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Call for Evidence: “Developing the Automated Vehicles Regulatory Framework” – techUK response

March 2026

Part 1 – “Type Approval”

Question 1: Do you think that amendments are required to any of the vehicle type approval schemes to enable deployment of AVs? If 'yes', please explain which approval schemes do you consider require amendment to enable deployment of AVs and why?

AND

Question 2: What amendments do you consider are needed for the categories identified in the previous question, and why?

Aligning the GB Type Approval framework with the UNECE ADS Regulations and incorporating those regulations into UK law would ensure that GB type approval assesses vehicles against a recognised, internationally-harmonised set of requirements, avoiding parallel GB-only technical tests. Type Approvals issued under the UNECE ADS Regulations would satisfy all vehicle technical safety requirements for authorisation. The UK should focus on ensuring clear alignment between the domestic regulatory framework and international regulatory obligations. Attempting to go beyond the internationally-agreed regulation risks fragmentation and confusion, and would deter companies from deploying and investing in the UK market.

Other issues of interest may include accounting for novel vehicle designs – especially those without conventional controls – and new use cases. This includes consideration not only of vehicles that are self-driving-ready, but also those that are not produced fully equipped for self-driving but able to have self-driving systems integrated on top.

All such amendments should be tightly coordinated and ensure that there is no duplication or overlap with other aspects of the AV regulatory regime and align with international standards. In particular, the partitioning of the different aspects of the regulatory approvals process should be guided by the principle that the later stages (e.g. APS and local consenting) do not reopen technical and safety questions already settled at type-approval and authorisation. It is important to clarify evidence boundaries at each stage to assist applicants in presenting the appropriate evidence at the appropriate time.

Question 3: In your view, what do you think will be the designs of self-driving vehicles deployed in the next 5 years?

AND

Question 4: In your view, do you expect any designs to be specific to the UK, and why?

AND

Question 5: In your view, what do you think will be the use-cases of self-driving vehicles deployed in the next 5 years in the UK?

AND

Question 6: In your view, do you expect any use-cases to be specific to the UK, and why?

Over the next five years, we expect a broad set of near-term AV use cases, including:

- Automated taxi services (robotaxis)
    - interiors prioritising rear-seat ride-hailing use, possibly retaining service controls, majority urban use
- Shuttle/busses
    - bi-directional, box-shaped, wide doors, no traditional driver controls, low-speed, fixed routes, level boarding, perimeter seating
- Middle-mile freight
    - highway-based ADS with remote assistance, depot-to-depot operations, potentially without traditional cab, limited transport corridors
- Last-mile delivery vehicles
- Special purpose AVs
    - a wide range of sweepers, inspectors, shuttles, and signage vehicles, in high-certainty environments, with occasional interface with public roads
- UIC and NUIC features on conventional vehicles

In terms of UK-specific issues to be considered:

- Dense, historic streets, road markings and UK road culture
    - There may be designs and use cases that account for narrower, windier pathways that emphasise a smaller and nimbler vehicle footprint
    - Vehicles will need to conform to the UK's road design, road signage, and road markings, as well as conform with the UK's external intent signalling rules
    - UK pedestrian culture is generally seen as being particularly flexible, in comparison with come other jurisdictions

- Regulatory cadencing and local consenting
    - The earlier APS pilots being permitted in the UK will influence the market to rollout these use cases first, and the UK's current Consenting Authority approach may produce localised deployments
- Transport integration
    - UK policy emphasis on inclusion and rural connectivity creates a potential for Demand Responsive Transport AV shuttles to fill thin-demand gaps where conventional bus economics struggle

Most vehicle platforms, be they conventional or bespoke, used for self-driving applications will be common across as many international markets as possible.

Part 2 – "Authorisation"

Question 7: In your view, what types of evidence should form the basis of an authorisation application?

AND

Question 8: In your view, what evidence gathered at the vehicle type approval stage, if any, should be used to support an authorisation decision?

AND

Question 9: In your view, do you think geofencing or environmental mapping have a role in operational design domain (ODD) approval, and why?

We ask for an overarching principle that authorisation should be an evidence-led assessment of whether the vehicle meets the self-driving test within its stated ODD, complementing (not duplicating) type approval, and guided by the Statement of Safety Principles. On the topic of geofencing and environmental mapping, manufacturers will define and evidence how their ADS will safely meet the conditions of its ODD, and as such, we oppose the introduction of additional prescriptions in ODD approval. We would also support a pathway for ODD growth using targeted evidence plans agreed with the relevant authorities.

Question 10: In your view, are there any specific authorisation requirements relating to the vehicle that should, or should not, be included, and why?

The authorisation regime should avoid duplication with international standards. In particular, this should not include:

- Aspects, such as safety compliance evidence for the safe operation of the ADS within its ODD boundaries, covered by type approval and the safety case
- Aspects of service-level conditions that may be covered under other parts of the regime (e.g. APS permitting)
- Service-level/APS matters
- Any prescriptions relating to specific technological solutions

Introducing additional vehicle-level authorisation requirements risks imposing duplicative approval or reporting processes already addressed by the UNECE regulatory regime. This would lead to compliance burdens for companies looking to deploy in the UK and lose the UK's competitive advantage in the AV industry.

Question 11: In your view, what should be considered when assessing whether an ASDE is of good repute?

AND

Question 12: In your view, what should be considered when assessing whether an ASDE is of good financial standing?

AND

Question 13: In your view, what should be considered when assessing whether an ASDE is capable of competently discharging authorisation requirements?

AND

Question 14: In your view, are there any other specific authorisation requirements relating to the ASDE that should, or should not, be included, and why?

In assessing that general good standing of an ASDE, we would call for a recognition that this is an emerging, start-up sector, and requirements should be imposed accordingly. We would ask that these requirements mirror best practice from other safety-critical transport regimes already in existence, reflecting the public-safety and integrity duties set out for ASDEs under the AV Act.

More specifically, it is important that criteria unrelated to safety, integrity, or legal compliance are not included, keeping ASDE requirements more organisational and process-oriented. It is vital not to duplicate vehicle construction, technical requirements, APS conditions, and so forth here. General judgements based on company size, nationality, ownership model, or commercial strategy should also be avoided, and the focus should be on the capabilities and accountabilities necessary to discharge duties under the AV Act, evidenced in a proportionate manner.

Many of these issues have been covered in detail by the Law Commission, and we would refer to those recommendations. Safety cases also cover many of these issues and should be assessed there.

Question 15: In your view, what, if any, additional information should be captured on the register of authorisations?

AND

Question 16: How might you expect to use the information available within the register of authorisations?

We have no strong views of the register, other than the importance that commercial sensitivities and technical information be protected.

Question 17: In your view, what should be considered when developing the authorisation procedure?

AND

Question 18: In your view, are there lessons from other regulated areas that should inform the authorisation regime, and why?

