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THE IN-CAR INFOTAINMENT CENTER REPORT: Examining the increase in consumer demand for in-car connectivity

John Greenough | November 16, 2015

BUSINESS INSIDER

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KEY POINTS

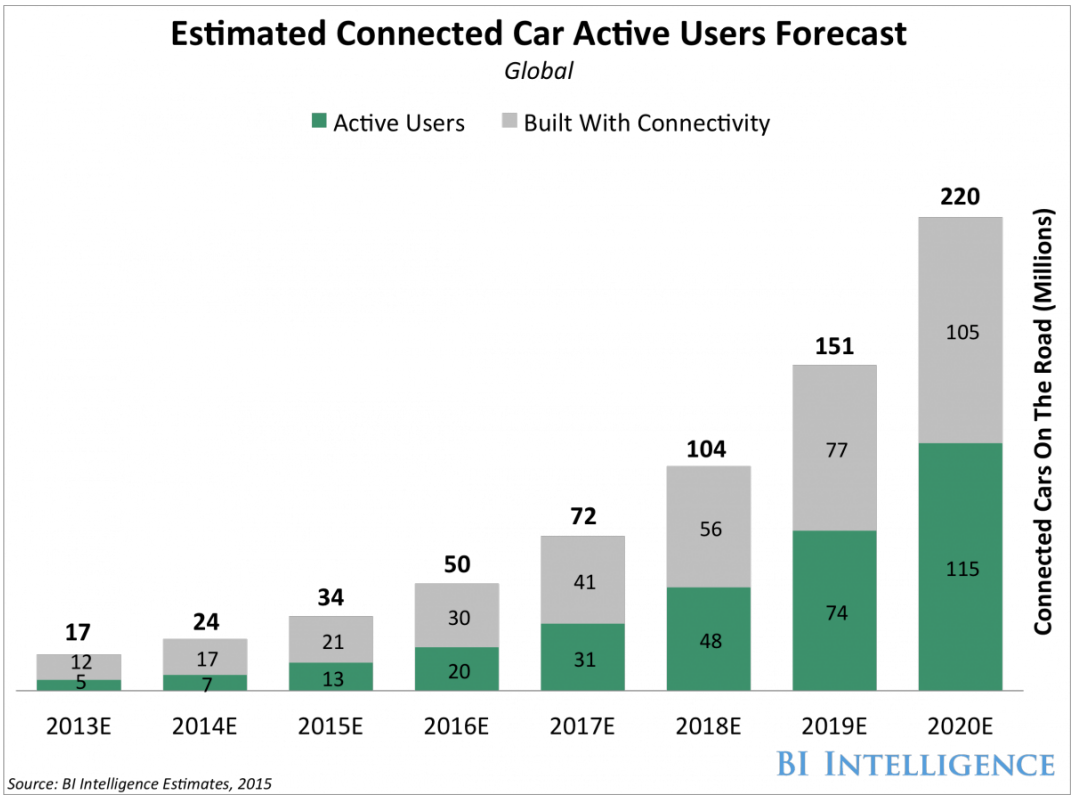
- **Consumer demand for in-car technology has increased significantly over the past year.** As a result, we've raised our connected car active user forecast from 88 million to 115 million in 2020. Overall, in-car entertainment features provided by the car's infotainment center, comprising a Wi-Fi hotspot, applications, and more, will generate $15 billion in sales in 2021, up from $7 billion in 2016.
- **Several factors are driving increased demand.** These include consumer expectations of always-on connectivity, greater awareness of connected car offerings, and governmental restrictions on using mobile phones while driving (which push consumers to hands-free modes of communication).
- **AT&T, the largest US in-car connectivity provider, has added 2.7 million cars in the US this year alone — that's 43% of the 6.3 million cars sold by its eight connected car partners.** In total, AT&T has 5.8 million cars on its network. The company told BI

Intelligence that the number of postpaid subscribers — consumers paying for an added connected car subscription — is growing.

- **Consumers and automakers are still worried about the vulnerabilities added internet connectivity creates.** Recent connected car hacks, such as the Jeep hack that occurred in July, have brought to light the security risks associated with internet-connected cars.

