the testing of automated vehicles. Some jurisdictions combine this with remote assistance of an automated driving system: examples are Japan and the US states of California, Florida and Michigan. German legislation envisages a limited role for remote driving in the context of automated vehicles.

8.7 By contrast, the US states of Louisiana and Alabama provide for teleoperation of vehicles which are not automated, as well as those which are.

Japan

8.8 In Japan, remote driving is only permitted as an emergency measure for vehicles equipped with an automated driving system.[197]

8.9 The National Police Agency has the power to grant advance permission for trials on public roads of two types of automated driving technologies:

(1) "remotely-controlled automated driving systems" under which "monitor-operators at a place remote from the vehicles" can drive vehicles with telecommunications technology "in the event of an emergency"; or

(2) "specially-equipped motor vehicles" in which "in-car monitor-operators drive manually or autonomously on public roads motor vehicles that are operated with special devices other than ordinary wheel and brakes when driven manually". [198]

8.10 The use of remote control in automated driving systems is limited in two ways. First, it must only be used in "an emergency".[199] Second, it is limited to "demonstration tests

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194 Florida Statutes §316.003(93) (2021).

195 See Ch 2 paras 2.29 to 2.30.

196 California Code of Regulations, Title 13, Division 1, Chapter 1, Article 3.7, §227.02(n).

197 We would like to thank Hiroko Mizuno of the Automated Driving Planning Office, Traffic Planning Division, National Police Agency of Japan for her help with this section.

198 National Police Agency, Criteria for Granting Permission for Road Use in Demonstration Tests of Automated Driving on Public Roads (September 2020), https://www.npa.go.jp/english/bureau/traffic/douroshiyou.pdf(hereafter "NPA 2020"), p 1.

199 NPA 2020, p 1.

towards the practical application of automated driving".[200] It is not regulated as an independent activity.

California

8.11 The California Autonomous Vehicle Regulations implement and interpret provisions in the California Vehicle Code[201] which provide for the regulation of autonomous vehicles on public roads in California.[202]

8.12 The regulations provide for a permit system for the operation of autonomous vehicles on public roads. This includes permits for Autonomous Vehicle Testing with a driver,[203] Autonomous Vehicle Driverless Testing Permits[204] and Autonomous Vehicle Deployment Permits.[205]

Driverless Testing Permits

8.13 For testing without a driver, the definition of "autonomous mode" includes circumstances where technology performs the dynamic driving task "with…a natural person actively supervising the autonomous technology's performance of the dynamic driving task".[206] Similarly, an "autonomous test vehicle" is defined as follows (emphasis added):

> A vehicle that has been equipped with technology that is a combination of both hardware and software that, when engaged, performs the dynamic driving task, <u>but requires</u> a human test driver <u>or a remote operator to continuously supervise the vehicle's performance of the dynamic driving task.</u>[207]

8.14 To obtain a Driverless Testing Permit, manufacturers must certify that there is a "communication link" between the vehicle and a "remote operator".[208] A "remote operator" is defined as a natural person who "engages and monitors the autonomous vehicle", is able to communicate with occupants and "may also have the ability to perform the dynamic driving task for the vehicle or cause the vehicle to achieve a minimal risk condition."[209]

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200 NPA 2020, p 1.

201 Division 16.6 (§§38750 – 38755), originally added by Statutes of 2012, Chapter 570 (Senate Bill 1298): https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201120120SB1298.

202 California Vehicle Code, §1651; California Code of Regulations, Title 13, Division 1, Chapter 1, Article 3.7, §227.00(a) and Article 3.8, §228.00(a).

203 As of 20 April 2022, 48 such permits have been issued.

204 Issued under Article 3.7. As of November 19, 2021, seven such permits have been issued.

205 Issued under Article 3.8. As of September 30, 2021, three manufacturers have been authorized to deploy autonomous vehicles.

206 California Code of Regulations, Title 13, Division 1, Chapter 1, Article 3.7, §227.02(a).

207 California Code of Regulations, Title 13, Division 1, Chapter 1, Article 3.7, §227.02(b).

208 California Code of Regulations, Title 13, Division 1, Chapter 1, Article 3.7, §227.38(b)(1).

209 California Code of Regulations, Title 13, Division 1, Chapter 1, Article 3.7, §227.02(n).

8.15 The regulations clearly envisage that under a Driverless Testing Permit there will be a remote operator constantly supervising the vehicle, who may at times perform the dynamic driving task.[210]

8.16 Manufacturers' law enforcement interaction plans confirm that under Driverless Testing Permits, remote operators may on occasion perform the dynamic driving task. For example, the plan published by AutoX Technologies Inc states that the vehicles are "continuously monitored and can be remotely controlled by an AutoX remote operator".[211]

Deployment Permits

8.17 The definition of "autonomous mode" for the purposes of a Deployment Permit specifies that the vehicle must be capable of "performing the dynamic driving task without the active physical control or monitoring of a natural person".[212] Applications for a Deployment Permit must include a description of how the vehicle will "safely come to a complete stop when there is an autonomous technology failure".[213] Nonetheless, there is still a requirement for a "communication link between the vehicle and a remote operator".[214]

8.18 Information published by deployment permit holders indicates that reaching a complete stop in the event of a technology failure may be performed by a remote operator. This suggests there could be a longer-term role for remote driving beyond the testing stage. Nuro Inc, one of three manufacturers to be issued with a Deployment Permit, has published its law enforcement interaction plan.[215] The plan contains several statements about the roles of remote operators, including that:

(1) When a Nuro vehicle is pulled over, "a Nuro remote operations specialist may be able to maneuver the vehicle via teleoperation, if requested."[216]

(2) When a Nuro Autonomous Prius vehicle is required to achieve a minimal risk condition in the event of a significant fault (by coming to a safe stop), "an In-Vehicle Safety Operator will take control of the vehicle operation and pull the vehicle over."[217]

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210 This is evident in the definitions of "autonomous mode" and "remote operator" under Article 3.7 (Testing of Autonomous Vehicles), as well as the training requirements of remote operators: California Code of Regulations, Title 13, Division 1, Chapter 1, Article 3.7, §§227.02(a), 227.02(n) and 227.38(f).

211 *AutoX Driverless Vehicle Test Law Enforcement Interaction Plan*, p 3, https://www.autox.ai/files/law_enforcement_interaction_plan.pdf.

212 California Code of Regulations, Title 13, Division 1, Chapter 1, Article 3.8, §228.02(b).

213 California Code of Regulations, Title 13, Division 1, Chapter 1, Article 3.8, §228.06(c)(2).

214 California Code of Regulations, Title 13, Division 1, Chapter 1, Article 3.8, §228.06(b)(1).

215 Nuro, *Law Enforcement Interaction Plan* (2021), https://nuro.sfo3.digitaloceanspaces.com/FINAL-2021-LEIP-_-PUBLIC.pdf?mtime=20220120095316&focal=none.

216 Nuro, *Law Enforcement Interaction Plan* (2021), p 16, https://nuro.sfo3.digitaloceanspaces.com/FINAL-2021-LEIP-_-PUBLIC.pdf?mtime=20220120095316&focal=none.

217 Nuro, *Law Enforcement Interaction Plan* (2021), p 33, https://nuro.sfo3.digitaloceanspaces.com/FINAL-2021-LEIP-_-PUBLIC.pdf?mtime=20220120095316&focal=none.

Florida

8.19 State legislation in Florida provides that "autonomous"[218] and "fully autonomous"[219] vehicles equipped with a "teleoperation system" "may operate without a human operator physically present in the vehicle when the teleoperation system is engaged", provided that the vehicle complies with specified requirements.[220]

8.20 As explained in paragraph 8.4 above, "teleoperation system" and a "remote driver" both have a wider meaning than our definition of "remote driving".

Michigan

8.21 In Michigan, legislation regulating the testing of automated vehicles and automated driving systems on public streets and highways does not expressly refer to either teleoperation or remote driving. However, there is a requirement for an authorised person with the ability to monitor the vehicle's performance and, if necessary, take control of its movements promptly. This also applies to circumstances where the automated vehicle, technology or automated driving system is being tested "without a human operator".[221]

8.22 The legislation does not specify the location of the authorised person monitoring the vehicle. This would appear to leave open the possibility that the authorised person may be situated remotely.

Germany

8.23 In Germany, legislation on "autonomous vehicles" envisages remote supervision by a "technical supervisor". However, the supervisor is not required to continuously monitor the journey. Generally, remote driving is not permitted in the commercial deployment of autonomous vehicles, though "in line of sight" remote driving is allowed in limited circumstances.

8.24 Recent amendments to the German Road Traffic Act (the Straßenverkehrsgesetz – "StVG") and the Pflichtversicherungsgesetz (Compulsory Insurance Act) were adopted to facilitate the deployment of vehicles with autonomous driving functions. Remote supervision is implicit in the provisions. For example, the accompanying Ordinance

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218 Any vehicle equipped with an "automated driving system", defined as "the hardware and software that are collectively capable of performing the entire dynamic driving task of an autonomous vehicle on a sustained basis, regardless of whether it is limited to a specific operational design domain": Florida Statutes §316.003(3) (2021).

219 A vehicle equipped with an automated driving system designed to function without a human operator: Florida Statutes §316.003(3)(c) (2021).

220 Florida Statutes §316.85(5) (2021). However the extent to which vehicles that are not fully autonomous can operate without a "licenced human operator physically present in the vehicle" is unclear. See Florida Statutes §§316.85(5) and 319.145(2) (2021).