We ask that the procedure be proportionate, predictable, internationally aligned and non-duplicative, including:

- Alignment with the emerging UNECE ADS Regulation
- A standardised and proportionate assessment model, that is transparent and understandable to applicants
- Clear timelines for decision-making, appeals, etc, with a duty on regulators to engage and respond
- Explanatory guidance, supported by case studies and exemplars
- Flexibility and variation based on different types of use case and deployments involved in any particular application
    - This might also be affected by different type approval and authorisation requirements for each, so it is hard to give a definitive answer to this question here.

Question 19: In your view, what processes should be in place to ensure that authorised vehicles continue to meet the legal safety standard over time?

AND

Question 20: In your view, how should changes to software or functionality be managed from an authorisation perspective, and when should reauthorisation be required?

The UNECE Regulations and other international standards include provisions to ensure that AVs continue to meet the legal safety standard over time. These outcomes are already central to the safety case and type approval process and should not be duplicated with further requirements. There will also be reporting through ISMR mechanisms, covering both short-term and periodic data elements. It is imperative that this data is aggregated and standardised. Non-standardised performance data cannot be taken out of context and compared between manufacturers

Software updates and functional changes are necessary for AV safety, but each change must be managed to ensure vehicles continue to satisfy the self-driving test. UN Regulation 156 governs software update procedures.

Overall, there should be clear categorisation of changes based on risk, and we generally support the principle that there needs to be flexibility in the authorisation process to account for this and ensure a proportionate legal regime. It is also important to take into account that quite major changes can lower – rather than raise – risk levels.

Question 21: What, if any, costs do you think should be taken into consideration when assessing the impact of authorisation standards?

AND

Question 22: What, if any, benefits do you think should be taken into consideration when assessing the impact of authorisation standards?

Authorisation should not become an additional burden on top of the existing approval process, which already represents a significant undertaking for manufacturers. Instead, it should function as a final layer that protects domestic competences — focused on ensuring that the technical approach is robust and appropriately calibrated for deployment in the UK context.

It is very difficult to provide a complete list of costs and benefits to be taken into account, but some of the key factors that will affect techUK members, and which should be given particular consideration are as follows.

Costs include:

- Compliance and evidence-generation costs
- Data-storage and reporting
- Organisational costs for new systems (ongoing engagement with regulators, skills, training, legal, etc)
- Delays or administrative costs from unclear or inconsistent processes
- Reauthorisation (where required)

Benefits include:

- Economic, productivity, environmental, social, public health, and public safety benefits (which are well-documented)
- Public and political trust in AVs and faster adoption
- Supporting investment and market confidence
- Supporting innovation in the UK economy

Part 3 – "User-in-Charge and Transition Demands"

Question 23: In your view, should any existing prohibitions on non-driving related activity by a UIC be disapplied? If 'yes', what activities and why? If 'no', why not?

We support the disapplication of some prohibitions on non-driving-related activity for a UIC while an authorised self-driving feature is engaged, provided that the UIC remains in position to exercise control, can respond to a transition demand in time, and the activity does not undermine those duties. Most importantly, however, the activities that will be appropriate will be dependent on what the ADS use case is in any particular instance. It should be up to the developer or the manufacturer to outline within their safety case that they develop through type approval what the limits of that system are and how they interact with transition demands. The key principle is that as a UIC is not dynamically driving the vehicle, the focus should be on things that would inhibit a UIC responding to a transition demand. We do not endorse standardised lists of activities that are/are not permitted to be set out in regulation or updates to the Highway Code.

Question 24: What evidence, if any, can you supply on the ability of a driver to safely resume control after disengagement from driving tasks? No personal information should be provided as part of the evidence.

Evidence supporting the safety assessment and conditions for transition demands must be evaluated in context and related to the specific ADS feature put forward for approval. Considerations such as ODD (e.g. highway or urban), system architecture and feature

conditions such as driver education and driver engagement strategies will determine how a manufacturer applies methodologies to evidence when and how a disengaged driver can resume control of the driving task. Approvals for these systems must be assessed on a case-by-case basis based on the technical requirements set out in the UNECE ADS Regulation.

Question 25: In your view, should there be specific training for a UIC?

techUK opposes additional, mandatory training, and such an approach would have the potential to create a significant barrier to market participation. Again, this is better dealt with at the safety case stage, where it will have to be demonstrated that the UIC will understand the system in which they will be operating, and is aware of the capabilities of the system and what their responsibilities are. Individual operators and developers are best-placed to provide this kind of training and assurance.

Question 26: What, if any, knowledge and skills outcomes should the training provide?

Manufacturers will need to put in place clear processes to communicate with and disable/override UIC features if safety-critical or regulatory changes affect the authorisation of the feature. Additionally, the safety case will need to clearly demonstrate how the UIC will understand the system they are operating, with evidence from testing the system with different user groups. We reiterate that we do not support a separate form of accreditation for this, and adding further requirements on this would mean that the UK diverges from the internationally-agreed approach.

Question 27: In your view, how frequently should UICs undertake training or tests of their ability?

The frequency of any tests or training should be set out in the safety case, in order to assure the regulators that any individual UIC system can be deployed safely.

Question 28: How should a UIC be informed of any changes to the vehicle's authorisation?

It is vital that any such authorisation changes are made knows to the UIC, as this will fundamentally change their legal powers and/or immunities and have other serious legal implications. Such communication should be clear, consistent, and multi-channel. With updates sent (wherever possible) by email, app, letter, and in the vehicle's Human/Machine Interface. It is vital that the distinction between immediate and urgent and non-immediate and non-urgent authorisation changes is understood, with leniency given to a UIC wherever possible. Such changes should be communicated in standard, easy-to-understand English.

Question 29: In your view what, if any, costs do you think should be taken into consideration when assessing the impact of UIC regulation?

AND

Question 30: In your view what, if any, benefits do you think should be taken into consideration when assessing the impact of UIC regulation?

It is very difficult to provide a complete list of costs and benefits to be taken into account, but some of the key factors that will affect techUK members, and which should be given particular consideration are as follows.

Costs include:

- UIC training, accreditation, and familiarisation
- Communicating authorisation changes through the methods in Q28
- Costs to regulators, such as legislating, oversight, enforcement, etc
- Broader indirect costs relating to uptake that might be incurred by over burdening UICs

Benefits include:

- Enhanced road safety and accident reduction
    - through effective regulation and skilled UICs
    - through UIC features in the wider market
- Economic benefits of successful AV rollout
- The importance of these features to OEMs and the consumer vehicle market
- Boosting public confidence in automation by increasing the use and understanding of UIC features on UK vehicles over the coming years

Regulatory design must proportionate to the limited responsibilities of a UIC under the AV Act. Over-burdensome UIC regulation risks undermining adoption, imposing unnecessary compliance burdens, and contradicting the proportionality principle emphasised by industry.

Question 31: In your view, should there be a stated value expected for a transition period duration akin to UNECE Regulation No. 157?

AND

Question 32: In your view, what should the minimum value be, and why?

AND

Question 33: In your view, should different scenarios require different transition demand protocols, and why?

AND

Question 34: In your view, should the nature of a transition demand vary depending on the user-in-charge and why?

AND

Question 35: In your view, should standards be established for transition demand interfaces across different vehicle makes and models, and why?

