

Hitachi and NVIDIA collaborate to advance HMAX and enable end-to-end autonomous operations through the integrated control of physical AI

- **Developing open and sovereign-enabled multi-agent orchestration technology to optimize the overall operations at industrial sites:** Enabling autonomous operations by seamlessly connecting and controlling customer facilities, equipment, and systems—including those from third-party manufacturers.
- **Connecting Hitachi's social infrastructure intelligence platform "IWIM" with NVIDIA Cosmos world foundation model to enable safe and secure control:** Leveraging on-site domain knowledge and simulation technologies to validate highly accurate, safe and reliable Physical AI control within digital twin environments. Hitachi also joins the NVIDIA Cosmos Coalition to help build open frontier physical AI models.
- **Accelerating real-world implementation through Hitachi's Physical AI FDE (Forward Deployed Engineer) Team:** Forming a Physical AI ecosystem together with partners and customers across robotics, mobility, energy, and industrial equipment sectors, while continuously evolving and scaling Hitachi's "HMAX" through joint validation initiatives.

Tokyo, July 16, 2026 – Hitachi, Ltd. (TSE:6501, "Hitachi"), in collaboration with NVIDIA, will develop multi-agent orchestration technology to accelerate end-to-end autonomous operations within manufacturing and social infrastructure environments. This technology aims to scale and advance "HMAX by Hitachi" ("HMAX"), a suite of solutions, bringing the power of AI to the real world. Through this collaboration, together with NVIDIA and customers participating in the ecosystem, Hitachi will create a model for end-to-end operational optimization and autonomy. The outcome will seamlessly integrate and orchestrate diverse facilities, equipment, and systems operating at customer sites—including those from third party vendors—in a vendor-agnostic manner.

To achieve both the open interconnection of diverse facilities and multiple Agentic AI while preserving data sovereignty and protecting enterprise information assets, Hitachi will leverage IWIM^{*1}, its social infrastructure intelligence platform model, as a knowledge and reasoning foundation, and integrate it with NVIDIA Agent Toolkit software, including the NVIDIA OpenShell secure runtime, NVIDIA NemoClaw agent blueprint and open source NVIDIA Nemotron models. Through this collaboration, Hitachi and NVIDIA aim to build a "Multi-Agent Orchestration Platform" that enables the safe and secure orchestration of multiple AI agents, even in mission-critical environments.

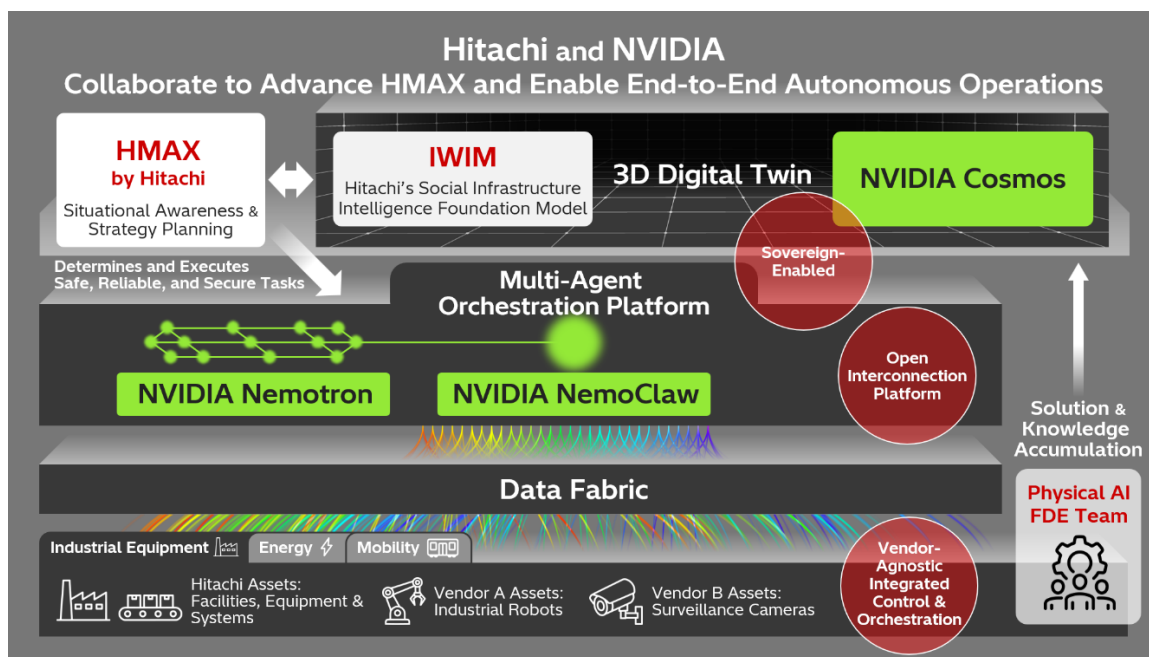
Furthermore, they will connect IWIM with NVIDIA Cosmos world foundation models, to ensure that control enabled by this platform can operate safely and autonomously in the physical world and establish a highly accurate, safe, and reliable validation environment based on digital twins.