221 Michigan Compiled Laws §257.665(2) (2021). An "operator" in these circumstances is a person who operates an automated vehicle on a highway or street by causing it to move under its own power in automatic mode: Michigan Compiled Laws §§257.35a(b) and 257.(36)(b) (2021).

refers on four occasions to a "control centre" where the "technical supervision" of "autonomous" vehicles is located.[222]

8.25 The amendments to the StVG define a new role of the "technical supervisor": a natural person who supervises an "autonomous" vehicle".[223] However, the accompanying Ordinance expressly provides that:

> Autonomous driving functions must be able to perform all the tasks necessary for safe control within the defined operating area without a person driving the vehicle intervening in the control or the journey of the vehicle being continuously monitored by the technical supervisor. A motor vehicle with autonomous driving function operated autonomously within a defined operating area shall require interaction with a technical supervisor only in exceptional situations.[224]

8.26 The technical requirements for autonomous vehicles also point to the conclusion that the "technical supervisor" is not intended to have direct control over a vehicle in the same way as a remote driver. For example, the vehicle must possess "technical equipment" which can perform the driving task independently without it being permanently monitored by the technical supervisor.[225] The "technical equipment" must also enable the vehicle to comply with traffic regulations and achieve a minimal risk state independently.[226]

8.27 Although remote driving is for the most part excluded from the technical requirements, it is possible in limited circumstances. Annex I of the Ordinance permits the control of a vehicle in "manual driving mode" through a "remote control unit" located outside the vehicle if two conditions are satisfied:

(1) the speed of the vehicle is no higher than walking pace; and

(2) the maximum distance over which remote control is exercised is no more than six metres, measured in a straight line.[227]

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222 Draft Ordinance implementing the Act amending the Road Traffic Act and the Compulsory Insurance Act (Federal Ministry of Transport and Digital Infrastructure, 10 June 2021) (the AFGBV), Annex I, pp 63, 81, 85 and 106, https://ec.europa.eu/growth/tools-databases/tris/index.cfm/en/search/?trisaction=search.detail&year=2021&num=344&mLang=EN.

223 Draft of an Act amending the Road Traffic Act and the Compulsory Insurance Act – the Autonomous Driving Act (Federal Government, 8 February 2021) (Amendments to the StVG), §1d(3), https://ec.europa.eu/growth/tools-databases/tris/index.cfm/en/search/?trisaction=search.detail&year=2021&num=81&mLang=DE.

224 AFGBV, Annex I, Part 4, section 13.

225 StVG, §1e(2) no 1.

226 StVG, §1e(2) nos 2, 3 and 7. An MRS is defined elsewhere in the amendments to the StVG as a state of "greatest possible road safety" for other road users and third parties, taking "due account of the traffic situation": StVG §1d(4). This seems intended to correspond to the SAE definition of an MRC rather than the lower threshold of "minimum risk manoeuvre" in the ALKS Regulation.

227 AFGBV, Annex I, Part 1, section 4.

8.28 The limited provision for remote driving within "manual driving mode" tracks the requirements of UN Reg 79 and seems to envisage only a limited role for remote driving in the context of automated vehicles.

REMOTE DRIVING AS A SEPARATE ACTIVITY

Louisiana and Alabama

8.29 The 2021 Revised Statutes of the state of Louisiana and the 2021 Code of the state of Alabama provide for teleoperation of vehicles which are not automated, as well as those which are. The relevant provisions are similar for both states, facilitating the testing of trucking and bus applications of the technology.

8.30 In both states, a "commercial motor vehicle" [228] equipped with a teleoperation system may operate without a conventional driver physically present in the vehicle if a "remote driver" [229] is operating the vehicle. In addition to other requirements, the vehicle must be:

> capable of achieving a reasonably safe state, such as bringing the vehicle to a stop if a failure of the teleoperation system occurs that renders the remote driver unable to perform the entire dynamic driving task for the vehicle.[230]

8.31 The concept of a "reasonably safe state" is not defined.

RECENT OR PROPOSED REFORM

Australia

8.32 At present, Australia does not have specific regulation for remote driving. However, a new national law proposed by the National Transport Commission (NTC), the "Automated Vehicle Safety Law (AVSL)", includes remote driving within its scope.[231] The NTC proposes that remote drivers should be regulated within the same framework as automated vehicles, alongside the companies putting automated vehicles on the road and their corporate officers.

8.33 The most recent policy paper published by the NTC defines a "remote driver" as:

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228 Louisiana Revised Statutes §400.1(4) (2021); Alabama Code §§32-9A-1(2) and 32-9B-1(3) (2021).

229 "Remote driver" is defined slightly differently in the two jurisdictions. In Louisiana, "remote driver" is defined as "a natural person who is not seated in an autonomous commercial motor vehicle, but is able to perform the entire dynamic driving task": Louisiana Revised Statutes, §400.1(9) (2021). In Alabama, "remote driver" is defined as "a natural person who is not seated in a commercial motor vehicle, but is able to perform the entire dynamic driving task": Alabama Code §32-9B-1(8) (2021). However, in neither jurisdiction does the definition of a "teleoperation" system refer to the vehicle being "autonomous" or "automated": Louisiana Revised Statutes §400.1(10) (2021); Alabama Code §32-9B-1(9) (2021).

230 Louisiana Revised Statutes §400.7(A)(6) (2021); Alabama Code §32-9B-7(5) (2021).

231 We thank the NTC's Dan Keely, Head of Automated Vehicle Program and Rahila David, Principal Policy Advisor, for their assistance with this section.

a human who can operate an automated vehicle but who is not seated in a position to manually operate vehicle controls such as brakes and steering. A remote driver may operate the vehicle from outside it or inside it.[232]

8.34 At present the NTC takes the view that it would prefer to wait for international consensus and more industry experience before developing specific provisions on remote driving.[233]

Finland

8.35 Finland is another jurisdiction that does not have regulation specific to remote driving at present.[234] However, a recent amendment to its road transport laws is intended to remove a potential barrier to remote driving. The change to the Road Traffic Act expanded the definition of 'road user' (previously confined to a person located on a road or inside a vehicle) [235] to be location-neutral. The new definition can now cover persons not themselves on the road if they drive vehicles that are on the road.[236]

8.36 The explanatory memorandum accompanying the legislative reform cited remote-controlled parking as an example of a situation in which a person might drive a vehicle from "outside the road area". It was also explained that the subparagraph would take into consideration the development of autonomous vehicles.[237]

LIABILITY

8.37 Where the testing or deployment of automated vehicles relies on remote driving, questions arise about the extent of criminal and civil liability incurred by the remote driver.

8.38 This has the potential to be complex where parts of the dynamic driving task are performed by an automated driving system and parts by a remote driver. Between US states, there is currently a lack of consensus as to whether, in such circumstances,

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232 National Transport Commission (NTC), *The regulatory framework for automated vehicles in Australia* (February 2022), p 12, at https://www.ntc.gov.au/sites/default/files/assets/files/NTC%20Policy%20Paper%20-%20regulatory%20framework%20for%20automated%20vehicles%20in%20Australia.pdf.

233 National Transport Commission (NTC), *The regulatory framework for automated vehicles in Australia* (February 2022), p 15, at https://www.ntc.gov.au/sites/default/files/assets/files/NTC%20Policy%20Paper%20-%20regulatory%20framework%20for%20automated%20vehicles%20in%20Australia.pdf

234 We would like to thank Kirsi Miettinen, Senior Adviser for Legislative Affairs of the Data Department, Automation Unit, in the Finnish Ministry of Transport and Communications for her guidance regarding the regulation of remote driving in Finland.

235 The original definition stated: Road user means any person on the road or inside a vehicle or tram that is on the road. (tienkäyttäjällä jokaista, joka on tiellä taikka sillä olevassa ajoneuvossa tai raitiovaunussa).

236 The revised wording reads: Road user means any person who is on the road or drives a vehicle or tram that is on the road (tienkäyttäjällä jokaista, joka on tiellä taikka kuljettaa sillä olevaa ajoneuvoa tai raitiovaunua).

237 Proposal of the Board of Directors HE 180/2017 vp, Government proposal to Parliament on the Road Traffic Act and some related acts (3 November 2021), available at https://www.eduskunta.fi/FI/vaski/HallituksenEsitys/Sivut/HE_180+2017.aspx

the remote driver or the automated driving system should be considered the "operator" of the vehicle for the purpose of compliance with traffic and motor vehicle laws.[238]

8.39 By contrast, in Japan the National Police Agency's permit scheme for trials of automated driving technologies provides that "monitor-operators" are always subject to the obligations of drivers under Japan's Road Traffic Act.[239]

REQUIREMENTS TO BE IN THE JURISDICTION

8.40 In Chapter 6, we consider whether a remote driver should be required to be in the jurisdiction. There are precedents for this elsewhere. For example, in Florida a "remote human operator" who "engages and monitors" a vehicle from "a remote location" using a "teleoperation system" must "be physically present in the United States and be licensed to operate a motor vehicle by a United States jurisdiction".[240]

8.41 The criteria for obtaining an advance permit from Japan's National Police Agency to test automated driving technologies on public roads do not expressly limit the location of the remote driver by jurisdiction. However, the permit criteria do highlight the importance of a "monitor operator" being able to reach the location of the vehicle quickly if needed or at the request of police officers.

Question

8.42 **Q10:** We would be grateful if stakeholders could inform us about their experience of how remote driving is regulated abroad.

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238 The 2021 Louisiana Revised Statutes and the Alabama Code (2021) both provide that where a remote driver is operating a commercial motor vehicle via a teleoperation system, the remote driver is considered the "operator" of the vehicle for the purpose of assessing compliance with applicable traffic or motor vehicle laws: Louisiana Revised Statutes §400.6(A) (2021); Alabama Code §32-9B-6(b) (2021). "Commercial motor vehicles" is a category which appear to include "autonomous" or "automated" commercial motor vehicles: Louisiana Revised Statutes §400.1 (2021); Alabama Code §32-9B-1 (2021). On the other hand, in Michigan legislation providing for the testing of automated vehicles on public roads requires there to be an authorised person with the ability to monitor the vehicle's performance and, if necessary, promptly take control of the vehicle's movements: Michigan Compiled Laws §257.665(2)(b) (2021). However, when engaged, an automated driving system which allows for the operation of a vehicle without a human operator is considered the "driver" or "operator" of a vehicle for the purpose of determining compliance with applicable traffic or motor vehicle laws: Michigan Compiled Laws §257.665(5) (2021).