Download the charts and data in Excel »

Introduction



Connected cars emerged as a top Internet of Things (IoT) device in 2015, as automakers and technology companies began to realize the added value in connecting cars to the internet. BI Intelligence defines an IoT device as any stand-alone internet-connected device that can be either monitored and/or

controlled from a remote location. From an automaker's perspective, a connected car enables it to monitor the car remotely to collect data about usage and push over-the-air software updates. Consumers are also able to track their driving habits and can use the car's infotainment center to access apps.

We project there will be 220 million internet-connected cars on the road by 2020, up from 34 million in 2015. Of those 220 million connected cars, over half (115 million) will be driven by "active users," defined as those who are:

- On a free trial subscription for connected services OR
- Paying for a connected car cellular service subscription OR
- Tethering their smartphone's cellular connection to their car (note that tethering is slowly being replaced by embedded connections).

We've raised our active user forecast for 2020 from 88 million to 115 million due to a significant increase in consumer demand for connected car services over the past year.

Click here to read our forecast for connected car shipments, by region »

Note: *A connected car doesn't require a cellular subscription for connectivity; it needs only the components necessary to connect. In many instances, automakers have begun embedding cellular chips into cars so that they can push over-the-air (OTA) updates to the car, if necessary, and receive data about the car's use. Doing so enables them to offer new car owners a free-trial connectivity subscription from a cellular provider, such as AT&T, much in the same way they have offered free-trial subscriptions to satellite radio. After the trial, drivers can choose to sign up for a paid subscription. Both those on free trials and those who have signed for paid subscription are classified as "active users." Separately, the automaker has partnerships in place with major telcos to pay for a limited connection to the car — primarily to push imperative over-the-air updates and collect data.*

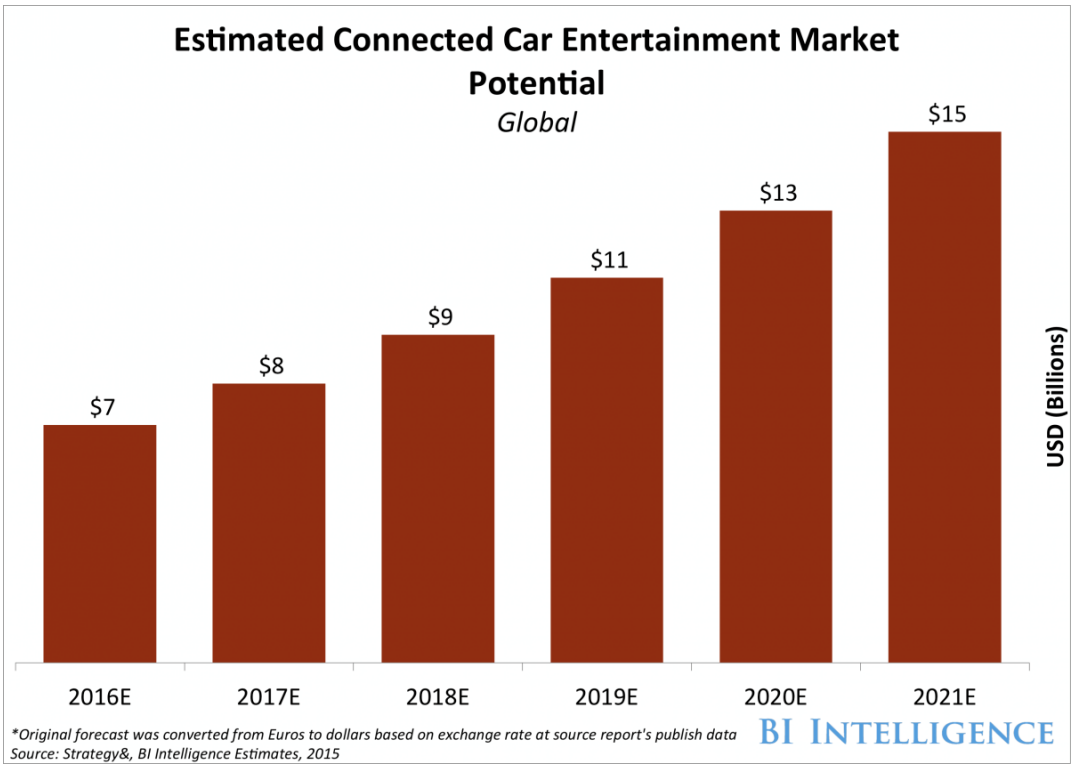
Connected car features comprise a broad range of services. Some, like over-the-air software updates for a vehicle's engine management computer or infotainment screen, are designed to reduce the need for dealer service. Those same mechanisms also enable carmakers to gather data about vehicles' on-road performance. Others are more explicitly consumer-facing entertainment and driver aid features, which are the subject of this report.

