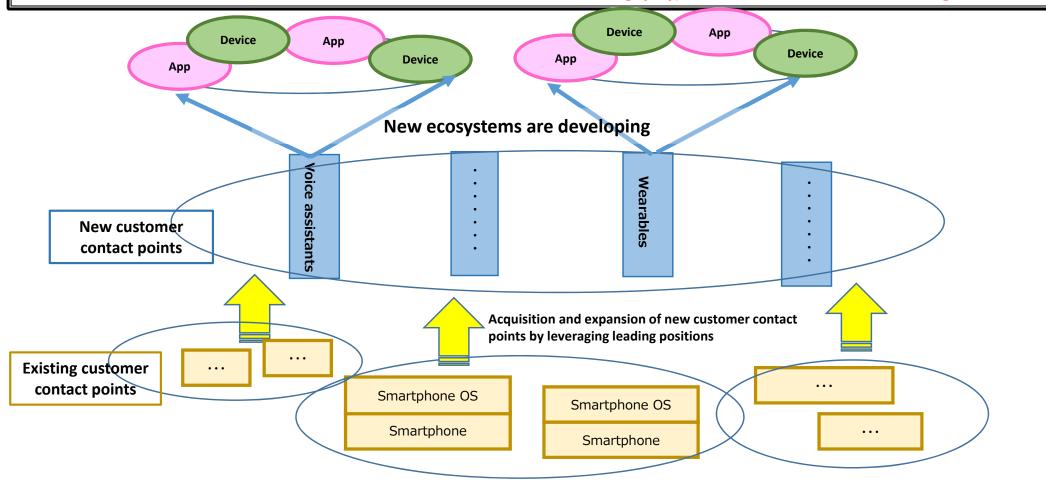# Competition Assessment of
New Customer Contact Points
(Voice Assistants and Wearables)
Interim Report Summary

April 26, 2022
**Secretariat of the Headquarters for Digital Market
Competition, Cabinet Secretariat**

- In the digital market, strong customer contact points are important for business operators, and the **acquisition and expansion of new customer contact points are the key elements to strengthening their competitiveness.**

- **There is a possibility that businesses that already have strong customer contact points can use their position as leverage** to **gain an advantage in acquiring and expanding new customer contact points.** As a result, **when a network effect occurs and an oligopoly emerges, it may become difficult for the market to cure the problem,** and **competition concerns at existing customer contact points may spread and become entrenched at the new customer contact points.**

- On the other hand, business operators are still developing a new ecosystem based on the new customer contact points. Therefore, **there is a risk that excessive market intervention could stifle innovation.**

⇒ **The theme of this competition assessment: In acquiring and expanding new customer contact points, to seek an approach that does not impede innovation and market growth and that prevents the competition concerns associated with an oligopoly, which is a concern as the market grows.**

App | Device | App | Device

Device | App | App | Device

New ecosystems are developing

Voice assistants

Wearables

New customer contact points

Acquisition and expansion of new customer contact points by leveraging leading positions

Existing customer contact points

... ...

Smartphone OS
Smartphone

Smartphone OS
Smartphone

...

...

Two new customer contact points that are the subject of this Competition assessment

(New customer contact point (1): **Voice assistants**)

•Voice assistants provides functions and services that provide verbal responses or actions to verbal questions or requests.

•**They can serve as a customer contact point in voice input and output** to the ecosystem and **as a foundation** for platform operators **to build new ecosystems.**

•They can provide much **richer information** than text data.

•**It is easy for platform operators to gain an advantage** in that they can **easily direct** customers to their own apps and products.

(New customer contact point (2): **Wearable devices**)

•Wearable devices are electronic devices that are worn and used. The market is expanding as a new customer contact point for devices that can be used in close proximity to the human body.

•Of these, **smartwatches have a relatively large market size** and can also measure **vital data,** etc.

•Wearable devices can contribute to **build an ecosystem that attracts a variety of applications,** especially in the healthcare sector, while **linking with smartphones.**

•**Switching costs for users** will become extremely high as users' **vital data accumulates in the platform operator.**

<Common issues> These new customer contact points **deal with sensitive data from the perspective of privacy and raise important issues** from the perspective of **ensuring a balance between the promotion of competition and privacy.**

•**A competition assessment of the above two new customer contact points have been conducted since June 30, 2021.**
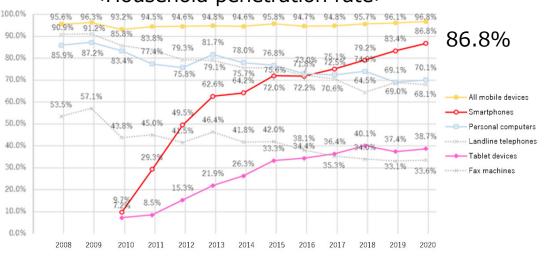
•Voice assistants are functions and services that combine speech recognition technology, natural language processing, speech synthesis technology, and other technologies to respond appropriately to questions and requests through spoken words.
• **Voice assistants have two main portals: Smartphones and smart speakers.**
•The household penetration rate of smartphones is **86.8%** (2020) and the individual penetration rate is **69.3%** (2020). **Voice assistants are installed as standard setting on almost all smartphones.**
•The household penetration rate of smart speakers is **13.5%** (2021), or roughly seven million households. The personal ownership rate of smart speakers for smartphone owners is **14.7%** (2019).
•However, **active users** of voice assistants (including those in smartphones and smart speakers) are **estimated at about 20% of total number of users.**
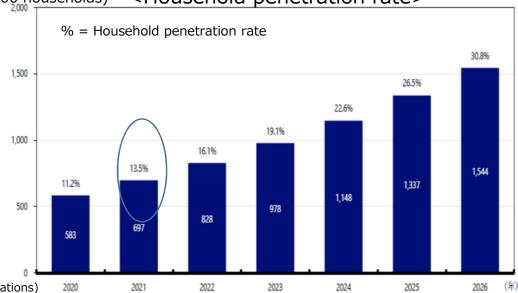
| Smartphone penetration rate | Smart speaker penetration rate |

<Household penetration rate>

86.8%

Legend:
All mobile devices
Smartphones
Personal computers
Landline telephones
Tablet devices
Fax machines

Source: 2020 Telecommunications Usage Trends Survey (Ministry of Internal Affairs and Communications)

<Individual penetration rate>

•69.3% (Source: 2020 Telecommunications Usage Trends Survey: Ministry of Internal Affairs and Communications)

(Reference) Total population: 125,502,000 (October 2021: Ministry of Internal Affairs and Communications Number of households: 59,497,356 (January 2021: Ministry of Internal Affairs and Communications), Average number of people per household: 2.13 (January 2021: Ministry of Internal Affairs and Communications)

(10,000 households) ### <Household penetration rate>

% = Household penetration rate

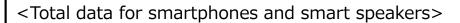Source: IT Navigator 2021 (Nomura Research Institute, Ltd.)