There should not be a single, fixed, prescriptive transition-period duration stated in UK regulation, and nor should there be UK-specific regulations relating to different scenarios, different UICs, and different vehicles makes and models. Instead, the UK should align with the UNECE Regulation, the adherence to which – and assurance that all systems will comply with the safe driving test – will be set out in individual safety cases and should be assessed in this context. Prescriptions for transition demands based on minimum values set by an authorisation authority would fail to understand how a specific system is designed to function in a specific context. Therefore, this must be proposed and evidenced by the manufacturer in the safety case.

Part 4 – "No-User-in-Charge Operator Licensing"

Question 36: In your view, what should be considered when assessing whether a NUICO licence applicant is of good repute?

AND

Question 37: In your view, what should be considered when assessing whether a NUICO licence applicant is of good financial standing?

AND

Question 38: In your view, what capabilities should NUICOs generally possess to be able to adequately detect problems arising during NUIC journeys?

AND

Question 39: In your view, what capabilities, if any, other than remotely assisting the ADS and driving the vehicle, should NUICOs generally possess to be able to adequately respond to problems arising during NUIC journeys?

In assessing that general good standing and capabilities of a NUICO, we would call for a recognition that this is an emerging, start-up sector, and requirements should be imposed accordingly. We would ask that these requirements mirror best practice from other

safety-critical transport regimes already in existence, reflecting the public-safety and integrity duties set out under the AV Act.

More specifically, it is important that criteria unrelated to the core functions of a NUICO are not included. It is vital not to duplicate vehicle construction, technical requirements, APS conditions, and so forth here. General judgements based on company size, nationality, ownership model, or commercial strategy should also be avoided, and the focus should be on the capabilities and accountabilities necessary to discharge duties under the AV Act, evidenced in a proportionate manner.

The responsibilities that NUICOs will uphold will be set out in the application made by the NUICO applicant for licensing, which may reflect requirements established by the ASDE and/or manufacturer at the type-approval and/or authorisation stage. Under the ADS regulation, the manufacturer is required to implement a Safety Management System to manage the safety of the ADS over its entire lifecycle. The manufacturer will also be required to put in place suitable arrangements with any organisation involved with in-use deployment of its ADS and its features.

Many of these issues have been covered in detail by the Law Commission, and we would refer to those recommendations.

Question 40: If you may seek to operate NUIC passenger-carrying vehicles in the future, what kind of service and types of vehicles would you be most likely to operate?

These use cases are covered in our responses to Qs 3, 4, 5, and 6.

Question 41: In your view, what requirements, if any, should be put in place for NUIC vehicles which carry passengers in addition to the requirements in existing schemes?

These should be a focused set of additional requirements, proportionate to the risks and aligned with the AV Act's separation of responsibilities. Most importantly, obligations for passenger service operators will be covered under the APS scheme – both statutorily and in guidance – and safety issues will be covered in the safety case. It is vital that these requirements are not duplicated elsewhere.

Guidance on how these regulatory regimes will interlink would also be of great help to the industry.

Question 42: In your view, how should operators and authorities seek to prevent and respond to crimes committed within a NUIC passenger vehicle, e.g. taking illegal drugs or sexual assault? No personal information should be provided as part of the evidence.

The approach to managing complaints and safety instances of this kind should draw on the experience built up through the PHV regime, where there are clear reporting and preventative requirements. There is a wide range of AV-specific options that will be available in this case – ranging from design, direct and indirect monitoring, emergency alarms, training, etc – and proposals should be set out clearly by government for comment.

Question 43: If you may seek to operate NUIC goods vehicles in the future, what kind of service and types of vehicles would you be most likely to operate?

The types of vehicles and service types most likely to be operated in the earlier stages of AV deployment include (but are not necessarily limited to):

- hub-to-hub NUIC freight movements
    - Middle-/long-haul on motorways and major A-roads, primarily overnight to reduce network complexity and interaction
- operations in private or semi-private environments
    - NUIC moves between port/airport gates, stacks and quays, and short on-road journeys to nearby consolidation sites — environments with high operational control
- last-mile or near-mile delivery

Question 44: If you may seek to operate NUIC goods vehicles over 3.5 tonnes in the future, is it likely you will operate both NUIC goods vehicles and manually driven HGVs?

AND

Question 45: What requirements, if any, of the existing HGV operator licensing scheme should be disapplied, replaced or amended for HGVs operating under a NUIC operator's licence?

Other stakeholder may wish to answer these questions.

Question 46: If you may seek to operate NUIC vehicles in the future, what remote ADS assistance tasks, if any, are you likely to incorporate into early deployments?

These are likely to be non-driving, non-continuous-supervision roles, providing high-level and advisory guidance to the ADS in uncertain edge cases. These are likely to be mainly relating to confirmation of proposed solutions, where the vehicle asks for human agreement. It is the vehicle systems themselves that should be making a decision, not the human suggesting specific solutions to the vehicle. There should be a clear regulatory distinction between assistance and remote driving. Regulatory confidence can be best supported through evidence-based safety case artefacts, including operator training frameworks and competence criteria, standard operating procedures, cybersecurity controls, and auditable logs of interventions and decisions.

Question 47: In your view, how often and in which circumstances would it be appropriate for operators to use remote ADS assistance?

These are likely to be occasional, exception-based, and safety-focused, and should not form a regular component of the overall driving task, which is consistent with the AV Act's separation of responsibilities. Particular circumstances could include:

- ADS uncertainty or ADS-requested assistance
- Recovery following emergency manoeuvre
- Passenger-safety or safeguarding

It should also be noted that developers may wish to use remote assistants during the development of a system. In those instances, there may be high levels of use of the assistance system. However, this will be for training purposes, and so it would be important not to implement requirements that would inhibit the ability to use it specifically within that context.

Question 48: In your view, how often, and in which circumstances, would it not be appropriate for operators to use remote ADS assistance?

Remote assistance should not be used to perform real-time dynamic driving tasks, and circumstances of connectivity degradation would render it impossible in any case.

Question 49: What, if any, training, health or skills assessments, qualifications, and vetting should remote ADS assistants undertake or meet to be deemed fit for their role?

AND

Question 50: In your view, what requirements, if any, should be mandated with respect to the working hours and conditions of remote ADS assistants?

AND

Question 51: In your view, what factors, if any, should determine how many NUIC vehicles a remote ADS assistant should be allowed to support simultaneously?

The role is not equivalent to drivers or safety drivers. Training should be role-appropriate, proportionate, and focused on situational judgement, system understanding and communication, and based on the safety case and requirements of the operator – not a fixed, external requirement. Matters like this are covered in the safety case presented by the manufacturer themselves, and we would warn against extra qualifications and extra licenses, which would create barriers to engage in the market.

Question 52: If you may seek to operate NUIC vehicles in the future, how likely are you to look to incorporate remote driving, if at all, into early deployments and in what form?

