

# Automakers on the road to self-driving cars at Consumer Electronics Show

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Forget 80-inch televisions or Wi-Fi-connected blenders. At the 2015 Consumer Electronics Show in Las Vegas, it's the automakers who are dominating the conversation.

Brands like Mercedes-Benz, Audi, BMW and Toyota used the annual show - expected to draw around 160,000 people this week - to highlight the rapidly approaching [self-driving car](#), as well as in-car apps and [hydrogen fuel cell](#) vehicles.

"CES is a place where [automakers](#) can reach an entire new audience of consumers who are looking for what's next," said Costantine Samaras, a professor of engineering at Carnegie Mellon University. "Even if it's just at the concept level, there's a lot of spillover for technology up and down an automaker's supply chain."

The concept car was exactly what Mercedes-Benz brought to this year's event. Mercedes Chief Executive Dieter Zetsche on Monday unveiled a radical self-driving concept dubbed the F 015 Luxury in Motion.

The low-slung oddity highlights what Mercedes thinks its cars could look like - and how they could function - just 15 years in the future. The large sedan holds four people, who can sit facing one another in lounge-style seating while the car drives itself.

"Think about it: Most cool gadgets here at CES actually consume your time," Zetsche said. "This car actually gives you more time and more space."

Toyota - which used last year's CES to show off a self-driving prototype - used this year's show to talk hydrogen. The company announced that 5,600 of its patents related to [hydrogen fuel cell vehicles](#) and refueling stations will be free to any competitor that wants to use them.

"The first-generation hydrogen [fuel cell vehicles](#),

launched between 2015 and 2020, will be critical, requiring a concerted effort and unconventional collaboration," Toyota Senior Vice President Bob Carter said. Toyota will bring the hydrogen-powered Mirai sedan to the U.S. market in October.

Other automakers used CES to offer a look at the near future of autonomous cars.

Audi was the first automaker to get a permit from the state of California to test self-driving cars on public roads in 2014. Like an eager 16-year-old, the automaker used this new permit to drive autonomously from Silicon Valley to Las Vegas in a prototype A7.

Per current law, the car drove the 560-mile journey with a specially licensed person in the driver and passenger seats. Despite driving at night and in heavy rain at speeds up to 70 mph on public roads, the trip was trouble-free, Audi said.

Mercedes and other automakers - especially the high-dollar luxury brands - already sell cars that have basic self-driving functions built in. Cars today can parallel-park themselves, brake automatically before a collision, and stay inside a lane and a set distance behind other cars on the freeway.

"The technology of the self-driving car is rapidly moving forward," Zetsche said. "And customers gain trust based on their positive experience with assistance systems."

BMW showed off a self-parking feature on a concept version of its tidy i3 electric car: four laser systems that scan 360 degrees around the car to find a space, locking itself closed once it has parked itself.

Drivers summon the car via a smart watch for pickup, and the i3 meets the driver at the entrance of the parking garage, ready to go. The company hopes for such a feature by 2020.

Luxury automakers in particular will face a challenge as self-driving cars become mainstream. When they do, automakers and analysts alike expect fewer traffic jams, safety improvements and reduced greenhouse gases.

But self-driving cars are likely to begin a transition from a product owned by an individual to an on-demand, subscription-based service.

"Once you get to the self-driving car, you get this issue with a luxury brand like Mercedes or BMW's 'ultimate driving machine,'" said Egil Juliussen, director of research for autonomous vehicles at IHS Automotive. "How do you translate that? They still want to sell the car as a product, not a service."

This is why Mercedes CEO Zetsche made it clear that his company expects to become an indispensable luxury when cars are self-driving. "The autonomous car grants access to the single most important luxury good of the 21st century: private space and quality time," Zetsche said.

It's not just high-dollar automakers with an eye on self-driving cars. During his keynote address Tuesday, Ford CEO Mark Fields made it clear that an autonomous Ford was a certainty in the future. But he said his company would take its time and make sure that the technology was approachable for everyone.

Technology is hardly the only hurdle for self-driving cars. There are knotty regulatory challenges (test vehicles are currently allowed on [public roads](#) in just four states); data privacy issues, since these cars accumulate massive amounts of information about how they're used and where they go; and ethical issues like how to program a car to react when a collision is unavoidable.

"We're in the Wild West of autonomous vehicle law and policy," said Samaras of Carnegie Mellon University. "The danger is a 50-states strategy where every one is different and automakers are locked into a less progressive path."

Despite transportation policy traditionally moving very slowly, Samaras says he's optimistic that automakers' rapid development of self-driving cars

will speed up policy change.

"These are surmountable challenges," he said.

Ford, meantime, is conducting 25 experiments around the globe on how transportation is evolving with technology. Fields said there's an on-demand, minute-by-minute [car](#)-sharing program in London; a partnership with an organization in Africa that maintains a fleet of vehicles used to deliver doctors and medical care to remote villages while simultaneously mapping the area; and a cloud-based system in Atlanta that uses sensors already on many new Fords to gather data on open parking spaces.

Such a discussion is exactly why Ford has been coming to CES for the last eight years, Fields said.

"For us, it's a way to showcase our innovations," he said. "We want to be viewed as part of this community."

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