Going forward, Hitachi and NVIDIA will build a global physical AI ecosystem centered on this "Multi-Agent Orchestration Platform" and its digital twin-based validation environment. By inviting participation from a diverse range of customers and partners across the robotics, mobility, energy, and industrial equipment sectors, they will promote the formation of a cross-industry ecosystem. Discussions have already begun with several companies, including global leaders in industrial robotics, regarding participation in the ecosystems. To support technology validation and digital transformation in operational environments, Hitachi's Physical AI FDE

Team—combining the advanced digital engineering capabilities of GlobalLogic, Hitachi’s U.S. subsidiary, with Hitachi’s OT (Operational Technology) expertise—will provide hands-on support to drive use case exploration and solution development.

Furthermore, the platform established through these technical validations and the solutions created through the support of the Physical AI FDE Team, will be leveraged to continuously enhance HMAX. Through this practical and open co-creation framework, Hitachi, together with its partners, will accelerate the real-world adoption of Physical AI and support digital transformation and sustainable growth across industries.

*1 Integrated World Infrastructure Model. An intelligent infrastructure model announced by Hitachi in November 2025. Developed based on the multi-layered OT knowledge accumulated over many years and a deep understanding of physical phenomena, it enables the safe and highly reliable implementation of Physical AI in mission-critical social infrastructure. It provides integrated support for the design, development, and operation of facilities and systems, enabling advanced functionality through appropriate decision-making and control even under complex conditions.



Background

In recent years, expectations for Physical AI, which combines autonomous decision-making with physical actions in operational environments, have been growing rapidly. However, realizing advanced Physical AI requires seamless interconnection and integrated control of diverse Agent AI systems, heterogeneous robots, and a wide range of equipment operating within those environments. To interconnect such diverse edge environments, vendor-neutral, globally available open software is essential. In addition, closed LLM environments that ensure sovereignty to prevent the exposure of proprietary corporate data assets are also required.

Hitachi has been driving AI transformation (AX) while strengthening its collaboration with NVIDIA by participating in the NVIDIA Global System Integrator (GSI) program^{*2} and, building Hitachi's AI Factory based on NVIDIA's reference architecture^{*3}. Based on this collaborative relationship and past achievements, Hitachi has decided to advance this development, which balances open interconnectivity with sovereignty that protects its own domain knowledge. Moving forward, by utilizing the use cases Hitachi has accumulated as our own "Customer Zero" and the robust AI Factory environment, it will tackle highly effective problem-solving in the Physical AI domain.

*2 June 6, 2025 Press Release : [Hitachi Expands Collaboration with NVIDIA to Accelerate AI Transformation for Global Customers: Hitachi Global](#) (available in Japanese only)

*3 September 26, 2025 Press Release: [Hitachi Announces NVIDIA AI Factory to Accelerate Physical AI Innovation : Hitachi Global](#)

The Evolution of HMAX Through the Integration of NVIDIA's Cutting-Edge Technology and the Physical AI FDE

Previously, Hitachi announced HMAX^{*4} as a suite of AI solutions supporting the AX of customers and enhanced by NVIDIA technology, such as NVIDIA IGX and NVIDIA Holoscan for sensor processing and Metropolis for real-time video intelligence^{*5}. Through this collaborative initiative, HMAX will evolve into a suite of solutions that autonomously and collaboratively control and operate entire operational environments through the "Multi-Agent Orchestration Platform".

