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U.S. Department of Transportation
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Advance Notice of Proposed Rulemaking:
Safe Integration of Automated Driving Systems-Equipped Commercial Motor Vehicles

Submitted By:

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TuSimple submits these comments to the Federal Motor Carrier Safety Administration (FMCSA) advance notice of proposed rulemaking (ANPRM) on *Safe Integration of Automated Driving Systems-Equipped Commercial Motor Vehicles* (ADS-equipped CMVs).

TuSimple is working to bring to market an autonomous truck able to drive depot-to-depot– with the highest levels of safety.[1] TuSimple is addressing industry challenges including making the road a safer place, reducing carbon emissions as well as overall operating costs, and providing a solution to the industry's critical driver shortage.

TuSimple's perception system sees up to 1,000 meters[2] and provides a pixel-level interpretation of the surrounding environment, enabling the vehicle to locate itself within four inches of the road. TuSimple's technology design uses sensor fusion, but with a camera centric approach that functions-- rain or shine.[3]

[1] https://youtu.be/HnphFUHOoXE

[2] https://youtu.be/Wi8JcCcipK4

[3] https://youtu.be/teMXT-j6jns

TuSimple is headquartered in San Diego, California, with a testing and development facility in Tucson, Arizona. The company has been testing its Level 4 Class 8 autonomous trucks in Arizona for over a year and is generating revenue hauling freight for commercial customers in the state. Earlier this year, TuSimple conducted a pilot with the United States Postal Service (USPS), hauling mail and packages between Phoenix, Arizona and Dallas, Texas in trucks using TuSimple's ADS. The Postal Service is exploring the feasibility of utilizing autonomous delivery vehicle technology to reduce fuel costs, increase safe truck operation and improve its fleet utilization rate through longer hours of operation. The Postal Service provides the nation with a vital delivery platform that enables American commerce, serves every American business and residential address, and is part of critical infrastructure which has played an indispensable role in connecting the nation over its 240 years of service.

On August 15, 2019, UPS Ventures, made a minority investment in TuSimple. Together, we are testing self-driving tractor trailers on a route in Arizona to determine whether the vehicles can improve service and efficiency within the UPS network. The collaboration began with the goal of helping UPS better understand the requirements for Level 4 Autonomous trucking in its network. Throughout the ongoing tests, UPS has been providing truckloads of goods for TuSimple to carry on a North American Freight Forwarding route between Phoenix and Tucson, Arizona. The company initiated self-driving service in May 2019, with a driver and engineer in the vehicle. TuSimple and UPS monitor distance and time the trucks travel autonomously, safety data and transport time.

TuSimple is currently working with local, state, and federal officials as well as public universities and non-profits to identify and resolve issues related to the testing and deployment of ADS-equipped trucks. TuSimple worked with Pima Community College to develop the industry's first, *Autonomous Vehicle Driver and Operations Specialist* certificate program. The certificate will prepare individuals for jobs such as training the autonomous system as test drivers, operating the vehicle in situations where autonomous driving is not suitable, and remotely monitoring the system from a command center. TuSimple is committed to an open and collaborative relationship within our community and with our government partners. Safety is TuSimple's north-star and we operate every day with that ethos in mind.

Issue 1: Do the FMCSRs Require a Human Driver?

In AV 3.0, FMCSA stated that "going forward FMCSA regulations will no longer assume that the CMV driver is always a human or that a human is necessarily present onboard a commercial vehicle during its operation."[4] Furthermore, FMCSA clarified that "in the case of vehicles that do not require a human operator, none of the human-specific FMCSRs…apply." TuSimple agrees with FMCSA for endorsing this approach, and supports a future rulemaking codifying this guidance, including through potential amendments to the definition of the driver. Taking this step will increase certainty for manufacturers of ADS-equipped CMVs and motor carriers who utilize those vehicles. In the absence of such amendments to current regulations, it is appropriate for FMCSA to interpret its regulations to no longer assume that the CMV driver is always a human (i.e., the driver could be an automated system) or that a human is present onboard a commercial vehicle during its operation, provided that the vehicle is equipped with a Level 4 or Level 5 ADS and is operating within its ODD (in the case of Level 4).

