



CAR TECH USERS AREN'T THE PROBLEM

JULIE LOWE

In a [recent piece](#) for Wired magazine's Autopia blog, Doug Newcomb profiled the owner of a small Oregon-based interactive design agency, a young, tech-savvy woman with disposable income – the ideal customer for an automotive company. Somewhat ironically, she had no idea how to operate the infotainment features of her 2012 Porsche Cayenne S. “There’s an anxiety that I’m not using all the great features on my car because it’s too difficult,” she says in the piece. “I can’t figure out how to get to the right screen. Or I’m there but can’t access the right settings.”

BAD TECHNOLOGY EXPERIENCES FRUSTRATE CUSTOMERS AND DAMAGE THE REPUTATION OF THE BRAND.

DRIVERS ARE FLUSTERED

That’s not surprising, as most contemporary in-dash car-tech systems range from moderately confusing to downright indecipherable. But Newcomb’s post took a strange tack. He said “everyone we spoke with agreed that the biggest failure with in-car technology has little to do with vehicle systems and more to do with owners.” To address this problem, Newcomb wrote, luxury brands like Lexus, Cadillac and BMW are staffing their dealerships with dedicated tech support specialists. Chevrolet has been forced to hire 25 new “connected customer support staff” members to deal with drivers who, like most of us, are confused about how to operate their in-dash computers. The manufacturers aren’t willing to admit that the fault might lie in their interfaces.

AUTOMAKERS ARE IN DENIAL

“The hardware itself is really pretty bulletproof,” says a Lexus executive in the piece. “It’s very robust and reliable. Occasionally we’ll get a bad hard drive or a bad screen. We are having challenges, but it has less to do with the components of the vehicle and more with dealing with customers on how to properly pair their phones.” But that’s the wrong way to frame this issue. It’s not about whether or not this sort of technology breaks down, because it rarely does. It’s about whether the technology is effective and easy to use.

Which it’s not.

POOR USER EXPERIENCE TANKS LOYALTY

Bad technology experiences frustrate customers and damage the reputation of the brand. That's true with phones, with DVRs, with banking software, with tablets and with personal computers. When those interfaces fail, it's not the fault of the consumer. It's the fault of the company. The same should hold true for the automotive industry. They can't just jam a third-rate tablet into the dashboard, proclaim it "interconnected" and then blame customers for not being able to figure it out.

The ideal tech interface design, whether you're talking about a smartphone or an in-car infotainment system, is one that eliminates the need for instructions. Technology is supposed to simplify the experience of using a product, not make it more complicated. When it comes to cars, that's even more important.

Convolved information systems distract people's attention when they should really be concerned about driving. Despite traction control, antilock brakes and all the other advances that have been made in recent years, driving is still tricky business. When you're going 70 on the highway, or even idling in a parking lot, it's not a good time to be recalling complicated instructions for what should be simple tasks.

A driver should be able to effortlessly sync their phone, navigate maps, and flip on their favorite XM radio station without having to tap a lot of buttons or struggle to find the main menu. A good infotainment center has its place, particularly in luxury cars, but a bad interface, in addition to being potentially unsafe, damages the brand and makes it seem much less premium.

IT'S TIME TO RETHINK INFOTAINMENT

Carmakers need to remember that infotainment centers aren't the main reason people buy cars. They need them to get from Point A to Point B. When you drive, you deal with weather conditions, crazy drivers, traffic and tons of other stresses. Drivers just want their systems to play music they like and get them where they want to go. If a tech-savvy driver can't figure out how to sync her phone to her car's dashboard interface, then it's up to the car companies to give her one that suits her. Blaming your customers is a guaranteed path to losing them. The problem has everything to do with vehicle systems and nothing to do with the owners.

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HOW AUGMENTED REALITY WILL REDEFINE DRIVING, CARS

JOE HEWITSON

Augmented reality (AR), as Hollywood blockbusters have shown us, is simply a way to see enhanced information about the world around us. Using an optical device that captures your surroundings — like the camera in your cellphone — AR transforms your field of vision into an interactive heads-up display.



This technology has the mobile and tech worlds abuzz, significantly bolstered by wearable devices like Google Glass. But AR isn't just going to change our glasses, it's also going to have a big impact on the way we drive.