Although we believe the biggest benefit connected cars offer automakers is internal to their operations — the money they will save by pushing OTA software updates to cars remotely and the product improvements they will be able to make by accruing data on their cars' on-road performance — there is still a massive market for carmakers and tech companies to monetize the connected car's infotainment center by providing entertainment features and added services powered by the infotainment center.

This report focuses on increased consumer demand for connected car technology. We examine the growth and importance of key connected car platforms, including CarPlay and Android Auto. Next, we discuss connected car initiatives from the most innovative automakers. Finally, we look at the barriers to gaining more active connected car users.

Increased consumer demand

The car's infotainment center is becoming the next major mobile device. It houses applications commonly found on phones and attempts to provide a hands-free experience to keep drivers constantly connected, while still enabling them to drive safely on the road. In total, **entertainment features** provided by the car's embedded infotainment center, comprised of a Wi-Fi hotspot, applications, and more, **will generate $15 billion in sales in 2021, up from $7 billion in 2016, and representing an 18% compound annual growth rate (CAGR),** according to Strategy&.



There has been a significant increase in demand for connected car infotainment features over the past year. Among recent car customers — those who recently purchased a car — in Germany, the US, and China, 37% agreed they would switch to another manufacturer if it was the only one offering a car with full access to applications, data, and media, up from 20% in 2014, according to a McKinsey survey.

In an Accenture survey that asked global consumers which feature they value most in their car — its technology or its driving performance — the majority chose technology. This indicates more consumers value cars for their in-vehicle digital technologies.

Three key factors are influencing increased demand for in-car connectivity:

1. **Consumers' growing "need" to be always-on.** In a Google survey of US smartphone owners, 30% of respondents said they get "anxious" when they don't have their smartphone on them and 68% check their smartphone within 15 minutes of waking up in the morning. Similarly, in

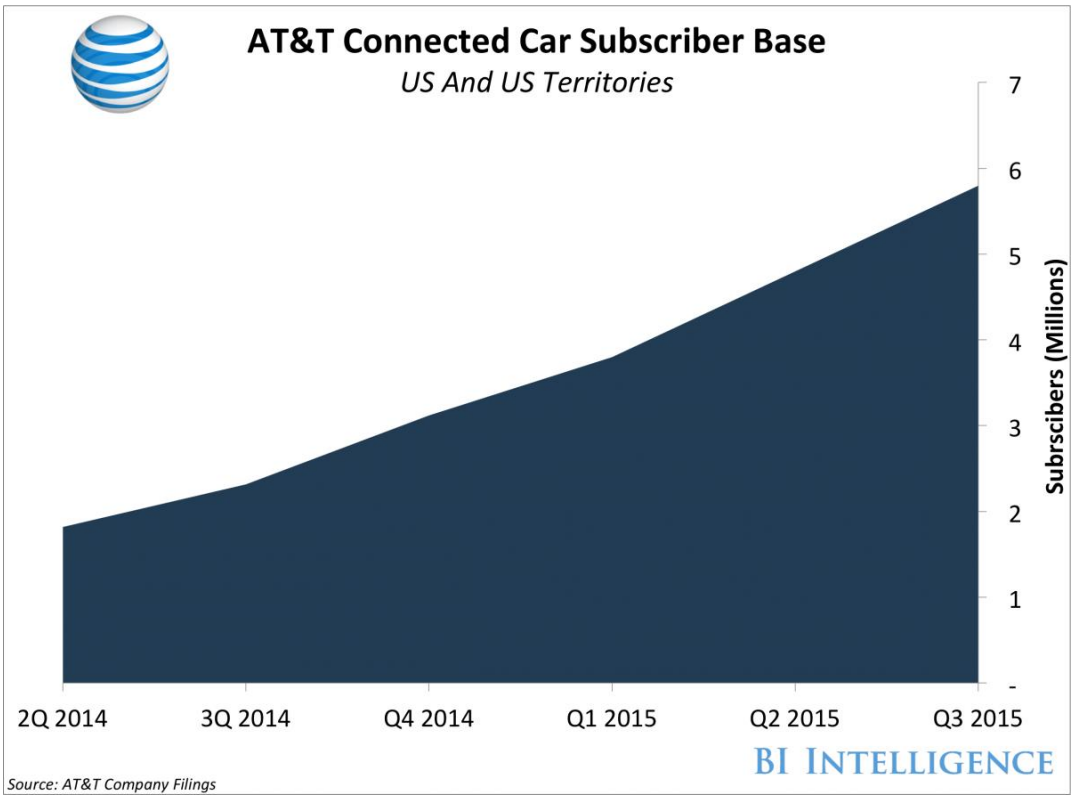
a recent BI Intelligence survey, 38% of millennial respondents said they get "anxious" without a smartphone. Carmakers and tech companies are trying to capitalize on this need by offering in-car technology through the vehicle's infotainment center, such as the apps and connection consumers desire, as an added selling point for the significant amount of time users spend in their car each day.

