

Questions for the Record from the Honorable David N. Cicilline, Chairman, Subcommittee on Antitrust, Commercial and Administrative Law of the Committee on the Judiciary

Questions for Mr. Kyle Andeer, Vice President, Corporate Law, Apple, Inc.

- 1. Does Apple permit iPhone users to uninstall Safari? If yes, please describe the steps a user would need to take in order to do so. If no, please explain why not.**

Users cannot uninstall Safari, which is an essential part of iPhone functionality; however, users have many alternative third-party browsers they can download from the App Store.

Users expect that their Apple devices will provide a great experience out of the box, so our products include certain functionality like a browser, email, phone and a music player as a baseline. Most pre-installed apps can be deleted by the user. A small number, including Safari, are “operating system apps”—integrated into the core operating system—that are part of the combined experience of iOS and iPhone. Removing or replacing any of these operating system apps would destroy or severely degrade the functionality of the device.

The App Store provides Apple’s users with access to third party apps, including web browsers. Browsers such as Chrome, Firefox, Microsoft Edge and others are available for users to download.

- 2. Does Apple permit iPhone users to set a browser other than Safari as the default browser? If yes, please describe the steps a user would need to take in order to do so. If no, please explain why not.**

iPhone users cannot set another browser as the default browser. Safari is one of the apps that Apple believes defines the core user experience on iOS, with industry-leading security and privacy features. As noted in response to Question 1, Safari is an “operating system app,” like the Phone, Camera and iMessage, which are designed to work together.

- 3. Does Apple permit iPhone users to set a browser other than Safari as the default browser for opening links clicked in apps that are pre-installed on Apple devices (e.g., Apple Messenger, Mail)? If yes, please describe the steps a user would need to take in order to do so. If no, please explain why not.**

No, for the same reason described in response to Questions 1 and 2.

- 4. Does Apple restrict, in any way, the ability of competing web browsers to deploy their own web browsing engines when running on Apple’s operating system? If yes, please describe any restrictions that Apple imposes and all the reasons for doing so. If no, please explain why not.**

All iOS apps that browse the web are required to use “the appropriate WebKit framework and WebKit Javascript” pursuant to Section 2.5.6 of the App Store Review Guidelines <<https://developer.apple.com/app-store/review/guidelines/#software-requirements>>.

The purpose of this rule is to protect user privacy and security. Nefarious websites have analyzed other web browser engines and found flaws that have not been disclosed, and exploit those flaws when a user goes to a particular website to silently violate user privacy or security. This presents an acute danger to users, considering the vast amount of private and sensitive data that is typically accessed on a mobile device. By requiring apps to use WebKit, Apple can rapidly and accurately address exploits across our entire user base and most effectively secure their privacy and security. Also, allowing other web browser engines could put users at risk if developers abandon their apps or fail to address a security flaw quickly. By requiring use of WebKit, Apple can provide security updates to all our users quickly and accurately, no matter which browser they decide to download from the App Store.

WebKit is an open-source web engine that allows Apple to enable improvements contributed by third parties. Instead of having to supply an entirely separate browser engine (with the significant privacy and security issues this creates), third parties can contribute relevant changes to the WebKit project for incorporation into the WebKit engine.

- 5. If a competing web browser seeks to introduce new features and security systems that would offer users enhanced privacy, would any restrictions imposed by Apple limit the competing web browser's ability to do so on iOS? If yes, please describe the restrictions that Apple imposes and all the reasons for doing so. If no, please explain why not.**

Please see the response to Question 4. On iOS, all apps that browse the web are required to use the appropriate WebKit framework and WebKit Javascript. This ensures that all browsers on iOS will have access to the enhanced security and privacy protections. It is not our experience that competing web browsers have typically offered enhanced privacy or security that would protect users as adequately as our WebKit protections.

- 6. Apple's Safari browser uses WebKit, the same browser engine that Apple policy requires competing browsers to use. Are there any WebKit functions that Apple allows Safari to use but that competing browsers are not permitted to use? If yes, please identify which ones and for each function describe all the reasons for not granting access to competing browsers.**

The following are examples of WebKit features that are not available to third-party browsers:

- WebRTC for videoconferencing is not supported for third-party browsers because Safari displays a prominent UI to make sure the user knows when a website is recording using the camera and microphone. Apple does not yet have a way to make this UI work in other WebKit clients.
- Service Workers is not supported for third-party browsers because Apple does not yet have a way to prevent abuse for an unintended purpose.

