

**Response to Law Commissions' third consultation on Automated Vehicles
(Law Commission Consultation Paper 252; Scottish Law Commission Discussion
Paper 171)**

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What is your name?

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Are you responding to this consultation in a personal capacity or on behalf of your organisation?

Response on behalf of organisation

CHAPTER 12: THE USER-IN-CHARGE

Consultation Question 29 (Paragraph 12.37)

We provisionally propose that following the end of the transition demand period:

(1) the user-in-charge should re-acquire the legal obligations of a driver, whether or not they have taken control of the vehicle; and

(2) if, following a failure to respond to a transition demand, the vehicle stops in a manner which constitutes a criminal offence, the user-in-charge should be considered a driver and should therefore be liable for that offence.

Do you agree?

[Respondents chose from the following options: yes; no; other.]

No

The following submission relates to Consultation Question 29:

Short Answer

This question cannot be answered without considering what drivers know about AV. If drivers are not provided with specialised training to operate an automated vehicle and instead, drivers are provided with instructions, risk descriptions and a confirmation of legal responsibilities via an in-vehicle human-machine interface (HMI), we would argue that this is an insufficient mechanism of information communication, which would not support the creation of civil and criminal liabilities upon the driver. In circumstances where HMI is the sole means of communicating risk and legal obligations, this is likely to result in a dangerous

comprehension deficit in the driver about their own cognitive and physiological limitations following a transition demand. The effectiveness of HMI is limited when used to communicate important safety information and legally binding terms, and this is likely to render consent to take on risk/responsibility meaningless under common law tests. Under these circumstances, creating civil or criminal obligations upon the driver for failing to adequately respond in the post-transition period by legislative means, would make bad law.

Long Answer

To answer this consultation question, it is necessary to know what the driver understood when they set off in the AV. Consultation Paper 3 makes reference to the clear need for drivers to understand the difference in vehicle capabilities and their corresponding responsibilities, whether it be an AV or a vehicle fitted with ALKS, and refers to the desirability for AVs to include an 'effective and intuitive human-machine interface' to communicate such important information.

However, there are reasons to doubt that HMI can be effective in delivering important information to drivers, and this is fundamental to the question at hand.

There are two sets of 'human factors' research relevant to the consultation question.

The Human Factors

Consultation Paper 3 already makes reference to the literature regarding the human factors involved in the transfer process, which consistently state there is a delay in the amount of time a driver requires to gain situational awareness in the driving task. The precise delay is not agreed, but is likely to be at least 10 seconds, up to 40 seconds (Merat, 2014). Arguably, it is likely to be more than 10 seconds for different drivers (inexperienced drivers, elderly drivers) in different circumstances (depending upon the level of distraction in the driver, or the weather for example). The problems faced by drivers following a vehicle-to-driver transition are significant, and the details of these issues, and how this impacts upon safety is not widely understood by members of the public.

The second distinct set of human factors which interfere with drivers being likely to operate an automated vehicle safely, concerns how well people absorb instructions and safety information when they are delivered via HMI. It is not known how well drivers are able to absorb important safety or legal information from HMI in the context of the automated vehicle. How people learn information from interfaces in vehicles is an area poorly understood, and this is a question which the Institute of Transport at the University of Leeds is actively engaged in seeking support in order to carry the relevant investigations. However, we do have a body of evidence which casts great doubt on the usefulness of HMI for the delivery of important information. Robust studies on how people absorb information and legal terms from websites and social media highlights the difficulties people encounter when provided information from a digital interface, particularly when they are simultaneously attempting to access a service. Individuals have difficulty in weighing up the 'costs and benefits' when they are presented terms via HMI, and tend to bypass engaging in the exercise at all.

We are bombarded by digital messages every day via websites and social media requiring that we either 'accept' or 'decline' legal terms and conditions. We are accustomed to dealing with these in order to access the service we require. When consumers are confronted with information and terms in a digital format which stand between them and the service they require, people tend to behave in a predictable manner:

1. Legal terms are largely glossed over or left unread (Obar & Oeldorf-Hirsch, 2018)

2. If terms are set out in a similar fashion to previous terms they have seen in the past, it is assumed they will be very similar (Strahilevits & Kugler 2016)
3. These types of notifications are regarded as inconvenient and uninteresting (Solove, 2012)
4. Consumers assume that whatever is being asked cannot be too detrimental to them personally, or else it would not be legal. (Brandimarte et al., 2013)

On this last point, in the context of physical safety in an automated vehicle, we would argue they are not wrong.

This research is outlined more fully in research published by the University of Leeds in November 2020, found at:

<https://www.nature.com/articles/s41599-020-00644-2>

For the purposes of privacy and GDPR, we appear to accede that as long as the information is there, and is available to be read and understood, then the user is bound by the terms presented if they “accept” by clicking the appropriate button. However, the use of an AV concerns physical safety of not just the driver, but all other road users, and this makes the stakes higher, and the terms of what is being asked, subject to greater scrutiny.

