HUMANETICS

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James Clayton Owens, Acting Administrator
National Highway Traffic Safety Administration
Docket Management Facility, M-30
U.S. Department of Transportation
1200 New Jersey Avenue S.E.
West Building Ground Floor, Room W12-140
Washington, DC 20590-0001

Subject: Framework for Automated Driving System Safety

Docket No. NHTSA-2020-0106

Humanetics appreciates the opportunity to comment on the National Highway Traffic Safety Administration's (NHTSA) Advanced Notice of Proposed Rule Making (ANPRM) on the topic of a framework for Automated Driving System (ADS) safety published in the Federal Register on November 19, 2020.

Humanetics is the leading global designer, manufacturer and supplier of crash test dummies and calibration equipment, crash sensors, and crash simulation software models. Humanetics also supplies critical tools used by automotive OEMs and suppliers, as well as government and testing facilities, to evaluate ADAS and ADS vehicles.

Humanetics currently assists customers worldwide with ADAS and ADS testing by supplying complete, one-stop solutions for their assessment protocols which includes advanced active safety test equipment such as the Ultra-Flat Overrunable (UFO) platform robots, soft target vehicle dummies, and steering and pedal driving robots. The remote operated, GPS-enabled UFO system allows vehicle manufacturers to test the latest advanced accident avoidance systems in real world scenarios. Steering and pedal robots apply precise and repeatable inputs to control the test vehicle, thereby removing the variability that comes from a human driver. Working in tandem, the UFOs and driving robots offer a true driverless testing solution to help provide a highly accurate assessment of automated driving technologies.

Humanetics has been dedicated to the advancement of occupant safety testing to create safer vehicles for over 65 years. Humanetics serves every major OEM and Tier I safety supplier worldwide with over 850 employees across 24 facilities strategically located around the globe with the corporate headquarters situated in Farmington Hills, Michigan, USA. We are proud that we are an industry partner that relentlessly brings advanced technologies to market, raising the bar on vehicle safety standards and ultimately saving lives.   Please consider our input on this important topic.

General Responses to the ANPRM:

Humanetics believes NHTSA should play a key role in ensuring the safety of the motoring public in the United States as the auto industry develops and implements ADS technologies.

Humanetics agrees with NHTSA that any regulatory protocols should be performance based and not just feature based.

Although Humanetics does not discourage the implementation of voluntary guidelines such as VSSA and operational guidance from NHTSA, we believe regulations are necessary. Regulations, which should include the physical testing of a number of driving scenarios, are necessary to ensure the safety and reliability of ADS technologies. The regulation framework should be roughly designed after the existing FMVSS structure.

Humanetics also agrees that simulation will play a key role in the development of ADS systems, but the industry will continue to require physical testing to develop the technologies effectively and safety. Simulations will supplement physical testing throughout the product development, not only during the initial stages of development. That said, physical testing will be required by the industry to develop safe systems and, thus, performance or regulatory protocols, enforced by NHTSA, should also include physical testing.

Humanetics also recommends that, as the framework of regulations and tests for autonomous vehicles are developed, they should be developed to ensure equitable safety for male and female occupants. This is to ensure that there is no disparity between the risk of injury and death for male and female occupants which currently exists. This transparency will ensure greater consumer trust in safety standards, and achieve better safety for all occupants.

Humanetics agrees with NHTSA that stakeholders and developers of these technologies should provide feedback to NHTSA voluntarily and timely as they learn about the challenges and issues with the development of ADS technologies.

Responses to some of NHTSA's specific questions outlined in the ANPRM:

Question 1. Describe your conception of a Federal safety framework for ADS that encompasses the process and engineering measures described in this notice and explain your rationale for its design.

Response: Humanetics encourages the agency to adopt a regulatory approach in the framework. Due to the nature of this technology and the significant changes anticipated in vehicles, it is important that this be regulated by the agency to ensure the safety of the motoring public in the U.S.

It is possible that select driving scenarios could be included in the regulatory protocols, but obviously not all of the possible driving scenarios. This is not unlike current FMVSS crash test protocols which test only certain crash scenarios, but help to drive safety in all crash scenarios. In the case of ADS, specific test protocols to challenge and test the vehicle's ability to perform the four (4) core functions of Sensing, Perception, Planning and Control should be implemented. A few key regulatory protocols (scenarios) could be used to test each of these functions. The agency could then utilize voluntary measures to expand the scope of scenarios, that is to ask the manufacturers to supplement the key regulatory scenarios with many more voluntary scenarios. This combined approach would be the most efficient use of the agency's resources.

Question 6. Do you agree or disagree with the core elements (i.e., "sensing," "perception," "planning" and "control") described in this notice? Please explain why.

Response: Humanetics does agree that the four elements of sensing, perception, planning and controls are the appropriate key functional elements.

Question 8. At this early point in the development of ADS, how should NHTSA determine whether regulation is actually needed versus theoretically desirable? Can it be done effectively at this early stage and would it yield a safety outcome outweighing the associated risk of delaying or distorting paths of technological development in ways that might result in forgone safety benefits and/or increased costs?

Response: Humanetics encourages the agency to implement a regulatory framework soon. It is not too soon and would not inhibit the advancement of technology. There are clearly certain basic driving scenarios which are anticipated to be very common, and all manufacturers would recognize these as critical and it is not too soon to implement a regulatory framework. As previously mentioned, these regulatory protocols could be supplemented with voluntary measures to control and manage a broader range of driving / test scenarios. Those voluntary scenarios / tests should remain fluid as the technology evolves. This would allow the agency to use its resources effectively and efficiently, but still allow for flexibility in a timely manner to manage the voluntary scenarios.

Question 9. If NHTSA were to develop standards before an ADS-equipped vehicle or an ADS that the Agency could test is widely available, how could NHTSA validate the appropriateness of its standards? How would such a standard impact future ADS development and design? How would such standards be consistent with NHTSA's legal obligations?

Response: NHTSA should encourage stakeholders, such as automobile manufacturers and their primary suppliers, to work with NHTSA to develop and evaluate any such standard. It is possible that these standards could be evaluated using prototype and development vehicles.

Question 15. Discuss the administrative mechanisms described in this notice in terms of how well they meet the selection criteria in this notice.

Response: A hybrid approach of using regulatory mechanisms (namely a few core FMVSS type physical tests) as well as voluntary mechanisms would work well. All of the mentioned voluntary mechanisms may play a part. The mentioned mechanism of safety self-assessment may be the most useful in the short term – relying on manufacturers to supplement the FMVSS tests with additional tests they deem appropriate for their vehicle technology. This can be reported to NHTSA to help guide future enhancements to FMVSS or enhance the voluntary mechanisms as the knowledge base increases in the industry.

Question 21. Should NHTSA consider an alternative regulatory path, with a parallel path for compliance verification testing, that could allow for flexible demonstrations of competence with respect to the core functions of ADS safety performance? If so, what are the pros and cons of such alternative regulatory path? What are the pros and cons of an alternative pathway that would allow a vehicle to comply with either applicable FMVSS or with novel demonstrations, or a combination of both, as is appropriate for the vehicle design and its intended operation? Under what authority could such an approach be developed?

Response: Yes, a parallel path with regulatory testing with an option for a manufacturer to provide evidence supporting an alternate test protocol based on their technology is appropriate. Both the regulatory protocol and any alternate path should both utilize physical testing to ensure the performance of the vehicle.

Once again, Humanetics appreciates the opportunity to respond to this important topic and encourages NHTSA to consider our input in developing a regulatory framework.

Sincerely,

Mr. Mark Westen
Global Vice President Global Sales and Marketing
Humanetics