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The Apple Carplay And Android Auto Report: How the connected-car platforms work, and where their opportunities lie

John Greenough | May 05, 2015



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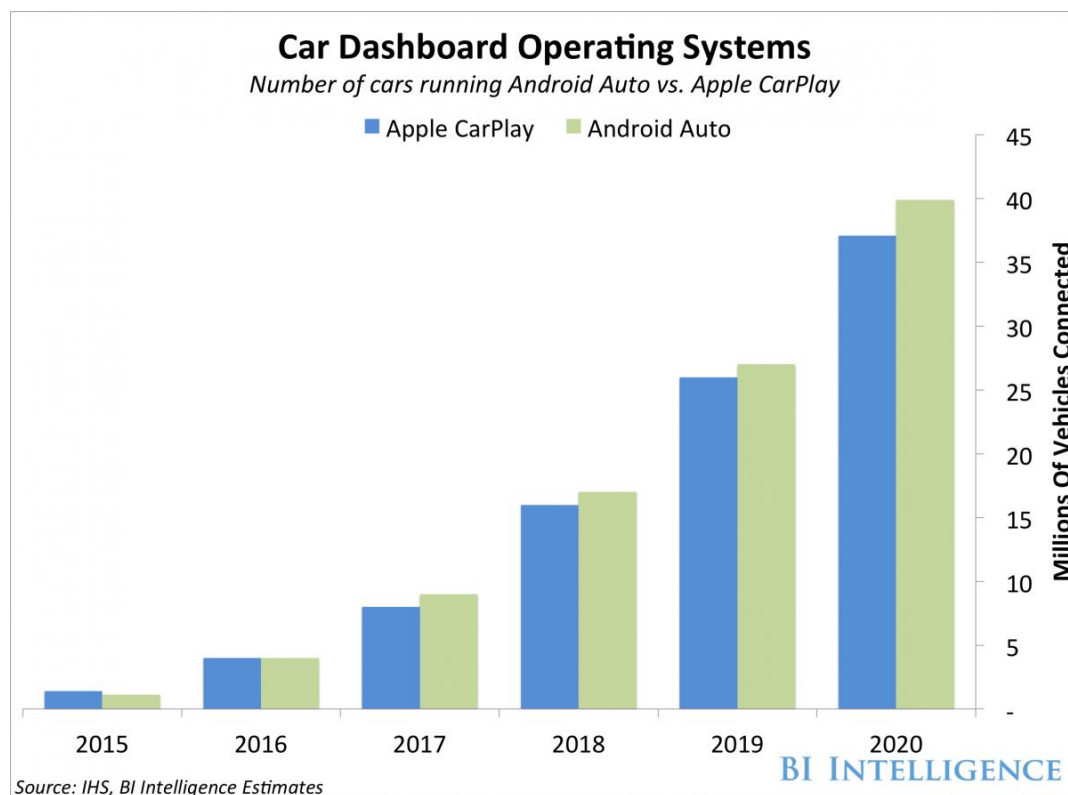
Key Points

- **The connected car is one of the most important new digital platforms, and it's becoming a critical battleground for Google and Apple.** Of the 220 million total connected cars on the road globally in 2020, we estimate consumers will activate connected services in 88 million of these vehicles.
- **Apple's CarPlay and Android Auto, the two companies' operating-system extensions for the car, enable drivers to run a selection of their smartphone apps on the car's infotainment center.** By 2020, nearly 40 million cars will be running Android Auto and 37 million will be running Apple CarPlay. For now, though, CarPlay is in the lead.
- **CarPlay and Android Auto have very different interfaces but provide similar capabilities.** They allow users to control a selection of apps via voice command and make other features available on the infotainment screen.

- **Both systems connect to the smartphone's native apps and offer an additional selection of third-party apps.** CarPlay and Android Auto will be especially useful for expanding the reach of each platform's music streaming and mapping apps.
- **There are a number of benefits to Apple and Google in creating these in-car operating-system extensions.** The two companies can deepen brand loyalty, earn additional revenues from digital goods and ads, and acquire more information on consumer behavior in the car.

[Download the charts and data in Excel »](#)

Introducing Android Auto and Apple CarPlay



Apple and Google will soon battle for platform share in yet another major hardware category: the car. Both companies have developed operating-system

extensions for the dashboard: Apple's CarPlay and Google's Android Auto. Apple and Google announced the new platforms last year, and rollouts of cars that use these systems have already begun.

It's no surprise that two of the biggest consumer-facing tech companies would be looking toward the car as an important avenue for growth. Connected cars that run digital services will be an enormous market.

- Of the 220 million total connected cars on the road globally in 2020, we estimate consumers will activate connected services in 88 million of these vehicles.
- About 88% of these cars will be running either Android Auto or Apple's CarPlay, based on IHS' estimates for the systems. *(We provide more analysis of projections for the Apple and Google systems in the next section.)*

Given how much time people spend in their cars every day, this presents an enormous opportunity to capture a larger share of consumers' digital time-spend. The top apps that people are likely to use in the car include mapping, entertainment, music, and messaging.

In the most basic terms, both CarPlay and Android Auto display a selection of a user's smartphone apps on the car's infotainment center. The infotainment center is the center console that displays music, navigation, and more.

The systems are embedded software platforms that act as extensions to the car's infotainment features, such as GPS-powered navigation, radio, and more. Through the systems, users can operate their phones' native apps that power text messages, phone calls, and navigation without picking up the phone. In addition, the user can choose from a selection of third-party apps that each company has teamed up with.

