Toward Social Implementation of Artificial Intelligence (AI) to Realize SDGs and Society 5.0

RECOMMENDATION BY THE TECHNICAL STRATEGY STEERING BOARD, JEITA

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Introduction

The use of Artificial Intelligence technology (hereinafter "AI") is already becoming increasingly widespread in society. Not only will its presence increase in the future, but it will also become indispensable in transforming our lives, industries, and social infrastructure toward the realization of the United Nations Sustainable Development Goals (SDGs) for 2030 and Society 5.0, the Super Smart Society that Japan aims to achieve.

In this recommendation, JEITA presents what should be properly understood, considered, and worked on for the social implementation and active use of AI, which will continue to evolve and develop.

I. [Promotion of Utilization]

AI is for the development of people, society, and culture, and should be actively utilized.

The use of AI is already spreading in various aspects of society. AI is used as a diagnostic aid in the medical field, AI has already been implemented as a system to support automobile driving, and the emergence of generative AI is making it easier for everyone to use AI in a variety of fields.

As AI continues to evolve, humans will be able to enjoy various benefits more than ever before, such as more efficient work, expanded creative activities, burden-free transportation, access to advanced medical care, and countermeasures against infectious diseases. JEITA believes that AI should be actively utilized to solve social issues and to help people become richer and more creative.

II. ［Literacy Improvement]

It is important to spread proper understanding of the usefulness, characteristics and risks, and ethical principles of AI through industry-government-academia collaboration in order to make appropriate use of AI.

AI has a wide range of applications and is being discussed in a variety of forums, from AI for specific applications to general-purpose AI. In particular, with the emergence of generative AI, the users of AI are spreading to general consumers due to its ease and usefulness. On the other hand, there are fears that generative AI may generate plausible but inaccurate output

(hallucination) and the risk that the products may unjustifiably infringe the rights of others (copyright and privacy). It is also important to be widely recognized that AI is constantly evolving and not perfect. It is becoming more and more important that all AI users have a correct understanding of the characteristics of AI, the benefits and risks it brings, and the ethical principles, so that they can judge and use AI in an appropriate way by themselves.

JEITA will actively promote necessary actions and activities to foster a more accurate understanding of AI and to improve its social acceptance.

III. [Responsibility decomposition and cooperation]

For appropriate utilization of AI, all parties involved need to fulfill their roles and responsibilities and cooperate with each other.

Appropriate use of AI cannot be realized only by developers of AI technology and providers of AI systems and services. In the use of AI, there is a risk of incorrect output and infringement of others' rights; developers need to improve algorithm accuracy and ethical perspectives, and providers need to provide information and monitor users, and users need to take into account the verification of results and respect for rights, as well as evolution through learning when using the system after it is released to the market.

It is important that all people and parties involved in AI systems and services, not only AI business players (AI developers, AI providers, and AI users for business), but also end users (excluding business users) who benefit from the systems and services provided by the providers, fulfill their roles and responsibilities, and cooperate with each other for the appropriate use of AI.

IV. [Ensuring Safety and Security]

Governance mechanisms, social systems, and technologies to mitigate risks are needed to serve as guardrails for the social implementation of AI.

Advances in AI technology have already surpassed human capabilities in some areas. While autonomously growing AI is expected to bring many benefits to users, it is also expected to bring unexpected disadvantages to users due to learning after AI products and services are introduced to the market. For the widespread use of AI, with properly understanding the risks and hazards, introduction of a new legal system should be considered in order to provide a safety net as necessary in cases where existing laws, regulations, and guidelines cannot address the issue. In the development of legal systems, the concept of agile governance is necessary to avoid excessive regulation and to provide flexibility based on the assumption of change in light of the evolution of AI. In addition, given that risks differ depending on use cases, it would be useful to establish guidelines by industry/field of application and update them as appropriate.

