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NHTSA Proposes Rule on Safe Deployment of Self-Driving Vehicles

Rebecca Baden Chaney and Rukiya Mohamed*

The authors of this article discuss a National Highway Traffic Safety Administration advance notice of proposed rulemaking that marks a departure from the way in which the agency has previously addressed automated driving systems, and automotive safety more generally.

The National Highway Traffic Safety Administration ("NHTSA" or "Agency") published an advance notice of proposed rulemaking ("ANPRM")[1] late last year that may signal a sea change in the way the Agency regulates developing automotive technologies. In this ANPRM, NHTSA sought public comment on a number of specific issues aimed to aid the Agency in developing a "safety framework" to "define, assess, and manage the safety of ADS [automated driving system] performance while ensuring the needed flexibility to enable further innovation."

This marks a departure from the way in which the Agency has previously addressed ADS, and automotive safety more generally, which typically focuses on developing Federal Motor Vehicle Safety Standards ("FMVSS"). While NHTSA here recognizes that "it may be premature to develop and promulgate a specialized set of FMVSS or other performance standards for ADS competency," the ANPRM suggests that NHTSA does ultimately intend to issue ADS-specific FMVSS.

NHTSA's Envisioned "Safety Framework"

NHTSA opines that "[p]remature establishment of an FMVSS without the appropriate knowledge base could result in unintended consequences," such as emphasizing the wrong safety elements or metrics. But the Agency deems it prudent now "to begin to consider how NHTSA may properly use its regulatory authority to encourage focus on safety as ADS technology continues to develop."

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This drives NHTSA's vision to develop an ADS-specific safety framework to define and assess the competence of ADS. NHTSA thus sought comments on how to select and design the structure on key elements of the safety framework, and the appropriate administrative mechanisms to achieve the goals of improving safety, mitigating risk, and enabling the development and introduction of new safety innovations.

NHTSA anticipates that the framework will focus on the four functions that NHTSA considers most critical for safe operation, and which it describes in the ANPRM:

1. Sensing;
2. Perception;
3. Planning; and
4. Control.

NHTSA sought comment on whether these are in fact the core safety functions and whether NHTSA appropriately defines them, as well as whether and how NHTSA should prioritize its research in this regard. As to NHTSA's identified four critical functions, NHTSA sought input on, among other things, which aspects are so important that they merit separate federal regulations.

In the ANPRM, NHTSA additionally identifies "other safety functions," deeming the four core functions to be necessary but not sufficient. The "other safety functions" NHTSA addresses include, among others, the vehicle's ability to communicate with vehicle occupants, other vehicles and people in the driving environment; ADS capability to detect the malfunction of its own and other systems within the vehicle; recognizing and responding appropriately to first responders; and addressing safety-related cybersecurity risks. NHTSA similarly sought comment on which of these elements the Agency's research should prioritize, and whether and what role NHTSA may have as to each beyond conducting research.

As part of its effort to evaluate ADS regulation, NHTSA assesses ADS performance, cybersecurity, and human factors, all in the context of ADS. NHTSA also tracks the work of other organizations that may prove useful to its regulatory efforts. This includes standards of the International Organization for Standardization ("ISO") and Underwriters Laboratories ("UL"). NHTSA sought comment on how these standards could be adopted or modified into a mechanism that NHTSA's safety framework can use to regulate minimum performance or minimum risk thresholds for ADS.

NHTSA Sought Input on Mechanisms to Implement Its Safety Framework

NHTSA describes a variety of mechanisms that could be employed to implement its safety framework, if and when they are needed. The array of available mechanisms roughly falls into either of two categories: (1) voluntary mechanisms for monitoring, influencing and/or encouraging greater care, and (2) regulatory mechanisms.

NHTSA identifies several factors it considers critical to evaluate the strengths and weaknesses in designing, assessing, and selecting appropriate administrative mechanisms for its framework. These include:

- Consistent and reliable assurance of safety;
- Technology neutral/performance-based mechanism;
- Predictability;
- Transparency;
- Efficiency;
- Equity;
- Consistency with market-based innovation; and
- Efficient use of available resources.

NHTSA sought comment on the manner in which the framework can and should be administered to support Agency oversight of ADS-related aspects, and on which type or types of administrative mechanisms would be most appropriate for constructing the framework.

The voluntary mechanisms the ANPRM identifies are voluntary disclosure, the New Car Assessment Program, and NHTSA-issued guidance. As to guidance documents specifically, the ANPRM touts their benefits in allowing the Agency greater flexibility in making recommendations, as guidance documents do not need to meet the strict requirements that FMVSS must meet and are generally easier to adopt and modify than mandatory requirements issued in a FMVSS. The Agency, therefore, would likely be able to develop and update these guidance documents more quickly, and design them to be more reflective of consensus industry standards and practices as they continue to develop. To that end, the Agency is requesting comment on whether developing further guidance on engineering and process measures remains the most appropriate approach.

Another voluntary reporting mechanism aimed at transparency is NHTSA's AV TEST Initiative,[2] which involves a series of events throughout the country where NHTSA, state and local governments, automakers, and ADS developers share information about activities. AV TEST is also expected to result in a website for companies to share information with the public about their vehicles, including details of on-road testing.

Yet another administrative mechanism NHTSA is considering is the use of guidance to encourage the development of a safety case by manufacturers. The case would be a structured argument, supported by a body of evidence that provides a compelling, comprehensible, and valid demonstration that a system is safe for a given application in a given operating environment.

As to regulatory mechanisms, NHTSA identifies FMVSS and other compulsory measures available to NHTSA—authority that NHTSA has leaned on already. NHTSA has, for instance, required the disclosure and reporting of certain information on ADS performance in the context of FMVSS exemptions. NHTSA recently conditioned the Agency's grant of a petition for temporary exemption on a set of terms that include mandatory reporting of information on the operation of the vehicles equipped with ADS. And, of course, NHTSA retains its authority to address unreasonable safety risks by using its existing defect-investigation and remediation powers.

NHTSA importantly notes that establishing FMVSS prior to technology readiness hampers safety-improving innovation by diverting developmental resources toward meeting a specific standard. The nature and requirements of the rulemaking process may challenge the Agency's efforts to amend existing FMVSS and develop, validate, and establish new FMVSS quickly enough to enable the Agency to keep pace with the expected rapid rate of technological change.

Conclusion

When the inevitable time for regulation does come, NHTSA offered several examples of how the FMVSS could aid in regulation of ADS, including requiring obstacle course–based validation in variable scenarios and conditions; and/or requiring vehicles to be programmed to drive defensively in a risk-minimizing manner in any scenario within their operational design domain. NHTSA

expects a phased approach to implementing regulation of ADS, especially given limited Agency resources and the constantly evolving technology and business models involved in ADS development. However, the question remains as to what the Agency should prioritize next in its goals of advancing the safety of ADS.

NHTSA sought comment on what next steps the Agency should take in the regulation of ADS, the timing of those steps, and whether any of the above-mentioned steps are required for the development of an ADS-specific FMVSS regime that achieves appropriate standards for highway safety while preserving incentives for innovation and accommodating improvements in technology.

The ANPRM concluded with 27 specific questions on which the Agency sought input. These questions concerned the safety framework, NHTSA research, and administrative mechanisms. Comments to the Agency are due April 1, 2021.

Notes

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1. https://www.crowell.com/files/20201207-NHTSA-ANPRM-in-FR.pdf.

2. https://www.crowell.com/files/202101-NHTSA-Continues-Its-Focus-on-Advancing-Autonomous-Vehicle-Technologies.pdf.