Digital Systems & Services

AI & Software Services

May 28, 2026

Digital, AI

1. Hitachi's Strategy Pioneered by Physical AI
Innovation in Social Infrastructure with Lumada 3.0 and HMAX

Hitachi is pursuing innovation in social infrastructure by leveraging its domain knowledge and experience in information technology (IT) and operational technology (OT) built up over many years. Through advances in generative and agentic artificial intelligence (AI), AI is making work more autonomous and optimizing operations at an increasingly rapid rate. In this context, Hitachi's Lumada 3.0 has placed a particular focus on physical AI, combining AI with large quantities of field data to deliver high levels of reliability and availability in mission-critical applications. HMAX by Hitachi is improving operational efficiency, reducing costs, and reforming working practices, primarily in the mobility and energy sectors but with deployment now being extended into other areas. On the platform front, "modernization powered by Lumada" for upgrading core business systems to be AI-native is a key pillar underpinning how Hitachi combines advanced technologies with its knowledge of these systems to help build up infrastructure in areas

ranging from assessment to data management and strategic operations and maintenance. Hitachi is also strengthening its collaboration with Google Cloud*, NVIDIA*, OpenAI*, and other global partners as it plays its part in expanding AI ecosystems and the resolution of societal challenges while also continuing to build up a technically skilled workforce.

With its goal of being a world-leading practitioner in physical AI, Hitachi is accelerating its transformation into a digital-centric company.

* See the list of “Trademarks.”

[1] Hitachi’s AI Strategy

SaaS: software as a service, DC: data centers

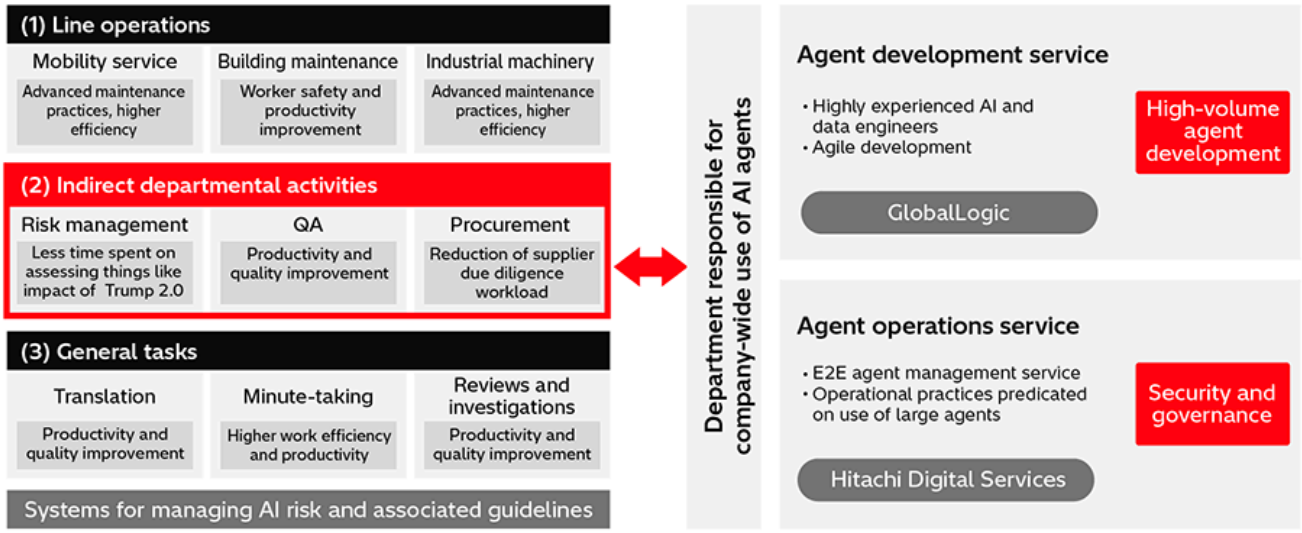
2. Use of AI Agents to Improve Indirect Operations

Based on its “customer zero” strategy, Hitachi’s approach is initially to use AI agents to reform its own operations and then to apply what it learns from this to other customers.

The two key elements in Hitachi’s use of AI agents for operational improvement are “strategic application” and “the establishment of development and operational

environments.” The scope of AI agent use is split into three layers, namely line operations, indirect departmental activities, and personal tasks. Initial work is focusing on indirect departmental activities where the potential efficiency gains are high.

A department responsible for company-wide use of AI agents collates the requirements of each department and using a development service (AI agent factory) that leverages GlobalLogic’s development resources it can rapidly develop agents that automate tasks such as risk management, quality reviews, and supplier vetting. These are then deployed across the company through an operations service (AI agent platform). A management regime for addressing AI risks has also been put in place along with associated guidelines to ensure that the use of AI agents in the business is safe.



[2] Use of AI Agents for Operational Improvement

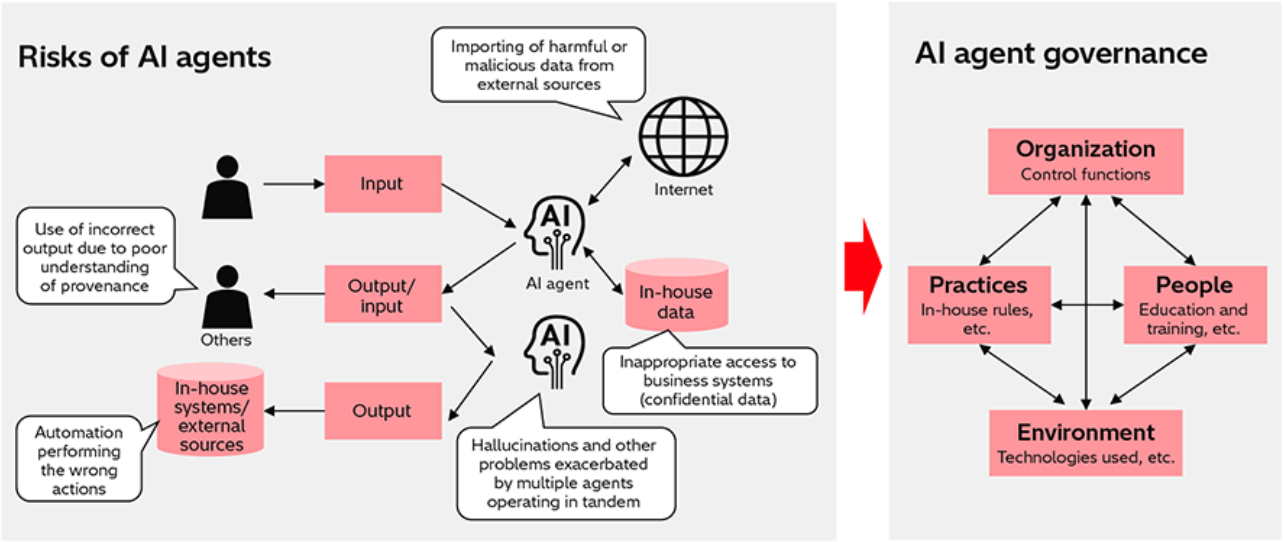
QA: quality assurance, HARC: Hitachi Application Reliability Centers, E2E: end-to-end

3. Establishing Governance Essential to Deployment of AI Agents

Unlike generative AI, AI agents are expected to perform tasks autonomously. This means they have the potential to unleash productivity gains throughout the organization by taking on these tasks in place of people. However, while the expectation is that the use of AI agents will deliver major benefits, they also carry risks inherent in the way they work. That is, their autonomy and the associated automation of tasks risk problems caused by errors of judgment, mistakes of logic, or the leaking of data. These risks are further complicated by multi-agent environments where agents communicate with one another.

This makes it vital that governance practices be put in place if the use of AI agents is to accelerate. Whereas users have control over the input and output of generative AI, an important factor when AI agents are used to automate processes is that control be maintained over the processes themselves. In addition to development requirements and rules on AI agent use, rules that govern the interactions between agents also need to be put in place when operating in a multi-agent environment. Hitachi Consulting Co., Ltd. can support the establishment of these governance measures for AI agents that are fit for purpose in the multi-agent era.

(Hitachi Consulting Co., Ltd.)



