Ford cars on the highway to health

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By John Rennie

In American culture, cars have been our homes away from home, extensions of our egos, roving entertainment centers, status symbols, refuges, passion pits, stress-relievers, and the occasional practical means of transportation. Are we ready for them to become our personal healthcare workers next?

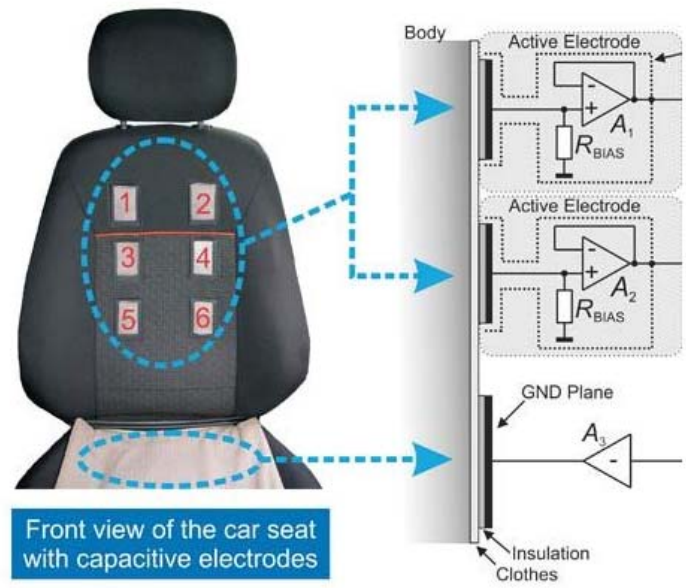
The automaker Ford certainly hopes so, as it revealed in January during a keynote address at the Digital Health Summit at the Consumer Electronics Show in Las Vegas. Speaking before a packed hall at lunchtime, Gary Strumolo, global manager for interiors, infotainment, health and wellness research at the Ford Research and Innovation, explained the company's vision in a speech entitled "Doctor in Your Car." Immediately after his talk, I had the opportunity to speak with him more about it. (*Disclosure:* I attended the Digital Health Summit while working on a project with Scientific American and Life Technologies, both of which were sponsors of the summit.)

Putting the "car" in "healthcare"

Ford and Microsoft, in partnership with the companies Healthrageous and BlueMetal Architects, are studying and developing technologies that would allow drivers and passengers to take to the road safely without interrupting any ongoing digital management of their health. New in-car systems might in fact enhance passengers' abilities to monitor their health and could potentially take advantage of medical information to improve driving safety.

The new partnership builds on Ford's announcements last year that it was working with Medtronic to develop an in-dashboard system for wirelessly reading a diabetes patient's glucose monitor, with WellDoc to integrate its cellphone-based diabetes and asthma management system into cars, and with SDI Health to draw on its Allergy Alert app.

As Strumolo explained, Ford cars of the future would engage with passengers' health through three types of systems: built-in features such as sensors and infotainment equipment; brought-in devices that passengers carried with them, such as their smartphones; and beamed-in health information from databases and artificial intelligence in the ether. Drivers would be able to interact with all these systems through wireless connections and the voice-control capabilities of Ford's SYNC connectivity platform. Drivers could use the voice-control capabilities of Ford's SYNC connectivity platform to interact with all these systems without removing their hands from the wheel.



Schematic for a car seat with embedded sensors that could monitor a driver's heart rate, under development at Ford's European Research Centre in Aachen. (Credit: Ford)

Biometric sensors in the car, for which BlueMetal Architects has been developing the prototypes, and other sensors in any carried mobile devices could monitor passengers' heart rates, blood pressure, glucose levels, or any other data. What Ford has in mind is to beam this medical data into the cloud where it could be stored securely with Microsoft's HealthVault, processed as needed by the Windows Azure cloud computing platform, then beamed back to the car. Healthrageous is charged with helping to translate the data into healthy lifestyle advice dispensed through the car's speakers and screens.