These are likely to be limited and tightly bounded. Any cases will be exception-based and focused on vehicle recovery in controlled circumstances -- such as circumstances when the ADS is unable to continue its journey in self-driving mode because it has reached the limits of its ODD, or where remote assistance to the ADS is not possible, or if in unexpected situations which the AV has not been programmed to deal with – and explicitly separated from routine dynamic driving operations. We recommend that how and when an ADS may be remotely driven should be assessed case-by-case through the safety case

For some, remote driving may be attempted as a bridge between having a safety operator in the vehicle and becoming fully driverless. There could be some treatment or allowance within regulations allowing that there may be measures such as this attempted in the development phase of applications. Although there are difficulties in proving the overall safety of this approach on public roads, this may be useful to some in the industry attempting to reach technology maturity.

Question 53: In your view, under what circumstances, if any, should remote driving be permissible for the purpose of vehicle recovery when a NUIC journey cannot be completed by the ADS?

AND

Question 54: In your view, under what circumstances, if any, and considering the possible presence of passengers or goods, should

remote driving be permissible for the purpose of responding to problems during NUIC journeys?

AND

Question 55: Under what circumstances, if any, and considering the possible presence of passengers or goods, should remote driving be permissible for the purpose of routinely completing elements of NUIC journeys outside the ODD of the ADS, and why?

It is difficult to outline a full list of circumstances but, in principle, these are likely to be only where remote advisory assistance is insufficient, remote driving will materially reduce risk and will focus on clearing carriageways with as brief an intervention as possible. Ultimately, this will have to be decided on a case-by-case basis as set out in individual safety cases.

Question 56: What, if any, training, skills, safeguarding and health assessments, qualifications and vetting should remote drivers undertake or meet to be deemed fit for their role?

AND

Question 57: What requirements, if any, should be mandated with respect to the working hours and conditions of remote drivers?

AND

Question 58: In your view, what considerations, if any, should be made with respect to assessing remote driving hardware and software within a remote operations centre?

There is disagreement in our membership on creating extra training/authorisation requirements beyond general driving, but such matters should be based on – and assessed according to – the safety case and requirements of the operator. There are analogous sectors where people perform safety critical roles in remote settings, and we would encourage the government to draw expertise and experience from these.

Question 59: In your view, which restrictions or mandatory conditions, if any, should be placed on NUICOs with respect to their contracting out of functions to third-party suppliers?

Contracting-out by NUICOs should be permitted. NUICOs are the regulated entity and, therefore, the duty will be on them to meet requirements set out by the regulator. The routes by which they do that should be left to the NUICO itself to determine. The only thing the

regulator should be concerned with is whether or not they meet their obligations, and the responsibility for securing safe and lawful outcomes will remain with the NUICO.

Question 60: What, if any, costs do you think should be taken into consideration when assessing the impact of NUICO regulation?

AND

Question 61: What, if any, benefits do you think should be taken into consideration when assessing the impact of NUICO regulation?

The cost-benefit analysis of NUIC regulation should take into account the positive impact these features will have on road safety. NUIC features will reduce risks to all road users by reducing the human error that contributes to most accidents. Furthermore, the NUICO is a new legal entity and, in the early stages of the market, we expect that how they work in practice will evolve. This potential for evolution should be considered in the development of NUICO regulation, to stimulate a healthy partner ecosystem without overly onerous requirements.

It is very difficult to provide a complete list of costs and benefits to be taken into account, but some of the key factors that will affect techUK members, and which should be given particular consideration are as follows.

Costs include:

- One-off set-up, regulatory, and assurance costs
- Operational costs

Benefits include:

- Enhanced road safety through effective regulation and effective NUICOs
- Economic benefits of successful AV rollout

Regulatory design must proportionate to the limited to the responsibilities of a NUICO under the AV Act. Over-burdensome NUICO regulation risks undermining adoption, imposing unnecessary compliance burdens, and contradicting the proportionality principle emphasised by industry.

Part 5 – “Insurance”

Question 62: In your view, how can insurance play a role in ensuring that good financial standing of regulated bodies is met?

This is a very complicated area with many (potentially overlapping) responsibilities. In general, it is important to highlight the potential for very large single costs on companies that can be very serious, and the need to protect from these to ensure an effective and dynamic market. It is difficult – from a regulatory point of view – to determine exactly what

good financial standing means in this instance and the extent to which insurance plays any role directly.

Question 63: What, if any, instances where insurance products are used to ensure good financial standing can you supply?

AND

Question 64: Taking into consideration available insurance for product recalls in the automotive industry, what sort of premiums are charged for what sort of coverage?

Other stakeholders may wish to answer these questions.

Question 65: In your view, is there a need for new kinds of fleet management insurance products for NUICOs? If 'yes', what type of products and/or coverage? If 'no', how do you see existing insurance products working to cover remote operations?

There are many fleet operators already in the PHV industry that provide fully-insured vehicles to private hire drivers, and it would be best to take examples and best practice from here, though they may not provide a full range of products that would apply to NUICOs specifically (e.g. register-driven suspensions, DSSAD evidence duties, remote-operations decisions, and software and cyber dependencies, amongst others).

Question 66: What, if any, learnings from other insurance models could be applied to any new types of insurance for AVs, and why?

Other stakeholders may wish to answer this question.

Question 67: In your view, what risks and opportunities are there for data controllers such as ADSEs and NUICOs in sharing this data with insurance companies?

AND

Question 68: If insurers request vehicle data that goes beyond determining liabilities of incidents where an AV is directly involved in a collision, how could privacy and data protection requirements be managed?

In general, we would warn against requiring excessive information to be shared, on account of privacy and data protection, competitive and commercial sensitivities, the potential undermining of data minimisation, and purpose limitation principles. It should also be

acknowledged that insurers have the option to enter into commercial arrangements with relevant parties to gain data access for their own commercial use, in compliance with existing data protection, privacy and sharing regimes.

Data sharing does not necessarily imply data comprehension and correct interpretation. Standards, skills, and communication channels need to exist to ensure that any data that is shared is of genuine use and accurately understood. We would also ask that any data sharing requirements are presented in an integrated framework, rather than stand-alone regimes for individual sectors like insurance.

We would strongly welcome specific proposals from government in order for us to provide more detailed feedback, but we recommend that the UNECE ADS Regulations for Data Storage Systems for Automated Driving and In-Service Monitoring and Reporting form the central basis for this. We would also point to the work that has already been done by the Law Commission, and others, on these questions. We support the principle that the regulatory regime should exist to enable insurers to meet their obligations under statue and go no further than this, and no further than international regulatory alignment.

It is key that data-sharing requirements are kept to a minimum – going no further than requirements for conventional vehicles, and not used for insurance risk modelling or premium pricing – and remain voluntary and governed by commercial agreement, not statutory obligation. Going further would introduce significant cost, proportionality, privacy and IP concerns without materially improving liability resolution.

Question 69: What, if any, costs do you think should be taken into consideration when assessing the impact of regulating the insurance of AVs?

AND

Question 70: What, if any, benefits do you think should be taken into consideration when assessing the impact of regulating the insurance of AVs?

It is very difficult to provide a complete list of costs and benefits to be taken into account, but some of the key factors that will affect techUK members, and which should be given particular consideration are as follows.

