Generative AI and Competition (Discussion Paper)
Summary

October 2024
Japan Fair Trade Commission

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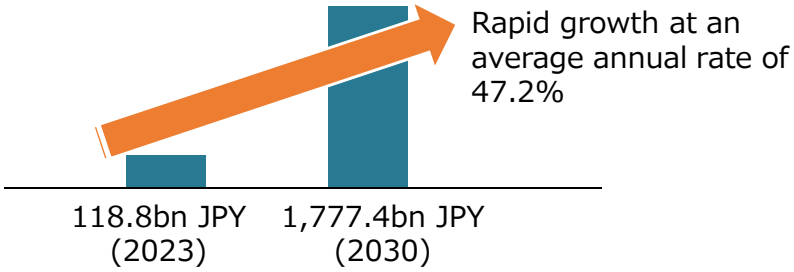
公正取引委員会 Japan Fair Trade Commission

Characteristic of the generative AI market

■ The generative AI global boom will develop and grow further in the future

Generative AI sector growth in Japan*



＊Made by the JFTC based on figures from the *"Trend Survey Report on Key Areas, 2023"* (Japan Electronics and Information Technology Industries Association)

■ The development and diffusion of generative AI has both merits and drawbacks

Potential innovations

- ✓ Business transformation and creation of new business models
- ✓ Various economic and social benefits, such as business productivity improvement and new services

Potential risks

- ✓ Copyright infringements
- ✓ Social confusion and instability caused by false information and misinformation
- ✓ **Possible risks from a competition policy perspective**

To foster further innovation in Japan's generative AI market and **witness the proper integration of these technologies into our economy and society,** it is crucial to **maintain a fair and competitive environment**. Ensuring the sustainable development of generative AI **requires first understanding the current landscape**, including both domestic and international trends, and **clarification of potential issues related to the Antimonopoly Act and competition policy**.

The JFTC's process for conducting market studies on generative AI markets

■ The JFTC is initiating a study to properly understand the rapidly changing and growing generative AI sector, including both domestic and international trends. Releasing the "Generative AI and Competition" Discussion Paper is the first step of the study.

1 START
Publication of Discussion Paper (Request for information)

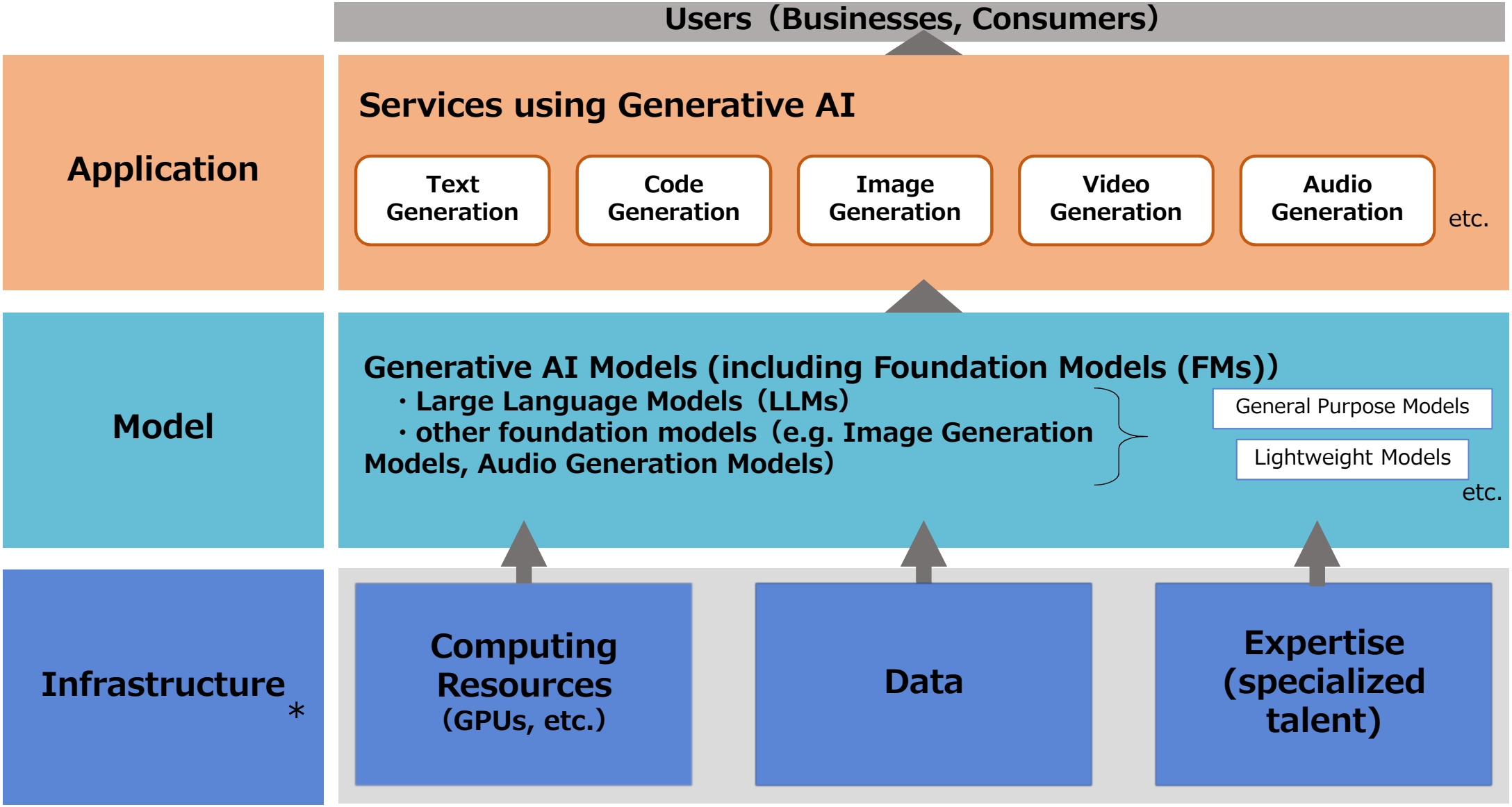
2
Interviews with businesses and experts
Analysis of information provided through RFIs