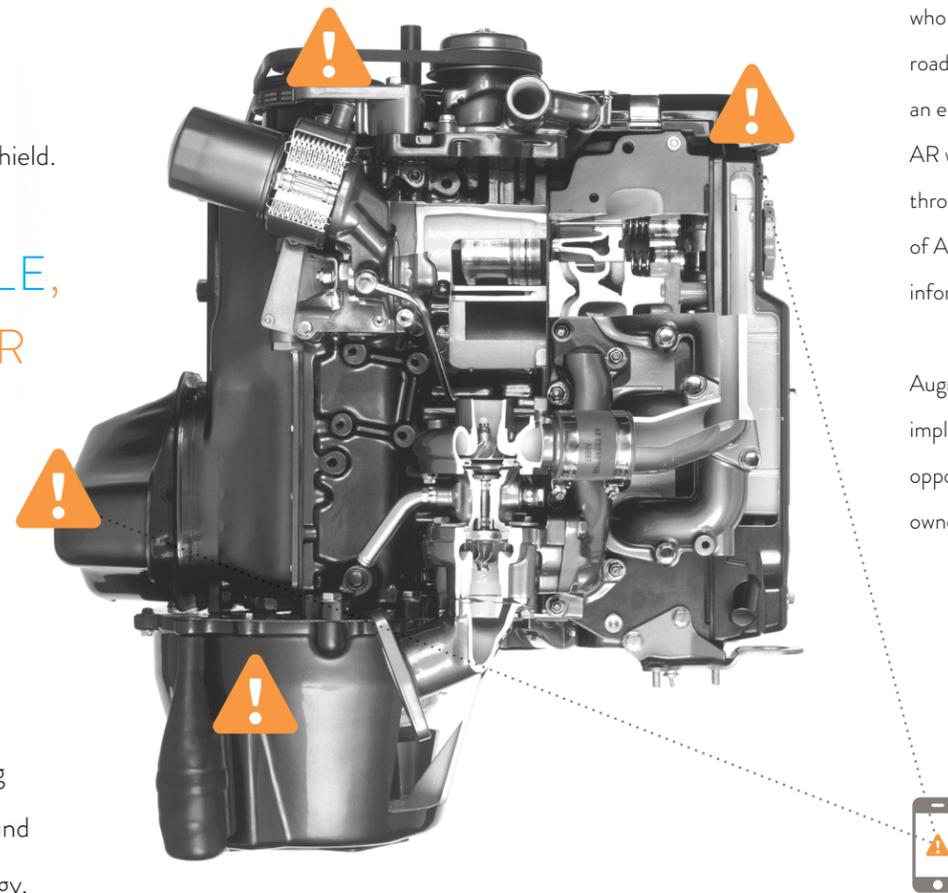
A NATURAL FIT FOR VEHICLES

With AR, original equipment manufacturers (OEMs) can now deliver important information to drivers in a way that's accessible and consumable, but also less intrusive or distracting than previous methods. The tech offers drivers the ability to keep their eyes on the road while interacting with maps, music, phones and dashboard displays.

Augmented reality could also give drivers and passengers timely updates on critical travel information like road conditions, weather alerts and detour directions, all while keeping the driver's eyes on the windshield.

ACCORDING TO A RECENT TELEGRAPH ARTICLE, THIS TECHNOLOGY COULD PAVE THE WAY FOR SAFER ROADS, EASIER NAVIGATIONS AND ALL-AROUND SMARTER DRIVERS.

But the people behind the wheel aren't the only ones to benefit from AR. Passengers might soon be able to interact with the world in a completely new way as it zips past their car window. Imagine driving through the majestic Rocky Mountains while snapping a photo of the picturesque peaks with a couple taps and pinches on your window. Better yet, how about driving down the historic Route 66 and enjoying streams of information pouring over your window as you pass prominent landmarks. While this might sound like a pipe dream, many OEMs like [Toyota](#) and [Mercedes](#) are already developing this promising technology.



PROVIDING AN INFORMED PERSPECTIVE

Augmented reality will prove exceptionally useful to vehicle owners who don't otherwise know much about their car. Most drivers on the road couldn't tell a camshaft from a crankshaft, and thumbing through an encyclopedia-sized driver's manual isn't going to change that. AR will give uninformed drivers the ability to examine their car's vitals through the eyes of a professional. [BMW](#) is already developing a pair of AR glasses that will allow mechanics to instantaneously gather the information they need to repair a faulty vehicle.