239 NPA 2020, p 4.

240 Florida Statutes §316.003(93) (2021).

Chapter 9: Short-term reform

9.1 In Chapter 7 we point to three problems with the existing law. First, the uncertainties of the existing law could have a chilling effect. Secondly, the same uncertainties could be exploited to put unsafe vehicles on the road. Finally, the law may hold an individual driver criminally liable for things that go wrong, even if the fault lies with the organisation.

9.2 Here we consider how far these problems could be addressed in the short term, without the need for primary legislation. As we have seen, the Secretary of State for Transport has flexible powers to amend the Road Vehicles (Construction and Use) Regulations 1986 and to provide exemptions from them.[241] This can be done:

(1) by issuing "Vehicle Special Orders" in respect of "specified vehicles or in respect of vehicles of specified persons";

(2) by amending the STGO to authorise special types of vehicles; [242] and

(3) by amending the Road Vehicle (Construction and Use) Regulations 1986.[243]

9.3 Furthermore, guidance on how provisions are to be interpreted may be given statutory effect through amendments to the Highway Code, under section 38 of the Road Traffic Act 1988.

9.4 We look at these powers in more detail below. Overall, our provisional conclusion is that the possible chilling effect of the current law can be overcome without the need for primary legislation. Any uncertainties could be addressed by using some or all of these powers. However, introducing more sophisticated safety regulation powers and changing accountability is likely to require primary legislation, as discussed in Chapter 10.

VEHICLE SPECIAL ORDERS

9.5 As discussed in Chapter 3, Vehicle Special Orders (VSOs) are discretionary and provided on a case-by-case basis to individual vehicles or individual fleets. To obtain a VSO, the operator or owner should apply to the Vehicle Certification Agency (VCA).[244] VSOs enable vehicles to be authorised for use on roads even if they do not comply with construction and use regulations, as long as the applicant can show that they reach a comparable level of safety. Importantly, VSOs also allow for conditions or

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241 SI 1986 No 1078.

242 Road Traffic Act 1988, s 44 gives the Secretary of State for Transport broad powers specify how Construction and Use Regulations shall apply to special types of vehicles, or to new and improved types of vehicle. The powers may either be exercised through a statutory instrument or through orders "applying only to specified vehicles or to vehicles of specified persons": see s44(3). In practice this has led to a division between a General Order (set out in a statutory instrument) and individual "Vehicle Special Orders".

243 SI 1986 No 1078. See the power in Road Traffic Act 1988, s 41.

244 https://www.vehicle-certification-agency.gov.uk/other-certification/vehicle-special-orders/.

restrictions to be placed upon how vehicles are used and the length of their authorisation.

9.6 VSOs have, for example, been used to allow the trialling of e-scooters. VSOs issued for e-scooters specify technical requirements as well as conditions of use. One of the conditions is to set out the area in which an e-scooter can be used. The VSOs for e-scooter trials also specify the operator of the trial, the length of the trial and the numbers of e-scooters that can be used.[245]

9.7 The flexibility which VSOs afford could be useful in the short term for approving vehicles intended to be used for remote driving. They would allow vehicles which do not conform to construction and use regulations to be assessed by the authorities for safety and to be approved subject to conditions. VSOs may also be varied or revoked by subsequent order of the Secretary of State.[246]

AMENDING THE SPECIAL TYPES GENERAL ORDER (STGO)

9.8 The Road Vehicles (Authorisation of Special Types) (General) Order 2003 provides exemptions from some construction and use regulations for "special types" of motor vehicles and trailers. The exemptions apply to vehicles which fall within the order without the need for an application. As outlined in Chapter 4, the STGO lists many types of special vehicles (such as excavation and track-laying vehicles) as well as vehicles intended for trials and tests.

9.9 The power to make a General Order is a broad one. At present, the STGO requires that any "new and improved" vehicles are only used for tests, demonstrations and ancillary purposes.[247] However, the power under section 44(1) of the Road Traffic Act 1988 is wider. It is not limited to trials but also covers vehicles constructed for "special purposes", "new or improved types of motor vehicles" and "motor vehicles equipped with new or improved equipment". This means that the power could be used to allow for the deployment of "new and improved" vehicles with remote driving capability.

9.10 Importantly, a General Order may modify construction and use regulations as well as provide exemptions. In some areas this power has already been used. For example, mobile cranes allowed under the STGO must be fitted with "an efficient brake" capable of braking the mobile crane at the maximum weight permitted by the order.[248] The STGO then gives detail about what brakes comply with this requirement.[249]

9.11 A General Order may also impose restrictions on the use of a special vehicle. For example, the STGO requires that before the start of any journey, the user of a track-

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245 See https://www.oxfordshire.gov.uk/sites/default/files/file/roads-and-transport-connecting-oxfordshire/e-scotter_cover_letter_and_VSO_Voi.pdf. Several hundred VSOs have been issued to facilitate e-scooter trials. The period for most e-scooter trials is generally nine months.

246 Road Traffic Act 1988, s 41(3).

247 Road Vehicles (Authorisation of Special Types) (General) Order 2003 (STGO), sch 11, para 2.

248 STGO, sch 2, para 7.

249 STGO, sch 2, para 8.

laying vehicle must obtain written consent from the road authority for each road on which the vehicle is to be used.[250]

Using the STGO to modify construction and use regulations

9.12 One way of removing uncertainties over current construction and use regulations would be to amend the way that the STGO deals with tests and trials.

9.13 The STGO could be used to modify regulation 104 (proper control and a full view of the road ahead). One possibility, for example, would be to specify that regulation 104 would be satisfied if the driver has a full view through a screen, provided that steps have been taken to ensure safety. These steps would be to ensure that connectivity is sustained, that the driver can understand the driving environment, and that the driver is able to maintain proper control of the vehicle. Guidance on what these steps involve could be provided through the code of practice. The order could even make any exemption contingent on the user obtaining written consent from the road authority to use the vehicle on a particular road.

9.14 Similarly, the order could modify regulation 107 (leaving a vehicle unattended). The order could, for example, specify that regulation 107 is satisfied by remote supervision, provided that the user has taken appropriate steps to prevent interference with the vehicle.

9.15 We seek views on whether such modifications would be helpful in allowing responsible developers to proceed with remote driving while preserving safety. Alternatively, would such provisions simply introduce additional uncertainties into the law?

Defining tests and trials

9.16 The STGO lists vehicles for tests and trials and those equipped with new or improved equipment as a recognised category of special vehicle. However, the current exemption only applies if the vehicle is being used for testing or demonstration or for other necessary use (delivery on sale or in connection with repair).[251]

9.17 There is some uncertainty over whether tests and demonstrations are permitted to have a commercial aspect to them. For example, developers have questioned whether a “trial” using remote driving to deliver rental vehicles may charge for delivering the vehicle. Elsewhere in the STGO, prohibitions on vehicles being used for “hire and reward” are clear: track-laying vehicles, for example, may only be used for certain purposes such as demonstration and may not be used for “hire or reward”.[252] However, the limits of a trial or demonstration are not fully defined.

9.18 We welcome views on whether tests and trials should include those with a commercial element to them.

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250 STGO, art 44.

251 STGO, sch 11, para 2. See para 3.53 earlier.

252 STGO, art 43(1) and 43(2).

9.19 We note that the power to make exemptions is not limited to tests and demonstrations, but could be used for full commercial deployment. Our current, tentative view, however, is that commercial deployment would require a more sophisticated licensing system to ensure that the many safety challenges are met and to address issues of accountability. We welcome views.

AMENDING CONSTRUCTION AND USE REGULATIONS

9.20 As discussed, the Road Vehicles (Construction and Use) Regulations 1986 are amended frequently, on a roughly annual basis. The enabling power for those regulations is very broad.[253] This means that the text of problematic regulations almost certainly could be changed for all vehicles, without the need for primary legislation.

9.21 We have also considered whether new regulations are needed to prevent organisations from putting unsafe remote driving systems on the road. This would be possible. A new construction and use regulation could, for example, prohibit remote driving from outside the jurisdiction. A new regulation could even prohibit remote driving altogether, allowing an exemption if the organisation had conducted a risk assessment and obtained approval from a specified authority. However, this would be a relatively crude tool to tackle a complex problem.

9.22 The main problem would be enforcement. A contravention of any new construction and use regulation would be a criminal offence under section 42 of the Road Traffic Act 1988. However, breach of section 42 is a minor offence as it carries a relatively low penalty. The maximum penalty is a £1,000 fine (or £2,500 if committed in respect of a goods vehicle or a vehicle adapted to carry more than 8 passengers).[254] Increasing the penalty, or introducing a power to seize the vehicle, would require primary legislation.[255]

9.23 New construction and use regulations would not provide regulators with powers to inspect remote-control centres, or to apply regulatory sanctions. Nor would they change the system of civil or criminal accountability. This would require primary legislation, as discussed in Chapter 10.

STATUTORY GUIDANCE

9.24 Some Acts of Parliament provide for the Secretary of State to publish statutory guidance to assist with understanding of the law. This guidance is not legally binding but may be taken into account by the courts when deciding a related matter.

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253 Road Traffic Offenders Act 1988, s 41.

254 Road Traffic Offenders Act 1988, sch 2. If the requirement concerned brakes or steering gear, a slightly higher penalty would be available under s 41A: a £2,500 fine (or an unlimited fine if committed in respect of a goods vehicle or a vehicle adapted to carry more than 8 passengers).

255 Statutory powers to seize vehicles are ordinarily set out in primary legislation. Some examples include: power to seize a vehicle being driven without licence or insurance (Road Traffic Act 1988, ss 165A and 165B); power to detain a vehicle if a person has been arrested for an offence of human trafficking (Modern Slavery Act 2015, ss 2 and 12); power to inspect and detain goods vehicles, public services vehicles and motor vehicles which can carry eight or more passengers (Road Traffic Act 1988, s 68).