JEITA also considers it important to technically address the risks and hazards of AI. For example, JEITA considers it useful to develop technologies for bias detection of data and explainable AI to realize fair, reliable, and transparent AI, and to eliminate inappropriate

products generated by AI. Furthermore, it is also necessary to improve safety in the process of utilization and to provide a mechanism to record and monitor unnatural behavior, rather than just providing products, services, etc. implemented with AI technologies to the market.

V. [International Cooperation]

AI should be promoted for social implementation through international cooperation by international organizations, multilateral agreements, and treaties.

AI research and development is in a state of fierce competition internationally, and the utilization of AI is also advancing across borders. In order to realize early and proactive social implementation of AI, as well as inn order for Japanese companies to be internationally competitive by conducting R&D in an advanced environment in the field of AI, JEITA calls for the development of a domestic legal system for AI that ensures interoperability with friendly countries that share values, based on international organizations, multilateral agreements, and treaties, while taking into account the status of legal development overseas and the evolution of AI. JEITA also believes that international cooperation is necessary in the development of technologies to ensure the safety and security of AI, including joint development and promotion of international dissemination with regard to common technologies that are areas of cooperation.

VI. [Human Resource Development]

Human resource development in the age of AI should be addressed not only from technical aspects, but also from multiple perspectives, such as solving social issues, creative use of AI, and understanding of diverse values, legal systems, and ethics in the world with regard to AI.

Currently, there is an overwhelming shortage of AI-related human resources in enterprises. Especially with the proliferation of generative AI, JEITA believes that the following diverse perspectives are necessary in human resource development.

- Increasing opportunities for diverse people with different backgrounds and experiences to generate ideas from new perspectives

- Providing educational programs to cover the fundamentals of natural language processing, image processing, and data analysis as well as understanding ELSI (ethical considerations, law and regulations, copyright, privacy, fairness, and accountability) for AI

In addition, Japanese companies are currently not competitive enough in the international competition for human resources due to various factors such as the compensation system. For example, it is important to improve the domestic environment for attracting global human resources by reviewing regulations and tax systems related to the Financial Instruments and Exchange Act and the Companies Act regarding stock compensation. On the other hand, there is a mismatch between the skills of engineers who have spent many years in their careers and the

demand in their respective companies. Industry, government, and academia should work together to strengthen Japan's presence in the field of AI by promoting the development of human resources in AI research and development and advanced applications, as well as an environment in which talented people can work in Japan, and also by providing motivated working people with opportunities for reskilling to "relearn" data science and AI application skills.

VII. ［Ensure advanced technological capabilities]

The development capability of advanced AI in Japan should be strategically and continuously strengthened.

JEITA believes that the use of advanced AI will lead to the competitiveness of a wide range of science, technology and industry, and will directly contribute to improving the country's international competitiveness. The research and development of AI, especially the development of foundation models for use in generative AI models, requires the availability of large-scale computational resources and high-quality as well as high-volume data. Without government support, it would be difficult to create such an environment.

In addition to the development of language models, AI research and development also requires the development of multimodal foundation models in non-verbal domains such as images, as well as peripheral technologies such as sensing, communication, and image recognition technologies to collect and maintain high-quality data. The development of new models such as personal/distributed AI is also important.

On the other hand, it is also necessary to ensure and improve the quality of large-scale language models and fundamental models with complex architectures, taking into account their technical characteristics; to develop systems and services that incorporate such models; and to conduct exploratory research to explore the next trend in language models and develop them ahead of the rest of the world.

JEITA believes that industry, government, and academia should work together strategically and continuously to improve the foundation model development environment, develop a variety of foundation models, and develop peripheral technologies to strengthen the development capability of advanced AI.

Conclusion

JEITA, as an industry association representing the digital industry, believes that AI will enrich people's lives and will urge the government to develop the necessary legal system and environment for its social implementation, while JEITA member companies, as AI providers (AI developers, AI providers, and AI users for business), will promote necessary policies and activities and contribute to the creation of industries for a sustainable society while enhancing Japan's international competitiveness.