Augmented reality is finally coming into its own as a truly useful and implementable tool. Vehicle OEMs now find themselves with a unique opportunity to change the way their products communicate with their owners, and we look forward to the innovations yet to come.

Real-time alerts give drivers in-depth insight, much of which could only be learned through mechanic school or hands on experience.

USER SPOTLIGHT

WHAT DRIVERS WANT FROM CARS

With most manufacturers making connected cars by 2015, what are drivers looking for in auto tech? Sources: JD Power and Associates, Johnson Controls

**A SMARTPHONE EXTENSION**

82% of smartphone-toting car owners are interested in an in-vehicle app that connects their phone to their vehicle's infotainment system.

**ALL AGES LOOK TO CONNECT**

Generation Y (ages 19 - 36) is most likely to be interested in device app-linking technology at every price level. Though surprising interest comes from Early Boomers, who indicate a high potential to purchase connected technology.

**TECH INTEREST ACROSS GENDERS**

Purchase interest is equally strong for both men and women, and is highest among owners of both compact sporty cars and those with large premium cars/SUVs.

**SAFETY COMES FIRST**

A new study indicates that safety tops as the single most important car selection feature. The safe delivery of vehicle infotainment information will be critical to consumer adoption.

CYBER ATTACK:**ARE OUR
VEHICLES
AT RISK?****JOE HEWITSON**

The threat of a cyber attack casts a dark cloud over our increasingly electronic lives. With our society's insatiable need to be connected 24/7, cyber criminals are finding a trove of lucrative targets in our homes, including our garages.

As car manufacturers race to bring modern technology to the automotive industry, hackers wait to see how they can use these innovations to their devious advantage. If automakers want to prevent these digital intrusions, they're going to have to think like a hacker.



ALTHOUGH TECHNOLOGY MAKES OUR VEHICLES EASIER TO DRIVE, IT ALSO MAKES THEM EASIER TO HACK.

A NEW ERA OF CAR THIEVES

Although technology makes our vehicles easier to drive, it also makes them easier to hack. The advent of in-dash computers, keyless entry and remote starters has created more avenues for car break-ins. Gone are the simple days of Slim Jims and hot wiring. A recent [AOL Autos](#) article shows just how easy it can be for this new breed of car thief to access your automobile.

WHAT'S IN IT FOR THE CYBER CRIMINALS?

It's bad enough to exit the grocery store to find that your car's been stolen, but what if your bank account was emptied as well?

As cars become smarter, they'll require more of our personal information like addresses, phone numbers and maybe even credit card numbers. Never underestimate the things people will share for the sake of convenience.

Sophisticated cyber thieves could also use your car as a portal to ransack your smartphone, tablet or other wireless device. Worried? You should be. The National Highway Traffic Safety Administration (NHTSA) felt threatened enough to open a new office just for [motor vehicle cyber crime](#).

CAR TECH ISN'T ALL VROOM AND DOOM

There may be a growing threat of a cyber attack, but there's also an increased ability to catch these criminals in the act. The proliferation of GPS and other tracking technologies makes it easier for the authorities to hunt down your car before thieves can drive it to the chop shop.

SO WHAT'S AN AUTOMAKER TO DO?

If car manufacturers want to keep their game-changing innovations from becoming tools for cyber criminals, they need to keep their security measures as advanced as their dashboards. One viable way to protect cars is through [biometrics](#). Some biometric security measures include fingerprint scans, voice detection and retina identification.

Moto-hacking may be relatively unheard of at the moment, but it's something to keep in mind for your next concept car. If a vehicle has the same computing capabilities as your tablet or phone, it shares the same susceptibilities as well.

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THE ANDROID CAR:

WHY YOU'LL BE DRIVING ONE SOON

JOE HEWITSON

The dawn of the “Android car” might not be as far off as you think. If this year’s Consumer Electronics Show (CES) was any indication, we could be buying cars running entirely on Google’s mighty mobile OS before the end of the decade.

Surprised? Don’t be. The automobile and the smartphone are two very different technologies with two very different uses, but it makes perfect sense for these two innovations to merge.



THE POWER OF AN OPEN OS

While it's certainly true that elaborate in-car information and entertainment systems are becoming more widespread, we've yet to see a car that's fully controlled by a mobile OS like Android. That said, car manufacturers are already using Android's source kernel to find new ways to sync your smartphone and your dashboard. With all this tinkering and customization, it's only a matter of time before your Android device and your steering column are intertwined.