2. **Government restrictions on texting while driving.** At any given moment, 660,000 US drivers are using their mobile phones or manipulating an electronic device, which increases the risk of getting in a crash three-fold, according to the National Highway Transportation Safety Agency (NHTSA) and the Department of Transportation. As a result, there has been a major push to use hands-free technology while driving. However, a new study from AAA found that using in-vehicle information systems is associated with moderate to high levels of cognitive distraction. As a result, automakers and tech companies will have to look for innovative ways to connect the consumer while in the car, while also ensuring safety. One such way, which we discuss in-depth in our Connected Car report, is through increased safety measures, such as lane departure warnings.
3. **Greater awareness of connected car options.** In the past two years, the search term "connected car" has continually risen in Google Keywords, peaking in October 2015, indicating a steady rise in consumer awareness of connected cars. In particular, CarPlay and Android Auto are some of the most searched connected car terms we analyzed. This suggests that technology companies, like Apple and Google, will help increase consumer awareness and demand for connected car technology. In addition, many carmakers have begun advertising campaigns featuring in-car connectivity. We discuss a few of these campaigns and their importance below.

Similarly, there has been an increase in the willingness to pay for a subscription for connected car services.

- Among recent car customers in Germany, the US, and China, 32% agreed they would be willing to pay for subscription-based connected car services, according to the McKinsey survey. That's up from 21% in 2014.
- Demand was particularly noteworthy in China, where 64% of Chinese car buyers said they would pay for such services, up from 24% a year ago. In the US, the share of car buyers willing to pay for connected car services doubled, from 13% to 26%.

A "subscription for connected car services" encompasses a broad range of possibilities. For example, it may include OnStar services, a paid application on the car dashboard, and more. However, we're particularly interested in this as it relates to paying a monthly fee for an added cellular connection to the car — similar to how a consumer pays for an added cellular connection to complementary devices, like tablets.



Embedded connections are becoming the norm in cars. AT&T added 2.7 million cars in the US in the first three quarters of 2015 — that's 43%

of the 6.3 million cars sold by its eight connected car partners (GM, Ford, Audi, BMW, Tesla, Nissan, Volvo, and Subaru) during that time, according to Motor Intelligence, as reported by the Wall Street Journal. In total, AT&T has 5.8 million cars connected to its network. For context, AT&T defines connected car "subscribers" as the number of cars sold on a wholesale arrangement, meaning the car comes with an embedded connection. **This means 43% of cars sold by the eight automakers have an embedded connection.** This does not reflect the number of drivers paying a monthly plan for added data in their car.