Costs include:

- System-wide factors that affect premium levels, both for insurer and those insured
- Ongoing costs relating to communication and data-sharing with insurers

Benefits include:

- Public and consumer confidence in using AVs
- Investor confidence and international friction reduction
- Economic benefits of successful AV rollout

Regulatory design must proportionate to the limited responsibilities of a UIC under the AV Act. Over-burdensome UIC regulation risks undermining adoption, imposing unnecessary compliance burdens, and contradicting the proportionality principle emphasised by industry.

Question 71: What examples, if any, do you have of AV insurance being done well, and why?

Other stakeholders may wish to answer this question.

Part 6 – "In-Use Regulatory Scheme"

Question 72: In your view, how might a regulated body determine if an AV has committed a traffic infraction?

In order to fully answer this question, it would be of great help to understand exactly what the government does and does not mean by "traffic infraction" in the first place, as they come with various severities, legal consequences, and physical driving consequences. Fundamentally, it is difficult to work out how incidents are to be detected if it is not clear exactly which incidents the government is seeking to be detected. Though, of course, those to the more serious end of the scale will be reported to regulators by operators, and there must be no duplication of requirements between different legal regimes in this respect.

When it comes to self-detection, the aim of an ADS is to drive without committing infractions, so if an infraction were detectable by an ADS, that ADS would not have committed it in the first place. A second option for detection would be sophisticated V2X technology, capable of monitoring – potentially with human assistance – every AV's activity, which is likely to be far too costly to implement proportionally. Generally, traffic infractions that might be committed by AVs are no different from those committed by conventionally-driven vehicles, and so the detection of infractions is likely to be very similar to traditional driving: including oversight and reporting by traffic authorities, local authorities, the police, other drivers, and the public.

All techUK members are committed to the safe and lawful deployment of AVs and fully commit to a duty of transparency and candour with all relevant regulators and authorities. Incidents reported and detected will be disclosed and corrected, and how operators detect infractions will vary between organisations, technological solutions, etc. We would reiterate that this would be made much easier if guidance were issued confirming in detail exactly what type of incidents – and at what severity – the government would wish to focus on. Furthermore, the Law Commission has already provided extensive thinking on how the

regulator should investigate traffic infractions, providing a large base of recommendations and evidence.

Question 73: In your view, what should be taken into consideration in the submission of standardised information to the IUR, and why?

Any standardisation should be based on principles such as:

- Being centred on the UNECE ADS Regulations, complementing established conventional automotive practices and being the only mandatory data sharing mechanism between manufacturers and regulators
- Non-duplicative of information already generated for type approval, authorisation, etc
- Privacy by design, both for passengers and commercially-sensitive data
- Feasible, proportionate, cost-effective, and risk-based
- Focus on operationally-material data

Question 74: In your view, do you think that any specialist elements, including knowledge, would be needed during an investigation into a relevant incident or traffic infraction by the IURS? If 'yes', what specialist elements, including knowledge, do you think the IURS need to undertake an investigation into a traffic infraction committed by an AV, or a relevant incident involving an AV?

The IURS should also take best practice from other similar road traffic enforcement organisations. We would also point to reports from the Law Commission and others, which have previously covered this topic.

Often, information and data supplied by operators will need interpretation and explanation by the operator themselves, and techUK members reiterate their commitment to openness and candour in any such dealings with the IURS, and the IURS should have a high confidence in the statements given to them by regulated bodies.

Question 75: What records, if any, should be retained regarding the maintenance and repair history of AVs?

The scope of records retained must be proportionate, harmonised with existing automotive requirements, and non-duplicative of type-approval, authorisation, in-use reporting obligations, and UNECE and other international regulations. techUK also reiterates its members' commitment to work collaboratively and cooperatively to support any investigations.

Question 76: In your view, what specialist knowledge or handling, if any, will be necessary in order to preserve evidence, and why? If 'yes', what specialist knowledge do you think may be needed to preserve evidence, and why? Do not provide any personal information relating to yourself or another identifiable person.

techUK would recommend taking best practice from other road traffic enforcement services that are already in operation.

Question 77: Beyond the primary purpose of supporting an investigation what, if any, other purposes do you think a thing seized could be retained and used for?

Any use would have to be subject to strict lawful authority, necessity, proportionality, data-minimisation, privacy protection, and robust chain-of-custody controls. Any secondary use must not undermine the integrity of the primary investigation, must not duplicate existing regulatory processes, and must be transparently governed.

In particular, the following must be avoided:

- open-ended analytics
- commercial use
- indefinite retention of data
- features allowing companies and individuals to be identified

We would ask for engagement with the owner in determining any use of seized articles beyond an investigation, as there may be case-by-case reasons why particular items should not be retained and used, or the manner in which they could be retained and used. We would also highlight more general legal restrictions on a regulator's power to seize and retain items.

Question 78: What challenges, if any, are you aware of regarding access to data relevant to investigations?

techUK members reiterate their commitment to working openly and honestly with regulators in the sharing and explaining of data relevant to investigations, as investigators will need to meaningfully work with operators to obtain useful and understandable data.

Question 79: In what circumstances, if any, would you consider it acceptable that the thing seized is delivered to someone other than the owner?

In principle, we would ask that this should only happen where there is a clear legal basis, a justified investigatory or safety-related need, appropriate safeguards, and the minimum necessary interference with property rights.

In particular, this should avoid:

- undermining or going beyond primary investigation
- data or privacy breach
- commercial misuse

We would ask for engagement with the owner in any instance that this is being considered, as there may be case-by-case reasons why particular items should not be transferred to other parties.

Question 80: Beyond those already used for electric and hybrid vehicles, what other considerations, if any, do you think should be implemented during the destruction of an AV?

In principle, we would warn against the destruction by the IURS of AVs. Additionally, on any occasion on which this is being considered, we would ask from close engagement with the owner to discuss why the IURS considers this to be a desirable course of action. The exact procedures regarding safe disposal of articles will have to align with wider best practice and be considered on a case-by-case basis.

Question 81: What considerations, if any, in addition to those for conventional vehicles do you think are appropriate for the storage of a seized AV?

This should align with wider best practice on the collection, storage, and securing of data and sensitive equipment. The commercially-sensitive and high-value nature of AV equipment means that the safeguarding and security of seized items will be very important.

Question 82: In your view, what are the circumstances in which a seized AV should be sold rather than disposed of?

This should only happen where it is lawful, proportionate, and safe, and where the vehicle can be returned in a software-wiped state to a compliant, non-compromised government or other entity without undermining ongoing investigations, privacy, data security, intellectual property, commercial sensitivities, or cybersecurity. We would, in general, strongly recommend against this, given the risks.

Again, we would ask for close engagement with the owner to discuss why the IURS considers this to be a desirable course of action. The exact procedures regarding safe sale of articles will have to align with wider best practice and be considered on a case-by-case basis.

Question 83: In your view what, if any, considerations are there in how an AV should be appropriately disposed of compared to a conventional vehicle?

Individual developers may be in a better position to outline their procedures for vehicle disposal.

Part 7 – "Sanctions"

Question 84: What information can you provide, if any, of existing sanctions regimes in other areas which take a similar, flexible approach to applying noncriminal sanctions?