**THE FUTURE OF ANDROID IN CAR TECH**

With the current crop of Android “infotainment” systems limited to in-dash navigation and general amusement, what other car components will this tech be found in down the road? Some believe literally every nut and bolt can be linked through your mobile device. Imagine integration so tight, the Android OS will know when your tire pressure is low and your oil needs to be changed. It'll even be able to tell you in layman's terms why your check engine light is flashing.

Android's openness with their source code makes them a perfect fit for this kind of partnership. It's a flexible, robust platform that can be molded to fit the different tastes of car manufacturers. All that's needed are developers willing to create innovative apps that tie the platform and car together via relevant and useful software. That's why Ford is pushing an [open Android API](#) to spur the development of Android-powered cars.

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Developers can now use this new SDK to enable communication between their app and Ford's cars. Before the announcement, access to the AppLink API — available in more than 1 million vehicles — was only offered to a select few. Today, a developer will just need to submit an app to Ford's engineering team for review.

ANDROID-POWERED CARS MAKE PERFECT SENSE

Still think Android-powered cars are a little far fetched? Go to your local Toys R Us and [see for yourself](#). Helicopters, “Ferraris” and even cannons are already being controlled with smartphones. It's only a matter of time before we take that tech from small-scale RC cars to full-size coupes and SUVs. Just make sure to keep your phone charged.

FEATURE SPOTLIGHT

THE BEST NEW CAR TECH

We don't have the flying cars the Jetsons promised us just yet, but we're getting closer with these new technologies



AUTOMATED DRIVING

At CES 2013, Audi showed off an automated driving concept to help you navigate heavily trafficked highways at speeds of up to 40 mph, partnering with Google for onboard maps. Google's own self-driving car uses cameras, sensors and laser data to virtually "see" other cars on the road.



SELF-PARKING

You could never have to parallel park again — both BMW and Volvo are working on concepts for self-parking. Volvo's concept connects the driver through a mobile app to spots equipped with sensors, finding and navigating your car into a free space.



DIGITAL VOICE ASSISTANT

The best aspect of new car tech may be that it takes mobile hands-free. With Apple's iOS in the Car, your personal assistant can make phone calls, play music, display Apple Maps, read messages and transcribe dictated responses. Ask your questions out loud — Siri answers with Bing, Twitter and Wikipedia.



ADVANCED NAVIGATION

Balancing your phone on your lap as you get turn-by-turn directions? Mercedes and Lexus save iPhone or Android directions to your car, storing favorites in different folders — a key feature for professionals with driving-based jobs like realtors, technicians and contractors.



SMART MAINTENANCE

Most of us don't give our cars enough love. New technology can now send a monthly car status report email, and if any problems come up in the diagnostic sweep, you'll get a message with a dealer who can fix it. For plug-in hybrids and electric vehicles, you can even monitor your car battery on your smartphone.



HEALTH MONITOR

If your car's Bluetooth can monitor your health — why not your seat? Ford has announced work on a car seat with sensors to monitor your heart-rate using electrical impulses, helping provide early warning of a heart attack for those at risk. Within a decade, Mitsubishi Electric plans to take this further, using a Doppler sensor to provide information to help with safe driving.



CAR-TO-CAR

With Intel's machine-to-machine, cars can share data on the road, warning you of accidents with real-time traffic info. Let's say a scooter is coming up along the passenger side of a line of traffic, in everyone's blind spot. Connected technology can alert the driver at the front who's turning right. Is this the end of road rage?



CONNECTED APPS

As Ford and others introduce new interfaces for in-car systems, what developers can build with either dashboard or voice-controlled apps is up to their imagination. For example, they could link a SYNC to a glucose monitor, so diabetics know when to take medication on the road. Or create an app that adjusts the music and lights, to keep you engaged on late drives.



REMOTE CONTROL

The new trend is to control your car before you step inside. Both Chevy Volt and Hyundai's Bluelink systems use a connected mobile phone to find, unlock and turn on the AC or heat remotely. They can also immobilize your car in the case of a carjacking, all without draining the charge, which is crucial for electric vehicles.



