



Anytime. Anywhere. Any need. Guaranteed.SM*

*Applies to Exact Express and Definite Delivery

[CLICK HERE TO EXPAND](#)

BusinessWeek online

[Close Window](#)

SEPTEMBER 14, 2004

SPECIAL REPORT: TOMORROW'S SAFER CARS

Coming to a Dashboard Near You

Auto designers are simplifying confusing, feature-crammed displays to help older drivers. Here are some innovations to look forward to

Bill Fluharty wants to build a futuristic, high-tech dashboard that even a grandmother would love. So the vice-president for industrial design at instrument and control-systems giant Johnson Controls ([JCI](#)) in Milwaukee helped put together the 3e, a bulbous concept car unveiled at the 2004 North America Auto Show in Detroit last January. This car's dash has only one dial, a speedometer. The rest of the myriad lights, gauges, and dials that one finds in most vehicles today have been merged into a single flat-screen digital control panel.

At the display's base is one large knob big enough to be easily grasped by an arthritic, shaking hand. Want to see how much fuel is in the tank? Just turn the knob to bring up a menu, which includes a virtual gas gauge. One tap or twist and a computer-generated image of that gauge fills the screen -- big enough to penetrate the thickest bifocals.

"As people get older, they're going to be stressed out and confused more. If our information displays and systems do a better job of communicating just the right amount of information at the right time, we'll help those people have a more pleasurable driving experience," says Fluharty.

DIZZYING EXPERIENCE. Johnson Controls is hardly alone in the quest to create dashboards and control systems better suited to aging drivers. All the carmakers and major equipment suppliers are looking at the graying of America and planning systems to suit baby boomer needs. Part of what's driving them is an increasing body of research showing that making cars easier to handle for older drivers will also help younger drivers.

"The more we study this, the more we find that features that are good for older drivers are good for everybody. No one complains and says the instrument panel is too easy to read," says Jeff Pike, a senior technical specialist at Ford ([F](#)).

Drivers would likely appreciate simplification as the trend to ever more car electronics is making the dashboard a dizzying experience. From climate control for individual seats to stereo systems that can accommodate MP3 players with 2,000 songs to GPS navigation systems, vehicle cockpits have come to resemble those found in fighter jets.

CONTROLLING FEATURE SPRAWL. According to some in the industry, this features barrage, particularly in luxury models, has long since reached a point of information overload. "As cars become more and more complex, what do you do with the controls? The average driver isn't a 747 pilot. It's someone who wants to drive to Safeway and buy bottled water," says Joseph DiNucci, a senior vice-president for sales and marketing

at Immersion ([IMMR](#)).

Immersion is a Silicon Valley software and tactile-feedback system outfit that helped BMW design its cutting-edge iDrive system. That system incorporates climate control, music, navigation, and other features into a streamlined menu structure controlled by a single large knob on the center console and a few buttons on the steering wheel and driver's armrest.

iDrive represents the most ambitious effort to date to control the feature sprawl, but it also illustrates the difficulties in making these systems work. BMW was forced to dumb down iDrive after critics complained it was overwhelming and distracting rather than useful. BMW, however, swears that iDrive has been a success and that dumbing down isn't an accurate description. It claims the changes were mere simplifications and enhancements, and BMW just needs to train drivers to use these new systems.

LOST ROAD FEEL. "It does take some time to learn. It's like sitting down at a home PC. You have to familiarize yourself with it. But we haven't any complaints from the people who own the cars," says BMW new products spokesperson Gordon Keil.

Still, that approach could prove problematic, say industry executives. Consumers don't think of their cars as PCs. They expect to sit down and drive a car without having to learn anything new.

Complicating matters is the ongoing switch from mechanical to digital control systems, a process that dramatically changes the feel of driving. While mechanical steering affords a driver a physical link to the wheels and the road, electronic-steering systems eliminate those sensations and take away road feel. For instance, if a driver hits a slippery patch of road, the steering would not feel any different than on normal, dry pavement.

EYES ON THE ROAD. "Baby boomers won't like driving those systems because they feel so alien," says Immersion's DiNucci. BMW introduced an electronic steering system in its 5-series in 2003 (see [BW Online, 4/9/04, "21st Century Cars Hit the Road"](#)), but it was accompanied by a parallel mechanical system that's still required by U.S. law for safety reasons. Such electronic systems won't completely replace mechanical ones for another decade at least, says DiNucci.

Carmakers are tentatively experimenting with various solutions to these issues, mostly in higher-end models. iDrive, which is offered only in BMW's top three luxury model series, is just the most prominent example. Ford has built a programmable display into the center console of its Lincoln Navigator SUV and Lincoln LS sedans that toggles between a navigation system and sound-system controller. These changes have been well received, and as the cost of building them declines, Ford may include them in some lower-end models 5 to 10 years from now.

More and more, though, auto makers are focusing on building control systems that don't require a driver to look away from the road to check the dashboard. These new systems will communicate with the driver either through sound or touch. Carmakers believe that this will alleviate existing visual overload and allow drivers to focus on the main task at hand. According to Johnson Controls' Fluharty, the average driver can take his eyes off the road for only 1.5 seconds before a panic reflex kicks in. Older drivers, who require more time to take in visual cues, can absorb even less information during this brief interval than younger drivers.

TACTILE COMMUNICATION. That's why most auto makers are busily enhancing the voice-recognition systems they're building into their luxury models. In early September, Honda announced that it would include new IBM-powered voice recognition in three 2005 models. It will be an option priced at \$2,000 for the Odyssey

minivan and the Acura MDX sport utility and a standard feature on the Acura RL sedan. The system will recognize 700 different types of commands and will hold a database containing 1.2 million places and street names (see BW Online, 1/9/04, "[Intelligent Conversation -- with Your Car](#)").

Voice recognition will supposedly allow drivers to ask the car normal questions and give it commands in conversational sentences. Such systems are relatively rare in cars but that could change. Carmakers sold about 2 million voice-recognition systems in the U.S. in 2003, according to Telematics Research Group, an auto technology consulting firm. That number is expected to surpass 11 million by 2010 as the cost of voice recognition declines to a fraction of its current \$500 to \$1,000 per car.

Carmakers are also exploring tactile-feedback systems that use the sense of touch and vibrations felt by the back, foot, or arm to communicate information. Such systems could, for example, simulate the road feel of mechanical steering in cars with electronic-steering systems. A sensor in the electronic system would record that the road was slippery and instruct the steering wheel to give off a looser, shakier feel to let the driver know what's happening.

NEAR-FUTURE FEATURES. Immersion's DiNucci claims that building tactile feedback into buttons and controls will also allow drivers to better keep their eyes on the road. A car that's about to run out of gas could give three sharp vibrations on the gas pedal to let the driver know how low the fuel level has gone rather than require her to look at the instrument panel.

For the most part, these innovations remain several years out even in luxury cars -- and perhaps a decade away in lower-end models. But as more and more baby boomers pass their 65th birthdays, the attraction of these features could make the car of the future a reality instead of an auto-show attraction.

By [Alex Salkever](#), Technology editor for BusinessWeek Online

Copyright 2000-2004, by The McGraw-Hill Companies Inc. All rights reserved.

[Terms of Use](#) [Privacy Notice](#)

BusinessWeek online



A Division of The McGraw-Hill Companies