

Hitachi develops multi-agent debriefing technology to strengthen on-site capabilities

Integrated into a physical AI orchestration system centered on Naivy to support the co-evolution of workers, AI, and robots

Tokyo, May 20, 2026 - Hitachi, Ltd. (TSE:6501, "Hitachi") has developed a multi-agent debriefing technology that enables knowledge gained by workers, AI, and robots in the field to be utilized across entire organizations. While the use of AI agents and robots is expanding at worksites, responses to unexpected situations still rely heavily on the experience and judgment of skilled workers. The technology facilitates post-task reflection through dialogue with multiple AI systems, using the worker's "why" (reasoning and rationale) as the starting point to identify the causal relationships behind decisions. By helping workers reach the state where they can explain the reasoning behind their decisions in their own words, the technology not only enhances autonomy and practical problem-solving capabilities but also transforms individual experience into knowledge that can be shared and applied across the organization.

In addition, by integrating the technology into the physical AI orchestration system^{*1} centered on the next-generation AI agent Frontline Coordinator - Naivy^{*2} (hereinafter "Naivy"), Hitachi aims to help improve safety, boost productivity, and strengthen on-site capabilities to handle unexpected situations. The system integrates field data and domain knowledge into a comprehensive package featuring knowledge enhancement support to consolidate experience into organizational knowledge, alongside task execution support to assist work operations. Through this framework, the system creates new value by enabling collaboration among AI, robots, and workers, thereby facilitating human-AI co-evolution (Figure 1).

Going forward, Hitachi will validate the effectiveness of the technology and system through proof-of-concept trials with customers and expand its scope of application. Naivy will be deployed as part of HMAX Industry, Hitachi's suite of next-generation industrial solutions, and the newly developed technology will serve as one of its core technologies. Through these efforts, Hitachi will contribute to the sustainable operation of industrial sites and social infrastructure, including electric power and railway systems, while advancing workforce development and skill transfer.

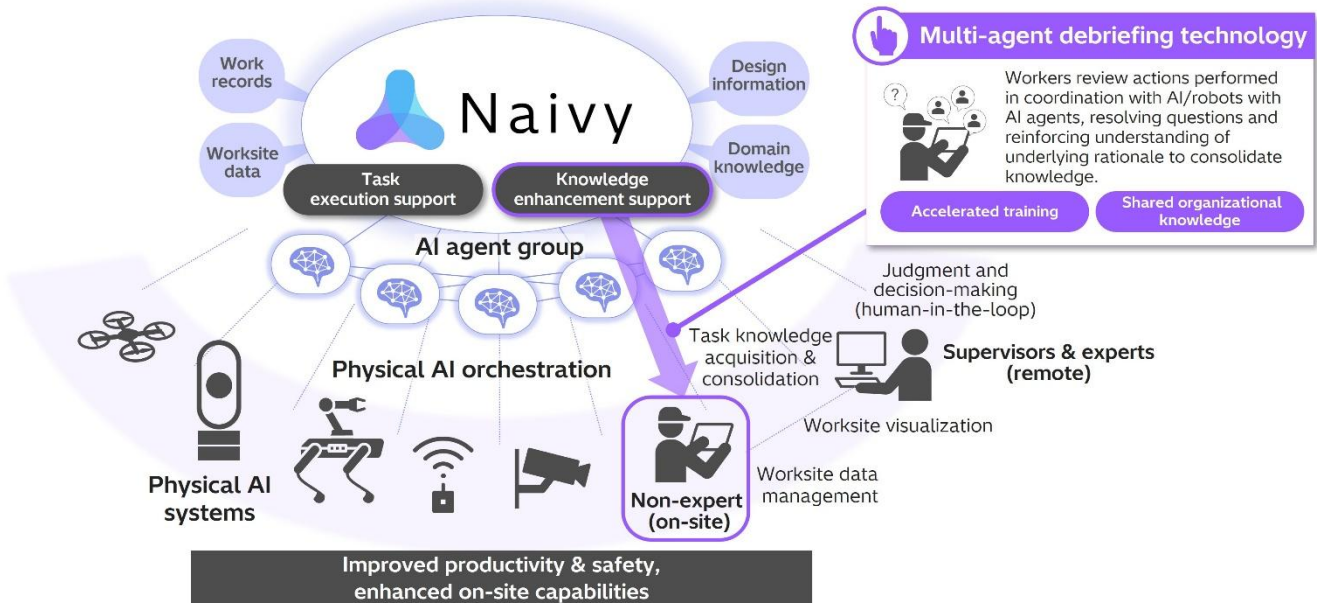


Figure 1. Conceptual overview of the physical AI orchestration system centered on Naivy

*1. A framework that coordinates, integrates, and manages multiple AI models, tools, and systems to autonomously collaborate in addressing complex challenges that are difficult for a single system to solve independently. Naivy leverages metaverse environments and groups of AI agents to achieve advanced collaboration between physical AI systems, which are responsible for concrete on-site actions such as robot control and automated operation of various equipment and devices, and workers and supervisors in the field.