[3] Governance that Takes Account of Risks Posed by AI Agents

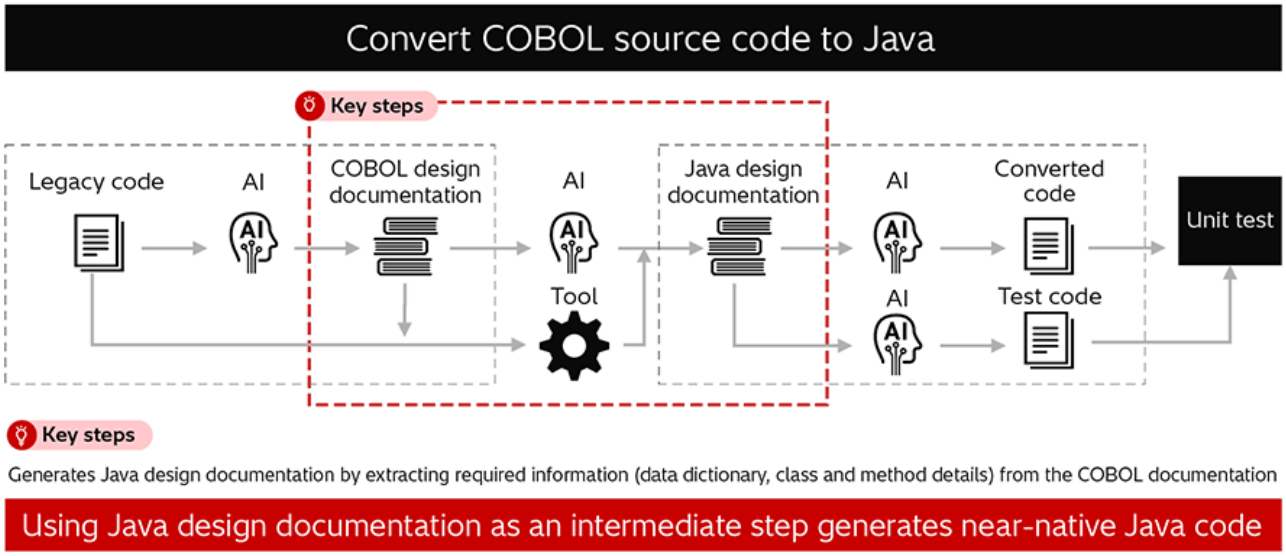
4. Use of Generative AI for More Efficient System Development

If generative AI is to be used for system development, it requires a high level of response accuracy. Hitachi has broken the overall system development process into small steps and designed prompts for each of these steps that take full advantage of generative AI. This includes the creation of a tool for generating these prompts, enabling practices to be put in place to achieve strong response performance using only the bare minimum of information. Hitachi has also deployed a framework for development using generative AI that combines these functions and is suitable for social infrastructure and other mission-critical systems. This framework has transformed the development process by providing functions for the generation of large systems in their entirety, including the ability to generate source code in bulk overnight.

When migrating legacy systems, Hitachi has adopted an approach where it generates Java source code by first reconstructing design documentation for Common Business Oriented Language (COBOL) software from the source code, converting this to Java* design documentation, and only then generating the Java code. This method can generate Java code that is easy to maintain, something that past practices have struggled to achieve. Productivity has also been enhanced by utilizing generative AI across all aspects of the project, including things like project management and quality management.

Future plans include work on AI agents tailored to system development tasks and further efficiency gains through the pursuit of new technologies.

* See the list of “Trademarks.”

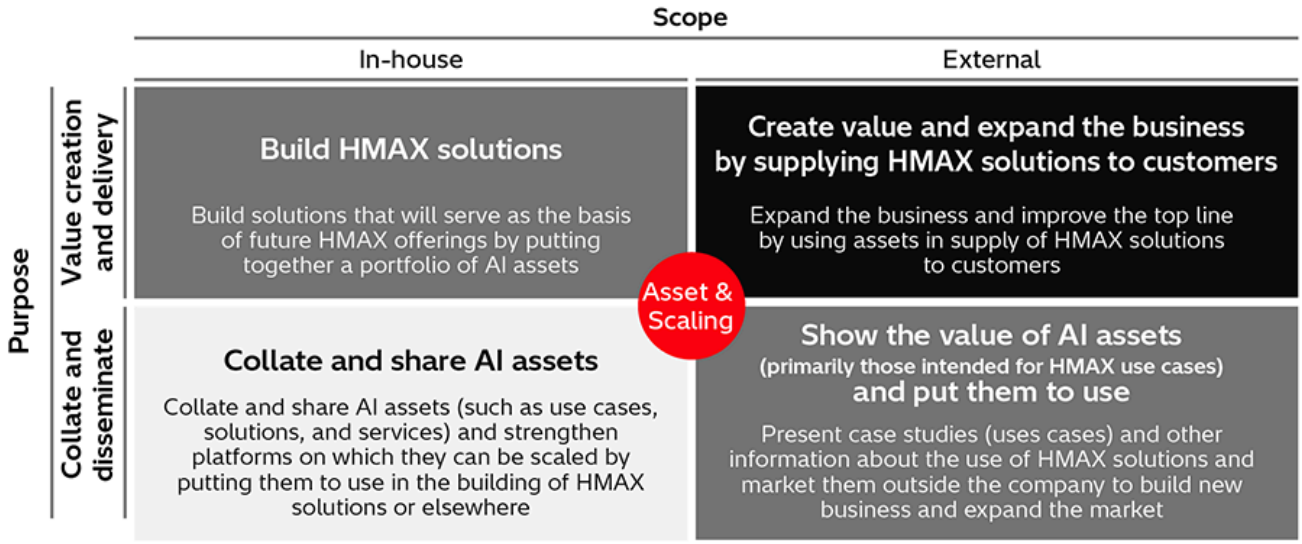


[4] Example Use in System Migration

5. Scaling Strategy and Leveraging of Assets to Accelerate Value Creation

Hitachi recognizes that leveraging its AI assets by combining domain knowledge with AI technology will be crucial to the growth of its Lumada 3.0 and HMAX business. Here, the term “AI assets” refers to knowledge and practices for the commercial use of AI and other digital technologies that have been consolidated into a form suitable for deployment in other applications. Putting these to use throughout the business enables the scalable roll-out of the knowledge that exists within the organization.

Nevertheless, using the same AI assets across all areas of the company is no easy task. Accordingly, Hitachi is putting practices and processes in place that clarify which high-quality AI assets are available and that facilitate their sharing and integration. These practices reduce the cost of adoption by company departments and in customer projects, speeding up business operations while providing more consistent quality. Moreover, by using generative AI to provide functions for retrieving and summarizing information on these practices and by accumulating knowledge from inside and outside the organization, it is hoped that they can be developed further as the company builds a future-oriented ecosystem fit for the AI-first era, one that is designed to strengthen competitiveness and deliver sustainable innovation.