- Enabling Intelligent Tracking Protection is not supported for third-party browsers as Apple believes this privacy setting should be under user control.
- Fullscreen API is not supported for third-party browsers because Safari takes steps to prevent abuse of this feature by phishing and other security attacks that attempt to trick the user. Apple has not yet been able to generalize these protections for use by third-party browsers.

7. In its testimony, Apple stated that 84% of apps on the App Store “share none of the revenue they make from our store with Apple.” Please explain how Apple selects the 16% of apps that are required to share their revenue with Apple.

Developers, not Apple, decide whether to charge for their app and services, and this determines whether or not they pay a commission to Apple. If it’s a free app for which the user pays nothing to use or play, and the developer is otherwise monetizing the download of that app (*e.g.*, via ad revenue) the developer gets 100% and Apple gets nothing. Apple only charges a commission when a developer charges a user for a digital good or service delivered onto the device. These fundamentals of the App Store business model have been the same since the beginning of the App Store.

On the App Store many kinds of apps are offered with varying business models, the majority of which do not include the payment of any commission to Apple. It is up to developers to choose which business model is best suited for their apps:

Free: These are apps that users pay nothing to use or play. The developer chooses to make them free to the user. Apple generates no revenue from supporting, hosting and distributing these apps.

Free (Ad Supported): These apps are free for users to download, and the developer generates revenue from the advertisements in the apps. Apple generates no revenue from supporting, hosting and distributing these apps as well.

Physical Goods: These apps generate revenue for the developer from the sale of physical goods and services, such as purchasing clothing, delivering food or ordering a ride from a transportation service. Apple generates no revenue from supporting, hosting and distributing these apps.

Free (In-app Purchase): These are apps that users pay nothing to download, and typically provide some degree of use or play without any payment from the user. Users download these apps and have access to most of the experience, and they pay for additional digital features and content in the app with Apple’s in-app purchase (IAP) system. Developers pay Apple a 30% commission on payments received from the user for the purchase of these in-app digital features and content.

Paid: These are apps that customers pay for the first time they download the app, and then own the app in full. Developers pay Apple a 30% commission on the price paid by the user.

Subscription: These are apps that users subscribe to within the app or game on the App Store using Apple's IAP subscription system. Developers pay Apple a 30% commission on subscription fees received from the user in Year 1, and 15% for all successive years that the user remains a subscriber.

Subscription (Reader): These are apps where the user has subscribed to content outside of the app, not on the App Store. Apple honors these subscriptions, even when they originate elsewhere. Examples of these include books, music and TV apps. In these cases, the developer keeps all of the revenue they generate from bringing the customer to their app because the customer was not acquired via iOS. Apple generates no revenue from supporting, hosting and distributing these apps.

8. Please identify all the factors that Apple considers when determining whether it will allow an app to offer payment options other than Apple's own payment system and explain why and how each is considered.

A developer who wishes to sell digital content to an iOS user has several choices. First, a developer may choose to distribute digital content over the Internet or via a web-app, which are not subject to App Store terms and conditions, including its payment system. The developer, rather than Apple, dictates payment mechanisms and other terms and conditions for content sold over the Internet or through a web-app on iOS devices. Apple does not impose any terms or conditions on these transactions, nor does it receive any compensation. Some developers have opted to offer their content only through their own web apps and handle payment and billing themselves.

A developer may also choose to take advantage of the opportunities created by the App Store. Developers selling digital content via the App Store must utilize Apple's in-app purchase (IAP) payment feature, through which Apple receives its standard commission.

As noted previously, Apple does not realize any revenue from the vast majority of apps on the App Store, as the majority of activity on the App Store does not result in a commission to Apple and is therefore not subject to IAP.

9. Please identify the principles that Apple believes it must adhere to with regard to how it treats apps that compete with Apple's own apps and explain all the reasons why for adopting them.

Apple's incentives are to ensure that it offers consumers the widest selection of quality apps as possible, as this increases the attractiveness of Apple's ecosystem to consumers.

We provide here numerous examples of very successful apps on the App Store which compete with Apple apps. We have worked with many of these companies for years to help make them a success:

Mail: Apple offers Mail. On the App Store, users will find competitive mail clients that have been downloaded hundreds of millions of times. Examples: Microsoft Outlook, Google Gmail, QQ Mail, Yahoo Mail and dozens more.