Providing information via video does not necessarily cure the problem. The airline industry has gone to great lengths to have passengers pay attention to the in-flight safety demonstration. Airlines have become increasingly inventive, incorporating humour and celebrities into their safety videos. While it can be shown that more people watch the video, the safety messages are not necessarily absorbed. In addition, it appears that the repetition of these videos create a perception of reduced relevance (Australian Transport Safety Bureau 2006).

Where drivers lack comprehension about the risks that they (and other road users) face when their attention is diverted from the driving task, we argue that this creates legal issues for an OEM seeking to rely on the warnings and terms delivered by HMI, which is explained below.

The Legal Issues

The operation of an AV constitutes an activity which involves risk to human life and safety, and there are common law principles which provide a framework for those wishing to engage in an activity which involves risk, for example, skydiving. Skydiving is an activity which can be done safely where participants adhere to safety instructions. Participants tend to heed this advice as it is obviously dangerous to ignore it. Those facilitating risky activities are provided with a defence to a potential claim if they provide adequate warning and instruction, in particular about risks which are not apparent (*volenti non-fit injuria*). When someone who understands the risk provides their consent, they agree to take on the ramifications associated with that risk should things go wrong.

While the concept of consent differs according to the context, universally it requires providing adequate information to a person so they are able to make a decision, and that the decision is of their own free will. In the context of AV, ‘adequate information’ must include the risks and the potential consequences of operating an AV. In the present case, drivers must understand that despite their best intentions, when they are a user-in-charge and the driving task is transferred back to them, it may be physically and cognitively impossible for them to adequately take control of the vehicle in 10 seconds, or otherwise before the end of the transition period. The human factors evidence on this point directly contradicts the current position stated in Consultation Paper 3 which is “under our current proposals, a user-in-charge must be ready, qualified and fit to take over driving following a transition demand” (12.10). The user-in-charge may not be ready, despite their best intentions and efforts.

Consultation Paper 3 refers to the joint report by the Association of Insurers and Thatcham Research which recommends that HMI should be simple and intuitive to understand, and that changes of user role in the operation should apply a clear 'Offer and Confirm' or 'Request and Confirm' process. However, we know from the human factors research, that even users who willingly confirm their readiness to take over, may be unaware that their situational awareness has still not calibrated.

A user cannot guarantee that they will be ready to take over, as it has been proven time and again that competent drivers require a period of adjustment to regain a safe level of situational awareness in transitions, and this period is not fixed or easily determined between individuals and circumstances. However, unless the driver has read the literature on this point, they are unlikely to understand that this period of adjustment is longer than they themselves are able to discern. No doubt drivers shall willingly agree to be bound by terms which dictate they assume legal responsibility at the end of the transition period, particularly when presented via HMI. Whether these terms will withstand the scrutiny of a Court when they are inevitably challenged is another matter.

Drivers also need to be aware of the fallibility of an AV to make a safe emergency stop or minimum risk manoeuvre where the driver has been unable to take back control. While it may be that the AV can achieve such manoeuvres some of the time, there is not nearly enough evidence to suggest such manoeuvres are consistently reliable. At this stage, we cannot rely on such safety manoeuvres mechanisms as if they 'close the loop' on the potential problem of a driver failing to take control. If we provide this warning via HMI, for the 'human factors' reasons outlined above, it is argued it is unlikely drivers will truly understand what they are getting themselves into. Not only is this fundamental for the purposes of consent, but it is necessary in order for drivers to calibrate their own perception of an AVs abilities and limitations. Where drivers are aware of AV limitations and their own limitations, they are more likely to adjust their behaviour and not push the limits of the technology. Using the example of the first-time skydiver, who is aware skydiving carries risks, they are likely to follow instructions, and less likely to disregard important safety information, as they appreciate their life depends upon it.

As opposed to the AV driver who has been exposed to the marketing of AV, and media projections of how automated driving may look like in the future. An AV driver, unlike the first-time skydiver, can be forgiven for misunderstanding the limitations of an AV in the context of the 'hype' they may have been exposed to in other areas, such as technology websites, social media and even the website of the OEM.

Consultation Paper 3 acknowledges that the safety of AV can be affected by the marketing, whereby consumers misunderstand the capabilities of the technology which is currently available, as opposed to technology which is planned for the future. (Such as the survey which indicated 70% of people thought it was possible to buy a self-driving car today.) Consultation Paper 3 refers to the need to issue "clear and memorable information about the limits of a vehicle's operational design domain". Again, the question is: how will this be communicated? A perusal of AV manufacturers' websites shows that generally, manufacturers are already careful about how they describe the capabilities of their current vehicles with driving assistance or automated features. However, the same websites often also contain powerful images depicting vehicles with further capabilities such as driver-less vehicles which are currently deployed in a strictly controlled traffic environment or driver-less technology which is 'in development' and not currently available to the public. The images universally show relaxed, (and often asleep) people in driver-less cars, with the text supporting those images explaining that such vehicles are part of an innovative plan for the future. Nevertheless, such imagery forms part of the messaging to inform the consumer about what AV is and what it can do. Consequently, in terms of marketing AV accurately according to their capabilities, in some respect, the horse may have already bolted in this area. People already have an idea of what constitutes an AV, and it is unknown as to how

these perceptions can be 'dialled back' by marketing which is worded more correctly or robustly.