[5] Scaling Strategy and Leveraging of Assets in HMAX Business

6. Partner Ecosystem Underpinning Hitachi AI Strategy

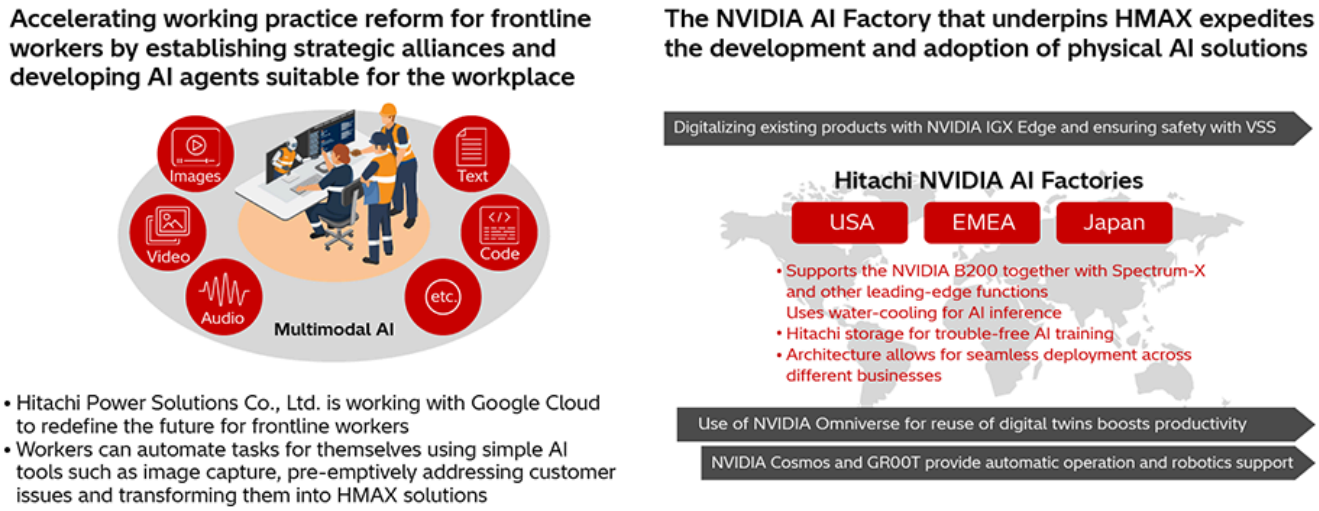
Hitachi is pursuing innovation in social infrastructure by combining domain knowledge with digital technology around a core of advanced AI. In doing so, Hitachi is transforming itself into a digital-centric company by using AI to boost operational efficiency, enhance quality, and reform working practices in mobility, energy, and connective industries, treating itself as “customer zero” as it makes the outcomes it has achieved in-house available to customers and other partners.

Underpinning this strategy is an AI ecosystem of customers and partners with world-leading technologies. Here, the focus is on collaboration with Google Cloud* and NVIDIA*. Work with Google Cloud involves the development and deployment of AI agents, expanding collaboration on OT to accelerate working practice reform for workers

at the frontline of social infrastructure. With NVIDIA, Hitachi is building a global AI Factory based on NVIDIA's reference architecture to expedite the development and adoption of a suite of AI solutions.

Hitachi intends to become a world leader in physical AI, resolving societal challenges and creating new value in collaboration with its partners.

* See the list of "Trademarks."



[6] Becoming a World Leader in Physical AI through AI Ecosystems

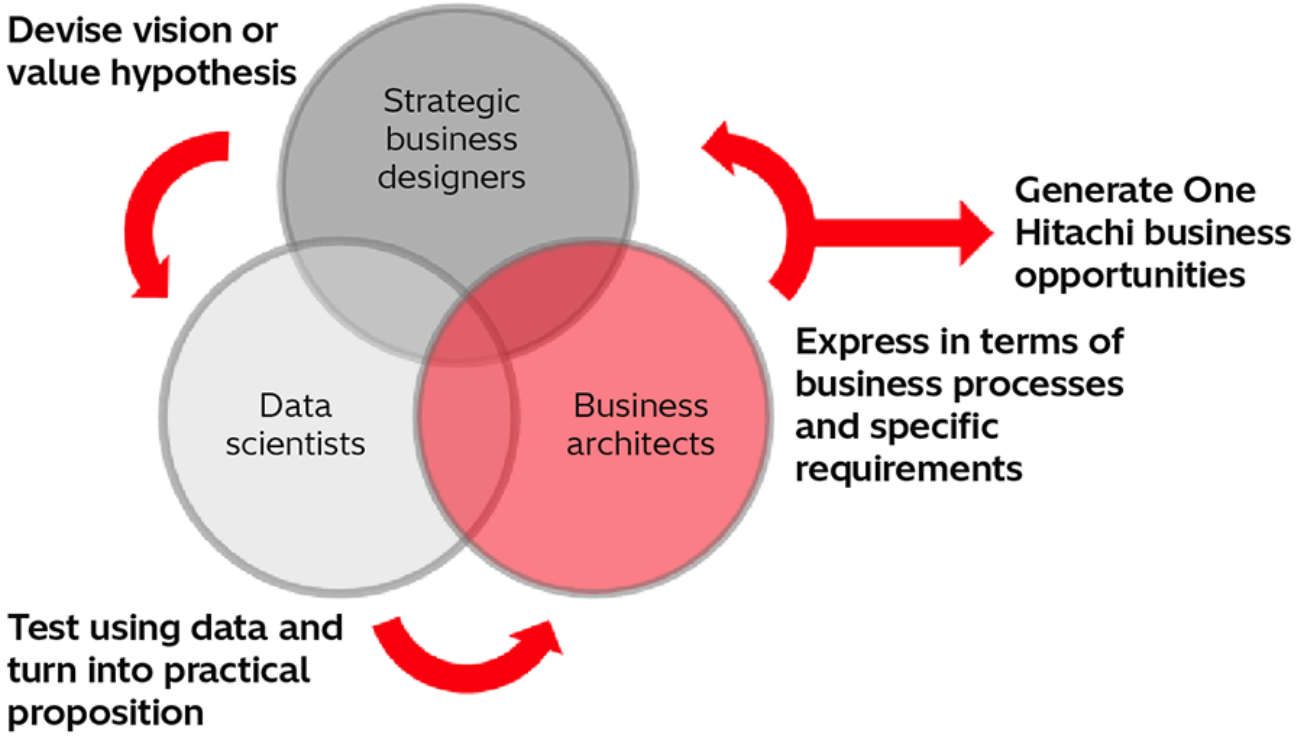
IGX: industrial-grade edge AI platform, VSS: video search and summarization agent, EMEA: Europe, Middle East, and Africa

7. One Hitachi Initiatives for Overcoming Customers' Business Challenges

Hitachi's Digital Business Development Division seeks to be an organization that combines digital services with digitalization assets to overcome challenges and adds value to customer businesses by addressing the management issues they face.

As an organization with the three-fold capabilities of data scientists, designers, and business architects, the value it creates does not end at the concept stage but rather delivers the greatest benefits at the point where it manifests as concrete business outcomes. Designers devise hypotheses offering genuine value to customers and wider society that data scientists test using data and turn into practical propositions. Business architects then incorporate this verified value into operational structures in the form of business processes, organizations, key performance indicators (KPIs), and cost-benefit

assessments, with design and coordination in practice being an ongoing process. By acting together, these three professions deliver rapid value creation without splitting the tasks of devising, grounding, and realizing business value into separate activities. As this approach applies right across the value creation process, it is being pursued with the goal of creating large numbers of business opportunities that put One Hitachi into practice and avoiding the pitfalls of ideas never getting past the experimental stage or losing track of their original purpose.



[7] Three Capabilities for Resolving Customer Business Challenges

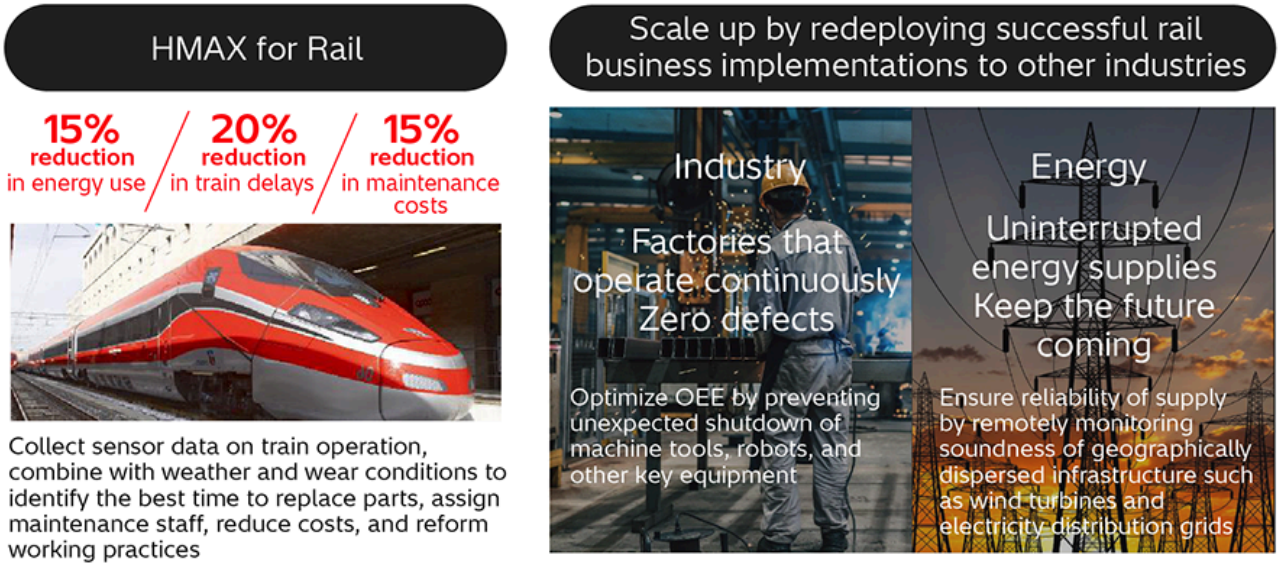
8. Strategy for HMAX Deployment as One Hitachi

HMAX offers strategic solutions that combine AI with the operational and information technologies that Hitachi has built up over time to address societal challenges such as aging infrastructure or worsening labor shortages, thereby serving as a key driver for achieving greater work efficiency and autonomy in mission-critical applications.