<Personal ownership rate of smart speakers for smartphone owners>

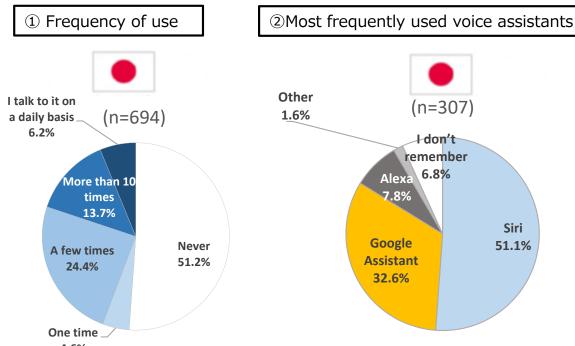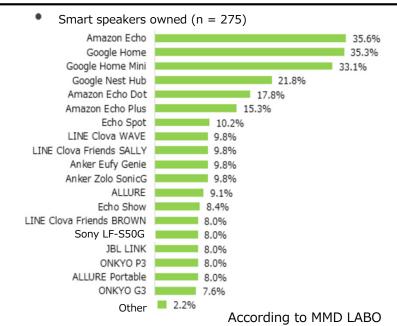•14.7% (Source: Survey on smartwatches and smartphones: MMD LABO Inc. <July 2019>)

- Active users of voice assistants (including those in smartphones and smart speakers) are estimated at **about 20%*** of the total number of users. The most frequently used voice assistant is **Apple's Siri at 51.1%,** followed by **Google Assistant at 32.6%** and **Amazon Alexa at 7.8%.** The devices of these three companies account for more than 90% of the total.

- In smart speakers alone, Google and Amazon are highly ranked, and Apple's market share is almost nonexistent. On the other hand, a diverse range of businesses have entered the market.

- Even if we make a high estimate of the use of smart speakers, **assuming that all Amazon Alexa users (7.8%) in chart② use smart speakers** and that the number of users of Google's smart speakers is about the same number (7.8%), voice assistants **are likely to be used mostly on smartphones**, taking it into account that Apple's Siri, for which smart speakers are hardly widespread, is used by more than 50% of the respondents.

<Total data for smartphones and smart speakers>

<Data limited to smart speakers>

① Frequency of use

②Most frequently used voice assistants

③ Smart speakers owned (multiple responses)

(n=694)

I talk to it on a daily basis 6.2%

More than 10 times 13.7%

A few times 24.4%

Never 51.2%

One time 4.6%

(n=307)

Other 1.6%

I don't remember 6.8%

Alexa 7.8%

Google Assistant 32.6%

Siri 51.1%

Smart speakers owned (n = 275)

Amazon Echo	35.6%
Google Home	35.3%
Google Home Mini	33.1%
Google Nest Hub	21.8%
Amazon Echo Dot	17.8%
Amazon Echo Plus	15.3%
Echo Spot	10.2%
LINE Clova WAVE	9.8%
LINE Clova Friends SALLY	9.8%
Anker Eufy Genie	9.8%
Anker Zolo SonicG	9.8%
ALLURE	9.1%
Echo Show	8.4%
LINE Clova Friends BROWN	8.0%
Sony LF-S50G	8.0%
JBL LINK	8.0%
ONKYO P3	8.0%
ALLURE Portable	8.0%
ONKYO G3	7.6%
Other	2.2%

According to MMD LABO Inc.

①, ② Source: International survey on voice assistants (1) (December 2019): IID, Inc.

③ Source: Survey on smartwatches and smart speakers (July 2019): MMD LABO Inc.

※19.9%: Total of respondents who "talk to voice assistants on a daily basis" (6.2%) and those who "talk to them ten or more times" (13.7%).

Parties concerned with the market have made the following observations regarding current market situations and future trends for voice assistants.

(Current market situations)

•The voice assistant market **has not yet matured, and a killer service has not yet been found.** Some apps are immature, just replacing their UI with voice instead of touch.

•The voice assistant market **is still in a relatively nascent stage in Japan,** and the users who regularly use voice assistants are mainly the group known as first adopters.

•It is said that the reason why the Japanese market for voice assistants remains undeveloped is because Japanese people **feel embarrassed to be seen talking to voice assistants in public.**

•Google and Apple have **not yet introduced some services in Japan that are available in English-speaking countries.**

(Future trends of voice assistant providers)

•Amazon is aiming to **develop a market that is different from smartphones and PCs by using voice input as a gateway,** and they are also very competitive in the cloud. Therefore, it is thought that they have entered the market with **the combination of voice and cloud computing.** They continue to be the most active in bringing devices for Alexa (Echo series/Fire devices) to the market. It is believed that they aim to **send customers to their own online malls**.

•Google's **response accuracy to questions is high** due to their many Japanese language assets. The **impression** is that their main focus **has shifted from smart speakers** (now the Nest series) **to voice assistants on smartphones.**

•Apple's Siri is less deployed in the smart speaker market (HomePod series) and **its main role is for the voice control of the iPhone.** Because of the iPhone's high market share, Siri will probably be the standard for quality expectations of voice assistant in Japan. Due to its ties to iOS, the **functionality of other companies' assistants on smartphones is limited.**

(1) The Japanese market from the perspective of market characteristics

	Market characteristics	The Japanese market from the perspective of market characteristics
a. Barriers to entry	•Huge development costs and **large-scale development resources** are necessary. •The importance of **huge databases. Superiority of smartphone OS providers** can easily be demonstrated. Cloud providers also have some advantage. •Low-price sales of devices through **internal subsidies** from other profitable businesses of digital platform operators.	⇒ **Barriers to entry** are considered high. •Excluding voice assistants for specific fields, the voice assistants most frequently used by users appear to be Apple's Siri, Google Assistant, and Amazon Alexa at about 90% of the total.
b. Network effects	**(Indirect network effects)** •More users attracts more apps and devices to be linked. This increases the value of the voice assistants and attracts more users to them. **(Direct network effects)** •A growing number of users providing voice data will accelerate quality improvements and increase the value of the voice assistants. This attracts even more users.	•Use of voice assistants is low due to the low quality and satisfaction of the responses **and the fact that a killer service has not been found**. ⇒ **It is thought that we have not yet reached a situation where either network effect is working strongly.**
c. Switching costs	•**Default settings** by smartphone OS providers make switching difficult. •Lack of compatibility, **troublesomeness of installation**, etc. have been pointed out. •Affinity with the cloud, including the **significant time and effort required to move large amounts of data**, is another factor that increases switching costs. •The possibility of **increased lock-in in the future due to high profiling accuracy.**	•All smart speakers currently in the market in Japan, with the exception of a few products, are exclusive for device providers' voice assistant. •Apple's Siri is **preinstalled** on the iPhone, and Google Assistant is **preinstalled** on most Android-based smartphones. In both cases, **there are certain limitations on third-parties' voice assistants in terms of functionality.** ⇒ Although switching involves certain difficulties, including those brought by **low compatibility,** it is thought that the **lock-in associated with the accumulation of data and the resulting highly accurate profiling has not yet been fully realized, partly because of the low level of usage.**