Web Browsing: Apple offers Safari. There are a wide variety of browser apps on the App Store. Examples: Google Chrome, Microsoft Edge, Firefox, Yahoo, Yandex Browser and Duck Duck Go.

Maps: Apple offers Apple Maps. The App Store offers Google Maps, Waze, Yahoo Maps, City Mapper, NAVER Map, Maps.ME and Yandex.Navi.

Messages: Apple offers iMessage. On the App Store, users will find hundreds of messaging apps including WhatsApp, Facebook Messenger, Snap, WeChat, QQ, Microsoft Teams, Discord, LINE and Ding Talk.

Video Chat: Apple offers FaceTime. On the App Store, third-party video chat apps have had billions of downloads. Examples: Skype for Business, Google Hangouts, Zoom Cloud Meetings, Line, Dingtalk, Facebook Messenger and QQ.

Podcasts: Apple offers Apple Podcasts. On the App Store, there are dozens of podcast apps. Examples: Spotify, iHeartRadio, The Podcast App and Overcast.

Camera: Apple offers Camera. On the App Store, this is a vibrant category. Examples: Instagram, Snapchat, Obscura 2, Moment and Prime.

Notes: Apple offers Notes for note-taking. There are a number of prominent notes apps. Examples: Google Keep, Evernote, Wunderlist, Todoist, Bear, Notability, Post-it and Pendo Note.

iCloud: Apple offers iCloud. Users have many options for Cloud storage on the App Store. Examples: Google Drive, Microsoft OneDrive, Dropbox, Box and Verizon Cloud.

Music: Apple offers iTunes and Apple Music. There are many music apps on the App Store. Examples: Pandora, Tidal Music, Deezer, Spotify, Amazon Music, Google Play Music, YouTube Music, SoundCloud, iHeartRadio and Anghami.

Video: Apple offers iTunes and Apple TV. There are many video apps on the App Store. Examples: Hulu, Amazon Prime, HBO Now, Netflix, Ivi, YouTube, Hotstar, Sling TV and Tubi.

10. Does Apple believe that it is appropriate to enable its own apps to have functionality or features within iOS that Apple does not allow competing apps to use? If yes, please explain why. If no, please explain why not.

Apple has long believed that integrated product development, the marrying of hardware, software and services, results in the best products. Engineers work side-by-side to create the very best, and most secure, products on the market. Our development strategy results in a deeply integrated, almost seamless, product. It would be difficult, if not impossible, to offer the same level of access to third parties. These decisions reflect design and development decisions, not commercial decisions.

Apple has a strong track record of sharing the innovations and technologies it has created with third-party developers, including those that compete against Apple. This includes a variety of developer tools like ARKit, which helps developers build unparalleled augmented reality experience for users on iOS; and Core ML, enabling developers to take advantage of our CPU, GPU and Neural Engine to integrate the latest cutting-edge machine learning models into their apps. Developers can also take advantage of Siri through the use of Apple's SiriKit framework. Other examples of Apple technology to which developers have been provided access include: Face ID, Touch ID, 3D Touch, Force Touch and CarPlay.

11. Does Apple allow apps to e-mail their customers whose e-mail addresses were obtained by signing up for the app through the iOS?

a. If no, why not?

b. If Apple does allow some apps to e-mail consumers but does not allow others, please explain how Apple makes this determination.

In order to protect the privacy of users who choose to sign up for or purchase a service through iOS, Apple does not share their email address with developers. If an app developer wishes to collect an email address to communicate with a user, it must do so via its own legally-compliant process.

A developer may obtain a customer's email address by communicating with the customer through its app. If an app developer wishes to collect an email address to communicate with a user, this is a matter between the developer and the user. The developer must obtain consent from users to collect their email address pursuant to legally appropriate notice and consent in the country in which such activity occurs. This approach reflects Apple's core belief that customers should be in the driver's seat when it comes to choosing what they share, and with whom.

12. In 2012, Apple introduced Apple Maps. How much has Apple invested in Apple Maps since its introduction?

Apple has invested billions of dollars in Apple Maps.

13. Why did Apple decide to build its own maps application rather than continue to use Google Maps to power the maps applications on iPhones?