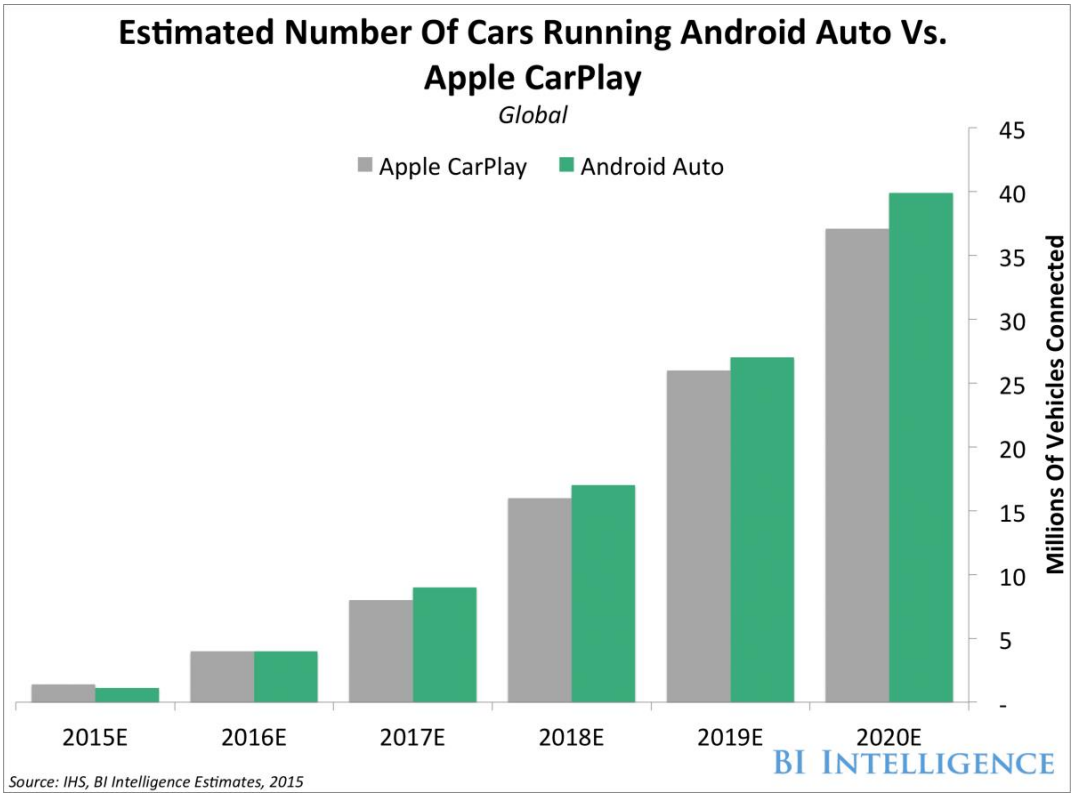
Although AT&T does not break out connected car consumer subscribers, or people who convert to paid subscriptions after their free trial expires, the company has told us that postpaid connected car subscribers are growing. There are two primary reasons why consumers may be willing to pay for an added data plan for their car:

- **Multiple devices needed to be connected.** Many automakers have leveraged their cars' embedded connection to offer an in-vehicle wireless hotspot. For example, Audi, Land Rover, Jaguar, Buick, and more offer Wi-Fi hotspots on select models. We asked multiple automakers why consumers would want a wireless hotspot in their car in lieu of using their smartphone for data. According to the automakers, a car's hotspot provides a stronger internet connection, in addition to supporting multiple devices simultaneously. This is particularly helpful for a family using tablets or laptops, as well as executives working on the road while being driven.
- **High data rates.** The most desired connected car features, which are also the features that consumers use the most, tend to vary between streaming music and navigation services. These features consume large data loads, which can drain a consumer's existing cellular phone data plan. For example, a Spotify stream of 160 kbps can eat through 70 MB per hour. The average American spends 101 minutes per week in their car, according to a Harvard Health Watch survey, which means they could use 4 GB of data per month on streaming music just while in the

car. Accordingly, telcos offer monthly plans and data packages that consumers can purchase for their car. The plans closely resemble wireless tablet subscriptions, for which long-term contracts are not required. Rather, they function more on a pay-as-you-go basis, where consumers can use the data only if and when they need it.

The importance of Apple and Google

In May, we released an extensive report on both Apple CarPlay and Android Auto. In the past six months, the automakers haven't released any drastic updates to the software. However, many automakers have announced integration plans for the software platforms. For example, Chevrolet, announced it would support both Apple CarPlay and Android Auto in 14 of its 2016 models, including the 2016 Corvette, Malibu, Suburban, Impala, and Volt.



Recognizing consumer demand for cross-platform in-car systems is crucial for automakers. We expect there will be a growing emphasis to offer the extended mobile ecosystems of both Android and iOS in the car so that users can always remain connected to their platform of choice.