(2) Potential for ecosystem formation and future concerns

•**New ecosystems based on voice assistants are being developed through expanding the linkage with hardware and software (apps)**, and voice assistants have the potential to be influential as **foundations for building new ecosystems by controlling inputs and outputs.**

•While barriers to entry are seen as a characteristic of the market, **the degree of network effects and switching costs may also increase and competition concerns may be raised if the development of ecosystem progresses or existing services are replaced by voice assistants in the future.**

Ideal state

   Ensure opportunities for innovation by diverse entities and consumer choice in ecosystems that will be built on voice assistants as the foundation. To realize this, the followings must be ensured.

A) **Ensure a fair and equitable competitive environment among voice assistant providers.**

B) In cases where **a voice assistant provider affects the competitive environment for vendors of apps and devices** that link with the voice assistant, ensure a fair and equitable competitive environment for them.

C) Through these efforts, realize **the healthy growth of a new market** consisting of voice assistants as new customer contact points and ecosystems based on them.

Basic approach to address issues

• Although the voice assistant market is still developing and has not yet reached the stage where network effects and switching costs strongly work and market dominance is established, **the high barriers to entry have led to an oligopoly by the three companies.** Therefore,

⇒ ① First of all, **it would be important to make competition among voice assistant providers,** including the three companies, **function.**

② If this competition functions, it may lead to **lessening possibilities for app and device vendors to be locked in and forced to rely on the voice assistants they work with, since they may still have room to choose which voice assistants they work with.** Therefore, **we suggest that the basic approach to address the competition concerns expressed by app and device vendors be to encourage voice assistant providers to improve the situation regarding such concerns through healthy competition among voice assistant providers.**

•Here, **innovation** in the process of new market growth **should be properly governed**. From this perspective,

⇒ •**While continuously monitoring the market environment** during the growth process,

•**And making efforts to keep engagement including dialogue with various stakeholders,**

•It may be **required to take an agile approach to market changes** in the development and implementation of rules.

(1) Competition among voice assistance providers

＜Voice assistants in **smartphones**＞

•Smartphones are becoming increasingly popular among users, and the **size of the potential user base for voice assistants is not small.**

•Smartphone OS providers **pre-install their own voice assistants and impose some limitations on the use of third-party voice assistants.**

＜**Smart speakers**＞

•Amazon and Google are competing to build an ecosystem that will attract app and device vendors, and there is still room for market expansion, **so it is a situation in which competition can function.**

⇒ In the future, ecosystems based on voice assistants **is likely to expand on their smartphones** that have an abundance of users.

There are concerns that if the two smartphone OS providers use their influence on their smartphones as leverage to give advantages to their own voice assistants, competition will not function with the other voice assistant providers and function only between the two companies that have built the smartphone ecosystems and, as a result, their positions will be entrenched.

•Even at this point in time, when the market is still developing, **it may be necessary to intervene based on certain rules against acts that use existing influence as leverage and impede fair and equitable competition.**

(2) Concerns between voice assistant providers and vendors of app and device that are linked with voice assistants

•There are concerns related to self-preference by voice assistant providers, opacity of their app review process and their support to vendors in adapting to specification changes, and their handling of raw data.

•The basic approach may be to encourage improvements through competition among voice assistant providers by creating a **competitive environment among them.**

•On the other hand, even at this time, these concerns cannot be overlooked, and there are **concerns that the harm may become more serious** as the market develops.

•Therefore, **a list of issues to be monitored** by the relevant authorities should be identified through this competition assessment.

⇒ The following mutually complementary efforts may be considered in order for the **relevant authorities to monitor the situation** regarding those issues, and to take actions **promptly if the problem becomes more serious. (Establishment of a framework for market monitoring)**

a) **Prompt implementation of policy recommendations to encourage voice assistant providers to voluntarily improve their conduct**, depending on the situation.

b) **Prompt, strict and appropriate enforcement by the Fair Trade Commission in specific cases that include concerns in light of the Antimonopoly Act, including the use of petition for an urgent injunction.**

c) In addition to the above, considering **some kind of framework that can promptly address harms.**

*I. Competition among voice assistant providers
II. Concerns between voice assistant providers and vendors of apps and devices that are linked with voice assistants.

	Issues	Approaches to address (options)	Remarks* I	II
1. Rule setting, modification, interpretation and operation within the ecosystem	1. Pre-installation and default settings of voice assistants in smartphones	● Option (1): Mandate to allow changes to default settings ● Option (2): Introduce a choice system (choice screen) of voice assistants that enables users to easily switch default settings	○	
	2. Functional restrictions on other companies' voice assistants in smartphones	● Mandate to provide equivalent access to the functions of OS and others	○	
	3. Restrictions on billing for digital content	● Establish a framework for monitoring the market (This is a matter that needs to be monitored. The situation will be closely monitored and promptly addressed if the problem becomes more serious.)		○
	4. Restrictions on link-out			○
	5. Restrictions on advertising business			○
	6. Restrictions on the provision of third-party apps	● Option (1): Prohibit access restrictions on third-party app developers to functions for linking their apps with one's own voice assistant ● Option (2): Ensure opportunities for third parties to provide services equivalent to those provided by one's own apps		○
	7. App store reviews, certification standards, procedure in specification changes, etc.	● Establish a framework for monitoring the market (This is a matter that needs to be monitored. The situation will be closely monitored and promptly addressed if the problem becomes more serious.)		○
2. Advantages in proposals by voice	8. Self-preference in the order to present choices by voice	● Establish a framework for monitoring the market (This is a matter that needs to be monitored. The situation will be closely monitored and promptly addressed if the problem becomes more serious.)		○
	9. Self-preference in location to display third-party apps			○
3. Acquisition and use of data, and access restriction to data	10. Access restriction to raw data, etc.	● Establish a framework for monitoring the market (This is a matter that needs to be monitored. The situation will be closely monitored and promptly addressed if the problem becomes more serious.)		○
4. Interoperability	11. Matter	● Any special measures are not necessary at this time		○
	12. Burden of dealing with multiple voice assistants	● Is it considered appropriate to address by the measures indicated in Section 1-7?		○