Connected-car features have been around since well before CarPlay and Android Auto. For example, navigation systems like Garmin have been around for more

than a decade. What differentiates CarPlay and Android Auto is the systems provide access to more connected apps via the dashboard and integrate a wider variety of features into the apps available. For instance, the Google Maps app on Android Auto connects to the user's Gmail account and can populate a list of addresses from that account.

Right now, Android Auto and Apple CarPlay are free. But to have either system, the iPhone or Android smartphone owner needs a car that has a compatible infotainment center. An infotainment center sometimes comes standard in cars, but often it's an added feature that costs between \$700 and \$3,000, depending on the model and carmaker. Additionally, there are many after-market systems that users can buy and install in their older cars, such as those made by Pioneer, which run both Android Auto and CarPlay. An additional cost is that CarPlay and Android Auto rely on the smartphone user's data plan, and, depending on how much data someone uses, adding connectivity in the car could drive up a user's data plan cost.

It's important to note that while many people say that BlackBerry and Microsoft are competitors to Android Auto and Apple's CarPlay because of their integration in connected-car systems, that's not really the case. BlackBerry and Microsoft provide the back-end systems that carmakers take and build their infotainment systems on top of. For example, Ford's Sync infotainment system is built on top of BlackBerry's QNX back-end system. It's very similar to how many companies take the Android platform and manipulate it to build custom operating systems (also known as "forking" Android). Apple's CarPlay and Android Auto can be thought of as extensions built on top of BlackBerry, Microsoft, or other similar back-end systems.

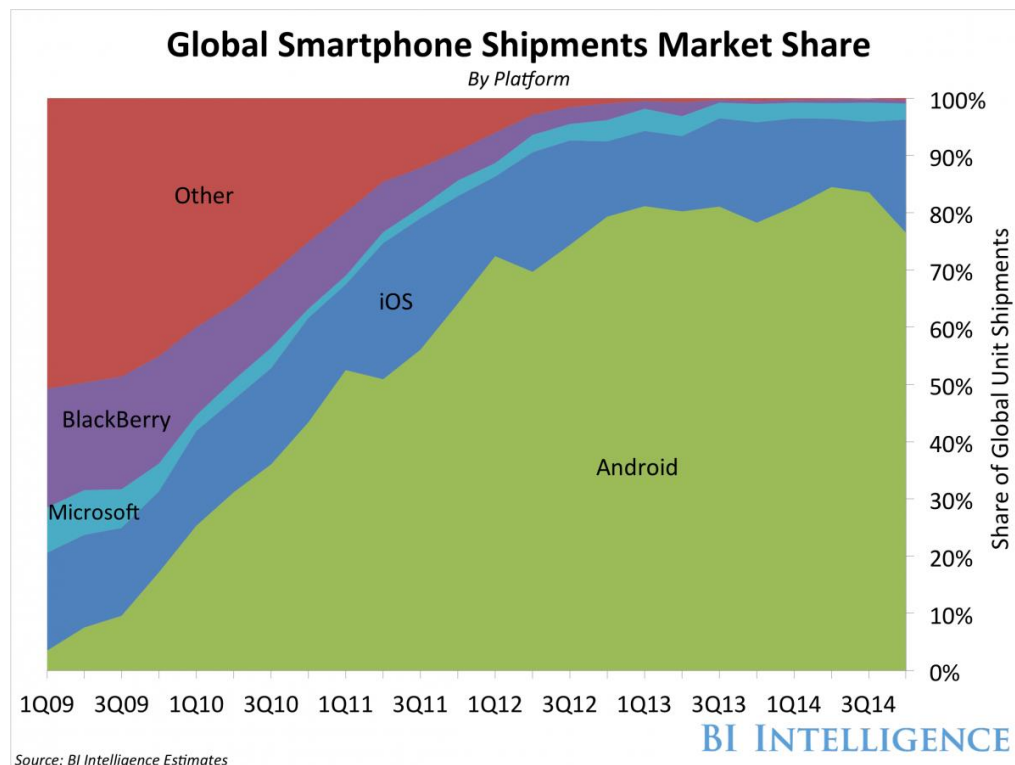
Sizing the potential for Apple CarPlay and Android Auto

For now, installation of the two connected-car systems is still relatively small. But growth will tick up fast.

- By the end of 2015, IHS expects that nearly 1.4 million cars globally will have CarPlay installed.
- Similarly, the research company expects Android Auto will be installed in 1.1 million cars by the end of this year.

While competition will remain close, Android Auto is expected to pull ahead by the end of 2020.

- Nearly 40 million cars will be using Android Auto at the end of five years, while 37.1 million will be running CarPlay, according to IHS estimates.
- System installations in aggregate will grow at a staggering 98% five-year compound annual growth rate.

