

Highway to Health

Incorporating wireless technology into its newest cars, Ford prepared to roll out vehicles capable of monitoring everything from pollen counts to glucose levels.

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By Jade Chang

The future? We're in it. Doctors perform remote surgery with lasers. Robot assistants engage us in charming banter (hiya, Siri!). Hovercrafts are old news. So what about the car? Where are those magic machines from World's Fairs past that were supposed to pilot themselves high above the morning commute? Technically, it's not outside the realm of possibility. But the problem is, we've changed. We're no longer the perky Jetsons, the family of the future, eager to adopt new devices solely for the sake of their newness. We've gotten older: stiffer in the joints, weaker in the eyes, and heavier ... well, heavier pretty much everywhere. In less than 20 years there will be more people over the age of 50 than under the age of 20, thanks to increased life expectancy and declining fertility rates. As for the dwindling young, they've grown up on different myths. The freedom of the open road—or the open sky—is no longer the lure that it once was. In less than 25 years, the number of 16-year-olds getting driver's licenses has dropped almost 25 percent; meanwhile, the share of miles driven by those under the age of 30 who do have licenses has fallen in recent years.

What's a beleaguered car manufacturer to do? If you're Ford, you throw out your old visions of the future and design for the new world where, on the one hand, an aging population is in search of cars that allow them to remain mobile, and on the other hand, a generation of young people increasingly prizes connectivity over freedom. "For a long time we made the assumption that people would continually be drawn to large SUVs," says the carmaker's lead futurist, Sheryl Connelly. "We put a lot into that, but oil volatility made people flip on a dime."

The company started concentrating on the aging population in 1999, and a focus on health and wellness within the car is at the center of their new approach. Unobtrusive ergonomic changes like lowered door frames—much kinder on stiff joints—have already been making a quiet appearance throughout the fleet. Within the next five years Ford will be rolling out more-dramatic medical apps for its voice-controlled Sync platform, a communications and entertainment system developed with Microsoft, which was first introduced in 2007.

In Gary Strumolo's office at Ford's Research and Innovations Center in Dearborn, Michigan, a printed-out photo of the company's beloved CEO, Alan Mulally, is taped above the desk. Mulally—a genial, sweater-vested straight shooter who joined the company in 2006—is receiving Iacocca-esque levels of hero worship for pushing this tech innovation, a move that has also earned him back-to-back gigs as a keynote speaker at the Consumer Electronics Show. In the photo, he's grinning into a side mirror, next to this quote: "It's cool to connect. But it's past cool. It's a reason to buy. We're going to be the coolest, most useful app you've ever had." Strumolo manages vehicle design for the company's research and innovation division, which is at the center of the company's healthcentric response to its changing customer base. He has taken his CEO's words to heart.

“You get an appreciation that Ford is being viewed as a tech company, like Apple,” he says, clearly relishing the thought. “The car is becoming a mobile communications environment, and we’re pioneering this while expanding the notion of automotive safety.” That doesn’t just mean that you can tweet while driving (though, thanks to the Sync AppLink, drivers can now access their Twitter timelines). More vitally, drivers will soon be able to transmit and receive medical information via their vehicles.

First up is a boon to some of the country’s 50 million sneezers and sniffers who suffer from seasonal allergy symptoms. In the next year, Strumolo says, the company will be rolling out a partnership with Pollen.com to implement an app that alerts drivers about weather conditions and allergen counts. It will eventually be integrated with an advanced air filtration system so that if you’re driving through a particularly itch-inducing area, your car can be prompted to change its filters or turn recirculation on. Ford is also working on a couple of different approaches to managing diabetes care. According to the International Diabetes Federation, by 2030 the number of diabetic people in the United States will increase from 26.8 million to 36 million. Ford is working to link Medtronic’s continuous glucose-monitoring device to Sync via Bluetooth. Most people with diabetes wear devices like this next to the skin, which can make it difficult to check insulin levels while buckled into a car. The idea is that once the car and glucose monitor are linked, Sync will be able to display the insulin level on the console, or read it out, but it won’t go the next step of actually adjusting it. “We don’t want to make the car a medical device,” Strumolo says.

But the vehicle can give you advice. Through another partnership, with WellDoc, an FDA-approved personal health-care coach, your car will become an encouraging but officious nurse, with overtones of Rosie the Robot. In a demonstration of the prototype, WellDoc’s app noted the driver’s low blood sugar and inquired whether he’d eaten breakfast yet. When he said no, the program replied, “It’s not a problem, but why don’t you eat some fast-acting carbs?”