1. Pre-installation and default settings of voice assistants in smartphones

Issues	● <u>In the future, the use of voice assistants may expand on smartphones.</u> However, • <u>iPhone: Siri is pre-installed and set as the default, and no other voice assistant other than Siri is pre-installed.</u> <u>It is thought that there are certain restrictions on changing default settings</u>. • <u>Android smartphones:</u> Although it depends on the decision of the OEM, etc., in most cases, Google Assistant is pre-installed and set as the default. Default settings can be changed.
Competition assessment at this time	● For smartphones, <u>users tend to have a status quo bias due to operability constraints, etc., and users tend to use pre-installed and/or default voice assistants, making it difficult for voice assistants of other companies to enter the market.</u> ● The market for voice assistants is still developing. But as the use of voice assistants in smartphones is expected to increase in the future, <u>it may become difficult for third parties other than smartphone OS providers to compete with them, leading to an oligopoly by the two smartphone OS providers with little competitive pressure.</u> ● <u>In that case, concerns between third-party app and device vendors and platform operators could become more serious.</u>
Options	**(Option (1): Mandate to allow changes to default settings)** ● It may be possible to <u>introduce a rule requiring smartphone OS providers above a certain level of scale to allow users to change the default settings for voice assistants.</u> **(Option (2): Introduce a choice of voice assistants that enables users to easily switch default settings)** ● In addition to Option (1), <u>it may be possible to require smartphone OS providers above a certain level of scale to introduce a choice system (choice screen) that provides users with information about the default voice assistant and other voice assistants and enables them to decide whether or not to switch default settings</u> in a simple and intuitive procedure.

*In subsequent descriptions, Alexa-compatible "skills" will also be included in "apps".

2. Functional restrictions on other companies' voice assistants in smartphones

Issues	• Voice assistant pre-installed in the smartphone: <u>Even if the smartphone is locked, a wake word can be uttered to activate it </u>without physical operation.
	• Third-party voice assistants: When installed in a smartphone, <u>the app cannot be activated by uttering a wake word while the smartphone is locked, and the app must be open</u> in order to be activated by the wake word. To do so, <u>a physical operation such as tapping the smartphone screen is required.</u>
	• In smartphones, <u>there are access restrictions on apps that link with third-party voice assistants to functions of smartphone OS and others.</u>
	    Ex): Apple: Text message reading, Contacts, Calendar
	           Google: Camera (selfie), alarm function using music

Competition assessment at this time	• <u>It is thought that functional restrictions would put third-parties' voice assistants other than those of smartphone OS providers at a competitive disadvantage.</u> • Although the market for voice assistants is still developing, as the use of voice assistants in smartphones is expected to increase in the future, <u>restrictions on functions for third-parties' voice assistants in smartphones may make it difficult for third parties other than smartphone OS providers to compete,</u> leading to oligopoly by the two smartphone OS providers with little competitive pressure. • In that case, <u>concerns between third-party app and device vendors and platform operators could become more serious.</u>
Options	**(Option: Mandate to provide equivalent access to the functions of OS and others)** • It may be possible to <u>introduce a rule that would require smartphone OS providers above a certain level of scale to allow voice assistants of other companies to have the same access to the functions of smartphone OS and others as their own voice assistants.</u> (Including allowing activation by wake word on an equal basis.)

3. Restrictions on billing for digital content

Issues	• Apple, Google, and Amazon all <u>require app developers to use those voice assistant providers' billing systems when the app developers sell digital content in apps linked with voice assistants</u> (digital content billing). • As a result, for example, Alexa-compatible skills installed in an iPhone cannot provide services with billing. (This is because the skill developers cannot use Amazon's billing system on iPhone.)
Competition assessment at this time	• <u>Developers of apps linked with voice assistants</u> are constrained in terms of monetization and face high barriers to market entry in terms of investment profitability, <u>making it difficult for robust competition to emerge.</u> • In addition, third-party voice assistant providers other than smartphone OS providers <u>may suffer in attracting app developers, which may put third-party providers at a disadvantage.</u> • On the other hand, <u>for apps linked with voice assistants, the monetization model has not yet been clear, and most of app developers are not in a position to be able to charge for their services. We should keep monitoring the future situation to see if the competition harm caused by restrictions on billing will grow, and take actions promptly if necessary.</u>
Options	**This is an issue to be monitored. This will be closely monitored by the relevant authorities, and if the problem becomes more serious, it will be promptly addressed** (P8. Framework for market monitoring).

4. Restrictions on link-out

Issues	• <u>There are concerns</u> that Google and Amazon <u>are trying to keep the services linked with their voice assistant within their own economic sphere by intentionally restricting link-outs or, even when link-outs are possible, making the procedures and steps for doing so more cumbersome.</u>
Competition assessment at this time	• <u>Google's smart speaker with display</u>: (1) When users want to link to other companies' streaming apps, <u>users are required to link the account of those streaming apps with Google account in advance and the linking is not always easy. It may lead to self-preference of Google's services and impair equal footing.</u> (2) <u>Browser functionality on the screen is limited, which may hinder innovation through the provision of services on third-party websites and consumer choice .</u> • <u>Amazon Alexa</u> link-out destination: (1) <u>There are concerns that people tend to be directed to third-party skills rather than third-party websites. Innovation through service offerings on web sites and consumer choice may be hindered. The billing for the purchase of digital content in skills is limited to the billing system provided by Amazon, which may impede competition through the provision of a variety of billing services.</u> (2) There are also concerns that users are being directed to Amazon's shopping service when making purchases. • On the other hand, at this point in time, <u>the number of services that can be charged for has not expanded. But it is necessary to monitor closely to see if concerns become more serious in the future.</u>
Options	**This is an issue to be monitored. This will be closely monitored by the relevant authorities, and if the problem becomes more serious, it will be promptly addressed** (P8. Framework for market monitoring).