Apple believed that it could create a better map. In addition, because of Apple's commitment to privacy and security, and the desire to keep as much information "on device" as possible, Apple believed offering a map that was more integrated into the device would serve the privacy needs of customers while providing them an exceptional map experience. Apple Maps helps users find their way without compromising privacy. Personalized alerts and suggestions, like letting users know when it's time to leave for their next appointment, are created using data on your device. And the data that is sent to

Maps while the app is being used—such as search terms, navigation routing and traffic information—is associated with random identifiers instead of a user’s Apple ID.

14. For each of the past five years, what percentage of iOS users have downloaded Google Maps or another Google map application (e.g., Waze)?

Apple cannot provide the requested information with any meaningful degree of accuracy. However, Google Maps and Waze have been downloaded by Apple users hundreds of millions of times over the last five years.

15. How does Apple Maps usage compare to usage of Google Maps and other Google map applications on iOS?

Apple does not have usage data for any third-party apps.

16. Does Apple impose any restrictions on what information third-party mapping applications can collect? If yes, please identify all the restrictions, the reason for each restriction, and indicate whether Apple also limits iOS or Apple mapping applications from collecting this same type of information.

Apple does not impose restrictions on the information third-party mapping applications can collect. Apple does require notifications to users allowing them to control how apps, including mapping apps, can use their location data.

17. Why does Apple prevent independent repair stores from accessing many of Apple’s spare parts and repair manuals? Isn’t this just a way for Apple to elbow out competition and extend its monopoly into the market for repairs?

Our goal is to achieve a safe and reliable repair for our customers, whether that repair is done by Apple or a service provider designated by Apple. Apple has spent time and money to make Apple devices incredibly user friendly—but they are still complex, very technical machines. And there are a number of factors that go into achieving the goal of ensuring repairs on these complex devices are safe and reliable.

Genuine Apple parts are designed, tested and manufactured for Apple quality and performance standards. If a customer needs an Apple device repaired, it’s important that the repair be conducted by a certified technician who has completed Apple service training and who uses genuine Apple parts and tools. Repairs performed by untrained technicians might not follow proper safety and repair procedures and could result in improper function, product quality issues or safety events. Additionally, repairs that do not properly replace screws or cowlings might leave behind loose parts that could damage a component such as the battery, causing overheating or resulting in injury. For these reasons, we believe it is important for repair shops to receive proper training when obtaining access to spare parts and repair manuals.

We continue to expand the number of locations where consumers can get repairs, while maintaining a priority on safety and reliability. Apple continues to grow its base of third-

party repair providers in the United States. Eligible repair providers can now apply to participate in Apple’s recently announced independent repair provider program (IRP).

In addition, we have expanded the Authorized Service Provider program. In 2018, we expanded the scope of our Authorized Service Provider program with Apple’s major expansion of its authorized service network into every Best Buy store in the US, tripling the number of U.S. Apple Authorized Service Provider (“AASP”) locations compared to three years ago. We now have nearly 1,000 Best Buy stores across the US providing expert service and repairs for Apple products. We continue to focus on providing customers convenient access to authorized repair locations—but we will never compromise on safety.

18. What types of repairs does Apple prevent its authorized technicians from making on Apple devices and what are the reasons for doing so?

AASPs conduct the exact same repairs that Apple Retail Stores offer. There are a very limited number of repairs that require special fixtures or equipment, necessitating that those repairs be done at an Apple Repair Center. In these cases, neither an Apple Retail Store nor an AASP will be permitted to conduct the repair. But they can mail the device to the closest Apple Repair Center to do the repair and then ship it back to the customer.

19. Does Apple take any actions to block consumers from seeking out or using repair shops that offer a broader range of repairs than those offered by authorized technicians? If yes, describe each action that Apple takes and the reason for doing so.

Apple does not take any actions to block consumers from seeking out or using repair shops that offer a broader range of repairs than those offered by Apple’s authorized technicians. Customers are free to obtain repairs from any repair shop of their choice.

20. How many repair technicians does Apple employ in the United States?

There are tens of thousands of Apple-authorized repair technicians working at Apple Retail Stores and third-party retailers.

21. For each year since 2009, please identify the total revenue that Apple derived from repair services.

For each year since 2009, the costs of providing repair services has exceeded the revenue generated by repairs.