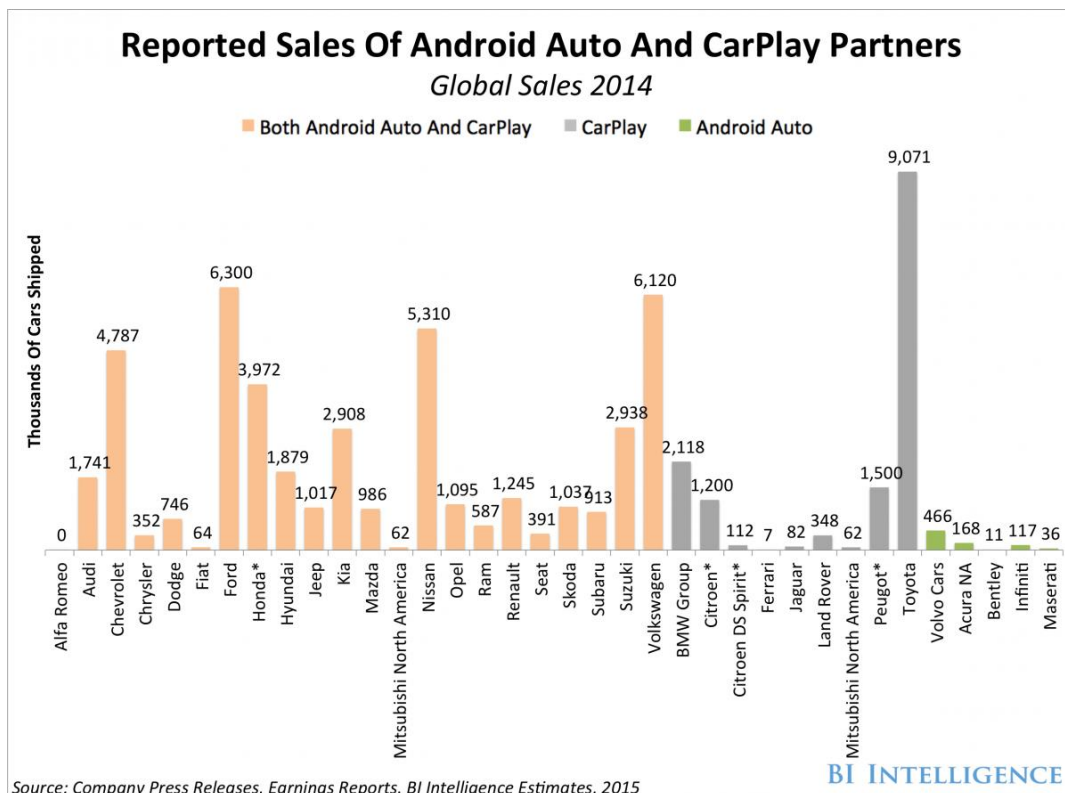


The close competition between Android Auto and Apple CarPlay stands in contrast to platform share in the global smartphone market.

- Android dominates the global smartphone market, with about 75% of the global market.
- Apple has only about a 15% share.

However, in the US, there are roughly the same number of Android and iOS users. This will greatly benefit Apple's CarPlay in the near term.

In our view, the connected car will likely come to more developed nations first, including the US, and will come to emerging markets only as the price drops and wireless capabilities are expanded. Given the high number of Android users abroad, and especially in emerging markets, Android Auto will slowly begin to edge out CarPlay. But its lead will be much narrower than in the smartphone market overall for many years to come, especially because the cost of a car is prohibitive to many in emerging markets, whereas there are lots of cheap smartphones.



Many connected cars support both CarPlay and Android Auto. However, there are some carmakers that have entered into deals with only one or the other company. For example, BMW is teamed up only with CarPlay, and Acura is partnered only with Android Auto.

Apple and Google have teamed up with about 36 carmakers so far in aggregate to offer Android Auto and Apple CarPlay. Twenty-two carmakers are partnered with both Apple and Google. In addition, Apple has nine partners that do not have relationships with Google, while Google has five partners that do not have partnerships with Apple.

These partnerships do not mean that the systems are already installed in a given car model yet. That is likely to come in the next year or two.

At the recent Apple Watch event, Tim Cook said that 40 car models would be released this year that will have CarPlay integrated, up from just a few models right now. Google has not announced how many models Android Auto will run on this year, but because of the large overlap of partners and the ability to run in many of the same cars as CarPlay, Android Auto is expected to be available in an equal number of new cars by the end of the year.

Following is a look at what some of the leading connected-car makers are doing with CarPlay and Android Auto.

- **Audi.** Audi said it plans to integrate Apple's CarPlay into some models in 2015, and it will integrate both CarPlay and Android Auto into all of its models by 2016. Today, only the Audi Q7, Audi's luxury crossover, has both Android Auto and Apple's CarPlay. In 2014, Audi [sold](#) 62,166 Q7's.
- **BMW.** BMW said 95% of its cars shipped this year would have internet connectivity. While the company said it is partnered with CarPlay, we haven't heard of any models that are compatible. However, some have speculated that the BMW i-series would have CarPlay integration.
- **Chevrolet.** Today, Chevrolet is the only General Motors brand that's listed as a partner of CarPlay and Android Auto. Chevrolet's 2016 electric

Volt will be the company's first model with CarPlay and Android Auto [compatibility](#).

- **Hyundai.** Hyundai was one of the first major automakers to bring Apple's CarPlay into one of its models last year, after releasing the Hyundai Sonata with CarPlay [compatibility](#). Now the Hyundai Sonata has both CarPlay and Android Auto.