9.25 The Highway Code is an example of statutory guidance. Produced by the Department for Transport (DfT), the Highway Code aims to promote safety by setting out expected road user behaviour and information on signs and road markings. Many of the rules set out in the Highway Code reproduce legal requirements. However, a failure to comply with other rules of the code is not, in itself, an offence. Rather in proceedings regarding an existing liability, a party to the proceedings may rely on the code as "tending to establish or negative" the liability.[256] It is up to the court to decide how much weight to give to the code on the facts of the individual case before them.[257]

9.26 At present the CCAV Code of Practice for automated vehicle trialling is not statutory guidance.[258] It does, however, set out a detailed list of recommendations for organisations seeking to conduct trials, including certain requirements for "remote-controlled tests". Amongst other things, it states that remote drivers should understand risks such as latency and network problems. It also provides that trialling organisation should have "robust risk management process and training procedures in place".

9.27 The requirements relating to remote driving set out in the CCAV Code of Practice could be given more weight by being made statutory guidance. One possibility would be to add these provisions to the Highway Code. We welcome views on whether this would be desirable.

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256 Road Traffic Act 1988, s 38(7).

257 Although the Highway Code is often accorded considerable weight, there are cases in which a defendant has been acquitted of careless driving despite breaches of the code and cases in which a defendant has been found guilty of careless driving even though the code has been complied with. See *Wilkinson's Road Traffic Offences*, para 5-77.

258 See Ch 3, para 3.3.

Questions

9.28 **Q11**: Should the Road Vehicles (Authorisation of Special Types) (General) Order 2003 be amended? In particular, we welcome views on whether amendments should:

(1) specify that regulation 104 is satisfied if the driver of a special vehicle has a view of the road ahead through a screen, provided that appropriate steps have been taken to ensure safety;

(2) specify that regulation 107 is satisfied by remote supervision, provided that the user has taken appropriate steps to prevent interference with the vehicle;

(3) make any exemptions contingent on the user obtaining written consent from the road authority to use the vehicle on a particular road; and

(4) permit trials and demonstrations with a commercial element to them?

Q12: Should any provisions of the CCAV Code of Practice relating to remote driving be added to the Highway Code?

Q13: Are changes needed to construction and use regulations to enable the safe introduction of remote driving?

Chapter 10: Regulation in the longer term

10.1 In this chapter we consider what a regulatory system might look like in the longer term, in the event of an opportunity to enact new primary legislation.

10.2 Under current law, the remote driver is the person primarily responsible if anything goes wrong.[259] In our view, remote drivers should continue to be responsible for matters within their control. However, when the driver is beyond line-of-sight and depends on connectivity to perceive hazards, some aspects of safety are under the control of the organisation rather than the individual. We therefore think that beyond-line-of-sight driving should be overseen by a licensed organisation. We also suggest limited defences for individual drivers where matters are outside their knowledge or control.

10.3 In our tentative view, when remote driving is beyond line of sight, the organisation responsible for the remote driving should obtain a licence by proving to a regulator that their system is safe. New primary legislation should place non-delegable civil duties on the licensed organisation and re-assign criminal liabilities, so that individual drivers are only responsible for matters under their control.

10.4 By contrast, we do not see a need for fundamental changes when the driver is in line of sight of the vehicle. A driver who operates a remote parking or summons feature may be an ordinary individual. Such drivers will retain the normal responsibilities of a driver for both dynamic and non-dynamic purposes, and do not require an organisation to oversee what they are doing.

DRAWING ON RECOMMENDATIONS FOR NUIC OPERATOR LICENSING

10.5 The Law Commissions' report on Automated Vehicles recommended that all vehicles which operate without a driver or user-in-charge should be overseen by a licensed organisation. We called this organisation a "no user-in-charge" (NUIC) operator.

10.6 Remote driving is different from automation, so it would not be covered directly by a NUIC operator licensing system. However, NUIC operation often raises similar concerns, and may be combined with remote driving. In our view, it would be desirable for the regulation of remote driving and NUIC operation to be as similar as possible, so that they can be combined with the minimum of duplication. We have therefore drawn on the principles behind the recommended NUIC operator licensing system.

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[259] See the discussion in Appendix 1, para 1.12. An analysis of how 81 road traffic offences apply to drivers is available in Background Paper A: Who is liable for road traffic offences? available at: https://s3-eu-west-2.amazonaws.com/lawcom-prod-storage-11jsxou24uy7q/uploads/2022/01/Background-papers-24-01-22.pdf.

TERMINOLOGY

10.7 The organisations responsible for using heavy goods and public service vehicles are referred to as "operators".[260] The Automated Vehicles report adopted to the same term to refer to NUIC "operators". However, we are aware that in the context of remote driving, the term "operator" has the potential to be confusing: it is often used to refer to an individual rather than an organisation.

10.8 We wish to adopt terminology which makes it clear when responsibilities rest with an individual and when they rest with an organisation. We have therefore considered alternative language. One possibility would be to refer to the licensed organisation as an Entity for Remote Driving Operation (or ERDO). "Entity" refers to a corporate entity rather than an individual, while "operation" refers to an organisation that uses and operates vehicles rather than develops or manufactures them. We welcome views on whether this would make the organisation/individual distinction clearer.

A SYSTEM OF "ERDO" LICENSING

10.9 In this chapter we ask whether primary legislation should make it an offence to drive (or cause or permit a person to drive) a vehicle beyond line of sight unless the operation of the vehicle is overseen by a licensed organisation.

10.10 In Chapter 2, we defined "line of sight" in terms of the ability to perceive the driving environment. A person within line of sight may use some form of aids and enhancements but would still have an adequate view of the driving environment if the aids fail. By contrast, a driver who relies on connectivity to see all or part of the driving environment is driving beyond line of sight. We ask if this is an appropriate dividing line.

10.11 The Automated Vehicles report recommended that to obtain a licence, a NUIC operator would need to show that it is of good repute; has appropriate financial standing; conducts its operations within Great Britain; and is professionally competent to run the service. The NUIC operator would then submit a safety case to show how it will operate vehicles safely. In particular, it would need to demonstrate how it will maintain connectivity; provide suitable equipment; train and supervise staff; and combat problems of boredom and inattention.

10.12 The Automated Vehicles report pointed to the importance of the information submitted in the safety case. It therefore recommended specific criminal offences where misrepresentations and non-disclosure by the NUIC operators had implications for safety. A senior individual would be required to take responsibility for the accuracy of the information supplied and could face prosecution if it is incorrect or incomplete. Other senior managers could also be liable if they consented to or connived in the offence. We ask whether similar requirements should apply to entities responsible for remote driving beyond line of sight.

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[260] Goods Vehicles (Licensing of Operators) Act 1995, s 2(1); Public Passenger Vehicles Act 1981, s 81.

ERDO RESPONSIBILITIES

10.13 One advantage of a licensing scheme is that it can impose a clear list of duties on the remote driver's employer. We ask whether the licensing scheme should specifically state that the ERDO should be under a duty:

(1) to ensure that the driver is able to drive safely by:

(a) taking reasonable care that connectivity is suitable;

(b) ensuring that in the absence of connectivity or driver input, the vehicle comes to a safe stop;

(c) providing suitable work-stations; and

(d) maintaining suitable training, vetting, health checks, working hours and breaks;

(2) to maintain the vehicle (including software updates and cybersecurity);

(3) to check that any load is safe and secure before that journey starts, and ensure that the number of passengers does not overload the vehicle;

(4) to insure the vehicle;

(5) following an incident, to provide information to other road users, the police and the regulator;

(6) not to impede traffic flow, by (for example) ensuring that vehicles are not left in inappropriate places; and

(7) to check the route and pay any tolls and/or charges.

10.14 In Chapter 5 we highlighted how little is known about the safety of remote driving. It will be important to gather information about how the challenges of remote driving can be overcome, and whether it gives rise to safety concerns.

10.15 We therefore think that an ERDO should also be under a duty to respond to the regulator's requests for information about the safety of remote driving. This should include, but not be limited to, information about collisions and injuries.

10.16 Many ERDO duties will overlap with duties on the individual driver. The individual driver will not only be liable to be prosecuted for dynamic driving offences, such as dangerous or careless driving or exceeding the speed limit. They may also be prosecuted for failing to report accidents or for faults within the vehicle within their knowledge and control. Often, this reflects the current law. For example, if a vehicle is

used while uninsured, both the driver and their employer are currently liable to be prosecuted under section 143 of the Road Traffic Act 1988.[261]

10.17 We think it would be helpful to set out a clear list of ERDO duties. A breach of these duties would lead to both civil liability and possible regulatory sanctions, as discussed below. This would be in addition to any criminal penalties brought against individual drivers for, as an example, careless driving or exceeding the speed limit.

CIVIL LIABILITY FOR BREACH OF ERDO DUTIES

10.18 At common law, a breach of statutory duty does not automatically give a victim the right to claim compensation.[262] However, a statute may specifically provide that a statutory duty gives rise to civil liability. Where this occurs, the claimant does not need to show that the defendant was negligent. It is sufficient to show that the defendant breached their statutory duty and that the breach caused damage to the claimant.

10.19 Before 2013, claims for breach of statutory duty were common in employers' liability cases. Section 47(2) of the Health and Safety at Work etc Act 1974 provided that breach of a duty imposed by health and safety regulations was actionable "except in so far as the regulations provide otherwise". In 2013, section 47 was amended to change the presumption.[263] Now breaches of health and safety regulations are only actionable if regulations specifically state that they are. In other cases, the courts will use health and safety regulations as a guide to what constitutes reasonable care by an employer.[264]

10.20 Despite the 2013 changes, there are examples where statute provides claimants with compensation for breach of statutory duty, without the need to show negligence.[265] The most relevant example for our purposes is section 1(1) of the Employer's Liability (Defective Equipment) Act 1969. This states that where:

(a) an employee suffers personal injury in the course of his employment in consequence of a defect in equipment provided by his employer for the purposes of the employer's business; and

(b) the defect is attributable wholly or partly to the fault of a third party (whether identified or not),

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261 For discussion of this issue see Background paper A: Who is liable for road traffic offences?, paras 1.19 to 1.30 available at: https://s3-eu-west-2.amazonaws.com/lawcom-prod-storage-11jsxou24uy7q/uploads/2022/01/Background-papers-24-01-22.pdf.