- 61% of consumers believe it's either essential or important that their car have the same operating dashboard as their phone, according to an Accenture survey.

Globally, Android accounts for approximately three-quarters of smartphone market share, while Apple makes up about one-fifth. However, in the US, the market between Android and iOS is fairly evenly split. If automakers that are partnered with only Apple or Google remain exclusive, they could lose out on auto sales from those who are more loyal to their mobile device provider than their car company.

We discuss what the benefits are for both Apple and Google in our full Apple CarPlay and Android Auto report»

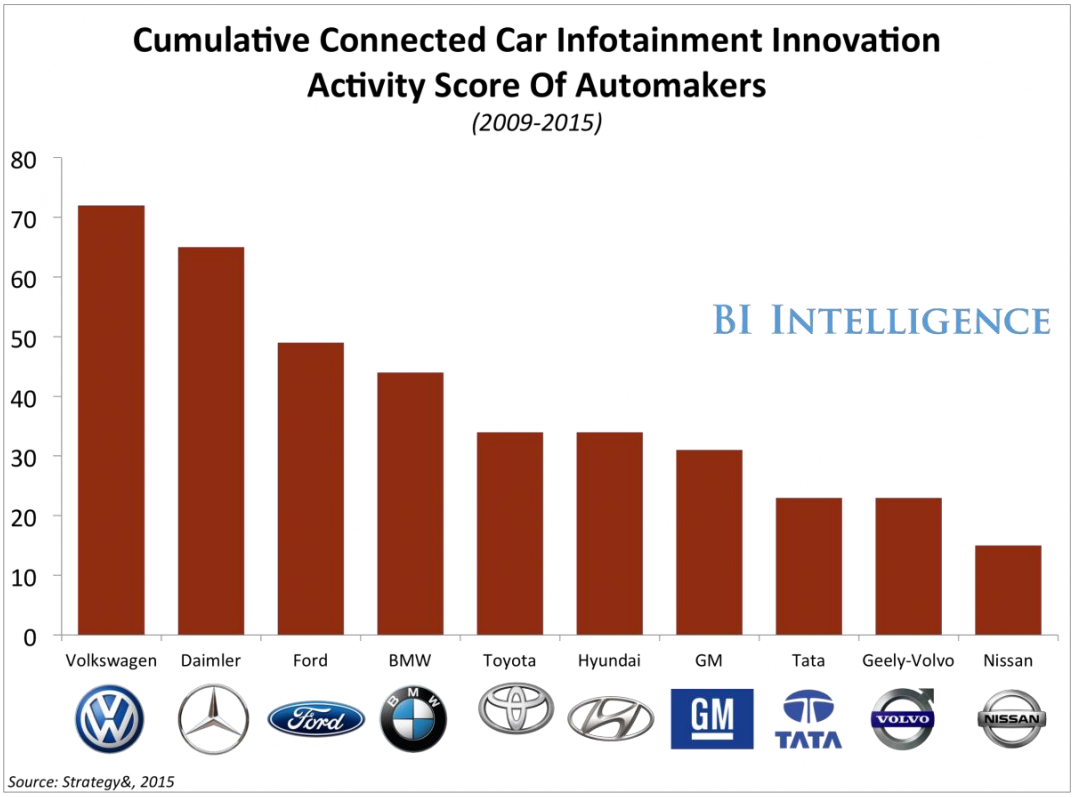
A few automakers have only announced partnerships with either CarPlay or Android Auto, which may relate to ownership of the data that their cars generate. Automakers likely are going to protect the data they collect closely and keep it from Apple and Google.

- Porsche, which is owned by Volkswagen, is only partnered with CarPlay because it believes Android Auto collects too much data about their driver, according to a MotorTrend report. Google later refuted MotorTrend's report, stating that it collects certain data points such as throttle position, oil temp, and coolant temperature, but did not refute that Porsche had denied Android Auto as a result of the data collected. Interestingly, Volkswagen is partnered with both.
- In August, BMW, Audi, and Daimler won a bid for Nokia's Here mapping service, which is arguably the most advanced mapping technology in the world, according to the Wall Street Journal. The newspaper reported that

the automakers intend to keep the technology out of the hands of Apple, Google, and Uber so they can continue to avoid losing control over their cars' information systems and the data they generate.