3
Present Antimonopoly Act and competition policy views as necessary

In light of **the fluid state of generative AI markets**, the JFTC will punctually sort relevant information from various stakeholders and proceed with the market study in **an agile, prompt, and flexible manner**, presenting its views on generative AI issues from the Antimonopoly Act and competition policy perspectives as necessary.

Structure of Generative AI Markets

- The JFTC has organized the current structure of generative AI sector into three market layers



* Cloud services play an important role in the infrastructure layer, but is not shown in the diagram as they can be used in each layer (such as for application development).

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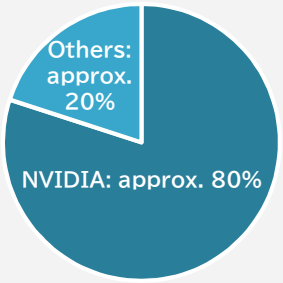
1 Infrastructure: generative AI's foundation

■ Computing Resources (GPU etc.)*

this discussion paper focuses solely on semiconductor chips



- ✓ Graphic processing units (GPUs) are important for the development of generative AI models. NVIDIA has approximately 80% share of the global GPU market.
- ✓ Domestic companies are working to acquire GPUs while also developing their own semiconductor chips that compete through energy efficiency and pricing.

■ Data

- ✓ Large amounts of training data are necessary for the development of generative AI models. Domestic businesses are said to be cautious about using data due to restrictions such as copyrights.
- ✓ Domestic businesses may be able to develop a superior model than those built by big tech companies if they are specialized in Japanese.

■ Expertise (specialized talent)

- ✓ Although highly-specialized talent are necessary for the development of generative AI, hiring them is difficult. There are claims that this is a key bottleneck in developing generative AI models, products, etc.
- ✓ Some have noted that domestic businesses struggle to acquire these talents as they tend to be concentrated in big tech companies due to their abundant financial resources.

2 Models: the market for developing generative AI

- ✓ The development of large language models (LLMs), which are generative AI models specialized in generation and processing text, is highly competitive both domestically and abroad.
- ✓ Experts point out a tendency for domestic businesses to develop specialized models in Japanese or for specific industries or uses.

3 Application: the development and provision layer of generative AI products

- ✓ Generative AI products are developed using open-source/closed-source or in-house models and used in a wide range of industries.
- ✓ Big tech companies are now offering generative AI products; there is a growing trend to integrate these products into existing digital services and functions via APIs.

4 Other generative AI specific issues and considerations that transcend layers

(1) Cloud services

- Most developers of generative AI lack their own computing resources, and use cloud services provided by big tech companies to develop their generative AI models and products.

(2) Switching/migrating development environments

- Experts mention that system reconstruction costs make it difficult to switch generative AI development environments and that migrating out of cloud services can be arduous.

(3) Open-source/Closed-source

- Open-source can lower barriers for entry and has transparency and flexibility in technical specifications, offering accelerated development. Closed-source does not disclose technical specifications, making it easier for users to manage its use and reducing the risk of misuse. While one is not definitively preferable over the other from a competition policy perspective, it is important to ensure that a variety of options are available.

(4) Partnerships

- There are various partnerships forming in the generative AI sector, especially between big tech companies and start-ups. Some believe these deals could boost competition, while others think they may weaken competition.

▶ The discussion paper presents questions related to each section for comments and information.

Antimonopoly Act and Competition Policy Issues in Generative AI

- In light of generative AI market developments, the JFTC has deduced the following five issues as a base for future discussions. The JFTC has not identified any problems at present or come to any conclusions regarding market behaviors.

1 **Access restrictions and exclusion of competitors**	[*Example*] A handful of large enterprises are in advantageous positions for acquiring GPU and data necessary for the development of generative AI models. If access to these are restricted and competitors are excluded, new market entry opportunities and other competition dynamics may be impacted.
2 **Self-preferencing**	[*Example*] If a provider of generative AI models develop their model in such a way that their own products of services appear more favorably in the inference results compared to those of other companies, it could impact competition related to those products or services.
3 **Tying**	[*Example*] If a dominant provider of a service bundles the use of its own generative AI model as a condition for offering that service, it could potentially impact competition related to generative AI models.
4 **Parallel conduct using generative AI**	[*Example*] While generative AI-driven price surveys can increase price competition, the alignment of underlying data and algorithms can lead to similar or identical pricing strategies and production targets by various companies, potentially impacting competition.
5 **Acquiring expert talent via partnerships**	[*Example*] If a company aims to corner highly skilled talent for themselves by forming partnerships, resulting in effects similar to a business transfer, it could impact competition.

- **The discussion paper presents questions related to each section for comments and information.**