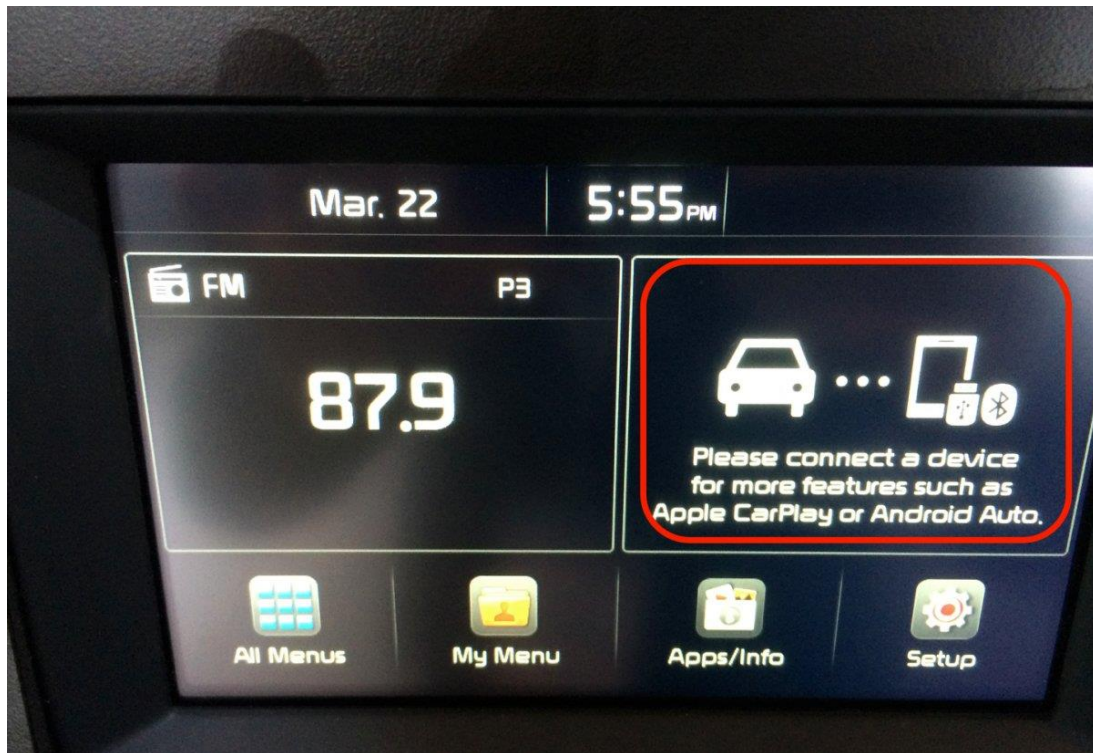
Comparing Apple CarPlay and Android Auto

We previewed both systems at the New York International Auto Show and found a lot of similarities between Apple CarPlay and Android Auto — and some key differences.

Connecting. CarPlay and Android Auto users connect their iPhone or Android Phone to the respective connected-car system via a USB cord or Bluetooth.

To run either CarPlay or Android Auto, the systems operate via a tethered internet connection (e.g., 4G, LTE, 3G). A tethered connection relies on internet connectivity provided through the user's smartphone and is not powered by an in-car SIM card. This means that users who connect their phones to CarPlay or Android Auto will use their mobile data plan to power the connected car.

We haven't seen an embedded connection power these systems, but we expect that with added embedded SIM cards in cars, automakers may offer that option in the future. Overall, we expect embedded connections in the connected car to win out over tethered connected in the next few years.