22. Apple has created a network of Apple Authorized Service Providers (AASPs) to make Apple-certified repairs. Please provide a full list of repairs that Apple permits AASPs to make on Apple products.

AASPs are permitted to conduct exactly the same repairs, both in terms of product and type of repair, that Apple Retail Stores conduct. These repairs are described below. As noted below, the ability to repair certain modules depends on the model of the Apple device.

(1) iPhone

- Display
- Battery
- Speaker
- Camera

(2) Mac Portables

- Top Case (some models include battery, keyboard, trackpad and speakers)
- Bottom Cover
- Motherboard
- Solid State Drive
- Memory
- Fan(s)
- Display
- Trackpad
- Speakers
- Battery
- Internal Flex Cables
- Antennas
- Touch ID
- Small Circuit Boards (I/O, audio, etc.)
- Power Adapter/Cable

(3) iMac

- Display Panel
- Display Adhesive
- Left and Right Speaker (as a pair)
- Fan
- Hard Drive (if applicable)
- Display Thermal Sensor Cable
- Embedded DisplayPort (eDP) Cable
- Hard Drive Bracket, Left (if applicable)
- Hard Drive Bracket, Right (if applicable)
- Power Signal Cable
- Hard Drive Data and Power Cable (if applicable)
- Logic Board (fully assembled, no component-level repairs in the field)
- Bluetooth Antenna
- Middle Wi-Fi Antenna
- Lower Wi-Fi Antenna
- Memory

- Power Supply
- Flash Storage (if not soldered to Logic Board)
- Hinge Mechanism
- Camera (if not integrated with the Display Panel)
- Camera Cable
- Chin Strap
- Rear Housing
- Memory Door
- Stand
- Antenna Cowling
- Memory Door Lock Mechanism
- VESA Mechanism Plate
- VESA Tongue
- VESA Mount Bracket

For other Apple products, both Apple direct repair channels and AASPs offer repair services through refunds or replacements. We currently do not provide same unit repairs for all products due to the challenge of reliably re-assembling devices after disassembling the unit for repair. For example, it is not possible to reliably repair some products because it is not feasible to split products into its component parts without significant risk of damage to those components.

- 23. Does Apple limit the repairs it permits AASPs to make? If so, please provide a full list of the repairs that AASPs are not permitted to make and explain all the reasons Apple does not permit each type of repair.**

AASPs are permitted to conduct exactly the same repairs (both type of repair and type of product) that Apple's Retail Store staff are permitted to conduct. For more complicated repairs that cannot be handled at stores (at Genius Bars and at AASP store locations), both Apple Retail Store and AASP technicians can mail the units for repair to the nearest Apple Repair Center.

- 24. If a customer seeks a repair that an AASP will not make and the customer then seeks that same repair from an unauthorized technician, will Apple refuse repair services to that customer in the future? If yes, explain all the reasons why Apple refuses access to future repair services.**

Apple would not refuse repair services to that customer in the future. For example, Apple does not automatically reject service for a device that show attempts by third parties to perform repairs. Similarly, the presence of non-Apple genuine components that are designed to mimic the function of Apple genuine components, even if those components infringe on Apple's intellectual property, does not automatically make the device ineligible for service by Apple.

However, Apple may not provide services to devices under the following circumstances:

- Devices in which certain original components, such as the main logic board and enclosure, have been replaced with non-original components. This is due to the fact that to replace these components the device has to be disassembled to a point that special tooling and processes are required to reassemble the device. Attempting to reassemble devices disassembled to this state without using proper Apple tools and processes may result in the issue the customer has reported.
- When a device has been disassembled to a point that special tooling and processes are required to reassemble the device.
- When an Apple genuine component is replaced with a counterfeit component designed to look like an Apple genuine component, but not designed to function (*e.g.*, fake speaker or camera modules).
- When a device is beyond economic repair such that repairing the device would result in greater cost to the customer than replacing the device.
- Devices that are missing components.
- Devices with intentional tampering designed to defraud Apple.

25. Does Apple instruct AASPs to refuse repair services to customers based on customers' repair history? If yes, describe these instructions and explain all the reasons why Apple gives these instructions.

No, Apple does not instruct AASPs to refuse repair services to customers based on customers' repair history.

26. Please provide a full list of circumstances or conditions under which Apple instructs AASPs to refuse repair services to customers and explain all the reasons for each instruction.