THE OEM CURVEBALL

Automatic's Smart Driving Assistant is a combination mobile app-and-hardware unit that turns anyone with an iPhone into a car geek. The app connects to any car to track driving behaviors, fuel efficiency, location and emergency response — telling you why your check engine light is on. For under \$70, this plug-in/app combo offers stiff competition to built-in car tech.



iOS IN THE CAR

EVAN WADE

In a world where you can take a call, read the paper and turn off your sprinklers with the same device, an interactive digital assistant for your car no longer seems that far-fetched.

With Apple's [iOS in the Car](#), a planned feature for iOS 7 that puts Siri and Apple Maps in your vehicle, you may never have to pull over to send a text or reprogram your GPS again.

JUST IMAGINE HAVING A DEDICATED, ALL-KNOWING CO-PILOT ANYWHERE YOU HAVE DATA SERVICE.

BUILT FOR INTEGRATION

Like Apple TV, iOS in the Car piggybacks off existing hardware (in this case, a car's center console) to get the job done. Common tasks like calling, listening to messages and searching for directions are as easy as pressing a button on the steering wheel and giving a command, while relevant visual information like Apple Maps appears on the car's dashboard display. Select cars would even have built-in connectors made for Apple devices — and possibly AirPlay compatibility — meaning no more tangled auxiliary cords or confusing Bluetooth sync instructions.

A CONSISTENT EXPERIENCE

Apple stuff works well with other Apple stuff, something automakers can capitalize on. By interacting with many of them from the get-go, Tim Cook and company will give iOS users a first-party experience on third-party hardware. Just imagine having a dedicated, all-knowing co-pilot anywhere you have data service. A Siri-enabled car could, for instance, direct you to a stored contact's address or help you navigate your music library with a single spoken prompt. From a safety and convenience standpoint — not to mention the whole not-getting-a-ticket thing — it's much safer than fiddling with your phone while you drive.

COMPETING FOR SCREENS

A successful launch would give Apple an undeniable advantage over Google when it comes to the smartphone/car interface. While some Android devices feature [Car Home](#), a Google app that optimizes home screens for driving, it's far from the universal solution iOS in the Car represents. Compatible Android devices require an extra car mount to use safely, whereas Apple's solution features the above-mentioned dock and screen mirroring on the center console. Until Google comes out with a similar product (perhaps in one of its self-driving cars), there's no comparison.

TWO PROGRAMS, SAME FOCUS

Eyes Free, another Apple solution for cars, offers a trimmed-down driving experience for those in need of quick information or hands-free phone manipulation. Instead of your dashboard monitor, Siri is the star of the show here. Pressing the voice command button on a compatible car's steering wheel will bring Apple's famed digital assistant front-and-center, helping users with tasks and directions alike with nary a finger touching a screen. While iOS in the Car will offer deeper integration with the cars that carry it — it's the only service to show Apple Maps and downloaded movies on a car's dashboard display — most anyone who's used a Bluetooth puck knows how helpful hands-free support can be.

THOUGH ADDING A SIRI BUTTON WOULD STILL REQUIRE SOME MODIFICATION, THE CHANGES WOULD BE MINIMAL IN COMPARISON, GIVING USERS A GENUINE APPLE EXPERIENCE WITH COUNTLESS PRACTICAL APPLICATIONS ON THE ROAD.

AN UNFINISHED PRODUCT

It'll be a while before the public can take iOS in the Car for a test drive. It was recently reported the technology will need some tweaking and could potentially be delayed until changes are made, though this isn't necessarily a bad thing: early versions of Apple Maps, for instance, were bad enough to cause a huge uproar online.

ADOPTERS AND AVOIDERS

Not everyone is so keen on iOS in the Car. A recent article notes that although 14 manufacturers have agreed to implement the service, others may think their existing interfaces are best suited for the cars they make. BMW has gone on record to say integrating any Apple solution would potentially result in significant changes to a car's existing architecture. In these instances, the above-mentioned Eyes Free may work well for those manufacturers unwilling or unable to bring iOS in the Car onboard. Though adding a Siri button would still require some modification, the changes would be minimal in comparison, giving users a genuine Apple experience with countless practical applications on the road. Whatever happens, Apple wants its customers fully invested in their ecosystem and the automobile is a perfect next step for device integration. Rest assured, when iOS in the Car arrives, that universal mount suctioned to your dashboard will look like a stone-age tool.