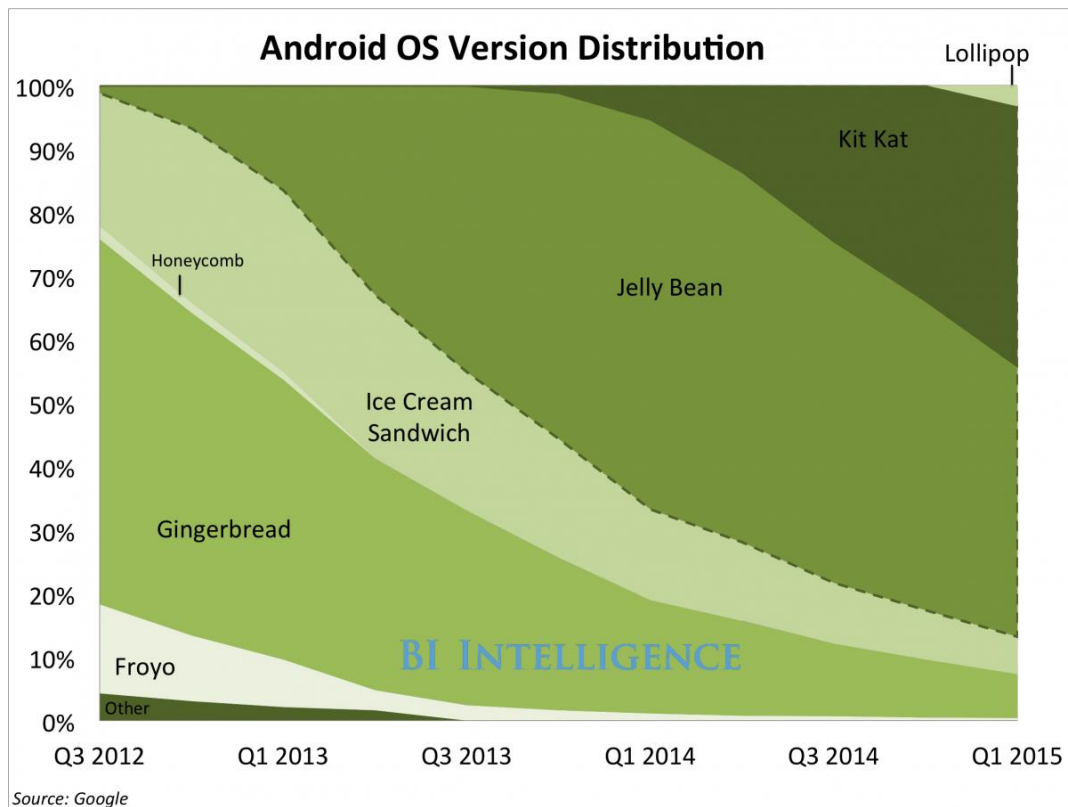


An infotainment-screen prompt tells users to connect an iPhone or Android to launch CarPlay or Android Auto.

Compatibility. In the case of the iPhone, the user must be running an iPhone 5 or newer to use the CarPlay system, while for Android Auto, the user must have Lollipop 5.0 or higher installed on an Android phone.

This is a big advantage for CarPlay. About 60% of all active iPhone users are on the iPhone 5 or higher. Android, on the other hand, has brought only 3.3% of its global user base onto the Lollipop platform, so there is a much smaller addressable market for Android Auto, at least until more Android users upgrade to its newest platform.

Another key difference at setup is that the user is required to download a specific Android Auto app to the phone, while Apple's CarPlay does not require a standalone app to work.



Display. Once connected, the CarPlay system displays a familiar app-based interface featuring the phone's native apps, including phone, music, maps, and messages, on the car's infotainment screen.

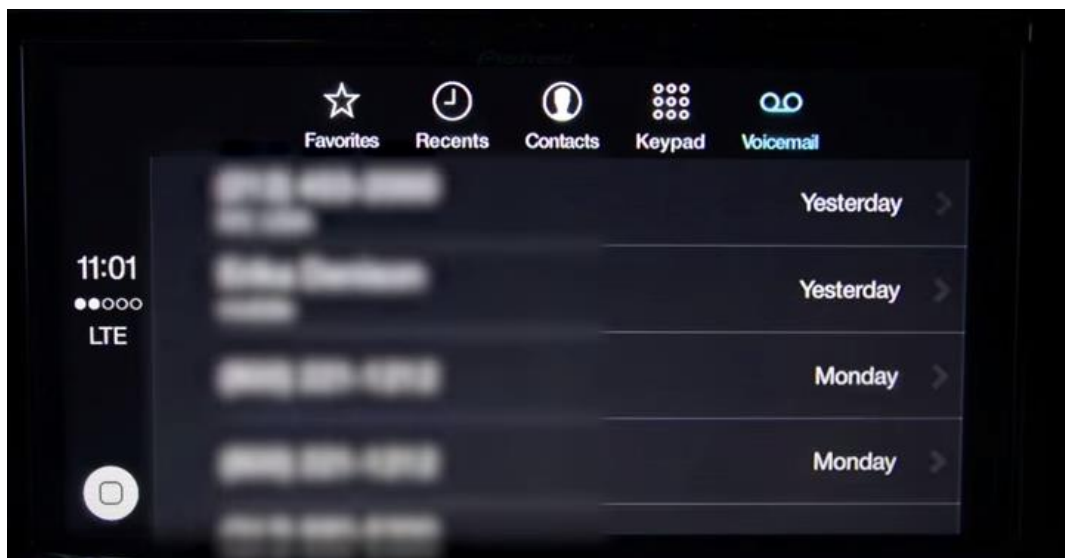
The CarPlay system mirrors the common features of the iPhone's native apps closely. For example, in the Phone app on the infotainment screen, CarPlay displays the Favorites, Recents, Contact, Keypad, and Voicemail tabs, which are also found on the iPhone's Phone app.

On Android Auto, the interface is more distinct from an app-based interface.