Q1.1 How should FMCSA ensure that an ADS-equipped CMV only operates consistent with the ODD for the ADS equipped on the vehicle?

[4] https://www.transportation.gov/av/3

TuSimple believes that an ADS developer should be responsible for defining the ODD for their own system, as they would have the most knowledge of the capabilities and limitations of the ADS technology installed on the vehicle. It should also be recognized that an ODD is something that may not be static for the life of an ADS, as it could be altered based on software updates or other changes by the ADS developer. In its oversight role, FMCSA should require that drivers and motor carriers not be permitted to operate the ADS of a CMV outside of its ODD. This could be done through amendments to regulations in Title 49, Part 392.7. TuSimple provides the following suggestions for amendments to Part 392.7 as potential options for the agency's consideration and would be happy to discuss further with FMCSA staff and other stakeholders.

Proposed language

> **392 - Driving of Commercial Motor Vehicles, Subpart G - Prohibited Practices**
> **392.72 - Automated Driving Systems Limited to Operational Design Domain**
> No person shall use, and a motor carrier shall not require or permit a person to use a Commercial Vehicle Automated Driving System outside of its intended Operational Design Domain, as specified by the ADS provider.

Alternative language that replaces ODD with specific intended use categories. This definition would obviate the need to define ODD in §390.5

> **392 - Driving of Commercial Motor Vehicles, Subpart G - Prohibited Practices**
> **392.72 - Automated Driving Systems Limited to Intended Use**
> No person shall use, and a motor carrier shall not require or permit a person to use a Commercial Vehicle Automated Driving System outside of the geographical area, road type, time of day, or environmental conditions for which the system is designed to safely operate, as specified by the ADS provider.

Q1.2. What are manufacturers' and motor carriers' plans for when and how Levels 4 and 5 ADS- equipped CMVs will become commercially available?

TuSimple is testing its level 4 truck on a daily basis in Arizona, and recently expanded operations to New Mexico and Texas. TuSimple tests its vehicles with an experienced, trained CDL driver behind the wheel at all times. Additionally, there is a safety engineer that rides in the right seat, working in tandem with the driver, monitoring the performance of the vehicle. Information about TuSimple's approach to operations during development and testing, including qualifications, training, testing and operational policies for safety operators, can be found in our Voluntary Safety Self-Assessment.[5] TuSimple is planning for a limited driver-out route(s) in the 2020/2021 timeframe.

[5] https://www.tusimple.com/wp-content/uploads/2019/05/TuSimple-2019-Self-Driving-Safety-Report.pdf

Q1.3 Should FMCSA consider amending or augmenting the definition of "driver" and/or "operator" in 49 C.F.R. § 390.5 or define a term such as "ADS driver" to reduce the potential for misinterpretation of the requirements?

TuSimple suggests the following definitions that could be added to § 390.5 Definitions (suspended) and §390.5T Definitions. Where applicable, the definitions have been pulled from SAE J3016, *Taxonomy and Definitions for Terms Related to Driving Automation Systems for On-Road Motor Vehicles*, or AV 3.0 (which itself relies heavily on SAE J3016). TuSimple would be happy to discuss further with FMCSA staff and other stakeholders.

Proposed Language

Automated Driving System (ADS): The hardware and software that are collectively capable of performing the entire DDT on a sustained basis, regardless of whether it is limited to a specific operational design domain (ODD); this term is used specifically to describe a level 3, 4, or 5 driving automation system, as defined in SAE J3016. For the purpose of this subchapter, an ADS is not a person.

Highly Automated Driving System (H-ADS): The hardware and software that are collectively capable of performing the entire DDT on a sustained basis, regardless of whether it is limited to a specific operational design domain (ODD), and capable of achieving a minimal risk condition without the input or presence of a human driver; this term is used specifically to describe a level 4 or 5 driving automation system, as defined in SAE J3016. For the purpose of this subchapter, an H-ADS is not a person.