*2. [Hitachi develops "Frontline Coordinator – Naivy" as a next-generation AI agent that helps alleviate the psychological burden on frontline workers and enhance work efficiency : Hitachi Global](#)

Note: "Naivy" is a product/service name used in Japan.

Background and issues

Declining labor populations and shortages of skilled personnel are becoming increasingly serious across social infrastructure and industrial worksites, making it an urgent priority to maintain on-site capabilities and effectively transfer skills. To address these challenges, Hitachi has developed Naivy, which supports task execution through intuitive navigation tailored to on-site conditions, as a means of reducing the psychological burden on less-experienced workers and improving operational efficiency. Beyond operational efficiency, Hitachi has also worked to enhance workplace safety through a Naivy-driven risk prediction support system.^{*3}

At the same time, the more advanced a site's adoption of AI agents and robots is, the greater the risk of workers proceeding with tasks without fully understanding the rationale behind operational decisions becomes. To flexibly address unexpected problems and situations, organizations need both task execution support and mechanisms that help workers understand the "why" (reasoning and rationale) behind procedures and decisions as they accumulate and consolidate individual experience as organizational knowledge.

*3. [New system that helps predict worksite hazards using Hitachi's next-generation AI agent Naivy demonstrates enhancements of on-site safety while boosting efficiency : Hitachi Global](#)

Features of the physical AI orchestration system and developed technologies

To address these challenges, Hitachi has built a physical AI orchestration system centered on Naivy that supports improvements in productivity, safety, and on-site capabilities by integrating

task execution support and knowledge enhancement support across field operations. As a core technology underpinning knowledge enhancement support, Hitachi also developed a multi-agent debriefing technology to help organize and consolidate learning after task completion. The key features are as follows:

1. Workplace orchestration connecting workers, AI, and robots

Leveraging site-specific domain knowledge accumulated via Naivy, the system orchestrates task execution across multiple robots and AI systems. In addition, based on Hitachi's extensive industrial expertise, the system organizes and visualizes the causal relationships behind physical phenomena that occur at worksites, such as abnormal facility temperatures and equipment failures, in digital form and feeds this information back to workers, AI, and robots in an optimal fashion. This supports the reliable execution of operations in the field.

2. Support for understanding decision rationale and consolidating knowledge through multi-agent debriefing technology

Multiple AI systems with different roles, including facilitator AI, peer (colleague) AI, and expert AI, work collaboratively to guide post-task reflection based on the worker's "why" (reasoning and rationale) (Figure 2). By linking this setup with operational data and procedures, the system organizes the causal relationships and underlying principles behind decisions, making it easier for workers to explain their reasoning in their own words. This makes it possible to consolidate experience as knowledge, leading to improved on-site capabilities that help address unexpected problems and situations. In internal validation tests simulating HVAC maintenance operations, scores on knowledge retention assessments^{*4} improved by approximately 70% compared with conventional one-on-one AI dialogue (chatbot-style) approaches.^{*5} In addition, evaluations (using DASH^{*6}) and questionnaire surveys confirmed improvements in both the quality of learning and the level of proactive engagement in the learning process.^{*7}

*4. A proprietary knowledge assessment developed based on interviews with experienced workers in the field (maximum score: 30 points; four written-response questions and two multiple-choice questions).

*5. After participants performed a specific task using Naivy, they were divided into two groups. One group conducted conventional one-on-one AI dialogue (chatbot-style), while the other conducted post-task reflection (debriefing) using this technology. Results were calculated based on subsequent test scores.

*6. [Debriefing Assessment for Simulation in Healthcare \(DASH\) | Center for Medical Simulation](#)

*7. Evaluations were conducted through DASH assessments of the quality of the reflection process, as well as questionnaire surveys measuring concentration (immersion) and interest during dialogue with AI.