262 *X (Minors) v Bedfordshire CC* [1995] 2 AC 633. For an account of the law in this area, see Administrative Redress: Public Bodies and the Citizen (2008) Law Commission Consultation Paper No 187, para 3.111.

263 Enterprise and Regulatory Reform Act 2013, s 69.

264 For a discussion of this principle, see A Dugdale and M Jones (eds), *Clerk and Lindsell on Torts* (23rd ed 2020), para 12-46.

265 For example, civil claims for breach of statutory duty are available for breaches of regulations made under the Merchant Shipping Acts 1979 and 1995: *Cairns v Northern Lighthouse Board* [2013] CSOH 22, 2013 SLT 645. Under the Gas Act 1965, s 14, a public gas transporter is "absolutely liable in civil proceedings" for damage caused by gas escaping from an underground gas storage, subject to normal principles of contributory negligence.

the injury shall be deemed to be also attributable to negligence on the part of the employer (whether or not he is liable in respect of the injury apart from this subsection), but without prejudice to the law relating to contributory negligence and to any remedy by way of contribution or in contract or otherwise which is available to the employer in respect of the injury.

10.21 We think it would be helpful to give claimants a similar right to claim compensation if they are injured by any breach of the first three ERDO duties we have outlined above. The statute could, for example, provide claimants with a clear right to claim compensation from an ERDO for a failure of the vehicle to reach a safe stop following a lack of connectivity (subject to a deduction for contributory negligence).[266] The claimant would not have to prove that the ERDO was at fault in designing the software.

10.22 An alternative approach would be to make the insurer liable to compensate the victim for injury and damage caused by a remotely driven vehicle, in a similar way to the Automated and Electric Vehicles Act 2018, discussed in Chapter 4. We welcome views.

REGULATORY SANCTIONS

10.23 The Automated Vehicles report recommended that breach of NUIC licence conditions should be enforced through a system of regulatory sanctions. The report commented that the police, vehicle examiners and the public would bring complaints to the attention of the regulator, who would then investigate. If the regulator established that the licence conditions had been broken, it would then have a broad range of sanctions available to it.

10.24 The report recommended that the regulator should have power to impose the following regulatory sanctions on NUIC operators:

(1) informal and formal warnings;

(2) civil penalties;

(3) redress orders;

(4) compliance orders;

(5) suspension of licence;

(6) withdrawal of licence; and

(7) recommendation of attendance at a restorative conference.[267]

10.25 We envisage that some entities will want to hold a combined licence for both NUIC operation and remote driving. We would therefore wish to have a similar list of

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[266] We envisage that the legislation would specifically extend the principles behind the Law Reform (Contributory Negligence) Act 1945 to this new cause of action.

[267] Automated Vehicles (2022) Law Com No 404; Scot Law Com No 258, para 9.120.

sanctions apply to both roles. This would enable the regulator to investigate a problem and impose a sanction irrespective of whether the issue arose in automated mode, in remote driving mode or in the handover between the two.

10.26 We ask whether the listed sanctions should be available to the regulator if an ERDO breaches one of their duties.

INSPECTION POWERS

10.27 The Automated Vehicles report recommended that the regulator of NUIC operators should have power to enter and inspect a remote operations centre. The report commented that "this will be an important tool to see that the system outlined in an operator's safety case is being followed in practice". It is common for other regulators to have inspection powers. For example, the Traffic Commissioners, vehicle examiners and the police have powers to inspect a heavy goods vehicle (HGV) operator's maintenance facilities and seize relevant documents.[268]

10.28 We ask if the regulator should have powers to inspect remote operation centres, both in the event of a problem and more generally.

REDUCING SOME OF THE RESPONSIBILITIES ON INDIVIDUAL DRIVERS

10.29 Under the current law, individual drivers bear heavy responsibilities, not only for the dynamic driving task but also for the condition of the vehicle. Here we consider possible reductions in individual driver responsibilities in limited and specific cases.

Non-dynamic responsibilities that a remote driver cannot comply with

10.30 Under the current law, drivers have duties to ensure that:

(1) the vehicle is roadworthy;

(2) any load is safe and secure, and that the number of passengers does not overload the vehicle; and

(3) child passengers wear an appropriate seat belt or restraint.

10.31 A driver situated in a remote-control centre may have some limited knowledge about the condition of the vehicle: a brake-light warning may, for example, be displayed on their screen. It is also possible that a driver could be given a video feed of the inside of the vehicle to monitor if children are wearing seat belts, provided that bandwidth and attention restraints were to allow it.

10.32 However, in other cases the duties may be difficult or impossible to fulfil. As discussed, the individual driver may have no way of knowing that the tyres are bald, the number plate is obscured, or a lamp housing is cracked.[269] They will not be in position to check the roof-rack or the load. Nor would they be able to strap a toddler

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[268] Automated Vehicles (2022) Law Com No 404; Scot Law Com No 258, para 9.125.

[269] See Ch 7, paras 7.9 to 7.13.

into a child seat. Instead, the ERDO will need to find other ways to fulfil these duties by (for example) employing other staff to check vehicles as they leave the depot.

10.33 We ask whether the law should provide individuals who drive vehicles beyond line of sight with an immunity from prosecution in respect of those issues concerned with roadworthiness, loading and seat belts which are outside their knowledge or control.

A defence for dynamic driving offences where the individual driver was not at fault

10.34 In the event of a collision, individual drivers can face serious charges, such as causing serious injury or death by dangerous driving. Prison terms are common.[270] This has the potential to act unfairly where the individual driver did nothing wrong, and the fault lay entirely with the organisation (for example, as a result of inadequate connectivity).

10.35 In the Automated Vehicles report we discussed a similar situation. This is where a user-in-charge takes over from an automated system and, given the previous actions of an automated driving system, cannot prevent an incident from taking place. We gave the following example:

> While in self-driving mode, an automated vehicle turns into a one-way street in the wrong direction. The user-in-charge takes over but is unable to avoid a collision. Alternatively, no collision takes place, but in the moment the user-in-charge takes over, they are driving in the wrong direction and may be guilty of an offence on that basis.[271]

10.36 We did not think that an individual should be penalised for an offence that was brought about by the ADS and which a competent and careful driver could not reasonably prevent. We recommended that in these circumstances the driver should have a specific defence where their driving did not fall below the standard reasonably expected of a competent and careful driver in the circumstances.

10.37 We ask whether a similar defence should be available to a remote driver facing criminal prosecution. Should a beyond line-of-sight driver have a defence to a driving charge if, given failures within the remote driving system, a competent and careful driver could not have avoided the offence in the circumstances?

10.38 For the offences of driving without due care and attention and dangerous driving, it is already an element of the offence that the driving falls below the standard of a competent and careful driver. Section 3ZA(2) of the Road Traffic Act 1988 states:

> a person is to be regarded as driving without due care and attention if (and only if) the way he drives falls below what would be expected of a competent and careful driver.

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270 For example, in the 10 years between 2009 to 2018, 3,214 people were imprisoned in England and Wales for the offences of causing death or serious injury by driving. This included 1,357 people imprisoned for causing death by dangerous driving and 1,027 imprisoned for causing serious injury by dangerous driving. Ministry of Justice, *Criminal justice system statistics quarterly: outcomes by offence data tool* (2018), https://www.gov.uk/government/statistics/criminal-justice-system-statistics-quarterly-december-2018.

271 See Automated Vehicles: Summary of joint report (Law Com No 404 / Scot Law Com No 258), para 4.9.

10.39 Similarly, dangerous driving normally requires that the way the driver drives "falls far below what would be expected of a competent and careful driver".[272] These are objective standards.[273] For example, a learner driver is expected to abide by the same standards as an experienced driver.[274] The offences would not necessarily take account of the particular circumstances a remote driver faced.

10.40 Other driving offences, such as exceeding the speed limit, impose strict liability. In the interests of equity, we would not wish to grant remote drivers an immunity unavailable to other drivers. However, this needs to be balanced against a possible injustice to individual drivers in holding them criminally liable for faults in a remote driving system. We seek views.

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272 Road Traffic Act, s 2A(1)(a).

273 In *McCrone v Riding*, the Court of Appeal referred to the standard as "an objective standard, impersonal and universal, fixed in relation to the safety of other users of the highway": [1938] 1 All ER 157 at 158E (by Lord Hewart CJ).

274 For example, in *R v Preston Justices* [1982] RTR 173, a learner driver was convicted of driving without due care and after performing an emergency stop without checking that the road behind because his instructor told him to. See also *Simpson v Peat* [1952] 2 QB 24.

Questions

10.41 **Q14**: To distinguish clearly between organisational and individual responsibilities, should the organisation behind remote driving be referred to with new terminology, as an Entity for Remote Driving Operation (or ERDO)?

Q15(1): Should primary legislation make it an offence to drive (or cause or permit a person to drive) a vehicle beyond line of sight unless the vehicle is overseen by a licensed ERDO?

Q15(2): For these purposes, is it appropriate to define a "beyond line-of-sight" driver as one who relies on connectivity to see all or part of the driving environment?

Q16: To obtain a licence, should an ERDO be required to show that it:

(1) is of good repute;

(2) has appropriate financial standing;

(3) conducts its operation within Great Britain; and

(4) is professionally competent to run the service?

Q17: Should an ERDO be required to submit a safety case to show how it will operate remotely driven vehicles safely?

Q18: Should an ERDO face criminal offences where misrepresentations and non-disclosure in the safety case have implications for safety?