Dynamic Driving Task (DDT): All of the real-time operational and tactical functions required to operate a vehicle in on-road traffic, excluding the strategic functions such as trip scheduling and selection of destinations and waypoints, and including without limitation lateral vehicle motion control via steering; longitudinal vehicle motion control via acceleration and deceleration; monitoring the driving environment via object and event detection, recognition, classification, and response preparation; object and event response execution; maneuver planning; and enhancing conspicuity via lighting, signaling, and gesturing.

Operational Design Domain (ODD): Operating conditions under which a given driving Automated Driving System or feature thereof is specifically designed to function, including, but not limited to, environmental, geographical, and time-of-day restrictions, and/or the requisite presence or absence of certain traffic or roadway characteristics.

Remote Operator: A person not physically present in a CMV but responsible for any portion of the Dynamic Driving Task (DDT) from a remote location during the operation of a commercial motor vehicle.

Issue 2: Commercial Driver's License (CDL) Endorsements

TuSimple agrees with FMCSA's preliminary inclination to maintain the CDL rules as written. The technology is rapidly developing and as more experience is gained operating vehicles with ADS, we may have data to indicate that there is a need to make changes to CDL rules. At present, TuSimple believes that current CDL requirements should remain in place and apply to any person responsible for the dynamic driving task, either in the cab or remotely. To help prepare individuals for jobs such as training the autonomous system as test drivers, operating the vehicle in situations where autonomous driving is not suitable and to remotely monitor the system from a command center, TuSimple assisted Pima Community College in developing the industry's first, *Autonomous Vehicle Driver and Operations Specialist* certificate program. Program's such as this along with training on a specific ADS provided by the ADS-developer or motor carrier will assure that individuals responsible for the dynamic driving task of an ADS-equipped vehicle have the necessary knowledge and skills.

Q2.1. Should a CDL endorsement be required of individuals operating an ADS-equipped CMV?

As noted in the paragraph above, TuSimple believes that any human responsible for the dynamic driving task, either in the cab, or remotely, should be required to hold a CDL. Currently, while ADS are in development, it is too soon for a uniform standard or consideration of an endorsement.

Q2.2. If so, what should be covered in the knowledge and/or skills test associated with an ADS endorsement?

At this time, TuSimple believes it is too soon for a uniform standard or consideration of an endorsement.

Q2.3. What would be the impacts on SDLAs?

At this time, there should be no additional impacts to the SDLAs.

Q2.4. Should a driver be required to have specialized training for ADS-equipped CMVs?

TuSimple's test drivers average 20 years of experience operating a CMV and go through extensive internal training before they get behind the wheel of TuSimple's ADS-equipped trucks. In the future, CDL holders should have training on and understanding of the technology. TuSimple believes that drivers will have to interact with level 4 vehicles for the foreseeable future, and they should have training from the ADS developer, OEM partner, or motor carrier. As noted in the opening paragraph to this section, TuSimple has worked with Pima Community College to develop a certificate program to help prepare drivers for working with ADS-equipped CMVs.

Q2.5. In an operational model that has an individual remotely monitoring multiple CMVs, should the Agency impose limitations on the number of vehicles a remote driver monitors?

TuSimple believes it is premature to impose limitations on remote monitors, as the role and responsibilities of a remote monitor are not yet clearly defined and may differ among different ADS designs and operational models. It is important as FMCSA and stakeholders continue discussion of remote monitoring that we clearly define the role and responsibilities that we are considering. TuSimple notes that terms such as "remote driver", "remote monitor", "remote operator", and "remote supervisor" are frequently used, often interchangeably, without a clear and common understanding. TuSimple does not at this time have specific proposals for

definitions of these terms, but provides the following examples of the different roles and responsibilities of someone "monitoring" ADS-equipped CMVs from a remote location. For the purpose of these examples, the term "monitor" is used in the broad sense of someone who is responsible for one or more ADS-equipped CMVs.

