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Autonomous vehicles: When will they be here?

Risk bulletin

Nearly every car on the road today has safety features that can help drivers be safer. You may already be familiar with some on your current vehicle. Some, you may not even know your car has available. There are cars on the road right now which can steer, brake and accelerate automatically, but still require a human behind the wheel. There are more than 35 active safety features available which may help prevent a crash. These include Forward Collision Prevention, Braking, Tire Pressure & Anti-Rollover, Driver State Monitoring, Parking and Backing Assist, Lane and Side Assist and many others being added with each new model. (One will even back a trailer for you!)

There are a few totally autonomous vehicles out there as well. In Miami, Las Vegas and Maryland an electric driverless bus named Olli (www.localmotors.com/olli/) operates on a fixed route with no driver. Uber in Colorado has vans delivering beer and UPS has semi-trucks transporting new appliances between California and Texas on the open road. Both of those have drivers sitting behind the wheel but not actively driving the vehicles.

Many miles lie ahead on the road toward mainstream use of fully automated vehicles. The technology could save tens of thousands of lives every year, but it remains years (if not decades) from becoming a reality on the majority of streets and interstates in America. Innovation takes time to fine-tune, and it is reasonable to expect more adjustments along the way as miles driven lead to lessons learned.

In the meantime, several engineering issues must be addressed before fully automated vehicles replace driver-operated vehicles as the most common form of transportation.

Sensors

Cameras and sensors are the eyes and ears in allowing fully automated vehicles to drive safely and effectively. Miniaturization, cost and accuracy are still being worked on. And what happens if snow, ice or mud blocks the sensors? Or if snow covers the lines of the road, which then could block the vehicle from identifying an upcoming curve or lanes merging or anything else?

Drivers know all too well the hazards of driving in snow and ice. Vehicle safety technology might change, but severe weather will remain, and one unresolved issue is how fully automated vehicles will operate safely when roads are snow-covered and visibility is at a premium. Likewise, redundancies will be necessary in case vandals damage or remove high-tech cameras and sensors belonging to new vehicles.

Infrastructure

Poorly maintained roads, signs and lane markings, as well as construction zones, offer additional challenges for engineers to overcome before a high-level rollout of fully automated vehicles. A driver behind a steering wheel can identify orange cones and realize a lane is blocked off a half-mile in front of him or her. Sometimes, vehicles must veer on to the shoulder as they slowly pass by a construction zone. How can experts ensure that fully automated vehicles will be able to pror

Software and hardware updates initiated by manufacturers could fall under government purview depending on the complexity of the updates, the document states. NHTSA would evaluate each highly automated vehicle system based on a 15-point “Safety Assessment” that covers areas such as data recording and sharing; privacy; system safety; human machine interface; post-crash behavior; object and event detection and response; and crashworthiness.