

News Release

FOR IMMEDIATE RELEASE

Hitachi Establishes Principles guiding the ethical use of AI in its Social Innovation Business

Human-centered development and societal implementation of AI will contribute to the creation of a safe and resilient society and the enhancement of people's quality of life.

Tokyo, February 22, 2021 – Hitachi, Ltd. (TSE: 6501, "Hitachi") today announced that it has established Principles guiding the ethical use of AI with a view toward the human-centered development of artificial intelligence (AI) and its societal implementation in Hitachi's Social Innovation Business with Lumada⁽¹⁾ as the engine for resolving increasingly complicated social problems. Principles guiding the ethical use of AI consist of three standards of conduct and seven items to be addressed which are established from the perspectives of safety, fairness, and privacy protection. Since its foundation, every individual employee in Hitachi maintains a high ethical code, strong values and sincere and proper behavior to contribute to society. To continuously respond to customers and partners, ensure their trust, and carry out Collaborative Creation activities together with them free from concerns, in addition to the unwavering policies mentioned above, Hitachi will ensure that risks are evaluated and that control measures are in place to mitigate them based on the stipulated Principles guiding the ethical use of AI. In so doing, it will contribute to the creation of a safe, comfortable and resilient society that champions human dignity and enhances people's quality of life.

Regarding the formulation of the Principles guiding the ethical use of AI, Toshiaki Higashihara, President & CEO, comments, " Hitachi's mission is to "contribute to society through the development of superior, original technology and products," and since its foundation, Hitachi has been delivering technologies that benefit society around the world, while at the same time conducting corporate activities with an emphasis that "right and wrong" is more important than "profit and losses". We will continue to contribute to the development of AI technology to solve social issues and build a human-centric society."

Around the world, climate change, the aging population and other issues have surfaced, and today humans face the unprecedented crisis of the COVID-19 pandemic. In this situation, AI, IoT and other state-of-the-art digital technologies support society and contribute to people's lives. For 110 years since its foundation, Hitachi has innovated in many different ways in the two areas of operational technology (OT)⁽²⁾ and

information technology (IT) with the goal of supporting society and creating a society that lives in safety and comfort. The significance of AI as a source of innovation is increasing. It is being applied in a broad spectrum of areas. For example, it will be utilized for the management of operations in the railway sector, the optimization of power transmission and distribution plans in the energy sector, the advancement of equipment maintenance in health care and manufacturing, and credit management in the financial sector. In Hitachi's Social Innovation Business, there is the risk in the OT area directly linked to social infrastructure that an AI's abnormal behavior or a malicious act by an external party could seriously impact the lives of humans and society as a whole. In the IT area, the development of AI that proceeds in a wrong direction could exacerbate discrimination, prejudice and inequality. Hitachi is well aware of these issues, and to control the inherent ethical risks in AI development and societal implementation, Hitachi has established its Principles guiding the ethical use of AI.

Specifically, Hitachi has established a standard of conduct required in each of the three stage of planning, societal implementation, and maintenance and management, and seven items to be observed which apply to all stages, and will utilize AI based on these guiding principles.

■ Standards of conduct

1. Development and use of AI will be planned for the realization of a sustainable society

It is important to ensure that the reason for using AI in services, solutions or products is appropriate from the planning stage, in order to suppress the inherent ethical risks in AI while generating new value. Hitachi will use AI to resolve issues in society, realize a comfortable, resilient and sustainable society and to improve the quality of life of people around the world.

2. AI will be societally implemented in society with a human-centric perspective

To ensure that decisions made by AI respects the rights of individuals and contributes to the interest of society, it is important that AI is societally implemented in a responsible manner and ensure its harmonious co-existence with humans. Hitachi will societally implement AI from a human-centric perspective according to the principles of freedom, fairness and equity, and endeavor to verify that it functions as intended.

3. AI will be maintained and managed to provide long-term value

It is important that the AI continues to consistently provide value over the long term after it is societal implemented. Hitachi will endeavor to maintain and manage the value

provided by the AI in a way it is responsive to and acceptable to societal and environmental changes.

