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"AVs: Statement of Safety Principles" techUK response to CCAV consultation

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Introduction

techUK is a membership organisation launched in 2013 to champion the technology sector and prepare and empower the UK for what comes next, delivering a better future for people, society, the economy and the planet. It is the UK's leading technology membership organisation, with a network that enables our members to learn from each other and grow in a way which contributes to the country both socially and economically. By working collaboratively with government and others, we provide expert guidance and insight for our members and stakeholders about how to prepare for the future, anticipate change and realise the positive potential of technology in a fast-moving world.

Our Self-Driving Vehicles Working Group is building political and public understanding of the benefits that automation can deliver for our transport system and wider economy. Its work also includes ensuring that the UK's regulatory system is fit-for-purpose and capable of supporting deployment on public roads. This work considers the industry's requirements from a technical, insurance and legal perspective, involving a diverse collection of businesses from across techUK membership. We welcome the opportunity to respond to this consultation and are available for any follow-up questions that you might wish to ask.

"Pre-deployment"

Question 1: in your view, are there any other uses for the safety principles we have not identified? AND Question 2: in your view, what other uses might there be for the safety principles and why? Provide evidence if possible.

The Statement of Safety Principles (SoSP) should set a high-level ambition for AVs without duplicating the UNECE regulatory framework, which will be the international framework for technical vehicle safety requirements. It could also:

- Be written with a view to align and operationalise the upcoming UNECE regulations, aligning UK standards with it, as complying with the UNECE technical requirements will satisfy pre-deployment safety requirements for authorisation.
- With no other major jurisdiction adopting a similar Statement of Safety Principles model, the UK should focus on ensuring clear alignment between the domestic regulatory framework and international regulatory obligations and not establish unnecessary additional parallel processes.
- Be used for public education and trust-building. Parliament and the public need to be satisfied that AVs deployed in the UK are safe, and so writing the SoSP in a way that

is publicly understandable will help to secure confidence, especially as many other pieces of legislation and guidance will not be written in a publicly understandable format. This said, the SoSP should not have a direct role in the technical compliance of the vehicle or setting technical safety benchmarks, which will be defined by the manufacturer in their safety case for a specific deployment.

Question 3: do you agree or disagree with our characterisation of how the SoSP might be used at pre-deployment? AND Question 4: why do you think this? Provide evidence if possible. AND Question 5: do you agree or disagree with our characterisation of how the SoSP might be used to inform pre-deployment safety requirements? AND Question 6: why do you think this? Provide evidence if possible

We broadly agree that the SoSP can provide an overarching framework for communicating the safety of AVs to Parliament and the public. However, a statement of principles is not an appropriate technical mechanism to assess vehicle system safety, and this is properly done by examining the safety evidence in the manufacturer's 'safety case', amongst other things. It can act as a "guiding light" without creating, duplicating, or contradicting other more bespoke requirements found in international regulations.

We are supportive of the proposal that, "to minimise regulatory burden, we wish to mirror requirements set at type-approval and authorisation as far as possible." The principles must align with the forthcoming UNECE ADS regulation and the SoSP must in no way undermine or vary from them.

We do not hold any strong option on how exactly a comparison might be attempted with human drivers, but we do not believe that to directly compare the two can be fully meaningful owing to limited and incomplete sources of data on human driving that are not attributable to a specific Operational Design Domain (ODD). There is not a single metric that will work for all AVs in all ODDs.

It will also be important for the Government to consider that there may be different understandings of exactly what "careful and competent" driving means in different jurisdictions, and particularly in different ODDs. Direct comparisons to traditional road vehicle incident statistics will be largely ineffective until AVs are as widely deployed as human-driven vehicles across all road types and driving environments. Therefore, the approach adopted in the forthcoming UNECE ADS regulations is the most effective mechanism for manufacturers to define and demonstrate how an AV meets or exceeds this level of safety for a given deployment situation.

Fundamentally, the purpose of the SoSP should be to reassure the public that this technology is safe and operates under strong oversight.

Question 7: what information do you think would need to be provided pre-deployment to demonstrate consistency with the SoSP? AND Question 8: In your view, what considerations should be taken into account when assessing at pre-deployment whether automated vehicles meet the expectations set by the SoSP?