Other stakeholder may wish to respond to this question.

Question 85: In your view, what factors relating to an incident or traffic infraction would warrant the IURS to:

- **issue a regulatory sanction under the AV Act, as opposed to a civil sanction?**
- **vary an automated vehicle's authorisation conditions, rather than suspending the authorisation altogether?**
- **issue a monetary penalty notice instead of a compliance notice?**

Any final policy approach must fully protect the commercial and market requirements of AV operators and may wish to make a distinction between safety and non-safety issues. The resulting framework must:

- ensure regulatory certainty so operators can plan investment and deployment
- avoid placing disproportionate or commercially-burdensome requirements on operators, especially during the early stages of the AV market
- prevent regulatory decisions from creating unintended barriers to entry or distortions that undermine the viability of AV services, or risk the UK's globally competitive position
- align with best practice and approach by other sanction regimes in similar sectors

We support the case-by-case, proportional, flexible, learning-based approach taken by the Call for Evidence, with the central aim being not to undermine the ecosystem more generally, but to guarantee safety.

Question 86: In your view, should a regulated body's turnover be taken into account when setting the maximum limit for monetary penalties? If 'no', why not? If 'yes', how should turnover be calculated and why? No personal information should be provided as part of the evidence.

AND

Question 87: In your view, at what amount would it be appropriate to set a strict limit for monetary penalties, and why?

- **Up to £10m**
- **£10m up to £15m**
- **£15m up to £20m**
- **£20m up to £25m**
- **Greater than £25m**

AND

Question 88: In your view, should a regulated body's turnover be taken into account when setting a limit for additional daily penalties that may be imposed if the failure is a continuous one, and why? No personal information should be provided as part of the evidence.

AND

Question 89: In your view, at what amount would it be appropriate to set a strict limit for additional daily penalties that may be imposed if the failure is a continuous one and why?

AND

Question 90: In your view, should a permit holder's turnover be considered when setting a maximum monetary penalty limit for APS? If 'yes', how, in your view, should turnover be calculated and why? If this differs from the way you think turnover should be calculated for penalties under section 36 of the AV Act, explain why. No personal information should be provided as part of the evidence.

AND

Question 91: In your view, at what amount would it be appropriate to set a strict limit for monetary penalties for permit violations, and why?

- **Up to £20,000**
- **£20,000 up to £50,000**
- **£50,000 up to £125,000**
- **£125,000 up to £500,000**
- **£500,000 up to £1,000,000**
- **Greater than £1,000,000**

AND

Other Question 92: In your view, should a permit holder's turnover be taken into account when setting a limit for additional daily penalties that may be imposed if the failure is a continuous one? No personal information should be provided as part of the evidence.

AND

Question 93: In your view, at what amount would it be appropriate to set a strict limit for additional daily penalties that may be imposed if the failure is a continuous one, and why?

We call for an approach aligned with the best practice of other regulatory regimes to be applied, and not to treat AVs as a special, different case. We would point to previous reports from other organisations like the Law Commissions on some of these points.

Any penalties applied – and the methods used to calculate them – should be proportionate and not liable to damages investor confidence or the viability of the AV sector more generally. Setting fixed and arbitrary figures at an early stage of deployment is also inadvisable, and we would also ask for the focus to be on engagement and the correction of issues, rather than simply on ongoing sanctions.

Question 94: What, if any, costs do you think should be taken into consideration when assessing the impact of the IURS?

AND

Question 95: What, if any, benefits do you think should be taken into consideration when assessing the impact of the IURS?

It is very difficult to provide a complete list of costs and benefits to be taken into account, but some of the key factors that will affect techUK members, and which should be given particular consideration are as follows.

Costs include:

- Industry compliance costs that flow from IURS requirements, such as data capture and standardisation
- Standards tracking and regulatory harmonisation

Benefits include:

- Public and consumer confidence in using AVs
- Economic benefits of successful AV rollout

The AV Act was designed with the principle of establishing a process of learning through engagement and fostering a "no blame" safety culture. As an emerging industry, there will be lessons learned in the early days as the technology develops and companies begin deployment. The sanctions regime should reflect this and enable businesses to enter the market, deploy, and share learnings. It is important to ensure the regime is proportionate and that its requirements are achievable for early market participants while deployments are in their early stages.

Question 96: In your view, what methods could be deemed an 'appropriate communication' between enforcement officers and AVs, and why?

It is important to co-design suitable methods of communication based on the deployment and service model, through early engagement between operators and enforcement officers. Given the diverse nature of deployments, the suitability of communication methods will vary across different service designs and operating models.

Such communication must be clear; unambiguous; reliably detectable; consistent with pre-existing practice and guidance for highways, traffic, and law enforcement officers; and safely-actionable. In particular, they should be technology-neutral, avoiding over-prescription to ensure compatibility across different vehicle makes, models, and ADS designs. Flexibility and understanding about the challenges with this sort of communication should be applied, alongside guidance for officer to ensure that the correct signals are used and that other measures – such as ways to contact real-time operatives from the operator – are known. There are models of standardised best practice in other jurisdictions that the government might also wish to consider.

Part 8 – "Incident Investigation"

Question 97: In your view, what opportunities, if any, are there for the statutory inspectors to learn from other safety critical industries?

It would be valuable to adopt inspectorate models that prioritise highest-risk operations, routes, and change events so inspections focus on what most affects system safety and public outcomes. We would also support the mirroring of the no-blame safety investigation tradition in other regulators to encourage early hazard disclosure without fear of undue sanction.

Question 98: In your views, what opportunities and challenges are there to encourage data and information sharing across regulated bodies, regulators and other stakeholders (e.g. the police) to foster a no-blame safety culture?

The In-Service Monitoring and Reporting and Data Storage Systems for Automated Driving mechanisms within the upcoming UNECE ADS Regulations already establish processes for how data will be shared to foster this no-blame culture.

In principle, sharing must be purpose-limited, proportionate, privacy-preserving, and non-duplicative. The same features that make AVs data-rich also create governance, privacy, and commercial sensitivity challenges.

This includes:

- data may include precise locations, timings, interior audio/video, or passenger interactions. Sharing must strictly apply data minimisation, redaction and purpose-limitation, with clear retention policies and audit trails
- sharing should default to summary-first, escalating to enriched data only when strictly necessary and lawfully justified. Otherwise, there is a serious risk of commercial and competitive information and know-how being released – in particular the reverse-engineering of procedures and systems
    - a memorandum of understanding, or other similar measure, would be of use to ensure that there is agreement that information that is shared has limitations, may be of significant intellectual property value, and is needed to maintain competitive advantage; and that, as a result, these must not be diminished in sharing that data with inspectors
- complex, ad-hoc requests can disproportionately affect smaller operators. Predictable, tiered reporting reduces cost and improves compliance.

Also, the regulatory regime must also take into account what data might be needed for any individual investigation, because this affects the boundaries needed properly to protect the above points. Finally, in a complex investigation in which data is shared widely across different people/areas of an investigation, it is important to ensure that different aspects of

the data are judged by those most appropriate to do, otherwise risking unfair misinterpretation and an inaccurate final decision. The no-blame culture will be key in defending against this.