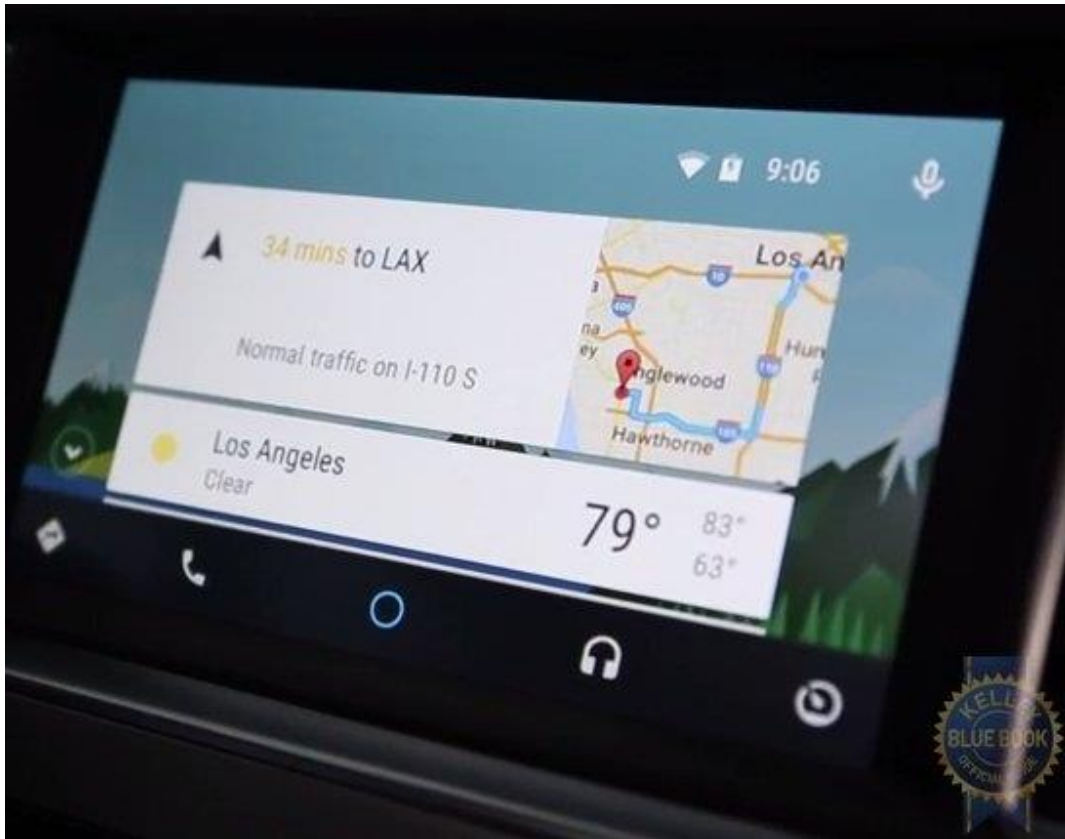
Android Auto provides five tabbed applications anchored on the bottom of the screen: Navigation, Phone, Home screen, and Music. Touching the Home screen (circle icon) brings you to a list of status updates of the recent actions Android Auto has taken. This can include recent directions, current music, and more. The display also provides a weather update. In addition, at the top of the screen is a Google Now button, Google's voice-automation tool.



A CarPlay home screen.



The CarPlay Phone app.



An Android Auto home screen.

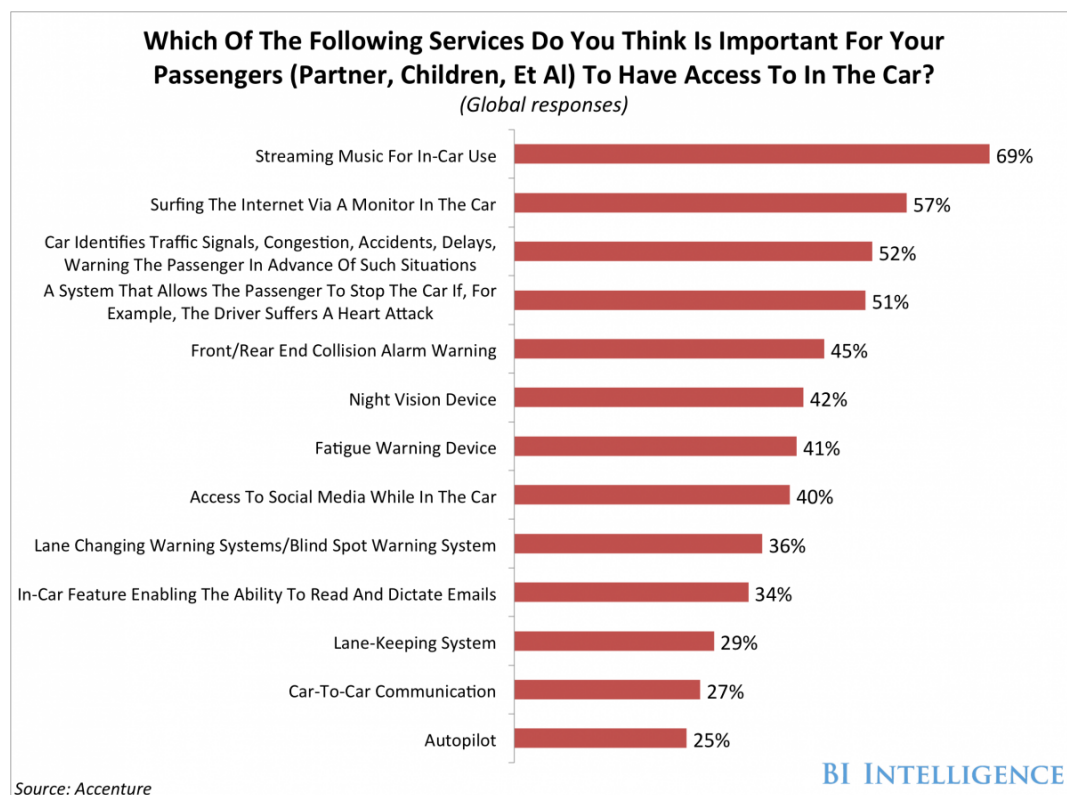
Voice-Control. Both systems rely heavily on voice control to operate the car's connected system. CarPlay relies on Siri, while Android relies on Google's voice-assistant software Google Now. Both CarPlay and Android Auto can be launched by voice command or by pushing the Siri or Google Now button on either the steering wheel or infotainment screen.

Both systems provide voice controls similar to what's available on the phone version of Android and iOS. For example the user could say through either system "Text Alex and say 'How are you?'" or "Call Alex." Drivers can also ask for their texts or voice mails to be read aloud. In addition, a phone call can be made hands-free and play through the car's speakers and users can dictate texts by voice command.