Prior to the establishment of the Principles guiding the ethical use of AI, Hitachi created the post of personal data manager, which is responsible for managing privacy protection, and established the privacy protection advisory committee in July 2014. Understanding changes in consumer awareness and social tolerance, it has been supporting risk evaluation and control measures in various data utilization projects and is working on projects utilizing data in consideration of the need for privacy protection. In a six-year period, it conducted at least 700 privacy impact assessments to make improvements based on actual identified issues, domestic and overseas trends and incidents and to accumulate expertise in different types of operation. Established in 1984, the Hitachi Professional Engineers Association⁽³⁾ is one of the largest societies of in-company professional engineers in Japan. It also works to improve ethical awareness of engineers inside and outside of the company. By utilizing experiences and knowhow mentioned above, leading data scientists and AI researchers took the initiative to formulate the Principles guiding the ethical use of AI.

Lumada Data Science Lab. is the center of numerous advanced Collaborative Creation projects in the Social Innovation Business. It plays a central role in specific operations that have now begun, including the review of the purposes for utilizing AI, the evaluation of risks involved in the societal implementation of AI and the development of control measures, using a checklist developed from the Principles guiding the ethical use of AI. In addition, it actively applies Explainable AI (XAI)⁽⁴⁾, a technology for explaining AI functionality, as part of its response measures.

Hitachi will make public its activities for the establishment of AI ethics in the form of a white paper to help stimulate discussion throughout society. It will incorporate the diverse opinions of stakeholders into its constant review of AI ethics to improve the text of the principles and their implementation and to raise awareness.

(1) A collective term for solutions, services and technologies based on Hitachi's advanced digital technologies for creating value from customers' data and accelerating digital innovation

(2) Operational Technologies are control and operation technologies.

(3) An association of current and former Hitachi Group employees that are qualified National Professional Engineers. Its objective is to contribute to the development of the Hitachi Group and society through engineering. <https://www.hitachi.co.jp/rd/pe/>

(4) Accountability adds reliability and fairness to data and helps identify the points to be remedied when

an error occurs. This opens the way for safety and reliability in the implementation of AI in society and in its maintenance and management.

Items to be addressed

1. Safety

Hitachi will endeavor to realize and manage AI that protects human rights including health and lives, property, dignity, reliability and trust of users and related parties, by verifying that AI and the system or solution using the AI operates as with the intended quality. Further, Hitachi will at the same time endeavor to realize and operate AI that prevents the destruction or deterioration of the global environment and provide a safe life to people.

2. Privacy

Hitachi will endeavor to realize and manage AI that protects privacy by ensuring the proper handling of personal data used as input data for AI learning, evaluation, and operation as well as of the output data from AI.

3. Fairness, Equality, and Prevention of discrimination

Hitachi will endeavor to realize and manage AI that works for the interests of a diverse and inclusive group of stakeholders, while ensuring that it prevents discrimination or avoids bias on factors such as race, gender identity or citizenship.

4. Proper and responsible development and use

Hitachi will endeavor to ensure the proper use of AI by pursuing development based on the potential risks in each specific use case so that it does not deviate from the purpose or operating conditions for which it was designed. Further, Hitachi will endeavor to ensure proper AI operation by informing users and operators of the use policy, conditions and so on. In addition, Hitachi will endeavor to ensure proper AI maintenance and management by continuing to check for any changes in the operating conditions, mindset of people in relation to the AI and its decision, and conditions in society.

5. Transparency, Explainability and Accountability

Hitachi will endeavor to ensure the transparency of the AI by validating and ensuring that the reasons behind the decision results produced are explainable. Hitachi will endeavor to be accountable for AI and its decision in response to the purpose and conditions of use of AI.

6. Security

Hitachi will endeavor to realize security-oriented AI and its operations including countermeasures at the system or operations level to prevent information leaks, data manipulation, system crashes and service interference.

7. Compliance

Hitachi will realize AI and its operations that comply with the applicable laws and regulations of the countries and regions in which the AI is to be used.

About the Principles guiding the ethical use of AI

For details, please visit

<https://www.hitachi.co.jp/products/it/lumada/about/ai/ldsl/index.html#p05>

About Hitachi, Ltd.

Hitachi, Ltd. (TSE: 6501), headquartered in Tokyo, Japan, is focused on its Social Innovation Business that combines information technology (IT), operational technology (OT) and products. The company's consolidated revenues for fiscal year 2019 (ended March 31, 2020) totaled 8,767.2 billion yen (\$80.4 billion), and it employed approximately 301,000 people worldwide. Hitachi drives digital innovation across five sectors – Mobility, Smart Life, Industry, Energy and IT – through Lumada, Hitachi's advanced digital solutions, services, and technologies for turning data into insights to drive digital innovation. Its purpose is to deliver solutions that increase social, environmental and economic value for its customers. For more information on Hitachi, please visit the company's website at <https://www.hitachi.com>.

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