The suggestions are worded so that they won’t alarm passengers, because stress reduction is one of the cornerstones of Ford’s health and wellness initiative. A few stress-reducing devices are already available (while the health-care coach could be introduced as early as 2013, the glucose monitor pairing won’t be in place until 2015). Through a long-standing partnership with M.I.T.’s AgeLab, the carmaker did a series of feasibility studies on its Active Park Assist (APA) feature, which guides a driver in parallel parking—according to surveys, the most dreaded driving task. They discovered that using APA dropped heart rates while parking an average of 3.4 beats per minute, from 75.9 to 72.5.

The parallel parking feature already exists in Lincolns and in three Ford models—the Flex, the Escape, and the Focus—and will be introduced in new Tauruses in 2012. Farther down the road is a heart-rate monitor built right into the driver’s seat that will be able to take measurements discreetly. “We want to be able to understand the driver’s stress level,” Strumolo says, “and couple it with information on what’s going on outside—like traffic levels. So, for example, if the stress level is high, we can know to send a call to voice mail,” because answering it would likely be distracting and ratchet up stress levels.

That may seem rather presumptuous of your car, but Ford is banking on the burgeoning health-care needs of aging drivers, and younger drivers’ comfort with connectivity, to ease the transition into this new version of the future. In essence, they are redesigning the user experience: the machine is in control, but instead of clamping the pod doors closed, it frees the driver to enjoy the ride.

In a 2010 CES keynote, Jim Buczowski, Ford’s director of electrical and electronics-systems engineering, said that the Sync interface—now in more than 3.5 million cars—was inspired by interactive displays used by characters in futuristic Hollywood flicks like *Minority Report* and *Iron Man*. Some of the

most unobtrusive changes to the vehicles were actually enabled by the same equipment used to make those films.

Ford's Virtual Reality Lab (VRL) is tucked off an endless, anonymous gray hallway within a brick building. Inside, the place is an endearing mash of high- and low-tech, where virtual reality headgear is jerry-rigged onto a Steelcase office chair and set in the middle of a room ringed with Advanced Realtime Tracking cameras and the same sophisticated motion-capture cameras that are currently used in nearly every Hollywood movie with special effects. The VRL allows designers and engineers to test out small modifications to the architecture of the vehicle without expending the time and money to put together a physical model of each iteration of the product.

Once you strap on the virtual reality helmet you're immediately deposited into a computer-graphic world, generated by a 3-D CAD model, in which you can move around the vehicle and "drive" it through virtual locations. With simple changes to the CAD model, windshields can be widened or narrowed, seats raised or sunk, and then the altered design can be put into an active environment so that the engineer can test out differences in visibility or comfort.

Engineers once used a "third age suit" as a sort of sympathy enhancer—it constricts the wearer with various braces and mimics the effects of old age. Now they utilize a program called RAMSIS. "We can create digital humans that represent a certain sketch—small people, tall people, thin people, people of girth—and in the software we put limits on their mobility," says Elizabeth Baron, the head of the VRL. This research has resulted in a number of physical changes across the Ford line: ingress and egress points have been lowered and widened to accommodate older drivers with stiff joints, and the same has happened to the trunk well. Windshields are constantly being adjusted to improve visibility. At the moment, the team is studying how armrests relate to driver seating positions.

"Of course, the car wouldn't do well if we said, 'this is the vehicle for old people,'" Connelly says. "These innovations should help everyone." As a futurist, she sees cars continuing down a "Swiss Army knife" path, packed full of appealing innovations that might prove useful to target audiences. But there's one feature she thinks everyone will embrace: collision avoidance. According to Connelly, "There's no reason anyone should ever die behind the wheel." Cars should soon be able to communicate with each other—to "see" each other, even when their drivers can't.

Strumolo also sees a future full of innovations. "We'll be leveraging cloud computing," he predicts. "Imagine you had an eight a.m. meeting, so you set your alarm for six a.m. and went to bed. If your meeting's cancelled, it'll change your alarm to seven. It can set the temperature in the car. If you're listening to Pandora in the house, it will migrate to the car—we'll use personal data to add seamless enhancements." But, he says, "the holy grail is really night vision," neutralizing the glare that can cause flash blindness. So, for both futurist and scientist alike, safety ultimately trumps coolness. This is our version of the future: instead of flying, we're going to sail through, hooked up and, with luck, stress-free.