- Example 1: if the ADS encounters a problem, the ADS will enter a minimal risk condition and the monitor's job is to dispatch someone to go to the truck to resolve the problem.
- Example 2: if the ADS encounters a problem, the ADS will enter a minimal risk condition and the monitor will send instructions to the truck (e.g., alternate path) that the ADS on the truck executes.
- Example 3: if the ADS encounters a problem, the ADS will enter a minimal risk condition and the monitor will manually take over the DDT using remote controls.

These examples are illustrative[6] of operational models that might be used, however some of these operational models may not be adopted while there may be variations or other examples that should be considered. TuSimple stands ready to work with FMCSA and other stakeholders and standards development organizations to identify the range of roles and responsibilities that could be assigned to remote "monitors" and clarify terminology as appropriate to assist in further discussion of this issue.

Q2.6. Is there any reason why a dedicated or stand-by remote operator should not be subject to existing driver qualifications?

TuSimple believes that existing driver qualifications should apply to anyone responsible for the DDT. As noted in the response to Q2.5, the definition of terms is important as FMCSA considers issues related to the roles and responsibilities of persons responsible for interacting with ADS-equipped CMVs from a remote location, this would also apply to clarifying the meaning of "dedicated" and "stand-by" in this context.

Issue 3: Drivers' Hours of Service (HOS) Rules

TuSimple agrees with FMCSA's interpretation that HOS rules should not apply to a level 4 system. TuSimple suggests that this could be clarified within FMCSA's regulations by amending Title 49, Part 391.2 as described below. Furthermore, TuSimple believes that current HOS requirements should remain in place and apply to any person responsible for the dynamic driving task, either in the cab or remotely, as discussed in our response to the specific questions in this section.

Proposed Language

> §391.2 General Exceptions
>
> (f) Highly Automated Driving System. The rules in this part do not apply to a Highly Automated Driving System as defined in 390.5 and capable of achieving a minimal risk condition without the input or presence of a human driver.

[6] These illustrative examples are not intended to imply TuSimple's endorsement of or plans to implement these operational models, but rather are presented to facilitate discussion.

Q3.1. Should HOS rule changes be considered if ADS technology performs all the driving tasks while a human is on-duty, not driving; off-duty or in the sleeper berth; or physically remote from the CMV?

TuSimple agrees with the initial approach to HOS for ADS-equipped vehicles described by FMCSA in the ANPRM:

> "The Agency believes, preliminarily, that the basic approach for applying the HOS rules should continue to be used; that is, any time a human is at the controls of an ADS-equipped CMV, either in the driver's seat or operating it remotely, the time should be recorded as on-duty, driving. Any time the human is working without having the responsibility for taking control of the ADS-equipped vehicle (because it is operating in a fully autonomous mode within its intended ODD) should be considered on-duty, not driving. For scenarios in which the human is in a sleeper-berth on a vehicle controlled by ADS technology, the human may record his/her duty status in the same manner as a team driver with hours off-duty in the passenger seat or sleeper-berth time."[7]

TuSimple notes that as more experience is gained operating vehicles with ADS, we may have data to indicate that there is a need to make changes to HOS rules and how they might be applied depending on the person's role and responsibilities related to the operation of an ADS-equipped CMV. Until such time, TuSimple suggests the following amendment to FMCSA's HOS regulations in Title 49, Part 395 to implement the preliminary, basic approach described in the ANPRM:

Proposed Language

§395.1 Scope of rules in this part (HOS)

(y) Highly Automated Driving System. For a commercial vehicle equipped with a Highly Automated Driving System as defined in 390.5, and operating without the physical presence of a human on board the vehicle,

(1) the rules in this part shall not apply to the H-ADS or to the commercial vehicle when operated by the H-ADS.

(2) the rules in this part shall continue to apply to any operator as defined in 390.5, whether physically located in the commercial motor vehicle or in a remote location, that may be required to complete any aspect of the Dynamic Driving Task during the course of ADS operation.