5. Restrictions on advertising business

Issues	● When placing ads in apps linked with voice assistants, voice assistant providers impose certain restrictions for reasons such as ensuring user safety by making it easy to distinguish the advertisements from others. 　• Google: Requires compliance with its advertising policy in reviewing the apps in Google Play (prohibiting false or confusing advertisements). 　• Amazon: It is allowed to run advertisements used in radio streaming and other media, but not easily allowed to do so otherwise. No advertisements are allowed to be played by Alexa's voice.
Competition assessment at this time	● For app vendors, this means restrictions on monetization. ● It is also a limiting factor for developing new forms of advertising unique to the voice assistant domain. ● While these restrictions are recognized as reasonable to a certain degree, it is necessary to keep closely monitoring the appropriateness of the extent of the restrictions.
Options	**This is an issue to be monitored. This will be closely monitored by the relevant authorities, and if the problem becomes more serious, it will be promptly addressed** (P8. Framework for market monitoring).

7. App store reviews, certification standards, procedure in specification changes, etc.

Issues	● It has been pointed out that app developers and device vendors are burdened by (1) opaque and ambiguous standards for review and certification of voice assistant providers, (2) frequent and sudden addition of new functions and specification changes, and (3) insufficient information provision and response to inquiries. ● It has been pointed out that many app developers have withdrawn from the market because they could not adapt to the updates.
Competition assessment at this time	● There are differences in the level of response among voice assistant providers with regard to clarification of criteria for review and certification, and support for developers to adapt to additional functions and changes in specifications (provision of information and pre-release testing, etc.). ● The above concerns may cause business uncertainty and risk for app developers and device vendors and may hinder new entrants and the creation of active innovation. ● In addition, equal footing with third-party developers may be impaired if voice assistant providers are developing their own services competing with them. ● On the other hand, at this point in time when the market is still developing, the approach to address the above concerns may be to improve the situation through competition among voice assistant providers for building an ecosystem to attract app developers.
Options	**This is an issue to be monitored. This will be closely monitored by the relevant authorities, and if the problem becomes more serious, it will be promptly addressed** (P8. Framework for market monitoring).

6. Restrictions on the provision of third-party apps

Issues	- Apple provides developers with SiriKit, a framework that allows them to integrate their apps with Siri. - The development categories (domains) provided by SiriKit are limited to 12 types, such as "Messaging" and "Payments," which may limit what can be done with requests and responses. Therefore, developers have pointed out the lack of flexible development.
Competition assessment at this time	- This may be hindering the opportunities for developers to provide their services on the iPhone, which accounts for a large portion of the market. - As a result, it may be difficult to develop services by taking advantage of economies of scale, and this may also lead to hinder the growth of the market for services. - As mentioned above, if restrictions are imposed on the app development environment and app development is limited to certain categories, while Apple can provide apps without these restrictions, there is a concern of self-preferencing and a fair and equitable competitive environment may not be ensured.
Options	**(Option (1): Prohibit access restrictions to functions for linking third-party apps with one's own voice assistant)** - If a smartphone OS provider above a certain level of scale provides voice assistant, it may be possible to introduce a rule that prohibits such an OS provider from restricting third-party app developers' access to functions for linking their apps with its own voice assistant (e.g., restrict developing categories). **(Option (2): Ensure opportunities for third party app developers to provide services equivalent to those provided by one's own apps)** - In addition to Option (1), if a smartphone OS provider above a certain level of scale provides voice assistant, it may be possible to introduce a rule that requires such an OS provider to provide third-party developers with functionality for linking their apps with its voice assistant to ensure that they can have the equal opportunities to provide their services as the OS provider has.

8. Self-preference in the order to present choices by voice

Issues	• Unlike on-screen presentations, where a number of choices can be presented simultaneously, when presented by voice, the order of presentation has a significant impact on the user's choice and decision, and the first one presented is by far the most advantageous. The criteria for determining the response to requests and the order of presentation are important, but they are unclear, and there are concerns that voice assistant providers, which can control the order of presentation, may give preferential treatment to their own products or products recommended by them. • Google has indicated that the cases where plural options are presented, such as searching and shopping, are currently not main use.
Competition assessment at this time	• If the presentation of choices to a user's voice input is arbitrarily made in a way that favors their own services, third-party services may be at a competitive disadvantage and consumer choice may be distorted. • Regarding the point made by Google, it is believed that there is a certain level of need for search. In addition, Amazon has not made such a point, and as mentioned above, the businesses involved have raised their concerns. • On the other hand, since the voice assistant market is still developing, it may not be so indispensable for many third parties as a means of reaching consumers. • Based on this situation, we should keep monitoring the extent to which the harm of this issue will become serious with the future growth of the voice assistant market and take prompt measures if necessary.
Options	**This is an issue to be monitored. This will be closely monitored by the relevant authorities, and if the problem becomes more serious, it will be promptly addressed** (P8. Framework for market monitoring).

9. Self-preference in location to display third-party apps

Issues	• For developers of apps that work with voice assistants, it is important that users have easy access to pages that showcase the apps offered in order for the service to be recognized by users. • However, it has been pointed out that the location of the developers' apps displayed by voice assistant providers are harder to discover than those of the voice assistant providers, making it difficult for users to recognize them. • There are differences among voice assistant providers regarding the ease of access by users to third-party apps.
Competition assessment at this time	• Since it is low probability that users dig through the hierarchical structure to make a choice due to a characteristic of voice assistants, if information is not properly provided to users, services provided by third parties may be at a competitive disadvantage compared to those provided by first parties, and user choice may be distorted. • Also, as the market is still developing, there is a high need for app developers to raise awareness of their services. • In this context, as each voice assistant provider is in the process of incorporating third-party apps into its own ecosystem, it is necessary to ensure a competitive environment among voice assistant providers so that competition takes place in facilitating user access to third-party apps.
Options	**This is an issue to be monitored. This will be closely monitored by the relevant authorities, and if the problem becomes more serious, it will be promptly addressed** (P8. Framework for market monitoring).

10. Access restriction to raw data, etc.

Issues	• Voice assistant providers such as Apple, Google and Amazon can access the raw data (voice recording data) obtained through their voice assistants and use it for their own benefit. • In particular, voice data is richer than text input, including information about the surrounding environment. • On the other hand, these three providers <u>do not share raw data</u> with third parties out of concern for user privacy. • <u>There is a concern that third-party app, service or device providers will be placed at a disadvantage over voice assistant providers in developing their own products or services that use information obtained from raw data.</u>
Competition assessment at this time	• We should be cautious about introducing some rules against restricting access to raw data, etc. for the time being, <u>taking into account the risk that increased privacy concerns may hinder the development of the business associated with voice assistants.</u> • On the other hand, if voice assistant providers use such data to improve their own services using voice assistants, <u>this may raise concerns about a level playing field and should be closely monitored.</u>
Options	**This is an issue to be monitored. This will be closely monitored by the relevant authorities, and if the problem becomes more serious, it will be promptly addressed** (P8. Framework for market monitoring).