As already noted, safety compliance with the forthcoming UNECE ADS regulations will be the definitive source of information pertaining to the technical safety of the system and, therefore, should be the basis of safety information required for authorisation. If any rules are created separately, this will lead to confusion and increased regulation and business burdens.

"Post-deployment"

Question 9: do you agree or with our characterisation of how the SoSP might be used at post-deployment? AND Question 10: why do you think this? Provide evidence if possible. AND Question 11: do you agree or disagree with our characterisation of how the SoSP might be used to inform post-deployment safety requirements? AND Question 12: why do you think this? Provide evidence if possible.

We broadly agree with the characterisation of the SoSP's use, and the in-use regulator can be a good reference point for ongoing safety monitoring and regulatory enforcement as set out. It is important that post-deployment oversight also aligns with the forthcoming UNECE ADS regulation and does not impose new or parallel obligations. The UK should focus on operationalising mechanisms already developed at the UNECE, and ensure the UK is aligned with harmonised requirements placed on manufacturers globally to address post-deployment considerations.

We recognise and support the flexible range of civil and regulatory sanctions that could be employed, and we urge that their use be proportionate. We also support the no-blame aspect of post-incident investigation as the best way to improve outcomes in the long-term. However, without a final SoSP draft to review, it is difficult to provide a more detailed response.

Question 13: What information do you think would need to be provided to the authorities post-deployment to demonstrate ongoing consistency with the SoSP? AND Question 14: In your view, what considerations should be taken into account when assessing at post-deployment whether automated vehicles meet the expectations set by the SoSP?

Post-deployment safety oversight will be robustly covered by requirements in the forthcoming UNECE ADS regulations, and the UK should focus on operationalising these mechanisms. The SoSP should not impose new or parallel obligations during the post-deployment phase.

"Setting the safety standard – Careful and competent human driving"

Question 15: provide any evidence you are aware of on the current performance of human drivers. AND Question 16: in your view, does human driving performance improve with competence? AND Question 17: why do you think this? Provide evidence if possible. AND Question 18: in your view, what characterises careful and competent human driving, and why? Your answer may like to consider capabilities, behaviours and outcomes.

We do not think we are in a position to properly define careful and competent human driving. We see this as being properly the role of the Government and of the judicial system, especially given the challenges of applying a legal term designed for human beings to automated systems. techUK strongly believes that our members in the AV industry can demonstrate that self-driving technology can meet this benchmark. It should be noted that manufacturers will develop robust methodologies and metrics suited to their Target Operational Domain (the actual area where an ADS will be deployed). They can then justify how they are applied in their safety case with evidence. Attempting to compare AVs to a competent and careful human driver using the currently available data sources is insufficient because they are not ODD-specific. Comparisons must be made using objective safety risks and outcomes such as collisions and injuries resulting from collisions based on a specific ODD. This should also be considered in the context of the overall performance of the ADS.

More generally, we would urge the Government to pay close attention to the road safety requirements under the Act, and we would welcome more information about how the Government seeks to understand, measure, and enforce this provision. This is particularly true in light of the requirement for actively improving road safety overall being a demanding one, and the difficulties in understanding, interpreting, and fairly assessing road safety statistics. Any evaluation metrics used to make comparisons two should focus on *objective* safety risks and outcomes, such as collisions and injuries resulting from collisions, and less on events that are open to contentious interpretation and do not lead to negative safety-

related events. It is important that safety assessments are contextualised and viewed within the overall performance of an ADS, and not simply individual cases.

"Setting the safety standard – Careful and competent automated driving"

Question 19: Do you agree or disagree with the considerations we have outlined in thinking about careful and competent automated driving? AND Question 20: which consideration do you disagree with and why? Provide evidence if possible.

Comparisons between human and automated driving are difficult to make. The SoSP should align with how manufacturers demonstrate this benchmark in the forthcoming UNECE ADS regulation. The safety case approach demonstrates how the ADS meets or exceeds this level and is free from unreasonable risk. This includes showing how the ADS performs against selected scenarios, handles nominal and critical situations, and remains within its Operational Design Domain (ODD). These scenario-based, evidence-driven approaches are more meaningful than abstract comparisons with human performance, especially given the lack of detailed human driving metrics.