§ 395.8 Driver's record of duty status.

(a)(1)(iii)(A) A motor carrier may require a driver to record the driver's duty status manually in accordance with this section, rather than require the use of an ELD, if the driver is operating a commercial motor vehicle:

(5) as a remote operator as defined in 390.5 and not physically located in the

[7] 84 Fed. Reg. 24454

commercial motor vehicle

Q3.2. Should the HOS requirements apply to both onboard and remote operators?

Yes. See response to Q3.1.

Q3.3. If so, how should HOS be recorded when an individual is not physically in control of the vehicle?

TuSimple believes that current HOS requirements should remain in place and apply to any person responsible for the dynamic driving task, either in the cab or remotely, as described in our comments in this section. As discussed in our response to Q2.5 and Q2.6, it is important to clarify terms as there could be different understandings as to the definition of terms such as "physically in control" as applied in the context of an ADS-equipped CMV.

Issue 4: Medical Qualifications for Human Operators

TuSimple agrees with FMCSA's position that individuals responsible for taking control of an ADS-equipped vehicle on a public road should be subject to the current physical qualification standards.

Q4.1. Should some of the physical qualification rules be eliminated or made less stringent for humans remotely monitoring or potentially controlling ADS-equipped CMVs?

Until further research and data is available indicating that a change would be appropriate, TuSimple believes FMCSA should maintain current physical/medical qualification rules for individuals responsible for any part of the Dynamic Driving Task.

Q4.2. If so, which of the requirements should be less restrictive for human operators who would take control of an ADS-equipped CMV remotely?

Please see response to Q4.1.

Q4.3. Should the Agency consider less restrictive rules for humans who have the benefit of ADS technology to assist them in controlling the vehicle (e.g., technologies that would enable individuals with limb impairments to operate at a level comparable to individuals without such impairments)?

Please see response to Q4.1.

Issue 5: Distracted Driving and Monitoring

TuSimple agrees with FMCSA's inclination to require human operators to comply with all existing regulations concerning distraction while operating ADS-equipped CMVs. TuSimple believes that any person responsible for any part of the Dynamic Driving Task as defined in SAE J3016, whether physically located in the vehicle or in a remote location, should be subject to all existing distracted driving regulations.

Q5.1. How should the prohibition against distracted driving (i.e., texting, hand-held cell phone) apply to onboard operators responsible for taking control of the CMV under certain situations, and to remote operators with similar responsibilities?

TuSimple believes that any person responsible for any part of the Dynamic Driving Task as defined in SAE J3016, whether physically located in the vehicle or in a remote location, should be subject to all existing distracted driving regulations.

Issue 6: Safe Driving and Drug and Alcohol Testing

Q6.1. Should FMCSA consider revising its rules to ensure that (1) any human exercising control of an ADS-equipped vehicle must continue to comply with all the rules under Part 392, and (2) a CMV under the control of a Level 4 or Level 5 ADS must satisfy the operational rules?

TuSimple believes an ADS equipped vehicle must comply with all relevant rules under Part 392. As discussed in our comments in the section on Issue 1, it is appropriate for FMCSA to interpret its regulations to no longer assume that the CMV driver is always a human (i.e., the driver could be an automated system) or that a human is present onboard a commercial vehicle during its operation, provided that the vehicle is equipped with a Level 4 or Level 5 ADS. For the purpose of compliance with the rules in Part 392, the goal should be compliance with the intent of the rules during the ADS-equipped vehicle's operation without distinction as to whether the function is performed by the vehicle or by a human who may or may not be the "driver". If new methods for complying with the intent of the rules in Part 392 are identified, FMCSA should consider revising its rules to provide the necessary flexibility to comply using alternative methods.

Q6.2. For example, should FMCSA require that the ADS be capable of identifying highway-rail grade crossings and stopping the CMV prior to crossing railroad tracks to avoid collisions with trains, or going onto a highway-rail grade crossing without having sufficient space to travel completely through the crossing without stopping?

