

How We See It: Autonomy and Self-Driving Cars

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The fully automated car will never happen. We don't say this because the word "Driver" is in our name, or because we see the automated car as a threat to our magazine's existence. We say it for one very simple reason: Automated cars will require closed (yet vulnerable) networks of vehicles in constant communication, and as long as Main Street is a place where there are motorcycles, cyclists, people, and dogs, it will never be a closed network. There will never be an automated dog, much as we find that notion intriguing, and dogs will never be able to communicate with cars. Barking doesn't count.

There are other reasons why full automation will never happen, but they only serve to underscore the point above: Unless every object in the streetscape is fully automated, nothing can be. Sure, the insurance lobby will fear cars that promise not to crash and will fight their advancement. Carmakers will be loath to assume all responsibility for a car's actions. The ethical issues, such as whether a skidding car should hit a single mother or a father of five, have been well documented and will be significant, of course. As will carsickness, the psychological loss of control, the absence of self-determination. But nothing will keep the car from being fully, completely automated like a dog with free will.

According to SAE International (the Society of Automotive Engineers), there are six stages of automotive automation. **We are in the third**, wherein the many features loaded into our cars seek to keep us in our intended lane and at the appropriate distance from the car ahead. The fourth is close, but not without issues. The sixth stage is the complete absence of driver involvement. It is our assertion that we will never get to the sixth stage. The unfettered movement of fully automated cars among free agents will require a system that contains some element of risk, and risk is antithetical to automation.

No, we're about where we'll stay forever, with incremental improvements, in the same way planes have long been capable of automation yet still require pilots. Maybe it's because nobody wants to board an Airbus A380 to Melbourne and see an empty cockpit. Or maybe it's because an animal could get through the runway fence.

THE SIX STAGES:

SAE standard J3016

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NO AUTOMATION

Old-school motoring with a human driver, a steering wheel, and, ideally, a clutch pedal, and an attractive passenger in the right-hand seat.

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DRIVER ASSISTANCE

Steering or braking/acceleration can be performed by the vehicle, based on the environment and the situation. The driver is in control the rest of the time.

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PARTIAL AUTOMATION

Coordinated steering and braking/acceleration are performed automatically by the vehicle, based on the environment and the situation. The driver does the rest of the driving.

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CONDITIONAL AUTOMATION

The vehicle can assume all aspects of the driving task, but the driver will intervene as necessary.

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HIGH AUTOMATION

The vehicle can assume all aspects of the driving task and keeps on doing so if the driver does not respond to intervention prompts.

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FULL AUTOMATION

The Robots are in control, driving all the time. Nothing to worry about. But they will be needing your liver.