Overall, we agree with the point that automated and human driving behaviours are different, but the industry has done large amounts of work to ensure that these are minimised and that the "feel" of automated driving is like that of a careful and competent human. Differences that still exist are often to the benefit of overall safety, however, with AVs able to observe, react, and plan better than a human. We reiterate that the government should clearly set out how the SoSP will align with UN regulations, and not create a new, separate interpretation of "careful and competent".

Question 21: In your view, how might the assessment of careful and competent driving differ between human drivers and automated vehicles?

Defined safety metrics and comparisons to human driving should not be set in the overarching SoSP because there is not a single metric that will work for all AVs in all ODDs. Instead, the standard of "careful and competent" and comparisons to human driving will be applied by manufacturers in their safety case as part of demonstrating compliance to the forthcoming UNECE ADS regulation for a specific deployment.

AVs require system-level validation and a measurable safety case, including simulation and scenario testing, but software can be tested in simulation in much greater depth that a human driver can be before being approved for deployment. Their pre-deployment performance must be assessed through scenario-based testing within a defined ODD, evaluating their ability to follow road rules, react safely to events and hazards, anticipate other road users, and recognise their operational limits.

"Setting the safety standard – Achieving a safety level better than careful and competent human drivers"

Question 22: In your view, what are the implications of setting a safety standard equivalent to careful and competent human drivers?

This standard sets a publicly acceptable and understandable baseline. It will help ensure that people trust AVs on the road, whilst not overpromising and allowing the potential for complacency in the public's road interactions with AVs. However, the term in law is designed to assess human driving and the safety implications of a self-driving system is a different matter.

Question 23: In your view, what characterises a standard higher than careful and competent human driving and why? Your answer may like to consider capabilities, behaviours or outcomes.

We do not think we are in a position to properly define a standard that is higher than careful and competent human driving. We see this as being properly the role of the Government and of the judicial system. techUK strongly believes that our members in the AV industry can demonstrate that self-driving technology is safe and can secure public trust and confidence. We note that "careful and competent", in combination with a requirement to improve overall road safety, already sets a requirement for higher standards.

Question 24: In your view, what are the implications of setting a higher safety standard than careful and competent human drivers?

It is important to recognise that 'careful and competent' is a higher standard than that of the average human driver – ensuring that the UK can capitalise on the huge safety potential of self-driving vehicles. AVs can be expected to exceed human drivers in many areas. They do not get tired, distracted, or intoxicated. They follow rules consistently and can share learnings across fleets. AVs will reduce the risk to all road users and improve road safety.

However, it is important to see what "careful and competent" means in practice before making a complete judgement on this. We are confident that the industry can and will produce vehicles and ASDEs that are safe and can command public trust, and any unrealistic and unevidenced "above careful and competent" standard may delay deployment or limit market entrants due to higher costs and regulatory burden.

"Setting the safety standard – Securing an improvement in road safety"

Question 25: In your view, what evidence should be used to assess the safety impact that automated vehicles have on other road users through

the hierarchy of road users? Provide specific evidence to support your response. AND Question 26: what evidence are you aware of about the safety impact that automated vehicles will have on groups with protected characteristics? AND Question 27: do you agree or disagree that the equality and fairness safety principle should be included within the SoSP? AND Question 28: why do you think this? Provide evidence if possible. AND Question 29: do you agree or disagree that an equality and fairness safety principle should focus on all road users? AND Question 30: why do you think this? Provide evidence if possible. AND Question 31: in your view, what metrics, if any, should be considered to support monitoring and evaluation of performance against an equality and fairness safety principle?

Automated vehicles must demonstrate safe behaviour towards all road users within their ODD, including pedestrians, cyclists, and other vulnerable groups, to comply with the forthcoming UNECE ADS regulation. This will include a robust safety case through which manufacturers will provide evidence to demonstrate how these road users have been considered. This will also include a Safety Management System to ensure continuous monitoring of safety and performance throughout post-deployment.

techUK members are committed to ensuring that all concerns and issues identified are fully considered and all relevant mitigations are made. We would like to reiterate the road safety points made in our responses to Qs 15-18. More broadly, we note the language relating to fairness and equality found in EU ADS Regulation 2022/1426.