11. Matter

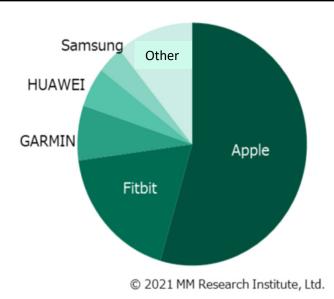|	
Issues	• <u>Matter is a connectivity standard for smart home IoT devices linked to voice assistants, developed by</u> Amazon, Apple, Comcast, Google, and the Connectivity Standards Alliance (an industry group that develops IoT standards).
Competition assessment at this time	• <u>It is expected to bring greater interoperability among smart home-enabled devices, thereby expanding user usage, facilitating device development, etc., and reducing the risk of lock-in by a single provider, which is expected to have a procompetitive effect.</u> • On the other hand, depending on future business environment, (1) Matter <u>may give advantage to platform operators in developing the ecosystem by easily connecting many devices,</u> shrinking the adjacent field where third-party device makers could determine the specifications to connect with other devices and services, <u>and lead to the ancillary services of smart homes being dominated by platform operators,</u> and (2) in the competition among voice assistant providers including Apple, Google, and Amazon, <u>there are concerns that the two smartphone OS providers</u> that obtain the SSID/PW of the router in the residence <u>will be favored.</u> • However, with regard to these concerns, <u>it may be difficult to say at this moment that this in itself would unfairly impede competition.</u>
Options	• It may not be necessary to address this issue at this moment.

12. Burden of dealing with multiple voice assistants

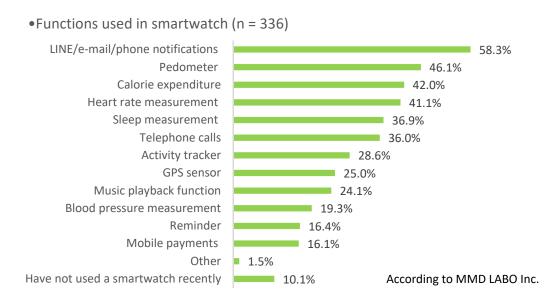|	
Issues	• Third-party app developers are <u>overburdened with developing apps for Google, Amazon, and Apple voice assistants, in that they have to develop dedicated apps in accordance with each different system respectively.</u> Even if connectivity specifications for peripherals are <u>standardized by Matter, the situation regarding the burden on the app developers will not change.</u>
Competition assessment at this time	• <u>Is may be difficult to say at this moment that the fact that each company uses different system</u> in its operating system and/or cloud service <u>unfairly impede competition.</u> • On the other hand, it should be noted that <u>concerns related to updates and changes in specifications regarding voice assistants, OS, cloud, etc. (see Section 1-7) would increase the burden associated with supporting multiple voice assistants.</u>
Options	• Since there is concern that the burden above mentioned may increase due to the degree of burden for updates, specification changes, etc., it may be considered appropriate <u>to address this issue through the measures indicated in Section 1.7 "App store reviews, certification standards, procedure in specification changes, etc."</u>

- Domestic sales of smartwatches (including wristband-type devices) for FY2020 (April 2020 to March 2021) is 2,294,000 units (up 19.9% from the previous fiscal year). The market is expected to continue to expand for the time being.
- **Apple** topped the manufacturer market share with **54.5%**, followed by Fitbit in second place with 421,000 units (18.4%).
- The smartwatch usage rate among smartphone users is 9.4%.
- Various sensors allow it to function as a powerful "measurement" device for vital data (ECG, heart rate, fall detection, blood oxygen level, sleep, cycle, etc.). The most frequently used function was "LINE, e-mail and phone notifications" at 58.3%, followed by medical and health-related functions.
- In particular, on the Apple Watch, the Apple health care app ("Apple Health") is pre-installed, and data from the iPhone, Apple Watch, and third-party apps can be obtained and displayed together, providing enhanced medical and health care functions.

Smartwatch sales and market share by manufacturer in FY2020

Samsung
Other
HUAWEI
GARMIN
Apple
Fitbit

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Source: "Survey on smartwatch sales trends and forecasts in Japan and their usage" [September 2021] (MM Research Institute, Ltd.)

Functions used in smartwatches

- Functions used in smartwatch (n = 336)

Function	%
LINE/e-mail/phone notifications	58.3%
Pedometer	46.1%
Calorie expenditure	42.0%
Heart rate measurement	41.1%
Sleep measurement	36.9%
Telephone calls	36.0%
Activity tracker	28.6%
GPS sensor	25.0%
Music playback function	24.1%
Blood pressure measurement	19.3%
Reminder	16.4%
Mobile payments	16.1%
Other	1.5%
Have not used a smartwatch recently	10.1%

According to MMD LABO Inc.

Source: Survey on smartwatches and smart speakers (July 2019): MMD LABO Inc.

Apple and Google explained the business development of smartwatches in Japan as follows.

(1) Apple

- In March 2015, Apple launched the Apple Watch in nine countries, including Japan. It links with the iPhone and other Apple devices, as well as Apple services such as Apple Fitness.

(2) Google

- Google developed **Wear OS** for **third-party wrist-worn wearable devices** (fitness trackers, smartwatches, etc.).
- In Japan, Wear OS-compatible devices are supplied by Casio, Mobvoi, and Fossil, in addition to Fitbit, which will be mentioned below.
- In January 2021, Google **completed the acquisition of Fitbit**, which has been actively offering wrist-worn wearable devices in Japan since 2013.
- In May 2021, **Google and Samsung** announced that they will integrate their respective operating systems for wearable devices, Wear OS and Tizen, into a single integrated platform. This new platform is open to third-party manufacturers.

The following have been pointed out by parties concerned with the market as their perceptions on the smartwatch market.

- Apple watch has a strong competitiveness. It doesn't have **that much capacity**, so third parties **may find it difficult to do business if the default configured apps take up that slack.**
- **Linkage with smartphones is important**, and if an ecosystem is built around the smartphone OS, some smartwatch providers may have advantage to link with smartphones, and others may not have.
- Miniaturization and extended service life of batteries are important and may become the key to differentiation in the future.
- **The evolution of wearable vital sensors** is accelerating, and when various medical data can be acquired in the future, smartwatches will become closer to medical devices and the smartwatch

- Apple has a **market share of about 55%** in terms of units sold. **A high barrier to entry** is formed, and there are no other leading products in the market.

- In this situation, an ecosystem is being developed by incorporating apps and devices on the basis where the iPhone and Apple Watch can work together.