Hitachi has an extensive installed base of products that underpin the infrastructure of society. These assets are a key feature of HMAX, as is Hitachi's domain knowledge that derives from a deep understanding of actual practice. Combining these with advanced digital technology gives Hitachi a competitive advantage that can extend across a diverse range of sectors, encompassing mobility, energy, industry, finance, and the public sector.

The key to deployment is a three-way approach that is based on customer maturity. This involves offering solutions in progressive stages, starting with narrowly targeted optimization in a particular industry before progressing to all-encompassing system-wide optimization and ultimately industry-wide optimization. Underpinning this is a robust AI platform provided through an ecosystem that includes partners such as NVIDIA* and Google Cloud*. What matters is that Hitachi makes the transition from the legacy sale-of-products model to become a creator of new value by combining technology with expertise as a world leader in physical AI and through a rapid rollout of real-world implementations.

* See the list of “Trademarks.”



[8] Strategy for HMAX Deployment as One Hitachi

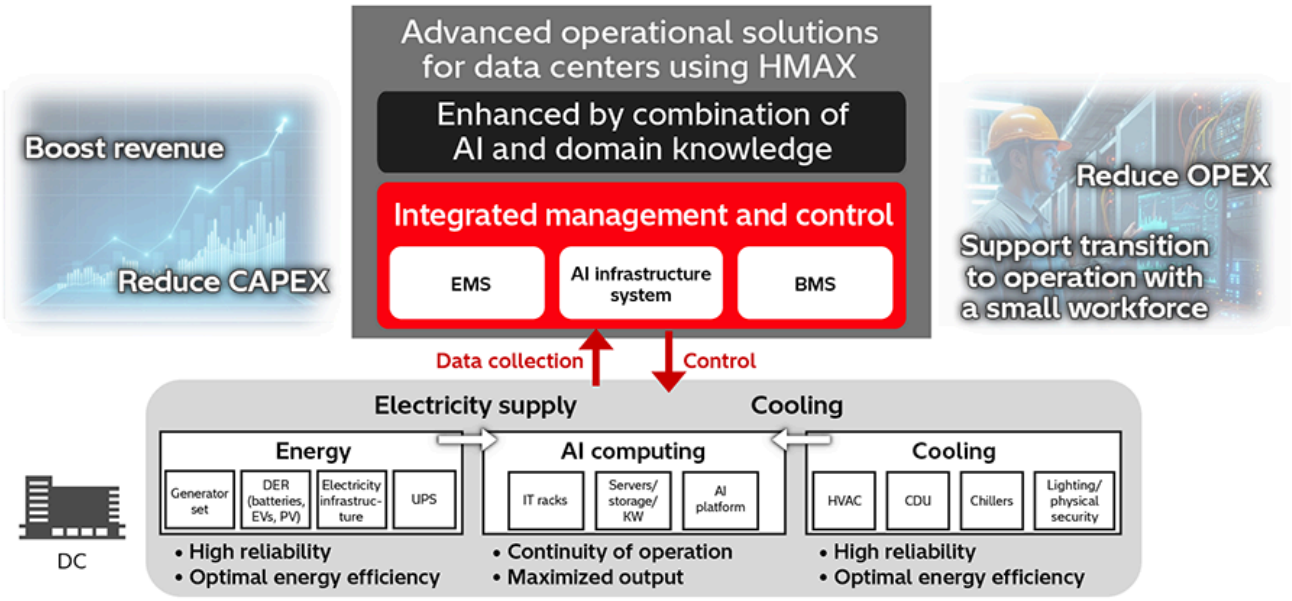
OEE: overall equipment effectiveness

9. Outlook for Advanced Operational Solutions for Next-generation Data Centers

The rapid spread of AI is driving strong demand for data centers that are purpose-designed for AI. Hitachi supplies a wide range of machinery and other equipment for data centers, including energy, cooling, and IT. By consolidating data from these products with domain knowledge and AI technologies, Hitachi has started work on advanced operational solutions for next-generation data centers that deliver value in such forms as reduced operating expenditure (OPEX) or capital expenditure (CAPEX). These solutions will put the HMAX concept of maximizing value into practice to address

the goal of establishing integrated operations management, going beyond the optimization of specific parts of the data center to instead deliver full system-wide optimization.

In practice, this will involve real-time data collection, analysis, and control that extends across both IT and OT with goals that include providing early warning of faults, automating troubleshooting and the implementation of countermeasures, optimizing the planning of equipment maintenance, and maximizing cooling efficiency and the electrical energy efficiency of AI processing. Technical testing has already started together with client consultation and proof of concept (PoC) trials to test hypotheses about customer challenges and use cases. Initial deployment within Hitachi Group is planned for FY2026, followed by a progressive expansion of the solution portfolio and delivery to customers.



[9] Conceptual Diagram of Advanced Operational Solutions for Data Centers

BMS: building management system, DER: distributed energy resources, UPS: uninterruptible power supply, NW: network, HVAC: heating, ventilation, and air conditioning, CDU: coolant distribution unit

10. Modernization Powered by Lumada Upgrades Core Business Systems to be AI-Native

Hitachi has launched a new service, Modernization Powered by Lumada*, that facilitates operational and organizational reform by upgrading core business systems to AI-native systems that take full advantage of AI.

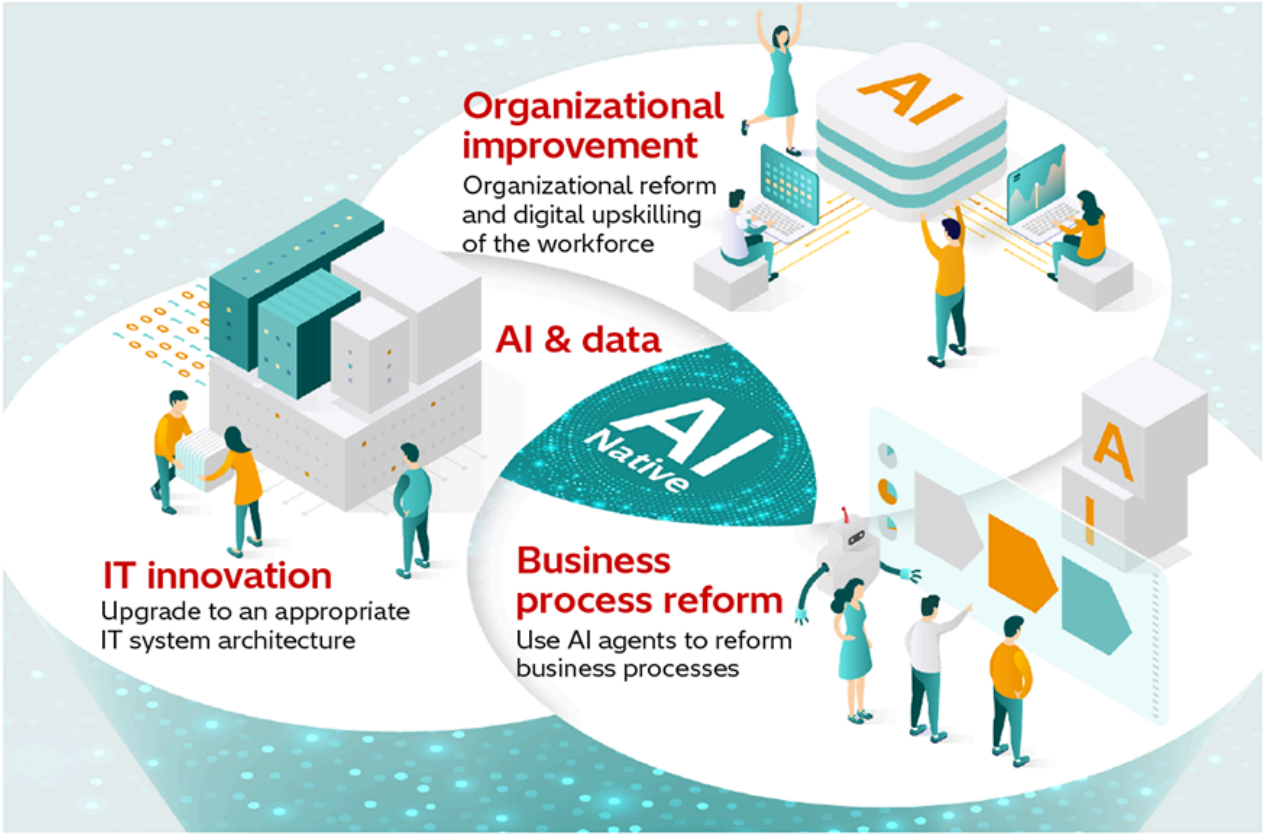
Adapting to the dramatic paradigm shift wrought by advances in AI over recent years is an urgent issue for all industries. Hitachi Group has embarked on a modernization program to transform itself into a digital-centric company.