“Measuring performance under the general monitoring duty”

Question 32: In your view, what outcomes should be considered for the monitoring and evaluation of performance against the SoSP? AND Question 33: in your view, what sources of information could be used to monitor and evaluate performance of these outcomes?

Performance monitoring should focus on whether AVs operate as expected, comply with traffic laws, interact safely with all road users, and remain within their ODD. These outcomes are already central to the safety case to comply with technical systems approval under the forthcoming UNECE ADS regulation and should not be duplicated under the SoSP. Mirroring post-deployment requirements in the upcoming UNECE ADS regulation will help ensure harmonisation with international requirements and minimise duplication for manufacturers.

"Making comparisons to the performance of human drivers"

Question 34: In your view, what evidence sources could be used to compare the safety performance of human drivers and automated vehicles?

We feel that other stakeholders are better placed to offer suggestions on this point.

Question 35: In your view, what metrics comparing the safety performance of human drivers and automated vehicles should be annually reported on by the Secretary of State for Transport?

We do not feel that a completely new system would need to be developed for this, and AVs can broadly be slotted into pre-existing road safety statistics.

We ask that AV statistics are set out contextually, including highlighting occasions when an AV was involved in a collision, but the regulator took no action because the ASDE/AV was not found to be at-fault. This is because, if metrics of road safety are collected and presented inaccurately or unfairly, enormous and undue damage could be done to the public's trust and understanding of AVs, thereby causing significant negative impacts on UK AV companies and the sector generally.

A fair reporting criteria will include:

- objective severity tiers to ensure like-for-like comparisons
- the use of ODD-specific benchmarks to reduce reporting bias and further enabling like-for-like comparisons for different collision types
- a form of information presentation that is based on miles driven, rather than just overall numbers

We also note that sources of annual performance data will be made available to authorities based on periodic reporting requirements through In-Service Monitoring, as established in the forthcoming UNECE regulations. It is imperative that this data is aggregated and standardised when reported. Non-standardised performance data cannot be taken out of context and compared between manufacturers. System design and ODD characteristics are crucial when assessing the performance of an ADS relative to another.

Overall, it is vital that there is agreement with industry about how any report will be drafted and presented and context and warnings about the possible shortcomings of statistics given due weight and attention. It is also likely that some data that the Government might wish to publish will be commercially sensitive, and so we urge that careful and detailed engagement is done with industry on this point to ensure that the UK's competitive advantages are maintained.

"Other principles for consideration"

Question 36: Do you agree or disagree with our proposed approach to these potential principles? AND Question 37: why do you think this? Provide evidence if possible.

We agree with this approach.

Question 38: In your view, are there any other principles you consider should be included within the SoSP? AND Question 39: what other principles do you think should be included and why? Provide evidence if possible.

We do not see there to be any other principles that need to be included in the SoSP.

Question 40: provide any further evidence you wish to submit for consideration on what safety expectations should be set for the deployment of automated vehicles.

None at this stage.

Question 41: any other comments?

Much of what will make a good safety regime will be based on lessons learned from actual vehicles deployed on the road, and so the Government must be careful not to unduly delay the Statement – or putting in place other aspects of the regulatory framework for AVs, but instead implement a good Statement which has the support of the industry, so that this technology can actually start to be rolled out and tested.

It is imperative that the SoSP does not duplicate the UNECE global regulatory framework. The AV Act should seek to 'implement' technical regulations developed at the UNECE, which set a high level of safety for AVs globally. Regulatory overreach, overcomplication and duplication risks AVs being deployed in the UK at scale.

Overall, we regret to say that techUK is disappointed with this call for evidence. We are concerned that the way the questions are set out implies several potential risks, which we have detailed above. These include statistical reporting, legal definitions and tests, unwelcome suggestions that UNECE regulatory alignment might be in doubt, vaguely written questions, and a basic nature to some of the questions that would give the impression that CCAV and industry are further behind in their joint understanding than we collectively are. Much work has been done by Government, Parliament, industry, trade associations, and the Law Commissions over previous years, and it is a shame that many questions that have been looked at in detail are being asked again.

We hope for more detailed proposals in the very near future and we look forward to working with CCAV in the coming months and years to ensure the swift and successful rollout of this technology.

ENDS