Training and licencing

Previous consultees have argued for driver education and training. We would echo this and maintain that the solution to the problem lies in dedicated training and licencing for automated vehicles, where drivers are provided with comprehensive instruction about their responsibilities, the safety risks, and drivers are also given the opportunity to drive an automated vehicle to experience transition in a controlled setting. In these circumstances, drivers are more likely to understand their responsibilities, and calibrate their behaviour appropriately.

While Consultation Paper 3 mentions the desirability of training, it is not clear that a specialised licence for automated vehicles based on driver training is being contemplated in a proposed roll-out of automated vehicles. This may be partly because OEMs are developing and offering different automated technology. It seems that the proposed framework contemplates the first automated vehicle drivers/operators to have a standard driving licence.

For the reasons we have already outlined in this response, we would argue that the "high quality training videos and online courses" suggested by some consultees should not be accepted as a training solution without evidence of how this training;

1. impacts driver comprehension of risk and responsibilities;
2. compares to real-world training; and
3. is received by drivers of differing levels of skill, experience and comprehension

While online or simulator training may be useful as part of a wider training package, these mechanisms remain a low fidelity experience of the technology, which deprives drivers of the scale and true feel of driving AV (Moran et al., 2014). Drivers need to experience transition in an AV first-hand to understand it. The cognitive and physiological difficulties that drivers experience in transition are not easily explained via text and video to the average person. Learning by doing is essential (Boelhouwer et al., 2019).

Summary

Consultation Question 29 cannot be answered without considering whether the driver will understand the risks associated with AV, and their legal responsibilities.

Providing important information and instructions via HMI (whether by text or video) is unlikely to sufficiently warn the driver in a meaningful way about the significant dangers associated with transition demands which arise due to normal human cognitive and physiological limitations, combined with varied and unpredictable personal, situational and environmental contexts. In these circumstances, it is unreasonable to stipulate that a driver should in the first instance (subject to any defence they may have such as medical incapacity) re-acquire legal responsibilities (civil or criminal) should they fail to take over control of the vehicle immediately after transition.

There are grave ethical implications in relying upon HMI to communicate vital safety information where there is good reason to suspect it will be ignored or misunderstood by an unknown number of drivers. HMI should not be used on its own to communicate risk and responsibilities to drivers and bind them to terms.

In circumstances where HMI is the sole method for providing instructions and information to the driver, we do not agree the user-in-charge should, following the end of the transition demand period:

1. re-acquire the legal obligations of a driver, whether or not they have taken control of the vehicle; and/or
2. if, following a failure to respond to a transition demand, the vehicle stops in a manner which constitutes a criminal offence, the user-in-charge should be considered a driver and should therefore be liable for that offence.

References

- Australian Transport Safety Bureau (2006) Public attitudes, perceptions and behaviours towards cabin safety communications. ATSB Research and Analysis Report, Aviation Safety Research Grant- B2004/0238
- Brandimarte L, Acquisti A, Loewenstein G (2013) Misplaced confidences: privacy and the control paradox personality. *Science* 4(3):340
- Boelhouwer A, van den Beukel AP, van der Voort MC, Martens MH (2019) Should I take over? Does system knowledge help drivers in making take-over decisions driving a partially automated car? *Transp Res Part F* 60:669
- Obar J, Oeldorf-Hirsch A (2020) The biggest lie on the Internet: Ignoring the privacy policies and terms of service policies of social networking services. *Communication Soc* 23:128–147
- Merat N, Jamson H, Lai F, Daly M, Carsten O (2014) Transition to manual: driver behaviour when resuming control from a highly automated vehicle. *Transp Res Part F*. 27:274
- Moran S, Luger E, & Rodden T (2014) An emerging tool kit for attaining informed consent in UbiComp. *ACM International Joint Conference on Pervasive and Ubiquitous Computing*. Seattle September 214:635
- Pattinson, Chen, Basu 'Legal issues in automated vehicles: critically considering the potential role of consent and interactive digital interfaces' (2020) *Humanities and Social Sciences Communications* volume 7, Article number: 153 <https://www.nature.com/articles/s41599-020-00644-2>
- Solove D (2012) Privacy self-management and the consent dilemma symposium: privacy and technology. *Harvard Law Rev* 126:1880. 13
- Strahilevits L, Kugler M (2016) Is privacy policy language irrelevant to consumers? Coase-Sandor working paper series in Law and Economics No. 776