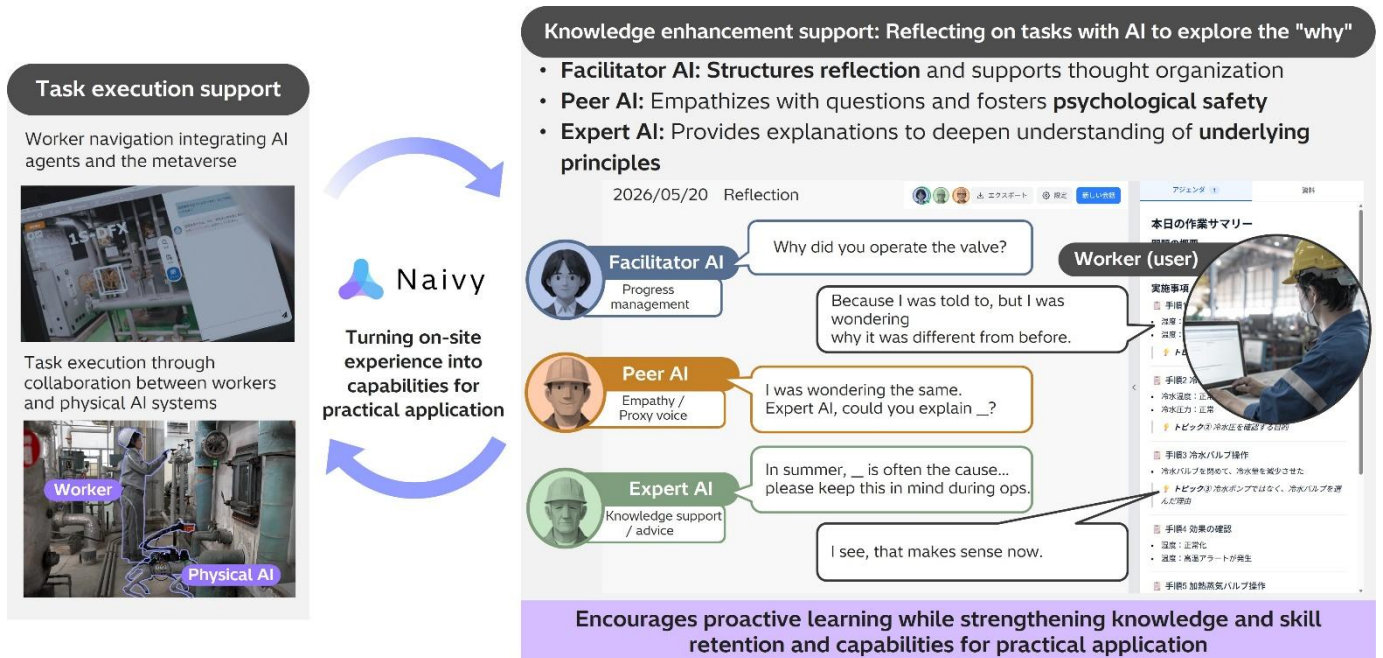


Figure 2. Example of AI-assisted reflection on on-site work using the system's knowledge enhancement support function

3. Cycle of task execution and knowledge enhancement in which people, AI, and robots evolve together

Insights gained through task execution and post-task reflection are not treated as mere individual experience but rather accumulated as organizational knowledge and incorporated in AI-based support. The accumulated knowledge can then be utilized for subsequent task execution support and training programs. This creates a continuous cycle of knowledge enhancement in which people, AI, and robots repeatedly execute tasks and learn together to strengthen on-site capabilities. Through this cycle, the system contributes to effective skill transfer and sustainable operations.

Looking ahead

Going forward, Hitachi will collaborate with customers and partner companies across the industrial landscape, including manufacturing, construction, and electric power, to create new value in the workplace through human-AI co-evolution that goes beyond conventional automation and efficiency improvement. Specifically, Hitachi will enhance mechanisms for dynamically adjusting AI roles and support levels according to users' skill proficiency, task content, and work progress and also expand diverse interaction capabilities. In addition, by incorporating physical AI technologies, the Integrated World Infrastructure Model (IWIM)^{*8} proposed by Hitachi, and other technologies, the company will further expand the ability to transform workplace experience into actionable knowledge and apply it effectively across operations. Furthermore, Hitachi will position Naivy as part of HMAX Industry, its suite of next-generation industrial solutions embodying Lumada 3.0, with the newly developed technology serving as one of its core technologies. Through these efforts, Hitachi aims to contribute to the sustainable operation of industrial sites and social infrastructure, including electric power and railway systems, while transforming workforce development and skill transfer practices.

*8. A model announced by Hitachi in November 2025 to support the development of physical AI and HMAX. By integrating AI technologies with the knowledge and methodologies Hitachi has accumulated in the social infrastructure domain, Integrated World Infrastructure Model (IWIM) enables accurate understanding, reasoning,

and response to real-world phenomena. This establishes an AI foundation capable of continuous, autonomous evolution in the field, including functions such as prediction, planning, and control of the phenomena (e.g., autonomously evolving manufacturing automation).

This technology will be exhibited at Hitachi Physical AI Day, scheduled for May 20, 2026.

Overview of Hitachi Physical AI Day

Date: May 20, 2026 (Wed.)

Venue: The Prince Park Tower Tokyo, 4-8-1 Shibakoen, Minato-ku, Tokyo

[Hitachi Physical AI Day | Lumada: Hitachi](#)

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About Hitachi, Ltd.

Through its Social Innovation Business (SIB) that brings together IT, OT(Operational Technology) and products, Hitachi aims to be a global leader in continuously transforming social infrastructure through digital, contributing to a harmonized society where the environment, wellbeing, and economic growth are in balance.

Hitachi operates worldwide across four sectors – Digital Systems & Services, Energy, Mobility, and Connective Industries – as well as a Strategic SIB Business Unit focused on new growth areas. With Lumada at its core, Hitachi creates value by combining data, technology and domain knowledge to solve customer and social challenges. Revenues for FY2025 (ended March 31, 2026) totaled 10,586.7 billion yen, with 606 consolidated subsidiaries and approximately 290,000 employees worldwide. Visit us at www.hitachi.com.

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