The service takes the expertise that Hitachi has built up in AI implementation and organizational reform through its own activities and makes it available in a systemized form. The planning phase service for developing a grand design formulates a roadmap and determines how to go about implementing AI-native business platforms that strike a balance between operations, data, IT, and the organization. For the implementation phase, the business and IT modernization service uses AI agents for operational automation, keeps data quality at a level that facilitates AI, and realizes upgrading to the latest architecture.

Through a modernization process that upgrades IT in parallel with reforming business processes to use AI, the service will help customers achieve sustainable business growth.

(Launch date: October 2025)

* Hitachi modernization (in Japanese)



[10] Transformation into a Digital-centric Company through Operational, IT, and Organizational Reform

11. Modernization of Core Business Systems to Facilitate AI Use and DX by Customers

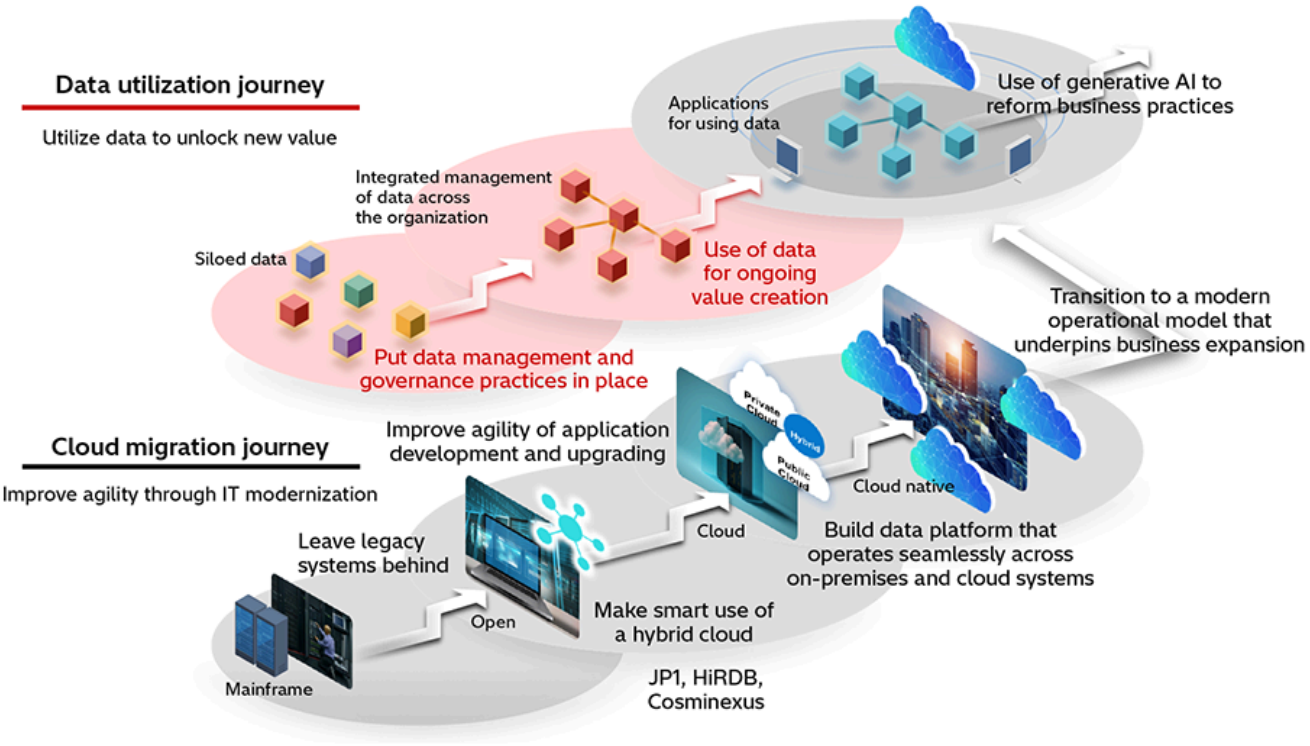
Many Japanese companies face a shortage of skilled staff, with system development also having become slow and costly due to programs still running on legacy mainframes that have turned into black boxes and become bloated in size. Together with the need for digital transformation (DX) and flexible interoperation with external services, these factors lend urgency to the task of modernizing core business systems.

With the goal of setting up a platform to enable the upgrading of core business systems, the first step is to put infrastructure in place for rapid system migration. This involves adopting open middleware that facilitates DX by providing ease-of-portability and making use of assets such as support tools for data migration. Hitachi is also improving efficiency by using generative AI for tasks like coding and to lighten workloads.

In addition to supporting new business creation by putting flexible and efficient system environments in place to boost system development efficiency in product development

and service delivery, Hitachi also intends to assist customers with DX by embedded AI in systems.

By supporting the modernization of core business systems, Hitachi will contribute to the growth of its customers' businesses.



[11] IT Modernization Steps to Facilitate AI and Data Use

12. SAKULaLa Biometric Authentication Service for ID-less Living

Societal factors such as the labor shortages resulting from aging demographics and a low birthrate, the emergence of a digital divide, and rising identity theft are behind a growing need for ways of verifying identity that are secure and simple to use.

To address this need, the scope of the SAKULaLa biometric authentication service has been expanded to encompass a range of additional applications that include railway ticket gates, in-store payment, and access control. Initially launched in April 2024, the service is operated in partnership with Tobu Railway Co., Ltd. Having added facial recognition to augment the existing finger vein authentication technique, the service is the first multi-factor authentication platform to be available in Japan. It provides a reliable and trouble-free way to get things done without the need to carry physical identification (ID).

The service commenced operation on the Tobu Utsunomiya Line in November 2025, allowing commuter pass holders to pass through ticket gates by facial recognition alone. Adding support for the service to in-store payment terminals is planned for FY2026 in partnership with JCB Co., Ltd. to expand the number of retailers offering payment by facial recognition and to promote cashless shopping.

Facial recognition is also used for access control at venues such as offices or sports clubs, with adoption of the system at Tobu Railway offices to commence during FY2026. In the future, Hitachi will work toward resolving societal challenges and creating new value by using the service as a means of linking real-world activities with digital spaces to create a safe and secure society.

* See the list of “Trademarks.”

