Cars Connect With Apps, the Cloud at CES

Automakers are racing the put the *mobile* in automobile as they connect our vehicles to the cloud and increasingly blur the line between cars and consumer electronics.

These systems let you do everything from update your Facebook status to make flight reservations to access voice-activated navigation. The goal of all this tech is to make sure we're connected even after buckling up.

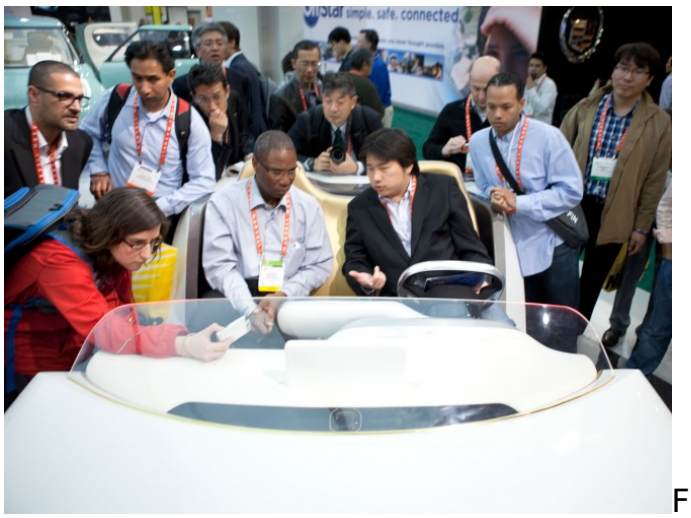
The pace of development has been blinding and is perhaps best measured by the role automakers have played at CES. When Ford's pioneering Sync system was unveiled here five years ago, it was widely considered a novelty and the show was an afterthought for automakers. This year, six of the 10 major automakers are at the show, with booths just as elaborate as you'd see at the Detroit or Frankfurt auto shows.

Their presence underscores the importance connectivity plays in the auto business, and the role it has in the industry's future.

"Connectivity has gone from being a unique feature that makes some brands stand out for having it to being a must-have feature that make some brands stand out for *not* having it," said Aaron Bragman, an auto industry analyst with I.H.S. Automotive. "Sync has turned out to be one of the major selling points of Ford vehicles. Other automakers want a piece of that action."

Consumers do, too. This technology is what sets many cars apart, especially for younger buyers at least as concerned with connectivity as fuel economy and performance. Automakers must deliver, or risk irrelevance.

"It's gone past cool," said John Waraniak, vice president of technology for the Specialty Equipment Market Association, an auto industry trade group. "It's a reason to buy."



Factory-installed vehicle tech including connected systems Sync, Chrysler's Uconnect or Audi Connect unveiled at CES this week will account for nearly $7 billion in sales this year, according to the Consumer Electronics Association. About 15 percent of American households own a vehicle with connected communications, and analysts expect that figure to climb sharply in coming years.

This is an area where the Big Three have led. OnStar, a division of General Motors, was launched in 1996, but Ford set the pace with Sync in 2007. Chrysler followed with Uconnect. They were all here this year, announcing updated systems, new apps and, in OnStar's case, a plan to offer its API to app developers.

The Koreans and Germans are catching up. Kia (pictured above) unveiled its Uvo eServices infotainment and telematics system here, while Mercedes-Benz rolled out Mbrace2, the second iteration of a system launched two years ago. Audi announced Audi Connect, a gorgeous system that uses the latest Nvidia chipset.

The Japanese are, surprisingly, lagging. Their systems aren't as elegant, and they look and feel a generation behind the benchmarks. Still, Toyota's Entune — unveiled here last year — offers a huge number of apps, from Bing to OpenTable to MovieTickets.com.

Yet for all the branding and marketing hype, these systems are variations on a theme. They connect to the cloud via Wi-Fi or 3G — Audi announced Wednesday that it will roll out 4G LTE connectivity "soon" — to deliver streaming audio, social media like Facebook and Yelp, and apps like iHeartRadio and NPR. Other common features include automatic crash response, voice-activated navigation, spoken text messages and concierge services that will make restaurant reservations, order flowers or book flights.

Although most systems are used largely for navigation and entertainment, we'll soon enjoy the versatility of mobile devices. Sync AppLink lets you control many smartphone apps from your dashboard, and automakers like Toyota have joined Ford in offering their API to developers. Others, like Mercedes-Benz, have in-house teams that work with companies like Facebook to adapt existing apps.

Eventually, we'll see cloud-based apps that work on your car just like they work on

your phone. And that's where things get interesting, because apps could lead us down new roads to greater convenience and safety.

"Connectivity opens up many, many new possibilities," said Nick Pudar, vice president of business development at OnStar.

And then there's the hardware. Automakers are taking two approaches: Built-in or beamed-in. Built-in systems like Mbrace2 use proprietary hardware within the car, while beamed-in systems like Sync are essentially elaborate smartphone interfaces. Built-in systems typically offer better integration and reliability, but they cost more to develop and could become obsolete. Beamed-in systems minimize hardware costs and the risk of obsolescence.

Obsolescence may become less of an issue. Audi is using the latest Nvidia Tegra chipset, which Nvidia adapted to suit automotive needs by building what it calls a "visual computing module." When Nvidia inevitably upgrades Tegra, all Audi has to do is add the new module to its system. Older models could even be retrofitted.

"We're eliminating the development lag often seen in the auto industry," said Taner Ozcelik, general manager of Nvidia's automotive division. "It eliminates the threat of obsolescence."