Automakers' connected car initiatives

Strategy&, together with Das Auto Institut, combed through annual statistics on infotainment innovations and created an index scoring automakers by how innovative their infotainment systems were each year. The firm then compounded the results, which are reflected in this chart. Volkswagen, which owns Audi, ranked the highest, followed by Daimler and Ford. Volkswagen and Daimler accumulated the bulk of their scores between 2009 and 2012. However, Volkswagen garnered a higher-than-average score for infotainment innovation in Q1 2015.



Volkswagen and Ford have partnered with both Android Auto and Apple CarPlay, while Daimler, which primarily sells Mercedes-branded cars, has only announced a partnership with CarPlay.

- **Volkswagen was rocked by a major emissions scandal this summer, but it remains one of the leading infotainment providers.** The company offers Car-Net App-Connect, which features Android Auto, CarPlay, and Mirror Link, available on many of its models. VW also has begun an advertising campaign in the US that features Android Auto and many of its capabilities.
- **Mercedes, owned by Daimler, boasts COMAND infotainment, which provides apps for the user.** Mercedes offers multiple apps including navigation, phone, and even a web browser. In addition, COMAND integrates a few external apps, such as TuneIn, Facebook, and Yelp.
- **Ford is focused on its proprietary Sync 3 infotainment system, which houses many apps including navigation, an ambient lighting mode, phone calls, and more.** Sync 3 has integrated Siri Eyes-Free to connect the driver's iPhone to the infotainment dashboard to give hands-free commands that play over the car's speakers. This is different from CarPlay, which is a dashboard operating system integrated into the current dashboard. Siri Eyes-Free just enables the user to make calls, texts, and basic functions, whereas CarPlay has a separate interface and has app integration. The company has announced that it will integrate CarPlay and Android Auto, but has made no definitive plans.

Connected car barriers

For consumers, the primary barrier is the high cost of adding a connected infotainment package when purchasing a new car and paying an ongoing subscription fee for the connection. For example, BMW has an embedded 3G Connected Drive system that comes complimentary in some BMW models, such as the BMW i3. If it doesn't come standard, however, it can be costly to have these systems installed, depending on the model and negotiated dealer price. A full system has been reported to cost £1,890 on average in the UK, or about $3,000.

In addition, there is often a subscription cost for wireless data. About one-third of consumers in Germany, the US, and China are willing to pay for connected services on a subscription basis. Although this has grown since last year, the percentage of people willing to pay for such services is low.

- AT&T recently announced it is nearly ready to launch NumberSync, a feature that enables the user to use one phone number across all devices that draw upon the same data plan for $5 or $10 a month. Glenn Lurie, CEO of AT&T Mobility, told Recode that NumberSync is likely going to show up in the connected car. If AT&T is able to keep the cost of connecting a device to a shared data plan down, it could be fairly successful in adding more connected cars to its subscriber base, which again AT&T has told us is growing.

Security: In August, hackers succeeded in accessing a Jeep Grand Cherokee via its infotainment center's radio and then control the car from up to a mile way. In response, Fiat Chrysler sent over-the-air and USB plugin updates to 1.4 million of its affected cars. However, carmakers are not doing enough to prepare for the possibility of security hacks.

- 75% of automakers do not have a countermeasure strategy in place in case their vehicles are hacked, according to a McKinsey survey. Similarly, only 30% work with "white-hat" hackers that look for vulnerabilities

within their in-car systems but don't intend to maliciously exploit the vulnerability; instead, they let the automaker know about the vulnerability.

THE BOTTOM LINE

- **Consumer demand for in-car technology has significantly increased over the past year.**
- **The increase is due to consumers seeking to be constantly connected, greater awareness of connected car offerings, and governmental restrictions mandating hands-free modes of communication.**
- **Entertainment features provided by the car's infotainment center, comprising a Wi-Fi hotspot, applications, and more, will generate $15 billion in sales in 2021, up from $7 billion in 2016, according to Strategy&.**
- **AT&T has seen a steady growth in connected car net adds in the past year, adding approximately 43% of the total cars that their eight partners have shipped in the US during the first nine months of 2015.**
- **Consumers and automakers are still worried about the vulnerabilities added internet connection creates.**

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