Q19: Should an ERDO be under a duty:

(1) to ensure that the driver is able to drive safely by:

  (a) taking reasonable care that connectivity is suitable;

  (b) ensuring that in the absence of connectivity or driver input, the vehicle comes to a safe stop;

  (c) providing suitable work-stations; and

  (d) maintaining suitable training, vetting, health checks, working hours and breaks;

(2) to maintain the vehicle (including software updates and cybersecurity);

(3) to check that any load is safe and secure before that journey starts, and ensure that the number of passengers does not overload the vehicle;

(4) to insure the vehicle;

(5) following an incident, to provide information to other road users, the police and the regulator;

(6) not to impede traffic flow by (for example) ensuring that vehicles are not left in inappropriate places;

(7) to check the route and pay any tolls and/or charges;

(8) to respond to the regulator's requests for information about the safety of remote driving; and

(9) any other duties not mentioned above?

Q20: To claim compensation should a person:

(1) have a right to claim compensation from the ERDO for injuries caused by a breach of the first three ERDO duties outlined above, subject to the normal law of contributory negligence?

(2) Alternatively, should an insurer be liable irrespective of where the fault lies (in a similar way to the Automated and Electric Vehicles Act 2018)?

Q21: Should the regulator have power to impose a range of sanctions on an ERDO, including improvement notices, civil penalties and (in serious cases) withdrawal of licence?

Q22: Should the regulator have powers to inspect remote operation centres, both in the event of a problem and more generally?

Q23: Should the law provide individuals who drive beyond line of sight with:

(3) an immunity from being prosecuted for any issues concerned with roadworthiness, loading and seat belts which are beyond the driver's knowledge and control; and

(4) a defence to a driving charge if a competent and careful driver in the same circumstances could not have avoided the offence?

Chapter 11: Questions

DEFINING A "REMOTE DRIVER"

Q1: Do you agree with the following tentative definitions?

(1) A driver is an individual who performs all or any of the following tasks:

(a) steering (lateral control);

(b) braking, removing a brake, or accelerating (longitudinal control); or

(c) monitoring the driving environment with a view to responding to objects or events by exercising lateral or longitudinal control (provided that this activity is safety critical).

(2) A remote assistant is not a driver if they do not exercise direct longitudinal or lateral control, but only advise an automated driving system to undertake a manoeuvre.

(3) For the purposes of this project, a "remote driver" is a driver who is outside the vehicle and who uses some form of wireless connectivity to control the vehicle (covering both in or beyond line of sight).

CONSTRUCTION AND USE REGULATIONS

Q2: Do uncertainties surrounding construction and use provisions cause difficulties in practice? We are particularly interested in whether uncertainties over regulations 104, 107 or 110 are delaying trials or making it more difficult to obtain insurance.

Q3: Are the various exemptions easy to navigate, or do they put any unnecessary obstacles in the way of trialling new forms of vehicle?

Q4: We seek views on whether any particular construction and use provisions should be maintained in the interests of safety, even for trials and demonstrations.

CIVIL LIABILITY

Q5: Is remote driving likely to cause victims undue delay and expense in claiming compensation; or could it defeat claims altogether?

THE SAFETY CHALLENGES OF REMOTE DRIVING

Q6: We have identified that any system to regulate beyond line-of-sight driving needs to consider the following:

(1) the adequacy of the communication network;

(2) cybersecurity;

(3) workstation layouts;

(4) staff training;

(5) staff health, fitness and vetting;

(6) staff attention and rest periods; and

(7) incident protocols.

Apart from the above, are there any additional challenges to consider?

Q7: If remote driving fails (through loss of connectivity, for example), how sophisticated would a risk mitigation system need to be? Would it effectively need to be an automated driving system, and regulated as such?

REMOTE DRIVING FROM ABROAD

Q8: We welcome views on how the problems raised by remote driving from outside the jurisdiction can be addressed.

Q9: Should remote driving on roads in Great Britain from outside the UK be prohibited?

INTERNATIONAL PERSPECTIVES

Q10: We would be grateful if stakeholders could inform us about their experience of how remote driving is regulated abroad.

SHORT-TERM REFORM

Q11: Should the Road Vehicles (Authorisation of Special Types) (General) Order 2003 be amended? In particular, we welcome views on whether amendments should:

(8) specify that regulation 104 is satisfied if the driver of a special vehicle has a view of the road ahead through a screen, provided that appropriate steps have been taken to ensure safety;

(9) specify that regulation 107 is satisfied by remote supervision, provided that the user has taken appropriate steps to prevent interference with the vehicle;

(10) make any exemptions contingent on the user obtaining written consent from the road authority to use the vehicle on a particular road; and

(11) permit trials and demonstrations with a commercial element to them?

Q12: Should any provisions of the CCAV Code of Practice relating to remote driving be added to the Highway Code?

Q13: Are changes needed to construction and use regulations to enable the safe introduction of remote driving?

REGULATION IN THE LONGER TERM

Q14: To distinguish clearly between organisational and individual responsibilities, should the organisation behind remote driving be referred to with new terminology, as an Entity for Remote Driving Operation (or ERDO)?

Q15(1): Should primary legislation make it an offence to drive (or cause or permit a person to drive) a vehicle beyond line of sight unless the vehicle is overseen by a licensed ERDO?

Q15(2): For these purposes, is it appropriate to define a “beyond line-of-sight” driver as one who relies on connectivity to see all or part of the driving environment?

Q16: To obtain a licence, should an ERDO be required to show that it:

(12) is of good repute;

(13) has appropriate financial standing;

(14) conducts its operation within Great Britain; and

(15) is professionally competent to run the service?

Q17: Should an ERDO be required to submit a safety case to show how it will operate remotely driven vehicles safely?

Q18: Should an ERDO face criminal offences where misrepresentations and non-disclosure in the safety case have implications for safety?

Q19: Should an ERDO be under a duty:

(1) to ensure that the driver is able to drive safely by:

  (a) taking reasonable care that connectivity is suitable;

  (b) ensuring that in the absence of connectivity or driver input, the vehicle comes to a safe stop;

  (c) providing suitable work-stations; and

  (d) maintaining suitable training, vetting, health checks, working hours and breaks;

(2) to maintain the vehicle (including software updates and cybersecurity);

(3) to check that any load is safe and secure before that journey starts, and ensure that the number of passengers does not overload the vehicle;

(4) to insure the vehicle;

(5) following an incident, to provide information to other road users, the police and the regulator;

(6) not to impede traffic flow by (for example) ensuring that vehicles are not left in inappropriate places;

(7) to check the route and pay any tolls and/or charges;

(8) to respond to the regulator's requests for information about the safety of remote driving; and

(9) any other duties not mentioned above?

Q20: To claim compensation should a person:

(1) have a right to claim compensation from the ERDO for injuries caused by a breach of the first three ERDO duties outlined above, subject to the normal law of contributory negligence?

(2) Alternatively, should an insurer be liable irrespective of where the fault lies (in a similar way to the Automated and Electric Vehicles Act 2018)?

Q21: Should the regulator have power to impose a range of sanctions on an ERDO, including improvement notices, civil penalties and (in serious cases) withdrawal of licence?

Q22: Should the regulator have powers to inspect remote operation centres, both in the event of a problem and more generally?

Q23: Should the law provide individuals who drive beyond line of sight with:

(1) an immunity from being prosecuted for any issues concerned with roadworthiness, loading and seat belts which are beyond the driver's knowledge and control; and

(2) a defence to a driving charge if a competent and careful driver in the same circumstances could not have avoided the offence?

Appendix 1: Definitions in law and recent reports

THE ROAD TRAFFIC ACT 1988

1.1 Section 192(1) of the Road Traffic Act 1988 states that:

> (1) "driver", where a separate person acts as a steersman of a motor vehicle, includes (except for the purposes of section 1 of this Act) that person as well as any other person engaged in the driving of the vehicle, and "drive" is to be interpreted accordingly.

1.2 Parliamentary debates from 1936 explain this provision. "Steersmen" were required for older, steam-driven vehicles. By the 1930s such vehicles were extremely old-fashioned but were still used in agriculture and by travelling showmen. They needed two people to drive them. The main driver was:

> responsible for getting steam up, applying the brakes and generally looking after the firing and mechanical side of the engine. When the engine goes downhill the driver… has to see that his fire is properly damped down, that he has not got too much steam up, and that his brakes are properly on.[275]

Given the difficulty of driving such vehicles, they relied on a second person to steer.

1.3 Thus the current position under the Road Traffic Act 1988 is that both the person who brakes/accelerates (longitudinal control) and the person who steers (lateral control) are drivers. The person with longitudinal control has full responsible for all aspects of driving, while the person with lateral control is responsible for everything except for the most serious crime - causing death by dangerous driving.[276]

CASE LAW

1.4 There is no direct case law on remote drivers. However, there are many cases in which the courts have been called on to decide who is a driver. The courts have tended to take a pragmatic approach to reach a just result in the case in front of them.

1.5 In *R v MacDonagh,* Lord Widgery CJ gave the classic definition of driving:

> The essence of driving is the use of the driver's controls in order to direct the movement, however that movement is produced.[277]

1.6 However, the courts have sometimes restricted this definition to prevent people from being convicted of serious offences that are not within the spirit of the legislation. In *R*

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275 Sir G. Fox HC Deb 08 May 1936 vol 311 cols 2070-71.

276 Road Traffic Act 1988, s 192(1) includes excludes steersmen from being drivers "for the purposes of section 1 of this Act", which creates the offence of causing death by dangerous driving.