On both CarPlay and Android Auto, there are still lots of instances where the driver would need to touch the screen. For example, to access

the Favorites tab in CarPlay's Phone app on the infotainment screen, the driver needs to click the Favorites button on the screen. There are many features where this is required, but the basic necessities one would want on their phone (e.g., text messaging, phone calls, music, maps) can be controlled through Siri or Google Now. Once users need to find the name of a contact or see a recent call, they must tap the screen.

Notably, once connected, Android Auto does not allow the user to access their phone. This is by design, because Android doesn't want the user to pick up their smartphone while driving. You can still pick up and use your phone while CarPlay is connected.



Music. Apps for streaming music are one of the most important aspects of both the CarPlay and Android Now systems, and the music services in each system could see a big boost from their integration. One of the top desired features among consumers is the ability to stream music while in their car.

CarPlay's best attribute is its native music integration. The native Music app enables the user to listen to music stored on their phone, similar to listening to it on an iPhone. Through the app the driver can purchase new songs directly from iTunes using controls on the infotainment screen. Additionally, the app includes iTunes radio — a feature that was released in iOS 7 and acts as a music radio streaming service that plays playlists selected by Apple.

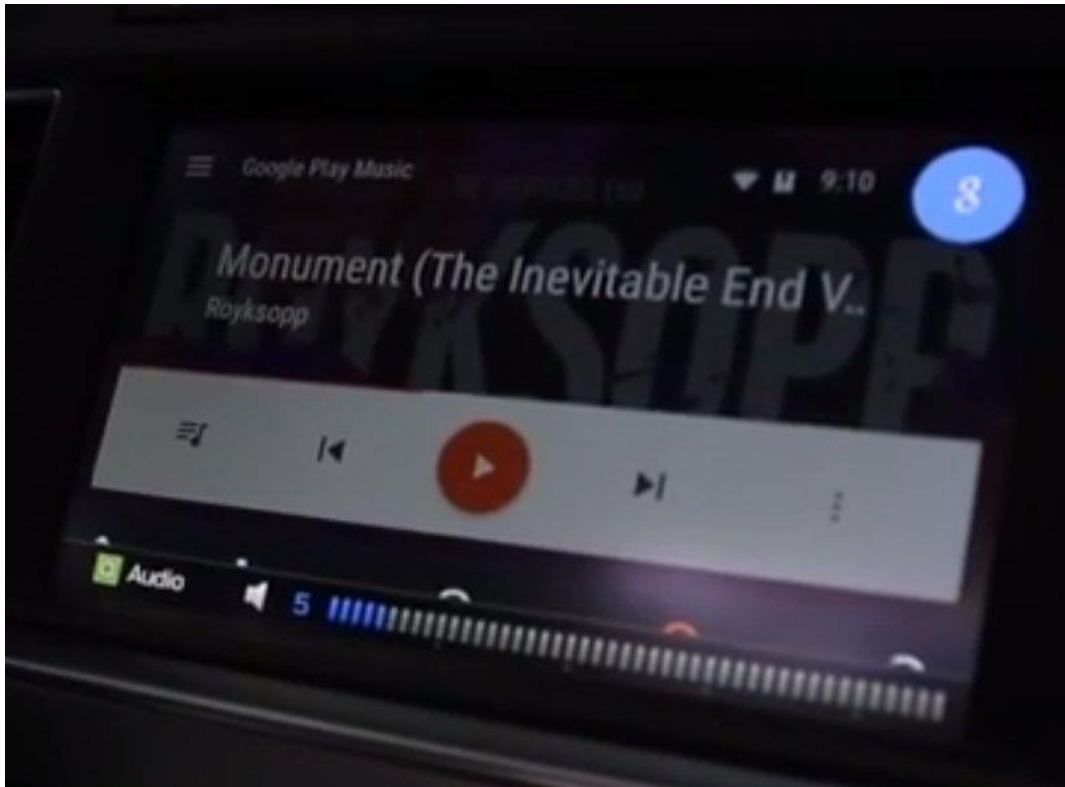
- Currently, 16% of US consumers use iTunes Radio, making it the third-most-used music-streaming service, behind Pandora (45%) and iHeartRadio (17%), according to an Edison Research [survey](#). iTunes Radio is a free service and earns revenues primarily off of ads, similar to Pandora and iHeartRadio. iTunes Radio could see a big boost in usage from its integration in CarPlay.
- Apple's services revenue, which includes iTunes and iTunes radio, has become increasingly important to the company. Revenue from this segment has been steadily trending upward over the past few years, and grew 9% year over year in Q1 2015.

CarPlay has four third-party music apps: Beats Music, Spotify, Rdio, and iHeartRadio. It's notable that Pandora, by far the most popular streaming-music service, isn't included, and Apple may see CarPlay as a way to grab share from the service and bring users to iTunes Radio.

Google Play is Android Auto's go-to music source. Google Play Music lets users stream 30 million songs and playlists. They can also purchase songs through the service and play any music stored on the phone.

Google Play All Access is used by 3% of US consumers, according to the Edison Research service.

There are three nonnative apps that play music on Google Now: Spotify, TuneIn, and iHeart Radio. As with CarPlay, Pandora is not available on Android Auto.



Android Auto Google Play Music.

Maps. Navigation services are another extremely important aspect of any connected-car service, and the popularity of these systems may rest, in part, on how successful each is at integrating mapping systems.