[12] How SAKULaLa Encourages Cross-industry Interoperation between Services from Different Operators

13. Support for Increasingly Complex Energy Supply and Demand in Pursuit of Carbon Neutrality

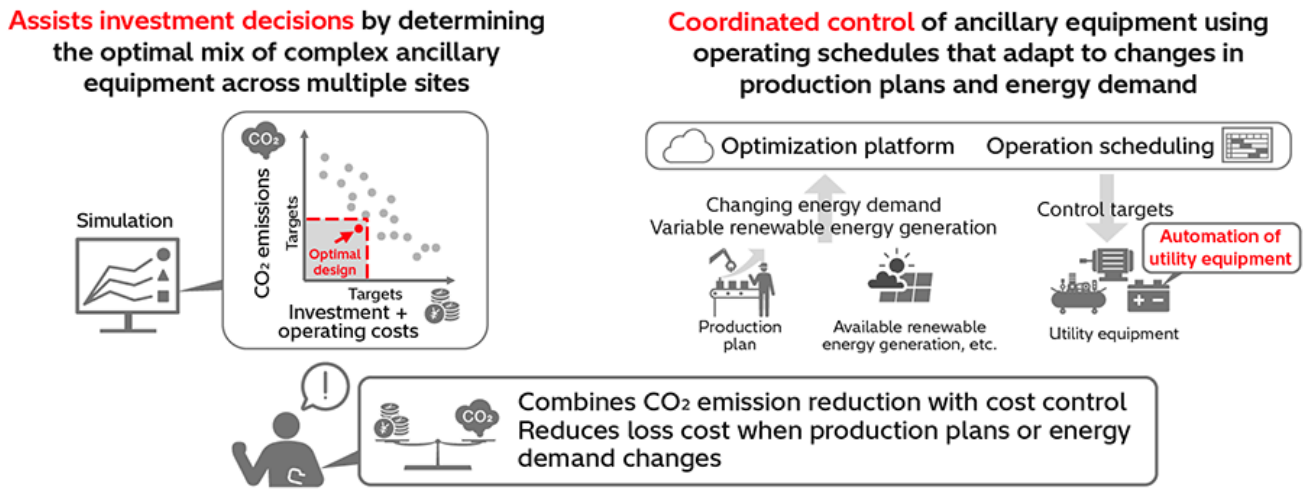
Coping with the changing business environment and the transition to a decarbonized society are both urgent tasks, with one of the key challenges being how to implement

reforms in a way that minimizes both cost and environmental burden.

In response, Hitachi has launched a cloud-based service that optimizes the operation of utility equipment. The service replicates equipment operation and the supply and demand for energy in cyberspace, and then uses mathematical optimization to obtain the best solution. By doing so, the service reduces energy costs and CO2 emissions and ensures that investment decisions are aligned with business plans and environmental targets. The service also supports optimal automation of the operation by developing the optimal operation schedules and by generating control commands that are coordinated across multiple items of equipment.

In an environment where companies are adopting flexible production practices and measures for aging equipment, and where the use of renewable energy and the switch to alternative fuels are making the supply and demand for energy ever more diverse and complex, the service responds to evolving business conditions and operational constraints by leveraging the same optimization engine used for investment decision-making. This engine is applied during operation to continuously update optimal equipment operating plans under dynamic conditions.

With this service as the core, Hitachi will provide integrated, end-to-end support by combining IT, OT, and products, contributing to carbon neutrality across diverse industries.



[13] Cloud-based Service for Operational Optimization of Utility Equipment

14. Local EMS Standard Platform Providing Optimal Site Energy Management

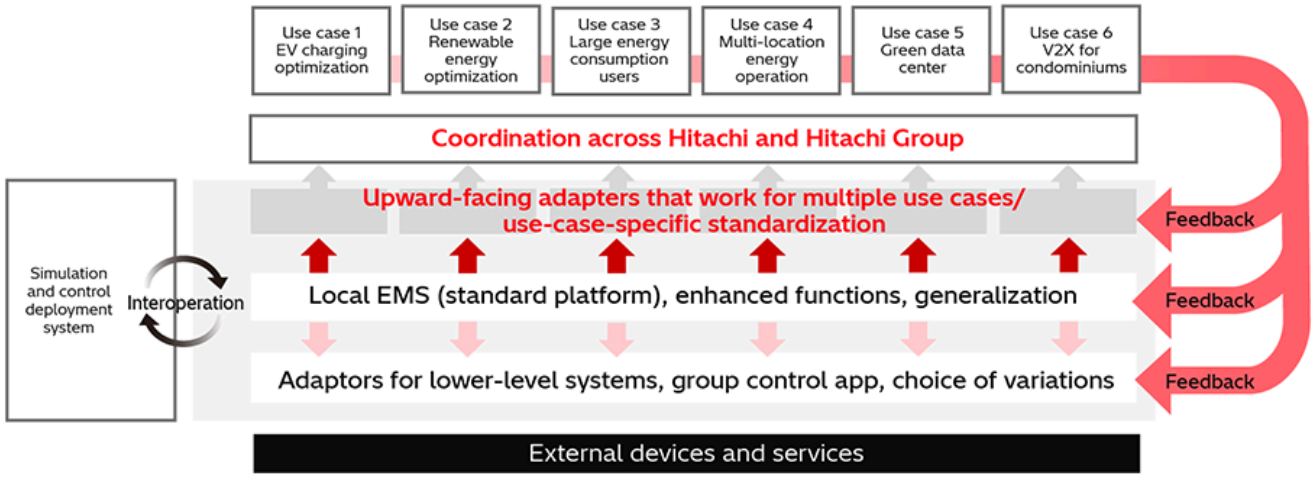
Companies and local governments are accelerating their adoption of electric vehicles (EVs) and renewable energy as they seek to achieve carbon neutrality. However, integrated energy management systems (EMSs) on their own are insufficient to operate these efficiently and lower both electricity costs and CO_2 emissions. Rather, detailed management and control of individual sites is also needed.

To address this need, Hitachi Information & Telecommunication Engineering, Ltd. has developed a local EMS by drawing on expertise in energy management that it has built up over many years spent developing electricity supply systems and its involvement in Hitachi Group's green transformation (GX). This system uses adapters to interoperate with other systems and equipment and deliver optimal energy management for individual sites.

In the future, the company intends to work as part of One Hitachi to help resolve societal and environmental challenges. This includes taking advantage of the system's ease of customization to cover a wider range of use cases, including vehicle-to-X (V2X)[*1] operation and the optimization of renewable energy, and improving interoperation with Hitachi's simulation and control deployment system that optimizes planning for achieving carbon neutrality.

(Hitachi Information & Telecommunication Engineering, Ltd.)

*1. Vehicle to X is a general term for technologies used in communication and interoperation between vehicles and other devices or systems.



[14] Interoperation between Local EMS and Other Systems and Equipment

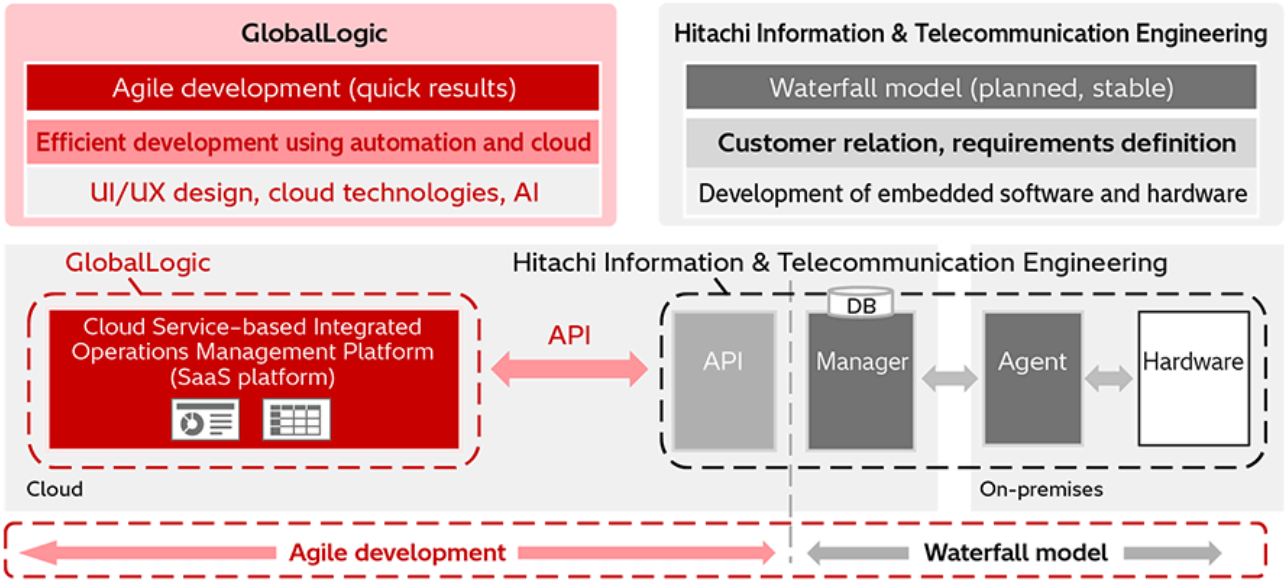
15. Coordination with GlobalLogic to Combine Quality with Rapid Commercialization

Today's ever more rapidly changing markets call for product and service development that combines high quality with speedy delivery. A problem with the waterfall development model used in the past has been that its long time-to-release makes it difficult to respond quickly to customer needs.