Much of the gathered information might simply add to the completeness of the passengers' health records. But in some cases, it might have immediate relevance to the driver. For example, Strumolo says, drivers who suffer from severe allergies or asthma might want to use incoming information about local pollen counts or smog levels to plot a different route.

Don't call it a medical device

"What we're really concerned with is the well-being of the driver, not just his ability to drive the vehicle properly," Strumolo explained to me. To do so, he says, they need to pull together as much medically relevant information as possible, both from inside the car and out, and to assess it against the current state of the driver to avoid making a stressful situation even worse. "We want to make sure that we understand the stress level and intelligently manage information that might want to come into the car and interrupt him."

In implementing its vision, Ford has to walk a fine line. Notwithstanding the "Doctor in Your Car" title of his speech, Strumolo emphasized that the company has no plans to give its cars any capabilities that would diagnose or treat disease. Doing so would require seeking FDA approval for them as mobile medical dives under the draft guidelines that the agency issued last summer. On the other hand, sensors that detected distress from a heart attack and directed a car to the breakdown lane might qualify as safety equipment, not diagnostics.

Automobiles have of course had health-related equipment in the form of airbags, seatbelts, and sobriety testing systems that lock out drunk drivers. New types of road safety systems on the way will also be able to alert sleepy drivers who drift out of their lanes.

What Ford has in mind, however, takes health interests beyond driving safety. The working assumption is that in the future, digital management of health will be an ongoing activity for many if not most people, and they will want to be able to do it safely and without interruption even while behind the wheel.

Prototype of a dashboard display monitoring blood glucose levels. (Credit: Ford)

Better care or a faster horse?

That assumption makes sense, given that health and medicine represents one of the fastest growing segments of the mobile app market. Some estimates suggest that by 2015 — just three years from now — a half billion people might using mobile health apps.

Mobile apps make smartphones and tablet computers seem like natural devices for monitoring health. So why should cars try to get in on that action, too?

Ford lists several reasons, starting with consumers' demonstrated eagerness to seek out health information online. A survey by the Pew Center found that upward of 80 percent of consumers look for health information online rather than asking their physicians because they like the convenience, the privacy, and the quantity of information available.

The privacy available in cars could therefore make them appealing places to get or request health information, Ford believes. Many people spend a lot of time in cars on a regular basis, particularly in traffic, which makes them sensible venues for routinely managing health. People in cars can also be seated and relatively motionless for long stretches, which could be useful for monitoring purposes.

Furthermore, cars can provide plenty of power for recharging smartphones and other personal mobile health devices. They have their own wireless communication systems, video screens, and other interface devices that could improve on portable ones.

Nevertheless, it's not a foregone conclusion that digital health features will catch on as avidly as Ford might hope. Consumers will need to be able to trust that Ford's system for handling passengers' health information offers strong privacy and security, Strumolo acknowledges.

Regulatory issues may be a headache, too. Strumolo says it will be important for the FDA and other agencies to understand that the goal of the initiative is not to create new medical devices but "to make sure people can continue to use devices they've already approved" while driving.

And at this stage, no one yet knows how much consumers will really be willing to pay for these automotive digital health services — or whether they might prefer to rely just on their own personal devices. Today, the added value of having these features in cars might not be worthwhile for most consumers. Then again, given the rapid aging of the population, options for monitoring whether drivers might be in cardiac distress, losing their concentration, or otherwise running into trouble could start to look much more attractive.

Strumolo recalls a famous anecdote about Henry Ford, who once was said to remark that if he asked his customers what they wanted, they would say “a faster horse.” ”We’re trying to create something that they don’t necessarily know they want, ” Strumolo says. ” But hopefully once they experience it they won’t be able to live without it.”

Image: Prototype shows how a future Ford car might use an allergy alert system to help drivers avoid areas that could cause breathing distress. (Credit: Ford)