- As the ecosystem develops and medical/healthcare-related **data accumulates, switching costs may increase further,** raising competition concerns.

	The Japanese market from the perspective of market characteristics
a. Barriers to entry	• Apple entered the market in a manner that it incorporate Apple Watch into iPhone-centered ecosystem, and **the Apple Watch maintains a high market share**. This trend is particularly prominent in Japan, where the iPhone has a high market share. • **The connection and interoperability between the iPhone and Apple Watch** is smooth, reliable, and advantageous through Bluetooth. • The development of a device like the Apple Watch, which can be linked to any services, requires **significant costs**. • In the case of health care, it is necessary to provide and maintain a platform that gives people a sense of reassurance that apps and other services wil**l be provided over the long term.** • Smartwatches to which many apps are not provided are less competitive, so it is necessary **to create an environment that attracts a large number of apps.** The number of OS providers that can build an ecosystem is limited due to the burden for app developers to support a large number of operating systems. ⇒**The burden** on potential entrants to **compete with the Apple Watch is high, and a high barrier to entry has been created.**
b. Network effects	• Many apps have already been developed for the Apple Watch, and the number of users of the Apple Watch is growing. **The more users, the more apps are offered**. This makes the Apple Watch more valuable, which attracts more users to the platform. Network effect is seen in this way. • A network effect can also be seen where Apple's platform also **attracts devices that collect healthcare-related data**. • The Apple Watch has been approved for sale as a medical device, and some medical institutions in Japan are using the Apple Watch to collect vital data. ⇒**Data in medical/healthcare field is being concentrated in the Apple ecosystem in addition to the involvement of third parties in this field through the linkage with the iPhone, etc.**
c. Switching cost	• The Apple Watch is a product with a familiar UI and concept as well as high brand loyalty. In addition, **the connection and interoperability with the iPhone are smooth** and it is easy to understand even **for people with low media literacy, which increases switching costs.** • **In the healthcare-related areas** that Apple's ecosystem focuses on, **switching costs tend to get higher, partly due to data continuity and other factors.**

Ideal state of the smartwatch market

> **Ensure opportunities for innovation by diverse entities and consumer choice in ecosystems that will be built on smartwatches as the foundation.** To realize this, the followings must be ensured.
>
> A) **Ensure a fair and equitable competitive environment among smartwatch providers.**
>
> B) In cases where **a smartwatch provider affects the competitive environment for vendors of apps and devices** that link with the smartwatch, ensure a fair and equitable competitive environment for them.
>
> C) Through these efforts, realize **the healthy growth of a new market** consisting of smartwatches as new customer contact points and ecosystems based on them.

Basic approach to address issues

<Perspectives for consideration>

○ Here, **innovation** in the process of new market growth should be **properly governed**. From this perspective,

⇒ •While **continuously monitoring** the market environment during the growth process,

•And **making efforts to keep engagement** including dialogue with various stakeholders,

•It may be required to take an **agile approach** to market changes in the development and implementation of rules.

○It is necessary to consider the **balance between the protection of privacy and the development of a competitive environment** in relation to the sensitivities of healthcare data.

○ **Policy considerations on how healthcare data should be used from a public interest perspective** are also necessary.

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(1) Approaches to address concerns about competition among smartwatch providers

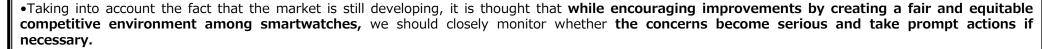| Concerns over smartwatches	Specific matters of concern
•There are concerns that a fair and equitable competitive environment in the smartwatch market will not be ensured by using their influence in smartphones as leverage to **give preferential treatment in connecting their own smartwatches to their own smartphones, for example.**	○**Restrictions on functions, etc. for other smartwatch manufacturers in connection to the iPhone**

① **If smartphone OS providers treat their own smartwatches favorably,** they may use their influence in the smartphone market as leverage **to impair a fair and equitable competitive environment at new customer contact points.**

② Even though the market is still developing, once a strong position is acquired, that position **is likely to become entrenched.**

③ The influence in the mobile ecosystem used as leverage is also unlikely to diminish due to lack of competitive pressure.

⇒ **At this point in time, measures should be taken to ensure a fair and equitable competitive environment among smartwatches.**

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(2) Approaches to address concerns between smartwatch providers and vendors of apps and devices that are linked with smartwatches

Concerns over smartwatches	Specific matters of concern
•Combined with the factors in (1) above, it is thought that Apple is in a position to be able to secure or strengthen its position by effectively determining the **various rules and data handling in the smartwatch-based ecosystem.**	○**Concerns about data** •**Constraints on third-party vendors in healthcare data linkage.** •**Third-party access to data which platform operators have obtained.** ○**Pre-installation and default settings of Apple Health**

•Taking into account the fact that the market is still developing, it is thought that **while encouraging improvements by creating a fair and equitable competitive environment among smartwatches,** we should closely monitor whether **the concerns become serious and take prompt actions if necessary.**

• From this perspective, it may be possible to establish **a framework for monitoring the market.** Specifically, **a list of issues to be monitored** by the relevant authorities should be identified through this competition assessment. The following mutually complementary efforts may be considered in order for the relevant authorities to monitor the situation regarding those issues and take actions promptly if the problem becomes more serious.

a) **Prompt implementation of policy recommendations to encourage smartwatch providers to voluntarily improve their conduct**, depending on the situation.

b) **Prompt, strict and appropriate enforcement by the Fair Trade Commission in specific cases that include concerns in light of the Antimonopoly Act, including the use of petition for an urgent injunction.**

c) In addition to the above, considering **some kind of framework that can promptly address harms.**

*I. Competition among smartwatch providers
II. Concerns between smartwatch providers and vendors of apps and devices that are linked with smartwatches.