In the development of an integrated operations management platform for telecommunications infrastructure, Hitachi Information & Telecommunication Engineering has partnered with GlobalLogic to transform its development practices. To develop the platform in a way that made the most of each partner's respective strengths, GlobalLogic took responsibility for the user interface (UI) and user experience (UX) design and SaaS platform development while Hitachi Information & Telecommunication Engineering handled the architecture for communication via the application programming interface (API). Moreover, development utilized a hybrid process whereby agile development was used for areas where responsive feedback was needed and the waterfall model for areas where quality was crucial. This contributed to the platform receiving an 87% positive response in customer PoC trials and to the release date being brought forward by six months.

By utilizing this experience to integrate more closely with GlobalLogic development practices and business models in the future, Hitachi intends to use engineering to boost the value that Lumada delivers to customers.

(Hitachi Information & Telecommunication Engineering, Ltd.)



[15] Development on Integrated Operations Management Platform

DB: database

16. Hitachi Advanced Database for Implementing Data Lakehouse

Companies at the forefront of putting data to use are working to build data lakehouses that facilitate the use of data through high-volume storage in the open table format[*1] used in data analytics and generative AI, running this on object storage services such as Amazon S3[*2] from Amazon Web Services (AWS) that are commonly used for data lakes.

Hitachi has implemented a method that uses structured query language (SQL) for directly searching such data on the Hitachi Advanced Database (HADB), an ultra-high-speed database engine. This leverages the parallel processing capabilities of HADB that are based on the out-of-order execution principle[*3] to enable rapid searching even when data is held on low-cost object storage. This facilitates more diverse and efficient data analysis using cross-sectional search and analysis in tandem with data held on HADB and improves the efficiency of data use for generative AI.

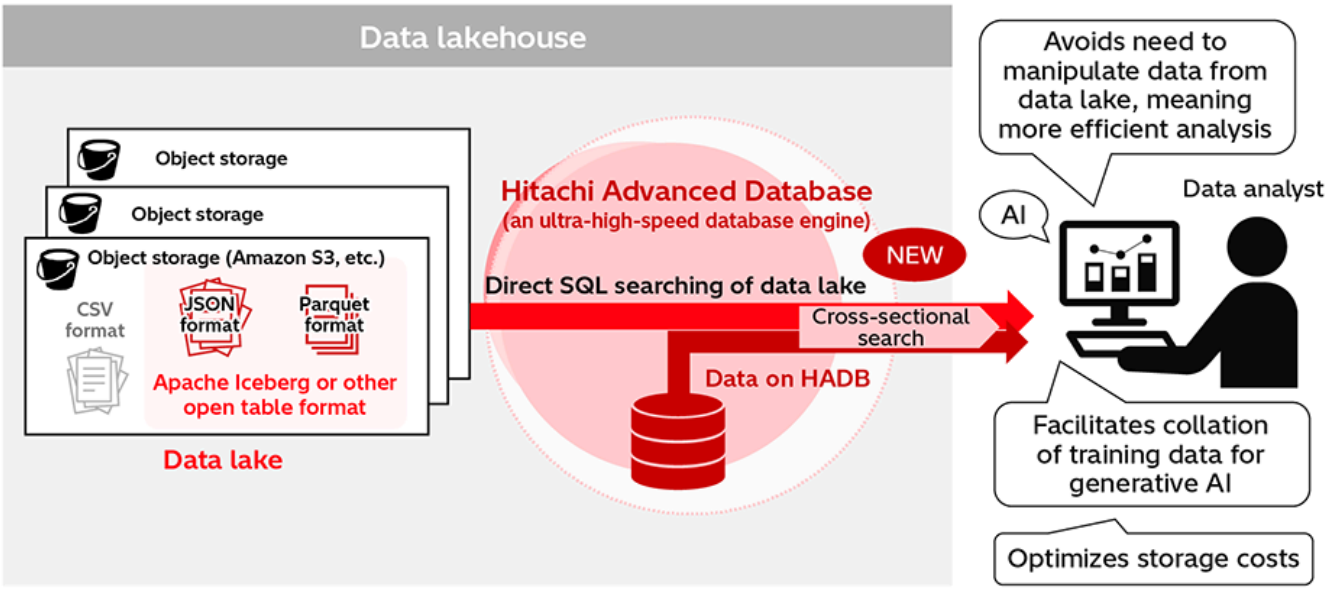
In the future, Hitachi intends to support the acceleration of corporate DX by working in partnership with Hitachi Vantara, including on the implementation of data lakehouses in on-premises hardware, and by pursuing research and development that anticipates future advances in AI and improvements in search capabilities.

* See the list of “Trademarks.”

1. A technique for metadata management and transaction control that supports a variety of data formats, including Apache Parquet and Apache Iceberg*, and that provides direct access for searching, updating, and analysis of this data through SQL and other interfaces.

*2. A cloud storage service suitable for storing large amounts of data at low cost with high durability.

*3. A principle proposed by Masaru Kitsuregawa, President of the Research Organization of Information and Systems and Professor at the University of Tokyo, and Professor Kazuo Goda of the University of Tokyo



[16] How HADB Can Facilitate Different Ways of Using Data

CSV: comma-separated values

17. Proof of Concept and Customer Deployment of Oracle Database@Azure

Hitachi has partnered with Oracle Corporation Japan and Microsoft Japan Co., Ltd. to trial a multi-cloud environment for core business applications. The trial used Oracle Database@Azure* running on Microsoft Azure* to assess system configurations designed to combine the high levels of processing performance and availability required by data platforms for core business systems*1.

Hitachi launched a service for migration to multi-cloud environments in 2024 that draws on the knowledge gained from this trial to support the configuration and modernization of data platforms, including core business systems. This migration support has already been provided to a number of customers.

Customers considering cloud migration over recent years have increasingly been looking to put generative AI to work in making use of data. With this demand as one of the background factors, Hitachi is working with Oracle Japan on the configuration and testing of data platforms and on AI agents that use generative AI, seeing this as a use case for the real-time searching and use of core business data.