Bridging this technological evolution to real-world deployment is the fusion of Hitachi's unique Physical AI FDE capabilities and NVIDIA's frontier technologies. Physical AI FDE is a specialized team with deep expertise in implementing AI in complex physical environments. Building on GlobalLogic's proven digital engineering capabilities—spanning from edge devices and hardware layers to the cloud through its "Chip-to-Cloud" approach, which supports the digital transformation of global enterprises—Hitachi will further integrate its decades of domain knowledge and OT expertise in social infrastructure to evolve this capability into a Physical AI FDE framework as One Hitachi. Physical AI FDE Team will embed itself at the forefront of customer sites and utilize the "Multi-Agent Orchestration Platform" built through the development by Hitachi and NVIDIA. Based on this platform, they will design and implement, a tailorable, open hybrid architecture that flexibly combines a sovereign environment protecting the customer's domain knowledge and confidential information, with the frontier AI of partner companies. This will enable the comprehensive integration of everything from legacy equipment to the latest robots from different manufacturers, achieving optimization and automation across the entire worksite and dramatically enhancing the value delivered by HMAX.

^{*4} September 24, 2024 Press Release: [Hitachi Announces "HMAX," an AI Solution Enhanced by NVIDIA: Hitachi Global](#)

^{*5} January 6, 2026 Press Release: [Hitachi Launches Expanded HMAX Solutions Accelerating Social Innovation Globally Across Industries](#)

Details on Technical Validation

Hitachi is currently working with NVIDIA to build and conduct technical verification of the "Multi-Agent Orchestration Platform," which serves as the core foundation for AI implementation in social infrastructure. In this validation, Hitachi will combine its expertise in on-site operations and real-world safety requirements with NVIDIA's agent control and high-speed edge inference technologies to advance the following three verification initiatives:

(1) Integrating knowledge regarding the design, development, and operation of social infrastructure with advanced world models.

Hitachi will connect IWIM, which consolidates Hitachi's domain knowledge, with NVIDIA Cosmos world foundation models, to simulate physical constraints in operational environment and mission-critical safety rules in advance. As a part of the Cosmos Coalition, this verification process will suppress malfunctions caused by AI-specific hallucinations, and determine and issue safe and reliable task objectives in operational environments based on a deep understanding of physical phenomena and operational rules/knowhow.

(2) Validation of a supervisory agent to enhance confidentiality and system scalability.

Hitachi will verify an open and secure multi-agent environment by utilizing NVIDIA NemoClaw. By using the industry-standard open protocols supported by NemoClaw, Hitachi will facilitate autonomous inter-agent communication and task delegation between the supervisory agent functioning as an orchestrator and the various equipment at the industrial sites will be facilitated. Furthermore, running agents in a secure environment provided by the NVIDIA OpenShell sandbox and gateway functions will avoid the leakage of confidential information and unauthorized external access.

(3) Demonstration of real-time monitoring of operational environments and equipment conditions and coordinated control.

By utilizing NVIDIA Nemotron, multimodal open source models, Hitachi will monitor and analyze the latest conditions of constantly changing operational environments and equipment in real time at the edge. This outcome will be achieved by cross-referencing Hitachi's expertise in operational environments, Hitachi will conduct verification to advance optimal control according to the situation for diverse facilities and equipment with different control laws and mechanisms, such as control valves, quadruped robots, and compact camera robots.

"The true potential of Physical AI lies in enabling end-to-end autonomous and optimized operations through the integrated orchestration of diverse AI agents and systems. Achieving this requires an open, secure, and sovereign-enabled platform, as well as co-creation across organizational and industry boundaries," said Toshiaki Tokunaga, President & CEO of Hitachi, Ltd. "By combining NVIDIA's advanced AI capabilities with Hitachi's expertise in IT, OT, and products, we are confident that this collaboration will realize integrated autonomous operations and significantly accelerate the adoption of Physical AI in society. Through the creation of an AI ecosystem, Hitachi will further accelerate co-creation with partners and customers, help drive AX and sustainable growth across industries, and continue to scale HMAX as we advance toward our Lumada 80-20 target outlined in our management plan."

"Autonomous operations depend on factories, energy systems and social infrastructure connecting sensors, robots and AI agents into systems that can understand, simulate and act as one," said Deepu Talla, vice president of robotics and edge AI at NVIDIA. "By combining Hitachi's operational technology and domain expertise with NVIDIA accelerated computing, simulation, world models and agentic AI technologies, Hitachi is evolving HMAX into a platform that helps customers validate and scale safer, more intelligent operations across industries."

Related Links

[HMAX: Hitachi Global](#)

Trademark Notes

All trademarks and product names are the property of their respective owners.

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.