Apple will instruct AASPs to refrain from providing repair services on devices in a limited number of circumstances for the reasons described in our response to question 24 above.

27. Are there any repair shops to which Apple will not sell Apple replacement parts? If yes, please identify and describe the factors that determine whether Apple will or will not sell replacement parts to a repair shop.

Eligible repair providers can now apply to participate in the independent repair provider program (IRP). If accepted into the program, Apple will sell commonly repaired components, including iPhone displays and batteries to participants. Apple also provides access to training, tools and processes to allow IRPs to perform repairs on iPhones. Eligibility criteria include that the repair shop or a sole proprietor runs a repair business that has at least one trained technician to conduct the repairs.

28. Which Apple spare or replacement parts does Apple make available for purchase by customers who may want to repair products themselves or hire an independent technician?

Apple has launched an independent repair provider program. As noted above, we currently only support sole proprietors and repair providers who conduct repairs as a business, and not individuals. Repairs performed by individuals, who are more likely to be untrained technicians, increases the likelihood that repairs will not follow proper safety and repair procedures and could result in improper function, product quality issues or safety events.

29. For each year since 2009, what is the total amount that Apple has accepted from Google for the right to be the default search engine in Safari and in any other Apple products or services? Please identify the amount accepted from Google in total and broken down by each Apple product.

Apple's search agreement with Google generates revenue based on referral traffic through the URL/search box on Apple's Safari browser. Although Google search is set as the default, this can be changed in settings on iPhone to another search engine, such as Yahoo!, Microsoft Bing and DuckDuckGo. Consumers may also conduct searches on search apps available through the App Store, searches performed on the web (through the search engine's web portal), or through virtual assistants like Siri, Cortana or Alexa that are available to users on our platform.

30. Please describe what types of data Apple collects through Siri and how Apple uses each type of data.

When users invoke Siri, the things they say and dictate are sent to Apple to process their requests. In addition to these audio recordings, the user's device will send other data to help better recognize what the user is saying. This data includes things such as:

- contact names, nicknames and relationships (*e.g.*, "my dad");
- music, books and podcasts the user requests;
- names of the user's devices;
- names of devices the user has set up in the Home app; and
- the names of the user's photo albums, apps installed on their device and shortcuts they have added through Siri.

If a user has also enabled Location Services, the location of the user's device at the time of a request will also be sent to Apple to help Siri and Dictation improve the accuracy of its response (*e.g.*, if a user asks "What's the weather here?"). This data is associated with a random, device generated identifier and is not linked to the user's Apple ID, email address or other data Apple may have from the user's use of other Apple services.

A user's request history, including transcripts, audio and related request data, such as device specifications, device configuration, performance statistics and the approximate location of the device at the time the request was made, may be retained for two years to help Apple develop and improve Siri, Dictation and other language processing features like Voice Control. The request history is disassociated from the random identifier at 6 months. A small subset of requests that have been reviewed may be kept beyond two years for ongoing improvement of Siri.

We have announced some additional changes to further enhance our commitment to privacy:

- First, by default, we will no longer retain audio recordings of Siri interactions. We will continue to use computer-generated transcripts to help Siri improve.
- Second, users will be able to opt-in to help Siri improve by learning from the audio samples of their requests. We hope that many people will choose to help Siri get better, knowing that Apple respects their data and has strong privacy controls in place. Those who choose to participate will be able to opt-out at any time.
- Third, when customers opt-in, only Apple employees will be allowed to listen to audio samples of the Siri interactions. Our team will work to delete any recording which is determined to be an inadvertent trigger of Siri.

31. Please identify which categories or teams of Apple employees have access to data or information that Apple collects through Siri, specify the types of data to which each has access, and describe where in Apple's organization chart the teams or employees are located.

Access to Siri data is tightly controlled and is available to Apple teams who are using it to improve Siri, Dictation and other language processing features like Voice Control. This activity is almost entirely done by the Siri engineering team. Access to customer data by these engineering teams is limited: engineers use the data which may be necessary to develop the feature they are working on.

This Fall, customers may opt-in to have audio samples of their Siri actions available for grading by a limited group of trained Apple employees to measure how well Siri was responding and to improve its reliability. For example, did the user intend to wake Siri? Did Siri hear the request accurately? And did Siri respond appropriately to the request? By using this process across a small sample of Siri requests over time, Apple is able to make big improvements that help ensure our customers around the world have the best Siri experience possible.