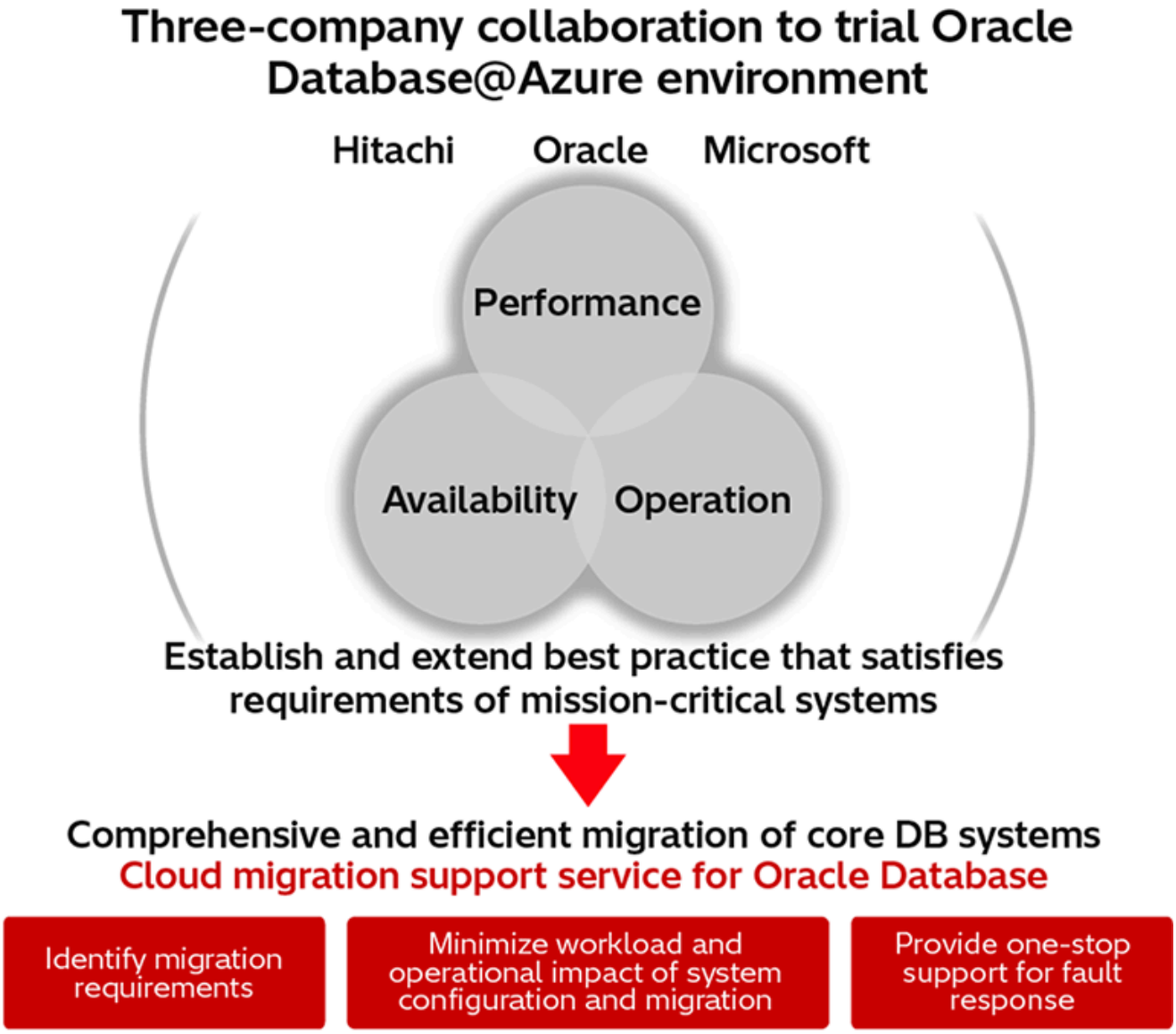
In recognition of these efforts, Hitachi has been awarded by Oracle Japan in the fields of data platforms and the use of generative AI*2, *3. Hitachi intends to continue both its testing of data platforms with generative AI applications in mind and its delivery of solutions that support the modernization of core business systems.

* See the list of “Trademarks.”

*1. A three-company proof of concept project unlike any previously undertaken in Japan. It achieved performance suitable for mission-critical applications on Oracle Database@Azure and is now available as a cloud migration service (as of March 2025) in Japanese.

*2. Hitachi received the Data Platform Breakthrough Award for Japan Technology/Cloud Service Partners at the 2025 Oracle Partner Awards (in November 2025) in Japanese.

*3. Hitachi received the Best Cloud AI Partner of the Year award at Oracle Japan’s partner awards (in September 2025) in Japanese.



[17] Features of Cloud Migration Support Service for Oracle Database

18. Empowerment of Service and Platform Workforce and Recognition in Awards

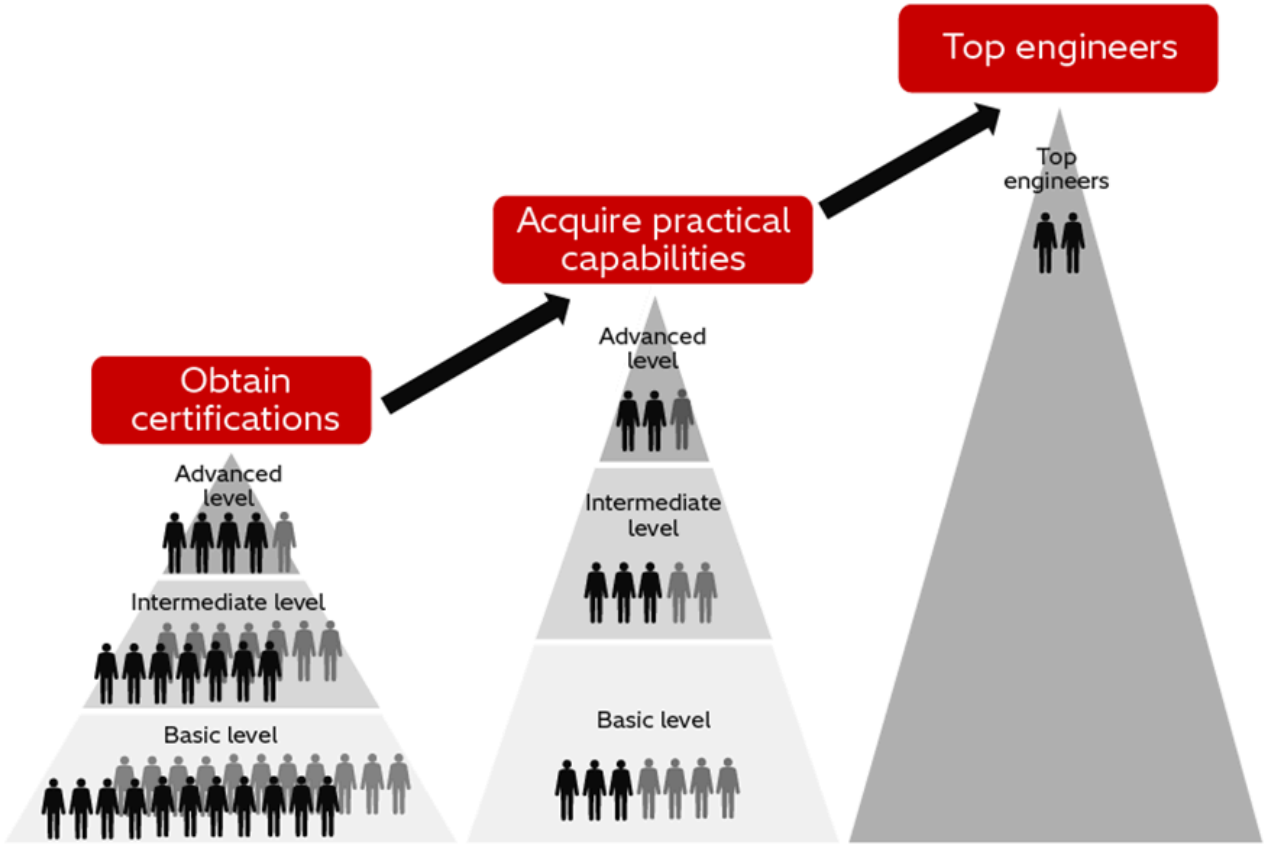
Hitachi has put a lot of effort into establishing an ecosystem through measures such as strategic alliances with major global technology partners, including AWS*, Google Cloud*, Microsoft*, Oracle [the supplier of Oracle Cloud Infrastructure (OCI)]*, and NVIDIA. Partnering with these companies accelerates cloud- or AI-based innovation and the joint development of solutions.

One of the keys to this acceleration of innovation is workforce development. To drive Hitachi's cloud and AI businesses and foster industry-leading professionals, this involves

not only having employees obtain certifications through in-house or external training, but also the provision of training that boosts their practical capabilities for working out for themselves how to overcome challenges. In 2025, leading engineers were chosen by AWS, Google Cloud, Microsoft, and Oracle as having made important contributions in which their technical skills helped to grow the business.

In the future, Hitachi intends to take note of advanced technologies that represent a turning point in history and to continue fostering a workforce of people who are able to operate both inside and outside the company with the aim of further accelerating innovation.

* See the list of “Trademarks.”



[18] How Industry-leading Professionals are Fostered