277 [1974] RTR 372 at p 374 D–E.

v MacDonagh,[278] the appellant was disqualified from driving. His car was causing an obstruction and a police officer told him to move it. He stood with both feet on the road, put his shoulder against the door pillar and pushed the car, putting one hand inside on the steering wheel to control the movement. The court held that this did not constitute driving. Lord Widgery commented:

> Giving the words their ordinary meaning there must be a distinction between driving a car and pushing it. The dividing line will not always be easy to draw, and the distinction will often turn on the extent and degree to which the defendant was relying on the use of the driver's controls. [279]

1.7 Lord Widgery commented that pushing a motorcycle while holding the handlebars did not constitute driving.

1.8 The Scottish courts have taken a different view. In *McArthur v Valentine*,[280] the accused was drunk. He tried to start the car by pushing it to the top of an incline. He released the handbrake and placed his hands on the wheel, while holding the driver's door open and both feet on the ground. A five judge bench of the High Court of Justiciary held that this was driving. It reasoned that if a person used the driver's controls to direct the movement of the car, it was unnecessary to ask whether this also amounted to "driving" within the ordinary meaning of the word.

1.9 In *Burgoyne v Phillips* the defendant was drunk.[281] He sat behind the steering wheel, removed the parking brake and allowed the car to roll 30 feet. He failed to realise that the keys were not in the ignition and that the steering was locked. An English court held this to be driving, even though the defendant conspicuously failed to direct the movement of the car. By removing the parking brake, the defendant had acquired the full responsibilities of a driver.

1.10 The courts have also held that there can be more than one driver at any given time. In *Tyler v Whatmore*,[282] both the person in the passenger seat (who had both hands on the wheel) and the person sitting in the driving seat were held to have been driving. Similarly, in *Langman v Valentine*,[283] a learner driver in the driving seat and an instructor sharing control (one hand on the handbrake, the other on the steering wheel, and the ignition switch within his reach) were both held to be drivers at the same time.

1.11 Thus, under the current law, the "essence of driving" is said to be the use of the driver's controls to direct the movement of the vehicle. However, the courts have taken a pragmatic approach, looking at both the facts of the case and the policy behind the statutory provision.

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278 [1974] QB 448.

279 *R v MacDonagh* [1974] QB 448, 452.

280 1990 JC 146.

281 [1983] RTR. 49.

282 [1976] RTR 83

283 *Langman v Valentine* [1952] 2 All ER 803.

The legal consequences of being a driver

1.12 The legal consequences of being considered a "driver" are profound. Alongside the Automated Vehicles Report we published Background Paper A, which identified 81 road traffic offences which we consider under eight headings.[284] These related to:

(1) the condition of the driver;

(2) the condition of a vehicle;

(3) the way the vehicle is driven;

(4) where a vehicle is driven;

(5) where a vehicle is left;

(6) conduct following an accident;

(7) safety (including seat belts and secondary activities); or

(8) loading.

1.13 The most serious offences, such as causing death by dangerous driving, apply only to drivers. Others apply more widely. The legislation uses a variety of labels to identify the person who is primarily liable for an offence, including those "in charge of a vehicle", "using a vehicle", "driving a vehicle" and in some cases "propelling" a vehicle or "using a motorway". Despite the variety of terms used, however, the person primarily responsible for these offences is normally the driver. It appears that a driver is always a "user" and is always "in charge of" a vehicle, though the concept of a user may be wider that just the driver.

1.14 The effect is that once a person is considered a driver, they have heavy legal responsibilities, and face a wide variety of criminal offences if they fail to act correctly.

THE SAE TAXONOMY APRIL 2021

"Remote driving and remote driver"

1.15 The SAE defines remote driving in para 3.24 as: "real-time performance of part or all of the DDT and/or DDT fallback (including, real-time braking, steering, acceleration, and transmission shifting), by a remote driver". The notes clarify that "a receptive remote fallback-ready user becomes a remote driver when s/he performs the fallback".[285]

1.16 A remote driver is then defined in para 3.31 as "a driver who is not seated in a position to manually exercise in-vehicle braking, accelerating, steering, and transmission gear selection input devices (if any), but is able to operate the vehicle". Note 1 states that "a remote driver may include a user who is within the vehicle, within line-of-sight of the

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284 Available at: https://s3-eu-west-2.amazonaws.com/lawcom-prod-storage-11jsxou24uy7q/uploads/2022/01/Background-papers-24-01-22.pdf.

285 SAE Taxonomy J3016, para 3.24, note 1

vehicle, or beyond line-of-sight of the vehicle. Thus “remote” relates to the way that the controls work - not the way that the remote driver perceives the environment.

1.17 This is a very wide definition. It applies to a person who conducts “part or all” of the DDT. In other words, object and event detection and response (followed by braking) is sufficient to amount to remote driving. Nor does it matter whether the driver is in our out the vehicle, if they are not in a position to exercise manual controls.

1.18 This point emerges clearly from the remote parking examples used in para 3.31. In Example 1, a person exits the vehicle and uses a key fob to remotely park is a remote driver:

> If, during the maneuver, a dog enters the pathway of the vehicle, the remote driver releases the button on the key fob in order to cause the vehicle to stop automatically.

1.19 The SAE comment that in this example, the fact that the person completes the object and event detection and response by braking is sufficient to make them a remote driver.

1.20 In Example 2, the driver operates the same key fob from the back seat, rather than standing outside the vehicle. The SAE state that this person is also a remote driver.

“Remote assistance”

1.21 The SAE contrast remote driving with “remote assistance”. In para 3.23, remote assistance is defined as:

> event-driven provision, by a remotely located human of information or advice to an ADS-equipped vehicle in driverless operation in order to facilitate trip continuation when the ADS encounters a situation it cannot manage.

1.22 The important point here is that “remote assistance does not include real-time DDT or fallback performance by a remote driver”. Rather, the ADS performs the complete DDT and/or fallback, even when assisted by a remotely located human.

“Remote operator”

1.23 The term “remote operator” is not used in the latest SAE taxonomy. They do use the term “operate” which refers to “performing the entire DDT”. At para 3.20, the SAE explain that “operate” refers to activity which might either be performed either:

(1) by a (human) driver (with or without support from one or more Level 1 or 2 driving automation features); or

(2) by an ADS (at Level 3 to 5).

1.24 Note 1 suggests that the term is synonymous with “drive”:

> The term “drive” is not used in this document, however, in many cases it could be used correctly in lieu of “operate”.

BSI 1890 MARCH 2022

"Remote driving/remote driver"

1.25 BSI follow the SAE definition with one major change. BSI use the term "remote" to 'indicate beyond visual line-of-sight of the subject vehicle".[286]

"Remote assistance"

1.26 Again, BSI follow the SAE definition with the same change: remote indicates "beyond visual line of sight".

"Remote operator"

1.27 BSI uses the term "remote operator". It is defined as in para 2.1.62 as "a safety operator who oversees the operation of an AV from a remote location". BSI note that "the remote operator might be responsible for remote driving, remote assistance or remote monitoring".[287]

1.28 BSI use the word "operate" quite differently from the SAE, While the SAE see "operation" as something that might be done by an ADS, for the BSI a "safety operator" is always a person. And while the SAE see operation as involving the entire DDT, for the BSI a remote assistant is also a remote operator.

1.29 In the Automated Vehicles report, we use the word "operator" to specify an organisation, not a human. With all these different uses, the term has potential to be confusing.

"Remote monitoring" and "remote supervision"

1.30 Another major change from the SAE is that BSI use two new categories: "*remote monitoring"* indicates "continual oversight of an AV" while "*remote supervision*" indicates "intermittent oversight to support the safety and comfort of AV occupants".

1.31 These terms are not used by the SAE. The SAE makes only limited use of the term supervision, which is mainly to point out that a Level 4 vehicle does not need driver supervision (para 5.5, Example 1).

1.32 The SAE makes more use of the term "monitoring", which it describes as a "general term" indicating real-time human or machine sensing and processing of data (para 3.18). The SAE point out that the word monitoring on its own may be insufficiently precise.[288] They therefore break down monitoring into four parts (monitoring the user, the driving environment, vehicle performance or ADS performance).

1.33 When used on its own, the idea of "remote monitoring" may also be insufficiently precise to be useful. It leaves too much ambiguity about what is being monitored, and for what purpose.

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286 BSI's CAV Vocabulary (Flex 1890 v 4) (March 2022) paras 2.1.58 and 2.1.9.

287 BSI's CAV Vocabulary (Flex 1890 v 4) (March 2022) para 2.1.62.

288 SAE Taxonomy J3016, para 3.18, note 1.

TRL REPORT, "REMOTE OPERATION OF CONNECTED AND AUTOMATED VEHICLES"

1.34 This report draws on a literature review and stakeholder interviews, and also attempts to provide a common language.

1.35 Although this report was published in August 2021, the literature review on which it was based was completed earlier. The report uses the 2018 SAE Taxonomy and refers to Consultation Paper 1 and Consultation Paper 2 of the Automated Vehicles project. However, it does not mention Consultation Paper 3 or the SAE April 2021 revision.

Remote

1.36 As with the SAE (but not BSI), TRL define remote as including any location outside the drivers' seat. It assumes that hard-wired connection to the AV is not used.

Remote driving

1.37 TRL follow the SAE definition, as defining driving as "comprising part or all of the DDT". However, TRL then goes on to distinguish between remote driving and "remote emergency intervention".

1.38 Remote emergency intervention is defined "the act of intervening to change the movement, status or conspicuity of the AV in response to an event". As TRL put it in para 3.2.1.2 of the summary, "remote intervention differs from remote driving". By contrast, the SAE see detecting and responding to events as part of the DDT - and therefore as one form of remote driving.

Remote operator

1.39 In the TRL nomenclature, a remote operator is a human who supervises the operation of an AV from a remote location. Supervision can comprise monitoring the AV, intervening or simply assisting passenger or managing the service. TRL does not use supervision in the same way as BSI (which use it to differentiate between continual and intermittent oversight). Instead, TRL use the term much more widely than BSI to include everything from monitoring to managing the service.

Remote control

1.40 TRL define remote control as "continual oversight of an AV's operation by a Remote Operator who is performing a safety critical role and has the ability to intervene in the AV's operations". This could range from performing the full DDT to bringing the AV to an emergency stop. Remote driving is considered "a sub-set of remote control".

1.41 This appears to be out-of-line with the SAE approach, which would see object detection and response as a subset of driving.