We'll probably see a hybrid approach, where automakers use a built-in system for "mission critical" features like safety, and beamed-in system for features like entertainment.

We're also seeing a growing number of automakers with apps that let you control your car remotely. You can do things like lock your doors, schedule service calls and, in the case of electric vehicles, monitor how much juice is in the battery and decide when your electric vehicle starts drawing power from the socket once you've plugged it in.

"We're looking at ways to connect your car to your home, your office and your life," said Jon Bucci, VP of advanced technology for Toyota.

Safety is obviously a big concern. Automakers insist this technology will ease our distractions by incorporating the functionality of our gadgets into our cars. Voice activation, gesture recognition and other features undoubtedly are safer than fiddling with your phone at 65 mph. And with the National Transportation Board calling on states to ban the use of phones behind the wheel, these technologies may be increasingly necessary.

“The reality is, for many people, the car is their office,” said Johan de Nysschen, president of Audi of America. (That’s a demo version of Audi Connect in the photo above.) “And to think that we can just shut down all communication in the vehicle simply is not practical.”

Here, too, automakers and their suppliers are looking at ways to minimize the risks. Delphi, for example, demonstrated a suite of technologies to keep your hands on the wheel and your eyes on the road.

One of the coolest uses a camera to track the orientation of your face. Take your eyes off the road for more than two seconds to, say, check the infotainment screen, and a yellow light flashes in the head-up display, drawing your attention back to the road. Keep your eyes off the road for five seconds and the screen dims.

The system also uses radar, speed sensors and other tech to allow greater use of infotainment features in light traffic while sharply curtailing functionality in adverse conditions. It’s all still a few years away, but possible because the system uses a lot of the hardware and sensors Delphi already provides to many automakers.

Automakers love this technology because it allows them to deliver up-to-the-minute content and services to consumers while providing them with the features and functionality of their mobile devices. It also allows consumers to tailor their experience to suit their wants and needs.

It also makes things easier for automakers. Using technology developed by tech firms like Nvidia and QNX greatly reduces their R&D and speed to market. Cloud-based voice recognition and navigation systems eliminate the need to develop dedicated systems for their cars.

The cloud also allows for fast and easy updating of essentially all the software in a car. Automakers can tell you when you’re due for service and even schedule an appointment. And, by aggregating data from so many cars, they can spot potential

problems before they grow serious enough to warrant a recall.

This is only the beginning. Automakers and others are looking to the day when vehicles talk to each other and to the road, keeping tabs on everything around us and alerting us to threats we aren't aware of.

Ford, Volvo, Audi and others are pursuing this technology, which would use GPS, wireless and radar technology to ease congestion, increase safety and save time in traffic. The National Highway Traffic Safety Administration says connecting our cars could address as many as 4.3 million crashes, or about 80 percent of accidents that don't involve drunk or stoned drivers.

Some in the auto industry doubt this will truly take off. Getting so many vehicles to talk to each other and their surroundings will require an almost unattainable level of global standardization and cooperation. But that may not be so hard as the doubters might think. Next year, Germany plans to begin real-world tests of such technology using vehicles from three automakers.

"These changes will not happen overnight, but with a step-by-step process — perhaps even with temporary setbacks, but a steady underlying trend toward connected mobility," said Daimler CEO Dieter Zetsche.

But we're getting ahead of ourselves. Although connected cars hold great promise for increasing safety and reducing congestion, the truth is most people simply want an easy, elegant and intuitive way to bring their digital lives into their cars.

"It's not just about Bluetooth anymore," said Joni Christensen, head of marketing for Chrysler's Uconnect system. "This is about total integration."

That is what ultimately will determine the winners and losers. We'll soon reach a point where everyone's offering essentially the same apps and delivering much the same content. At that point, it's all about the UI and the UX — user experience.

"It has to be more than easy to use," said Andrew Poliak, director of business development for QNX, which provides the operating system, media player and other backend bits for the infotainment system in hundreds of models. "It has to be a pleasure to use."

To that end, companies like QNX are rolling out prototypes that look and feel remarkably like tablets. And in many ways, that is the grail. The company that creates a system as easy and elegant as the iPhone or iPad will reshape the industry.

“The day Steve Jobs died, every auto executive slept a little better because the iCar would have killed the auto industry,” said Myles Kovacs, co-founder and publisher of *Dub* magazine. “It still might.”

That is what makes this so important to the automakers. We’ve reached a point where, in many ways, building great cars is no longer about mechanical engineering, but computer engineering.

“The bits and bytes are the new horsepower,” said Thilo Koslowski, an analyst with Gartner. “This is what matters. Smaller companies can steal the show if they get this right. It’s new ammunition to aim at the big guys.”

That small company need not necessarily be an automaker. Koslowki boldly predicts that by 2016 “at least one megatechnology company will have announced plans to develop its own automobile offering.” It could be a complete automotive infotainment system — not just the software, or the chipset, but the entire system &mdash if not the whole car.

There’s no question an Apple or a Samsung could develop a complete cloud-based automotive infotainment system. Building a car is trickier, but not impossible. Anyone with with deep enough pockets can hire a firm like Magna International for the engineering and a company like Valmet Automotive for the manufacturing. That is, essentially, how Fisker Automotive brought the Karma plug-in hybrid to market.

It’s an outlandish idea, but if it happens, the line between cars and consumer electronics would no longer be blurred. It would be obliterated.

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