

TIME

No traffic.
No accidents.
No deaths.

All you
have to
do is
**give up
your
right
to drive.**

By Matt Vella



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FORGET THE DISTANT FUTURE,

SMARTER CARS ARE ALREADY HERE

BY KATY STEINMETZ

WHEN THE JO KOTE TURNS on his Audi A4 near his apartment in San Francisco, his home starts to cool down because the car has told his thermostat that he's heading out for the day and it's time to start conserving energy. His company, Automatic, makes a little dongle that plugs into a slot beneath the steering wheel of most cars on American roads (probably including yours) to enable this kind of cross talk. As Kote drives around to showcase the gizmo's other talents—like sending his smartphone information about his fuel-wasting jack-rabbit accelerations—he points out the little gestures exchanged between humans in cars and on foot. These nods and knowing glances that make it clear who should go and who should wait are still beyond the reach of algorithms, he says: "We've come maybe 85% of the way. But that last 15% is very, very hard. Because cars and computers in general aren't very good at things that humans take for granted."

There is no denying that self-driving cars are coming, but people like Kote believe the death of the steering wheel is further off than

futurist CEOs might suggest. The legal, ethical and technical challenges may keep that reality out of most people's driveways for decades. Which means that for now, focusing on a truly driver-free future is like imagining the last scene of a play already in the throes of Act II.

Cars are well into the biggest automotive revolution since Henry Ford debuted his assembly line. This historic transition from analog to digital promises to do to driving what the iPod and streaming did to music. Cars are fast becoming nodes in a network that could make driving more fun, more convenient, more safe—and in some ways more complicated—than ever. As General Motors CEO Mary Barra put it last year, "The industry will experience more change in the next five years than it has in the last 50."

Imagine a car that knows where you want to go before you even touch the GPS. Imagine a car that can sense that another vehicle is about to T-bone it and shifts the driver's seat away from the impact before it happens. Imagine a car that's its own wi-fi hot spot. Imagine cars that, because they are digitized, can be remotely

hacked and the steering and the brakes taken over. All of that—and more—is already here.

UPGRADING THE UPGRADES

AT GOOGLE'S I/O developer conference last May, early adopters clamored to try the company's take on cardboard virtual-reality machines. Nearby, lines of people waited to get into upcoming versions of vehicles like the Audi Q7 (\$54,800), Hyundai Sonata (\$21,750) and Chevy Spark (\$12,660), all parked on an elaborate carpet designed to look like a freeway. Side by side, automakers and Google were demonstrating the fruits of their partnership: cars equipped to run Android Auto, new technology that essentially turns a car's infotainment system into a giant smartphone, with purposeful limitations.

With an Android smartphone plugged in, Android Auto enables your car to read texts to you as well as send replies dictated to it by voice. It can give you constantly optimized, step-by-step directions, without requiring you to check the phone lying in your lap or on the passenger seat. And it can give you helpful suggestions courtesy of a system that, as Google product manager James Smith says, is designed to turn your car into a "new personal assistant." If you've just been Googling a restaurant, for instance, Android Auto will suggest that eatery as a logical destination when you slip into the driver's seat. Apple's competing system, CarPlay, offers many similar features for iPhone users.

The best part: users will

be able to get new features without getting a new car, since these software systems are designed to take upgrades. This means that rather than having their tech frozen in time once they drive off the lot, owners of a 2016 Honda Accord could potentially get the same experience as the driver of a 2018 Porsche 911. At the 2016 North American International Auto Show, CarPlay and Android Auto were two of the most discussed improvements rolling out to new vehicles this year.

What you can't do using these systems is anything that might amount to distracted driving, the companies say. For now, that means no video streaming and no *Angry Birds*. And every available app must adhere to strict protocols. "We take a pretty conservative view of what should go on there," says Google's Dylan Thomas, "because we're under a lot of scrutiny." The National Highway Traffic Safety Administration (NHTSA) has guidelines about everything from how many seconds drivers' eyes should be taken off the road to how big display text on in-car screens should be.