- 32. Does Apple include, or has it ever included, in any contracts with business partners a waiver of some or all intellectual property rights whereby a business partner agrees not to bring some or all intellectual property infringement claims with regards to an Apple product? If yes, please describe the relevant circumstances.**

The intellectual property rights that flow between the parties may vary greatly depending on the type of business relationship the parties will have and the activities that are contemplated. Most of Apple's agreements include some express grants of intellectual property rights by the business partners as well as by Apple with respect to the other's products and/or services.

- 33. Does Apple include, or has it ever included, in any contracts with business partners a waiver of some or all antitrust claims whereby a business partner agrees not to bring some or all antitrust claims with regards to Apple's conduct? If yes, please describe the relevant circumstances.**

Apple is unaware of any such terms in its business agreements.

- 34. Please identify the percentage of Apple consumers that are subject to a mandatory arbitration clause and/or class action waiver in their agreement with Apple, describe the relevant provisions, and identify any types or categories of Apple consumer contracts that do not contain a mandatory arbitration clause and/or class action waiver.**

None. Apple does not have such provision in its consumer agreements.

- 35. Since 2014, how many Apple consumers have initiated arbitration proceedings to adjudicate a legal claim against Apple, in total and broken down by type of legal claim?**

None.

- 36. Please identify the percentage of Apple employees that are subject to a mandatory arbitration clause and/or class action waiver in their agreement with Apple, describe the relevant provisions, and identify any types or categories of Apple employee contracts that do not contain a mandatory arbitration clause and/or class action waiver.**

Apple does not track the percent of US employees who have agreed to arbitration provisions. (Apple first implemented limited arbitration provisions for new employees starting in June 2016, and those employees are provided the option of opting out of the arbitration provision.)

The provision expressly excludes certain claims from arbitration, including claims for discrimination and harassment, which are expressly carved out (so that even employees who do opt-in to the arbitration provision can pursue any such claims in court).

- 37. Since 2014, how many current or former Apple employees have initiated arbitration proceedings to adjudicate a legal claim against Apple, in total and broken down by type of legal claim?**

Two. Both are for wrongful termination claims. One of the employees was not subject to an arbitration agreement but requested his claims be arbitrated.

- 38. Please identify the percentage of Apple contractors that are subject to a mandatory arbitration clause and/or class action waiver in their agreement with Apple, describe the relevant provisions, and identify any types or categories of Apple contractor contracts that do not contain a mandatory arbitration clause and/or class action waiver.**

Apple does not track the percentage of Apple contractors that are subject to a mandatory arbitration clause (or class action waiver). Apple's standard Professional Services Agreement and Individual Consulting Services Agreement forms contain arbitration provisions subject to International Chamber of Commerce Rules governing the arbitration of commercial disputes.

- 39. Since 2014, how many current or former Apple contractors have initiated arbitration proceedings to adjudicate a legal claim against Apple, in total and broken down by type of legal claim?**

Apple is not aware of any.

- 40. Please identify the percentage of app developers that are subject to a mandatory arbitration clause and/or class action waiver in their agreement with Apple, describe the relevant provisions, and identify any types or categories of Apple's contracts with app developers that do not contain a mandatory arbitration clause and/or class action waiver.**

None. Apple does not have such terms in its developer agreements.

- 41. Since 2014, how many current or former app developers have initiated arbitration proceedings to adjudicate a legal claim against Apple, in total and broken down by type of legal claim?**

None.

- 42. Please identify the percentage of Apple employees and contractors that are subject to a non-compete clause in their agreement with Apple, describe the relevant provisions, and identify any types or categories of Apple employees and contractors that are not subject to a non-compete clause.**

Apple does not have non-compete clauses for its US employees. And Apple does not track the percentage of Apple contractors that are subject to a non-compete clause. Apple's

standard Professional Services Agreement and Individual Consulting Services Agreement forms do not contain non-compete clauses.

- 43. Since 2014, how many former Apple employees and contractors has Apple sued or initiated arbitration proceedings against in connection with an alleged breach of a non- compete clause? Please break down this number by type of legal relationship (e.g., employee or contractor) and describe the relevant circumstances that gave rise to each suit or arbitration.**

Apple does not have non-compete clauses for US employees and has not sued any former employees or contractors for alleged breach of a non-compete clause.