Question 99: In your view, should there be any limitations placed on an inspector's role and powers considering other safety-critical industries in the UK and internationally, and why?

A framework that clearly defines when safety incidents necessitate referral to a statutory inspector is key. In-Service Monitoring and Reporting requirements in the UNECE ADS Regulation set expectations for incident reporting and the corresponding process. DSSAD should form the basis of these investigations, with data interpretation a joint-venture involving the manufacturer.

Inspectors' powers should be clearly bounded to protect due process, privacy, commercial confidence, innovation, and the no-blame learning ethos, whilst avoiding relitigating issues at the approval and authorisation stages. In particular:

- Inspections should only proceed on cases that high enough magnitude, profile, or public interest to warrant being referred to the statutory inspector
- Inspectors should default to summary-first data. Access to raw sensor/media or detailed engineering logs should require a documented necessity test, proportionality assessment, and appropriate approvals
- Individual inspectors must be prevented from using information gathered as an inspector in any future role in the industry, and vice-versa
- Investigations should remain within in-use behaviour and compliance
- Mandate data minimisation, targeted redaction, and need-to-know access

Crucially, this investigative function must uphold the 'no-blame' culture.

Question 100: In your view, should there be an oversight function to review the actions and decisions of the statutory inspectors to ensure that they are using their powers appropriately, and why?

An independent oversight function could:

- reinforce fairness, consistency, and due process
- protect the integrity of a no-blame, learning-oriented safety culture
- protect commercially sensitive information

However, it must be transparent, proportionate, and non-duplicative, and not place additional burden (financial or otherwise) on operators etc. Additional, best practice from other similar investigation branches should be applied here.

Question 101: What safety themes, if any, can be learnt from international deployments of AVs, or AV pilots in GB?

The UK is set to have the most comprehensive AV framework in the world. Alignment with the UNECE ADS regulation is an opportunity to underpin this framework with global harmonised technical safety standards, which will ensure users experience the technology consistently.

Individual operators and developers will have particular experience in deploying these technologies in other jurisdictions. They may be able to share those more specifically, but techUK would encourage an engagement with other jurisdictions' experiences with these technologies to guide the UK's, bearing in mind the differences outlined in previous sections between UK driving and that elsewhere. These different input factors will necessarily require different solutions and approaches to deliver a safe and effective AV ecosystem in the UK.

Question 102: In your view, how can lessons learned from investigations into relevant incidents be used to improve:

- **the pre-deployment processes (e.g. approval and authorisation)?**
- **the general in-use safety of AVs to prevent future incidents?**

Any lessons from investigations may be of use in informing pre-deployment and in-use safety cases. However, it is vital that such lessons are applied to future examples of this and should not normally be applied retrospectively to those already authorised, especially without a sufficient warning time for any changes – particularly in cases where an operator's safety management systems can provide quick remediation as evidenced by the IURS.

Uncertain and unpredictable regulation damages investment and innovation, so such lessons:

- must be evidence-driven, not anecdote-driven, and only robust, repeatable patterns should inform expectations
- must be applied proportionately to regulatory escalation
- cannot override UK GDPR or privacy principles
- de-identified and aggregated learning should be shared industry-wide
- must not become automatic triggers for punitive action

Question 103: In your view, are there any specialist skills and/or expertise needed by someone to carry out the proposed functions of a statutory inspector for AVs, and why?

Other stakeholders may wish to answer this question.

Question 104: What considerations, if any, should a statutory inspector take into account to ensure that their findings lead to actionable recommendations, and why?

Recommendations should be:

- evidence-based, not speculative
- proportionate and risk-based, as well as clear, specific and monitorable
- aligned with defined regulatory roles
- feasible and operationally realistic
- support continuous improvement and no-blame learning
- protect privacy and commercial confidentiality
- align with international standards (UNESE) and best practice

Question 105: In your view, how should reports and recommendations be developed to ensure transparency and ease of understanding by the public?

Reports should:

- use clear, everyday language, avoiding specialist terminology as far as possible, in order to ensure that key messages can be understood without prior knowledge of AV systems or regulation.
- Separate facts, analysis and recommendations
- Use a no-blame, learning-orientated tone
- Provide context and mitigation, and outline the scope of investigations to avoid misinterpretation and avoid overly judgemental critiques
- Outline resulting actions that will be/have been taken (where relevant)

Question 106: In your view, should the approach to findings being communicated to the public differ at all in the early stages of AV deployments? If 'yes', how should it differ in approach?

Early deployments carry greater public scrutiny, lower baseline understanding, and higher sensitivity to incidents; and commercial sensitivities are heightened early in the market stages. It is, therefore, vital that public communications should provide richer contextual explanations, emphasise the learning and improvement mindset, reduce technical complexity and focus on plain-language summaries, framing risks in a balanced way. It may also be helpful to augment reports with additional public information assets explaining the AV ecosystem and also providing an opportunity for the regulated body being reported on to provide a short right of reply.

Question 107: When specialist technical AV expertise is not available from within the incident investigation function, are there any:

- **operational considerations that should be made before appointing an expert to assist in an investigation?**
- **commercial considerations that should be made before appointing an expert to assist in an investigation?**
- **other considerations that should be made before appointing an expert to assist in an investigation?**

We call for ensuring that any external expert is equipped with the right skills and is committed to the principes stated in previous questions, with a particular focus on ensuring that there is no unmitigated commercially-sensitive data breach risk, as it is important that market competition and commercially-sensitive information is protected, and a "revolving door" problem is prevented.

Question 108: In your view, should there be any limitations placed on the type of physical material, data and/or information a statutory inspector can retain following an investigation to protect personal or commercial interests? If 'yes', what limitations?

AND

Question 109: What mechanisms, if any, could be used to ensure that evidence is made available to a statutory inspector when it is held outside of the UK?

AND

Question 110: What, if any, specific guidelines or standards should be established for the examination and retention of evidence related to AVs (i.e. physical items, data or information) obtained during an investigation?

AND

Question 111: What specific purposes, if any, could be considered for the disclosure of evidence obtained by a statutory inspector to ensure that sensitive data and information is managed appropriately?

AND

Question 112: In your view, should there be any guidance or specific regulations created to govern the use, retention and destruction of physical evidence, and why?

A statutory inspector should only keep physical material, data, or information that is directly relevant to the investigation and strictly essential for establishing factual circumstances. This limit is necessary to protect personal privacy and legitimate commercial interests by preventing the excessive or speculative retention of sensitive material. Regulated bodies should be consulted and be able to challenge the relevance or quantity of retained material if it appears unnecessary to them. An independent oversight process should be created with the power to review these disputes and, if appropriate, order the return or erasure of materials.

Implementing constraints based on relevance, combined with an accessible challenge process, promotes trust, proportionality, and accountability in investigative procedures.

Question 113: What, if any, costs do you think should be taken into consideration when assessing the impact of incident investigation regulation?

AND

Question 114: What, if any, benefits do you think should be taken into consideration when assessing the impact of incident investigation regulation?