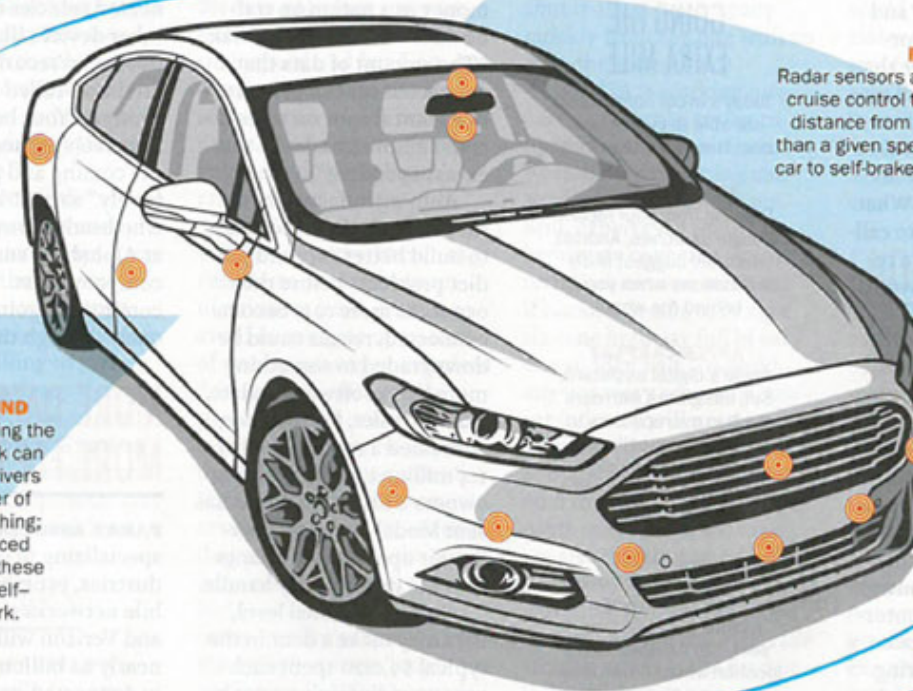
Google and Apple argue that their technology will actually make driving safer. If the alternative to using these systems is old-fashioned texting while driving—something that 61% of drivers with smartphones admit they do despite finger-wagging PSAs—then, the logic goes, using voice-enabled apps has to be a step in a safer direction. While tech firms are being more cautious than usual, car manufacturers are cautiously moving faster. In some ways, "we absolutely need to move as quickly as the technology companies,"

HOW NEW CARS SEE THE WORLD

New models—high end and budget alike—are covered in dozens of sensors that make them aware of their surroundings. Manufacturers want to increase safety and convenience as much as they can, while humans are still legally (and literally) in control.



V2V
By beaming out basic data about their location and heading to nearby vehicles, cars will be able to send and receive warnings about dangers that drivers can't see.



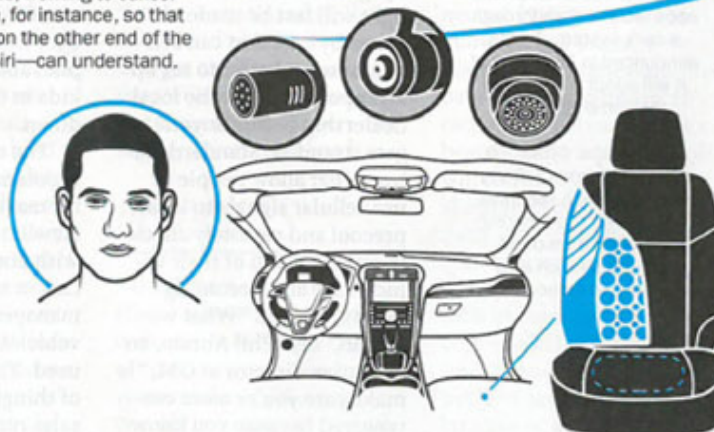
RADAR
Radar sensors allow cars to be set on cruise control that maintains a safe distance from the car ahead rather than a given speed. They can alert the car to self-brake to mitigate collisions.

ULTRASOUND
Sensors covering the front and back can signal that drivers are in danger of hitting something; more-advanced vehicles use these signals to self-parallel park.

CAMERAS
Exterior cameras read lane markings so cars can self-steer to keep from drifting. Combining wide-angle shots provides an overhead view helpful for tight parking.

MICROPHONES
Microphones are tuned for voice commands, working to cancel road noise, for instance, so that somebody on the other end of the line—or Siri—can understand.

FACE CAMERA
Cameras pointed at the driver are being designed to monitor eye patterns to detect distractedness when a car is self-steering or sleepiness when a human has hands on the wheel.



SENSORY SEAT
Haptic seats alert drivers to dangers like a vehicle in their blind spot via vibrations under the left or right thigh. Other sensors detect whether the seat is occupied to activate air bags in a crash.