ADS equipped vehicles must comply with all relevant rules under Part 392 within its ODD.

Q6.3. For scenarios in which the control of the ADS-equipped CMV alternates, or may alternate, between a human and the technology, should FMCSA require that both the human operator and ADS comply with the applicable operational rules?

Yes. For the purpose of compliance with the rules in Part 392, the goal should be compliance with the intent of the rules during the ADS-equipped vehicle's operation without distinction as to whether the function is performed by the vehicle or by a human who may or may not be the "driver". If new methods for complying with the intent of the rules in Part 392 are identified, FMCSA should consider revising its rules to provide the necessary flexibility to comply using alternative methods.

Issue 7: Inspection, Repair, and Maintenance

Q7.1. What qualifications should be required of the individual performing the pre-trip inspection?

Currently, TuSimple believes all existing qualifications should be required for those performing the pre-trip inspection.

Q7.2. What kind of routine or scheduled inspections should be performed and what types of ADS-related maintenance records should be required?

The ADS developer should be responsible for setting the routine and/or scheduled maintenance appropriate for its ADS design and application.

Q7.3. Should the inspection period be more or less frequent than annual for an ADS-equipped CMV?

At the present time, there is no evidence to suggest that an ADS-equipped CMV should be subject to an inspection period different from the annual inspection required in Part 396 as currently applied to non-ADS-equipped CMVs.

Q7.4. Should inspections be mileage-based or time-based (e.g., 1,000 miles, 3 months or 1,000 hours of operation)?

The ADS developer should be responsible for identifying the inspection requirements appropriate for its ADS design and application.

Q7.5. Should FMCSA impose general requirements for motor carrier personnel responsible for ADS-related inspection, repair, and maintenance tasks similar to the Agency's brake inspector qualification requirements?

At the present time, there is no evidence to suggest that new requirements in FMCSA regulations are necessary for qualifications for persons responsible for the inspection, repair, and maintenance of ADS-equipped CMVs.

Q7.6. How could FMCSA ensure that motor carriers apply safety-critical software updates?

TuSimple believes that this issue requires more study as there may be different operational models that will affect how software updates will be accomplished and what entity (e.g., motor carrier, ADS-developer, OEM) will have responsibility for ensuring the update is applied.

Issue 8: Roadside Inspections

Q8.1. Should motor carriers be required to notify FMCSA that they are operating Level 4 or 5 ADS-equipped CMVs?

TuSimple believes a that FMCSA's Safety and Fitness Electronic Records (SAFER) System could be utilized for motor carriers to inform FMCSA that their operating fleet includes ADS-equipped CMVs.

Q8.2. If so, how should the carrier notify FMCSA?

Please see Q8.1.

Q8.3. Should FMCSA require markings identifying the ADS Level of a vehicle?

TuSimple believes that the issue of markings on ADS-equipped vehicles requires more study before the agency considers any new requirements. Among the questions to be considered are

what the intended purpose of the markings is, and whether the markings or lack of markings would have a positive or negative impact on behavior of road users (including pedestrians and cyclists as well as drivers of other vehicles and law enforcement) interacting with the ADS-equipped CMV. Also, FMCSA states in the background section of the ANPRM, "For the purposes of this ANPRM, FMCSA's primary focus is SAE Levels 4-5 because it is only at those levels where the ADS can control all aspects of the driving task, without any intervention from a human driver," which suggests that perhaps this question should be whether markings to identify a vehicle capable of operating at SAE Level 4 or 5 should be required, rather than identifying the specific ADS Level of which the vehicle is capable. Consideration should also be given to the fact that an ADS-equipped CMV could be on the road operating in manual mode (i.e., with a human driver behind the wheel and performing the DDT) or the ADS could be controlling the DDT.

Q8.4. Should the Agency require motor carriers to utilize ADS-equipped CMVs that have a malfunction indicator?

As with the marking issue in Q8.3, a requirement for a malfunction indicator could use more study to better understand the need and purpose for such an indicator, whether the need and purpose could be accomplished by other means, and any potential unintended consequences.