Apple's Maps feature is the mapping service available on CarPlay, and it operates similarly to the iPhone Maps app. As in the phone app, it's able to display directions and show real-time traffic information through Tom-Tom, the back-end GPS system it relies on. The app can show information about the destination (like a business' phone number) and connect to reviews on Yelp.

Additionally, Maps connects to the user's iPhone Mail accounts and can populate addresses from these accounts into the destinations. Notably, Apple does not offer a nonnative map app, like Google Maps or Waze, to be displayed on CarPlay. This should give Apple Maps an advantage in CarPlay-equipped cars, but may cause frustration among users who already have a strong preference for another third-party mapping service.

- 44% of US adult smartphone users used the Google Maps app in February, compared to 22% who used Apple Maps, according to [comScore](#).



Apple Maps on CarPlay.

On Android Auto, Google Maps connects directly to the user's Google account and shows recent destination searches and addresses received in emails within the Google Maps infotainment screen interface.

Like Apple Maps for CarPlay, Android Auto includes detailed information about a location as available, shows traffic information, and provides turn-by-turn navigation.



Google Maps on Android Auto.

While Google Maps is the only mapping app available on Android Auto for now, the head of Google-owned Waze Noam Bardin has speculated that Waze will eventually be available on the connected-car system.

Third-party-app integration. There are nine third-party apps compatible with CarPlay, according to the CarPlay website. Four of the nine apps are music-related, including Beats Music, Spotify, Rdio, and iHeartRadio. The other apps are also audio-based and include Podcasts, Stitcher, CBS Radio News, Overcast, and Umano. For these apps to be mirrored on the CarPlay system, users need to have the apps downloaded on their phone.

MacRumors has reported that Apple chooses the apps that go on CarPlay similarly to how they choose the apps that go on Apple TV. Some of the choices, like Beats Music, which is owned by Apple, seem obvious. However, Apple has

also allowed Beats Music and its native iTunes Radio to compete with Spotify, Rdio, and iHeartRadio in the car.

Android Auto [advertises](#) 16 third-party apps. Of these, seven are apps built for messaging and phone calls. These include ICQ Messenger, Talk Ray, Threema, Skype, textPlus, Kik, and Text Me! It's worth noting that CarPlay offers no third-party messaging apps/phone apps, and requires the user to use the native Phone/Messages app for this type of communication.

The messaging apps offered by Android Auto, however, have limited popularity. The most popular messaging apps, like WhatsApp and Facebook Messenger, are not available on the Google system. Additionally, there are a few news apps on Android Auto, including NPR and Umano, and a few podcast apps like Stitcher and Podcast Joyride.

The benefit for Google and Apple

Apple and Google stand to benefit from their in-car infotainment systems in a few ways.

Both companies can develop **deeper brand loyalty** with their audience by connecting with them in a new arena and turning the car into another ecosystem for each company's software. Then, when it comes time to purchase a new smartphone or other device, the user has another reason to stick within the same OS ecosystem that is familiar and intuitive.

This may be why Apple and Google are allowing entertainment apps (such as Spotify and iHeartRadio) that have a high number of monthly active users (MAUs) onto CarPlay and Android Auto. They can then leverage interest in those apps into use of their nonentertainment native apps, such as each platform's mapping apps.

There is also the straight **revenue gain** available through selling digital goods like music through Google Play and iTunes in the car. As the systems are opened up to more third-party apps, there may even be an opportunity to enter revenue-sharing agreements with some of these platforms.

Apple has not publicly released any fees involved with nonnative CarPlay apps, but we believe that Apple could collect a percentage of the revenue earned off of CarPlay use. For example, Apple is [rumored](#) to collect 15% of the monthly revenue from HBO Now, Hulu, and Netflix sign-ups if the person signs up for the service through Apple TV. It's possible the Apple has a similar system in place, in which they take a small percentage of either the ad revenue or subscription revenue from the apps on CarPlay.

Finally, the connected car provides a new conduit for **information about consumer behavior**. Google is largely a data company, and the car now acts as a lens through which to collect information about Android users while in the car. Google will be able to learn about the Android user's driving habits and leverage that information into specific Google ads.

In the future, Google could integrate advertising based on behavior in the car, similar to the way the Waze app on the phone integrates third-party location-based advertising.

Apple is also likely trying to collect data from CarPlay. But many around the automotive industry believe that Apple will not only use the data for iAd, Apple's advertising platform, but also to learn more about the car industry so that the company is prepared to make its own car in the future. An Apple Car, which Apple is [rumored](#) to be working on, could be put into production in the next five years.

THE BOTTOM LINE

- **The connected car is one of the most important new digital platforms.** Of the 220 million total connected cars on the road globally in 2020, we estimate consumers will activate connected services in 88 million of these vehicles.
- **Apple's CarPlay and Android Auto enable drivers to run a selection of their smartphone apps on the car's infotainment center.** By 2020, nearly 40 million cars will be running Android Auto and 37 million will be running Apple CarPlay.
- **CarPlay and Android Auto have very different interfaces, and, most important, they offer the driver app control by voice command.**
- **Both systems connect to the smartphone's native apps and offer an additional selection of third-party apps.** CarPlay and Android Auto will be especially useful for expanding the reach of each platform's music-streaming and mapping apps.
- **There are a number of benefits to Apple and Google in creating these in-car operating-systems extensions.** The two companies can deepen brand loyalty, earn additional revenues from digital goods and ads, and acquire more information on consumer behavior in the car.

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