	Issues	Approaches to address (options)	Remarks*	
			I	II
1. Restrictions on functions and connections	1. Connection from Wear OS smartwatch to iPhone	● Option: Mandate to provide third-party peripherals with the functions equivalent to those provided to their own peripherals	○	
2. Data	2. Restrictions on third-party providers in healthcare data linkage	● Establish a framework for monitoring the market (This is a matter that needs to be monitored. The situation will be closely monitored and promptly addressed if the problem becomes more serious.)		○
	3. Third party providers' access to platform operators' data	● Establish a framework for monitoring the market (This is a matter that needs to be monitored. The situation will be closely monitored and promptly addressed if the problem becomes more serious.)		○
3. Default settings and pre-installation	4. Advantages due to default settings, pre-installation	● Establish a framework for monitoring the market (This is a matter that needs to be monitored. The situation will be closely monitored and promptly addressed if the problem becomes more serious.)		○

1. Connection from Wear OS smartwatch to iPhone

Issues	• Compared to the Apple Watch, <u>Wear OS smartwatches are constrained</u> in terms of various functions <u>when connected to the iPhone.</u> Specifically, the following examples can be listed. ① Hassle of pairing (requires downloading a companion app to connect to iPhone) ② In principle, Bluetooth Low Energy (a standard for infrequent, small-volume data exchange, with lower transmission speeds than Bluetooth Classic) is used (this requires the use of Wi-Fi, which constrains its use in places where Wi-Fi is not available. The battery drains quicker). ③ Notification functions and app operation when the iPhone is not nearby (unable to access to functions such as sending/receiving data, music, etc.). ④ Notification functions and functions to reply to notifications (notification functions are constrained and reply functions are not supported). ⑤ Background synchronization (if an app is not used over a long period of time, it cannot automatically run in the background). ⑥ Unable to sync apps.
Competition assessment at this time	• While it is extremely important that smartwatches work with smartphones, <u>Apple Watch has a competitive advantage</u> over other smartwatches, such as a Wear OS smartwatch, <u>because Wear OS smartwatches have more limited functions than Apple Watch when connected to the iPhone.</u> • From this perspective, there are concerns that <u>restrictions in connecting to the iPhone may be impairing equal footing among smartwatches.</u>
Options	**(Option: Mandate to provide third-party peripherals with the functions equivalent to those provided to its own peripherals)** • It may be possible to <u>introduce a rule that requires smartphone OS providers above a certain level of scale to provide equivalent functions to third-party peripherals when they provide such functions to their own peripherals.</u>

2. Restrictions on third-party providers in healthcare data linkage

Issues	- For the Apple Watch and iPhone, <u>third parties are required to store healthcare data collected by third parties in a specific area of the user device (HealthKit Store) designated by Apple in order to provide services linking those data with other third-party apps.</u> - In such a case, the third parties concerned <u>will not be able to access access logs from other app providers, etc. to the data stored in the HealthKit Store,</u> and there are concerns that the third parties concerned will not be able to obtain marketing information necessary for detailed coordination.
Competition assessment at this time	- As mentioned above, Apple's <u>requirement that data be placed in the HealthKit Store may make it difficult for third parties that link data with other third parties</u> to seamlessly accumulate and process various information about access to their own data to <u>develop a variety of services.</u> - Such data accumulation in the HealthKit Store would also be a <u>concern from an equal footing perspective if only Apple may view and use data provided by third parties.</u> - <u>It may be necessary to closely monitor</u> whether any competitive problems arise, such as putting third parties at a competitive disadvantage through self-preferencing or imposing excessive burdens on them.
Options	**This is an issue to be monitored. This will be closely monitored by the relevant authorities, and if the problem becomes more serious, it will be promptly addressed** (P8. Framework for market monitoring).

3. Third party providers' access to platform operators' data

Issues	- There are concerns that Apple will be able to <u>enclose data</u> obtained from third parties as well as data obtained by Apple itself, and that <u>only Apple will be able to use the data to develop services.</u> - It is pointed out that Apple is encouraging customers to share their personal data through <u>inductive displays</u> on the <u>iPhone consent acquisition screen</u>.
Competition assessment at this time	- Generally, the degree to which access to data is granted to other enterprises should also be based on the perspective of ensuring privacy. - In addition, the accumulation and use of data does not pose a problem in itself, as they lead to the creation of new products and services and innovation. - <u>With the iPhone and the Apple Watch that links with it</u> becoming a platform for third-party device and app vendors, and data accumulated in the HealthKit Store, there <u>may be concerns from an equal footing perspective</u> that Apple, in its first-party capacity, can <u>encourage users to share their personal data with Apple</u> by <u>inducing consent acquisition with positive displays and use those data</u>. - <u>It may be also necessary to continue to closely monitor Google</u> to see whether any problems arise in setting rules for access to data and in its implementation.
Options	**This is an issue to be monitored. This will be closely monitored by the relevant authorities, and if the problem becomes more serious, it will be promptly addressed** (P8. Framework for market monitoring).

4. Advantages due to default settings, pre-installation

Issues	- <u>Apple Health is pre-installed on iPhone and Apple Watch</u>, and Apple Health can obtain data from the iPhone, Apple Watch and third-party apps and display them together. - <u>Since Apple Watch does not have much data capacity</u>, there may be concern that if that capacity is taken up by pre-installed Apple apps, <u>there will be not enough room for third-party apps.</u> - Since <u>pre-installed apps</u> create a <u>strong status quo bias for users</u>, <u>Apple Health</u> may have an advantage over third-party apps <u>in terms of user acquisition and data collection</u>.
Competition assessment at this time	With pre-installed apps, Apple has an <u>advantage over third-party app developers in terms of user acquisition and data collection</u> and <u>may have a competitive advantage over third parties in terms of both quality and price in providing various services related to collected healthcare data</u>. From this perspective, <u>it may be necessary to closely monitor whether any adverse effects on competition will arise in the future.</u>
Options	**This is an issue to be monitored. This will be closely monitored by the relevant authorities, and if the problem becomes more serious, it will be promptly addressed** (P8. Framework for market monitoring).

○ This interim report have summarized the issues surrounding the competitive environment for voice assistants and wearables and have presented response options to address these issues and points to keep in mind.

○ However, this is a tentative proposal, including the options to address issues in this interim report, and no decisions have been made. Rather, the purpose of this report is to clarify and publicize the issues to be discussed and examined in the future, and to solicit opinions and ideas of concerned parties in a broad manner in preparation for the final report.

○ Therefore, the following "items for which we would like to receive your opinions" are included in each issue mentioned above, and we will receive opinions from a wide range of concerned parties through public comment procedure.

(Example)

```
【Main items for which we would like to receive your opinion regarding this matter】
1. Additional information on facts and concerns
•   Is there additional information (e.g., additional or supplemental specific
    examples) regarding the facts and concerns?
2. Effectiveness of the options
•   Will options effectively solve the issues? What kind of benefits will the option
    bring?
•   Other than the options written in the report, are there any other options to
    effectively solve the issues?
3. Possible costs and risks with the options implemented
•   What kind of costs and risks will be raised if the options are implemented?
•   What kind of measures can be considered to mitigate those costs and risks?
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○ Based on the opinions received, we will hold hearings, exchange views with concerned parties and experts, study and organize measures to address the issues, and will publish a final report. We appreciate your continuous cooperation.