Q8.5. Should the Agency require that motor carriers deploying ADS-equipped CMVs ensure the vehicle can pull over in response to Federal and State officials or move out of the way of first responders?

As noted in our response to Q6.1, Q6.2 and Q6.3, an ADS equipped vehicles must comply with all of the requirements in Part 392 within its ODD, which would include pulling over and/or moving out of the way of first responders.

Q8.6. How might that be achieved, and at what cost?

This capability will be developed through simulation, track testing, collaboration with our first responders, and road testing. In this manner, the ADS developer will determine how to achieve this requirement given the capabilities of the technology used by their ADS and their operational model, which will likely differ among the companies.

Q8.7. How would roadside enforcement personnel know that a vehicle can no longer operate safely?

TuSimple is working with other stakeholders through the Commercial Vehicle Safety Alliance (CVSA) as well as local law enforcement in the areas where TuSimple is testing to address this issue and will keep FMCSA informed of our progress.

Q8.8. Absent an FMVSS, how could standard indications be provided to enforcement personnel?

TuSimple believes that this issue can be addressed by stakeholders working through the CVSA, the American Trucking Association's Technology & Maintenance Council (TMC), SAE, and/or other appropriate standards organizations.

Issue 9: Cybersecurity

Q9.1. What types of safety and cargo security risks may be introduced with the integration of ADS-equipped CMVs?

TuSimple's approach to safety and cybersecurity is contained in our VSSA[8]. Cargo security risks can be addressed through a combination of applying advanced security technology and carrier policies that reflect ADS operations.

Q9.2. What types of rules should FMCSA consider to ensure that motor carriers' safety management practices adequately address cybersecurity?

TuSimple notes that ATA's Fleet CyWatch Program, the Automotive Information Sharing and Analysis Center (Auto-ISAC), and the TMC are all involved in aspects of cybersecurity affecting CMV operations and suggests that FMCSA coordinate with those groups and other stakeholders to inform future decisions of the agency with regard to whether and how to ensure that motor carrier's safety management practices adequately address cybersecurity.

Issue 10: Confidentiality of Shared Information

Q10.1. As the development of ADS technology continues, the Agency believes there is a need to learn about the performance limitations of these systems. FMCSA draws a distinction between information about performance limitations (e.g., how well does the ADS keep the vehicle in its lane and under what environmental conditions, etc.) and details about the system design (e.g., the specific types of sensors, or the arrays of sensors and cameras used for input to the central processing unit for the ADS). To what extent do ADS developers believe performance data should be considered proprietary and withheld from the public?

TuSimple believes that FMCSA should continue dialog with ADS developers while protecting proprietary information. ADS developers should be encouraged to voluntarily release relevant performance data to the public, but it would be premature to require this disclosure as a common set of relevant performance characteristics has not been widely agreed upon. For example, time or mileage between system disengagements during testing may not be indicative of an ADS's performance when restricted to a specific ODD, as the testing may be designed to gather data to inform development of the system to extend the ODD.

Q10.2. Are the Agency's current processes under 49 C.F.R. 389.9 for submission and protection of confidential business information in the context of a rulemaking sufficient to allow ADS developers and motor carriers to communicate essential information to the Agency regarding the operation of ADS?

At this time TuSimple believes the current processes are sufficient. We will inform FMCSA should we identify any concerns or recommended changes in the future.

10.3. If not, how should those processes be modified?

At this time TuSimple believes the current processes are sufficient. We will inform FMCSA should we identify any concerns or recommended changes in the future.

[8] https://www.tusimple.com/wp-content/uploads/2019/05/TuSimple-2019-Self-Driving-Safety-Report.pdf

In conclusion, TuSimple is looking forward to working with the FMCSA, and other partners to bring this game-changing technology to market. If you have further questions or comments, please do not hesitate to contact me by email at robert.brown@tusimple.ai

Respectfully,

Robert Brown
Head of Government & Public Affairs