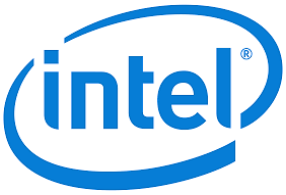

Safety First.

Safety is our North Star. From driver assist solutions through fully automated vehicle technologies, our mission is road safety. As a global leader in vehicle safety technologies and the development of automated driving systems (ADS), Intel urges Congress to adopt two major pillars of policy within whatever automated vehicle-related legislation it may adopt in the 116th Congress – 1) safety assurance for ADS decision-making, and 2) prioritization of Mobility-as-a-Service (MaaS) deployment.

Safety Assurance

Consistent with USDOT's safety-first "Automation Principle," we support industry collaboratively defining a universally acceptable set of safety assurance principles for ADS. This will enable a common definition of what it means for an automated vehicle to drive safely, as well as a common metric to measure and assess the safety of an automated vehicle. Intel suggests the following high-level principles are essential components of a technology-neutral and performance-based approach to safety:

- Future safety test procedures, performance criteria and/or guidelines should adhere to the Vehicle Safety Act principles for Federal Motor Vehicle Safety Standards (FMVSS) that "[e]ach standard shall be practicable, meet the need for motor vehicle safety, and be stated in objective terms."[1]
- Manufacturer self-certification should remain the U.S. governing framework.
- Future safety test procedures, performance criteria and/or guidelines should include pre- and post-deployment observability of a repeatable and deterministic (vs. probabilistic) safety model for the automated vehicle, in order to demonstrate safety assurance.
- To ensure a competitive marketplace that promotes safety and innovation, all industry stakeholders testing and/or deploying ADS and automated vehicles should be subject to the same testing and deployment policies under a uniform federal framework. Similarly, any new USDOT or NHTSA ADS or automated vehicle Advisory Committee or Working Group should reflect the breadth of industry stakeholders, from technology companies and other new entrants, alongside traditional OEMs and suppliers.

Consistent with these principles, Intel's Mobileye business unit published a transparent, technology-neutral mathematical model for ADS safety decision making called Responsibility-

[1] Motor Vehicle Safety, Title 49, United States Code, Chapter 301.

Sensitive Safety or RSS.[2] RSS formalizes what it means to be a safe driver into technology-neutral and transparent mathematical equations. It provides a detailed, practicable, and efficient solution for validating an ADS that results in a verifiable safe-by-design automated vehicle. As a parameterized model, RSS also enables flexibility in setting the balance between the safety and usefulness of automated vehicles operating in the real world.[3]

- A 2018 RAND report highlighted RSS as a "leading" measure (reflecting performance, activity, prevention) of a safe-by-design automated vehicle.[4] RSS may be used as a "lagging" measure (observations of safety outcomes or harm) to collect statistical evidence of frequency of dangerous situations and crashes.
- Intel recently joined ten other automated driving and mobility industry leaders[5] to publish the Safety First for Automated Driving framework,[6] a first-of-its-kind framework for safe automated passenger vehicles, which defines a safe-by-design approach to automated driving. RSS is featured in this framework as an element for a safe-by-design automated vehicle.
- The Institute of Electrical and Electronics Engineers (IEEE) has approved a proposal to develop a standard for safety considerations in automated vehicle (AV) decision-making, naming Intel to lead the workgroup.[7] Participation in the workgroup includes broad industry representation. In this workgroup, RSS will serve as a starting point for the industry to align on what it means for an automated vehicle to drive safety.

Two Phases of Exemptions

Intel encourages Congress to consider initially prioritizing exemptions (from FMVSS) for MaaS fleets, to increase consumer trust and facilitate a narrower, more controlled and predictable initial deployment of AVs in the U.S. Key learnings from MaaS deployments will offer beneficial insight for government and industry, prior to broad deployment of series-production passenger cars. Intel believes that this two-phase exemption process reflects the most likely reality for AV deployment (taking into account the current cost of a self-driving system, oversight/compliance, and geographic scale) – and will help build the public trust necessary to ultimately deploy AVs at scale across the U.S.

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[2] Responsibility-Sensitive Safety (RSS): A mathematical model for autonomous vehicle safety, https://www.mobileye.com/responsibility-sensitive-safety/.
[3] Driving safely is often cultural and RSS, as a parametrized model, enables customization to ensure automated vehicles are "driving safely" as defined by each country (e.g., U.S.) or region (e.g., EU) where vehicle is operating.
[4] Measuring Automated Vehicle Safety, Forging a Framework, RAND Corporation (2018), at 29-32, https://www.rand.org/content/dam/rand/pubs/research_reports/RR2600/RR2662/RAND_RR2662.pdf.
[5] Aptiv, Audi, Baidu, BMW, Continental, Daimler, FCA, HERE, Infineon, Intel, Volkswagen.
[6] Intel and Auto Industry Leaders Publish New Automated Driving Safety Framework (July 2, 2019), at 55-56, https://newsroom.intel.com/news/intel-auto-industry-leaders-publish-new-automated-driving-safetyframework/#gs.q95rv4.
[7] https://newsroom.intel.com/news/ieee-to-define-a-formal-model-for-safe-automated-vehicle-decision-making/#gs.w4e678