THE EU DRAFT ADS REGULATION

1.42 On 7 April 2022, the EU Commission published a draft regulation for consultation dealing with the type-approval of automated driving systems (ADS) in fully automated motor vehicles.[289]

1.43 The draft regulation follows the SAE by distinguishing between remote assistance and remote driving. An "on-board operator" and a "remote intervention operator" can provide assistance to a fully automated vehicle (whether from inside the vehicle or remotely) through instructions. However, they are expressly prohibited from performing any "operational and tactical functions of the dynamic driving task" (which continue to be performed by the ADS).

1.44 Article 2 (Definitions) paragraph 25 provides that "remote intervention operator" means, where applicable to the ADS safety concept, an authorised person located outside the fully automated vehicle who:

(a) activates, switches off the ADS, gives instruction to the ADS to perform a minimum risk manoeuvre, provides additional contextual information to the ADS in case of an unclear situation or validates manoeuvres proposed by the ADS,

(b) gives instruction to the navigation system operating on the ADS to select or modify the planning of an itinerary or stopping points for the users.

1.45 In the above situations, the draft regulation prescribes that the remote intervention operator shall not remotely drive the fully automated vehicle (i.e. perform DDT). Instead, the ADS shall continue to perform the operational and tactical functions of the DDT.

[289] Draft regulation for the application of Regulation (EU) 2019/2144 as regards uniform procedures and technical specifications for the type-approval of the automated driving system (ADS) of fully automated motor vehicles. Available at https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12152-Automated-cars-technical-specifications_en.

Appendix 2: Using hand-held devices

THE TEXT OF REGULATION 110

2.1 Under the current law, the use of hand-held devices while driving is prohibited under Regulation 110 of the Road Vehicles (Construction and Use) Regulations 1986. As we discuss in Chapter 3, the provision has been amended twice since its introduction in 2003. It currently reads as follows:

(1) No person shall drive a motor vehicle on a road if he is using-

(a) a hand-held mobile telephone; or

(b) a hand-held device of a kind specified in paragraph (4).

(2) No person shall cause or permit any other person to drive a motor vehicle on a road while that other person is using-

(a) a hand-held mobile telephone; or

(b) a hand-held device of a kind specified in paragraph (4).

(3) No person shall supervise a holder of a provisional licence if the person supervising is using-

(a) a hand-held mobile telephone; or

(b) a hand-held device of a kind specified in paragraph (4),

at a time when the provisional licence holder is driving a motor vehicle on a road.

(4) A device referred to in paragraphs (1)(b), (2)(b) and (3)(b) is a device, other than a two-way radio, which is capable of transmitting and receiving data, whether or not those capabilities are enabled.

(5) A person does not contravene a provision of this regulation if, at the time of the alleged contravention-

(a) he is using the telephone or other device to call the police, fire, ambulance or other emergency service on 112 or 999;

(b) he is acting in response to a genuine emergency; and

(c) it is unsafe or impracticable for him to cease driving in order to make the call (or, in the case of an alleged contravention of paragraph (3)(b), for the provisional licence holder to cease driving while the call was being made).

5A A person does not contravene a provision of this regulation if, at the time of the alleged contravention-

(a) that person is using the mobile telephone or other device only to perform a remote controlled parking function of the motor vehicle; and

(b) that mobile telephone or other device only enables the motor vehicle to move where the following conditions are satisfied-

(ii) there is continuous activation of the remote control application of the telephone or device by the driver;

(iii) the signal between the motor vehicle and the telephone or the motor vehicle and the device, as appropriate, is maintained; and

(iv) the distance between the motor vehicle and the telephone or the motor vehicle and the device, as appropriate, is not more than 6 metres.

5B A person does not contravene a provision of this regulation, if at the time of the alleged contravention-

(b) a person does not contravene a provision of this regulation if, at the time of the alleged contravention-

(c) for a good or service which is received at the same time as, or after, the contactless payment is made; and

(d) the motor vehicle is stationary.

(6) For the purposes of this regulation-

(a) a mobile telephone or other device is to be treated as hand-held if it is, or must be, held at some point while being used;

(b) a person supervises the holder of a provisional licence if he does so pursuant to a condition imposed on that licence holder prescribed under section 97(3)(a) of the Road Traffic Act 1988 (grant of provisional licence);

(c) in paragraphs (1) to (3) the word "using" includes the following—

(i) illuminating the screen;

(ii) checking the time;

(iii) checking notifications;

(iv) unlocking the device;

(v) making, receiving, or rejecting a telephone or internet based call;

(vi) sending, receiving or uploading oral or written content;

(vii) sending, receiving or uploading a photo or video;

(viii) utilising camera, video, or sound recording functionality;

(ix) drafting any text;

(x) accessing any stored data such as documents, books, audio files, photos, videos, films, playlists, notes or messages;

(xi) accessing an application;

(xii) accessing the internet;

(d) "*two-way radio*" means any wireless telegraphy apparatus which is designed or adapted–

(i) for the purpose of transmitting and receiving spoken messages; and

(ii) to operate on any frequency other than 880 MHz to 915 MHz, 925 MHz to 960 MHz, 1710 MHz to 1785 MHz, 1805 MHz to 1880 MHz, 1900 MHz to 1980 MHz or 2110 MHz to 2170 MHz; and

(e) "wireless telegraphy" has the same meaning as in section 19(1) of the Wireless Telegraphy Act 1949;

(f) "*contactless payment*" means a payment made at a contactless payment terminal using the contactless payment facility of a card, mobile telephone or other device;

(g) "*an application*" means a software programme that runs through a web browser or offline on a mobile telephone or other device.

THE USE OF HAND-HELD DEVICES IN LINE-OF-SIGHT DRIVING

2.2 We have considered how far Regulation 110 prohibits the use of hand-held devices in line-of-sight driving. The following example illustrates the issue:

> An AV developer needs to manoeuvre a vehicle with no steering wheel out of the garage, across a public open space and onto the street. To do this, an individual stands within 6 metres of the vehicle holding gaming-type controls in their hand, which they use to steer, stop and accelerate the vehicle.
>
> Is this a breach of Regulation 110?

2.3 This raises a series of questions:

(1) Is the vehicle on a road? The Construction and Use Regulations only apply to roads, not to other public places. This means that it would not be an offence to

use a hand-held device to manoeuvre a vehicle across public open space. However, using the device while the vehicle is on the road is more problematic.

(2) Is the individual a driver? Yes – the individual is controlling the vehicle by steering and braking.

(3) Is the individual using a device which "is capable of transmitting and receiving data"? Almost certainly yes. Although it might be technically possible to use a device that only transmits data, that would be highly unusual. Without a receive function in the device, the vehicle could not (for example) send a signal acknowledging that it was responding to this controller.

(4) Is the device hand-held? In this example, yes. However, it might be possible to circumvent the whole of Regulation 110 by strapping the device to one's wrist or to a cradle. In this case, use of the device would appear to be legal, even if being used more than 6 metres from the vehicle.

2.4 On this basis, the use of hand-held gaming-type controls on the road is likely to contravene Regulation 110 unless the use falls within the exemption for remote controlled parking, discussed below.

Is the person performing "a remote controlled parking function"?

2.5 The final question is whether the use falls within the exemption set out in Regulation 110(5A) for "remote controlled parking functions". The term is not defined in the Regulation. The consultation leading to the exemption uses the term in a specific way, to refer to the function authorised under UN Regulation 79.[290] It describes remote controlled parking as follows:

> Remote control parking enables the driver to get out of the vehicle and, using a mobile device (such as a dedicated remote control, a smart phone, or even a smart watch), command it to automatically drive itself into, or out of, a parking space. While the control button on the device is activated, the vehicle will manoeuvre automatically at very low speed while monitoring its surroundings for pedestrians, other road users or any other hazards.
>
> If a person or hazard is detected, or if the remote control button is accidentally or intentionally deactivated, the vehicle will come to an immediate stop. Equally, to ensure that the driver can exert control at all times, the system will not function if the driver is outside a certain range.[291]

2.6 This suggests that the phrase "remote controlled parking function" is intended as a term of art. On this basis, if the use does not fall within UN Regulation 79 (as described above), it would not be covered by the exemption in Regulation 110(5A).

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290 UN Regulation No 79 on uniform provisions concerning the approval of vehicles with regard to steering equipment, E/ECE/TRANS/505/Rev.1/Add.78/Rev.4.

291 Centre for Connected and Automated Vehicles, *Remote Control Parking and Motorway Assist, Proposals for amending Regulations and the Highway Code* (December 2017), p 9, para 1.2.

2.7 However, a court may interpret the meaning of "remote controlled parking function" more widely, to include any use of remote controls to park a vehicle. In this example, it could be argued that the remote control is being used to take the vehicle from the garage and park it by the side of the road. Therefore, the use of the device would be legal provided it met the three conditions set out in Regulation 110(5A)(b). These require that:

(1) there is continuous activation of the remote-control application of the telephone or device by the driver;

(2) the signal between the motor vehicle and the telephone or the motor vehicle and the device, as appropriate, is maintained; and

(3) the distance between the motor vehicle and the telephone or the motor vehicle and the device, as appropriate, is not more than 6 metres.

Conclusion

2.8 Our tentative view is that, in this example, the use is probably legal provided that there is continuous activation, a maintained signal and no more than six metre distance. However, use of such a hand-held device would only be legal if the primary purpose was to park the vehicle on the road. It the device was used to travel any distance on a road, it would not be remote-controlled parking. Use of the hand-held device while driving would therefore be a contravention of Regulation 110.

2.9 If Regulation 110 is breached, an offence would be committed by both the individual driver and their employer who caused or permitted the breach.[292] However, Regulation 110 would not necessarily be a problem for those involved in tests and trials. As we discussed in Chapter 3, most "special vehicles" involved in tests and trials are exempt from Regulation 110 under the Road Vehicles (Authorisation of Special Types) (General) Order 2003.

[292] Road Traffic Act 1988, s 41D(b).