It is very difficult to provide a complete list of costs and benefits to be taken into account, but some of the key factors that will affect techUK members, and which should be given particular consideration are as follows.

Costs include:

- A wide range of industry compliance and engagement costs
- Standards tracking and regulatory harmonisation

Benefits include:

- Public and consumer confidence in using AVs
- Economic benefits of successful AV rollout

Part 9 – "AV Cyber Security"

Question 115: In your view, are there any aspects specific to AVs that are not addressed by R155 and R156, and why?

The UNECE ADS framework – incorporating R155 and R156 – mandates that AV manufacturers must hold valid Certificates of Conformity (CoC) for their Cyber Security Management System (CSMS) and Software Update Management System (SUMS) before type approval is granted. This ensures AVs meet international cyber resilience standards, include software identifiers, and that manufacturers and their supply chains operate under regularly audited, approved processes for cybersecurity and software change management. The UK should mirror these UNECE cybersecurity provisions. Deviating from internationally-agreed regulation risks market fragmentation, confusion, and deterring investment and deployment in the UK.

Other issues that may merit particular consideration include:

- Data privacy
    - As AVs become ever more connected with external infrastructure, it would be worth engaging on with the sector on data minimisation, anonymisation and explicit user consent.
- Operation centre integration
    - Real-time integration between vehicle and operation centre should be a key consideration for further engagement.
- Human factors
    - The passengers and other human users/operators of AVs must remain central, so further engagement with the sector on how drivers, passengers and authorised users interact with AV securely would be beneficial.
- Market development
    - It would be worth ensuring both that there is sufficient account taken of the transition from traditional vehicles with AV add-ons to from-the-ground-up AV production, and also that the ecosystem as whole is taken into account.

On all these points, however, industry needs to see a clearer position from government about what aspects them and what they would like the industry to do in response.

Question 116: In your view, how should the relationships between parties such as vehicle manufacturers, ADS suppliers and NUICOs be managed to support the cyber security duties under the AV Act?

Cybersecurity for automated vehicles depends on a whole-system and lifecycle-based approach. The upcoming regime should:

- be centred on the Safety Assurance section of the UN Regulation, which mandates that manufacturers establish appropriate arrangements with all organisations involved in the ADS's development, manufacturing, or in-use deployment

- establish clear, non-overlapping roles, accountability, and governance
    - the split in responsibilities between NUICOs, ASDEs and suppliers is of particular importance here
- formalise security-critical information sharing and aligned practices with appropriate safeguards

However, it is vital that this does not:

- duplicate or misalign with other regulatory requirements (e.g. type approval, authorisation, R155, R156, safety case, NUICO licensing, in-use regulation, APS permitting, etc)
- create tech-specific rules or biases
- create excessive data demands or burdens
- create barriers to entry

Question 117: What aspects of security in these areas should be considered when issuing a NUICO licence? Evidence is sought on the following areas, including systems that have been added to and those adapted/used to enable remote operations:

- **On-vehicle control systems**
- **Perception systems**
- **Communications systems including data transmission and encryption**
- **Workstation and workplace**
- **Physical access**
- **Personnel requirements**

At its heart, the Automated Vehicles Act is about safety primarily and ensuring that the security of the system doesn't undermine that safety. The physical safety of passengers and other road users is paramount, and the regulatory regime must ensure that NUICOs are sufficiently able to secure their fleets. This will require many measures that are likely to be similar in approach to rules and best practice in other sectors, which include:

- Physical security of NUICO premises and vehicle fleets
- Proper vetting of personnel
    - particularly those in more sensitive roles, with greater powers of operation within the organisation, and with the ability to compromise the connections between the vehicle and the remote system
- Fail-safes as a last resource for vehicle security

Question 118: What capabilities, if any, should NUICOs have in order to detect and respond to cyber security-related incidents?

AVs face cybersecurity risks like those encountered by other geographically distributed operational systems and ADS developers are currently adopting guidance from bodies such as the National Cyber Security Centre and wider standards.

NUICOs should possess comprehensive, proportionate, and operationally-mature cybersecurity detection and response capabilities. NUICOs must be able to detect, triage, contain, escalate, and support recovery from cybersecurity-related incidents across the entire operational chain, and the cybersecurity requirements and approvals placed upon manufacturers will relate to this. Regulation should not damage role clarity with ASDE/ADS, and should be broadly in line with other regimes for protected sectors. However, without more detailed proposals, it is difficult to provide a more detailed response.

Question 119: In your view, how and when should cyber security-related incidents be reported? No personal information should be provided as part of the evidence.

AND

Question 120: In the event of a cyber security-related incident, what information should be provided in the report? No personal information should be provided as part of the evidence.

Reports should be made in a timely, risk-based, proportionate, and consistent manner. There should be a tiered approach, depending on the severity of the issue, and proportionate periodic reporting can build consistency and trust with the public and regulators.

techUK members are committed to openness and transparency for the benefit of the sector and the public. Again, however, without more detailed information, proposals, and ambitions from government, it is difficult to provide a more detailed response here, especially in relation to how any particular regulatory requirements might interact with other recent cybersecurity-related statues and regulations.

Part 10 – “Accessibility”

Question 121: In your view, are there any wider considerations regarding accessibility that should be taken into account in the deployment of AVs?

techUK believes that realising AVs’ potential for elderly, vulnerable, and disabled customers requires a balanced, practical, whole-journey approach to accessibility. techUK and our members have done significant work on these issues, both operationally – on issues such

as digital accessibility, physical access to pick-up and drop-off points, in-vehicle accessibility, and loading/unloading – and in previous submissions to government. Individual developers and operators will be able to more fully outline their own use cases.

However, regulation should avoid over-specifying design, especially in early deployments in order to remain commercially viable and scalable. For example, different vehicle types will have different requirements and constraints, and not every AV can support all things at once. Overly-prescriptive requirements risk reducing innovation.

Part 11 – "Environmental Impacts of AVs"

Question 122: In your view, which environmental mechanisms are more important for understanding the overall environmental impact of AVs, and why?

AND

Question 123: What evidence, if any, can you supply on how AV production— particularly in the UK—will affect the environment, including carbon and other emissions?

AND

Question 124: In your view, how can these factors be developed or managed to minimise environmental impacts?

AND

Question 125: In your view, how should AVs and their components be handled at end-of-life to reduce environmental harm?

The shift to AVs can deliver significant environmental benefits. Most AV platforms in development are based on new vehicle architectures, with many being electric vehicles. The sector is therefore shifting toward cleaner, greener models of operation. Additionally, AVs may enable changes in ownership models and increase vehicle utilisation, both of which can reduce the overall environmental footprint of road transport per capita.

It will be important to focus on mechanisms that dominate life-cycle outcomes, such as reducing emissions. AV have the potential to do this in a variety of ways, including transport electrification, demand effects, operational and fleet efficiency, eco-driving techniques, manufacturing techniques, modal shift, and improved land use. Other stakeholders, developers, operators, and manufacturers may be able to highlight their own practices and use cases in more detail.

ENDS