Research & Development

Digital

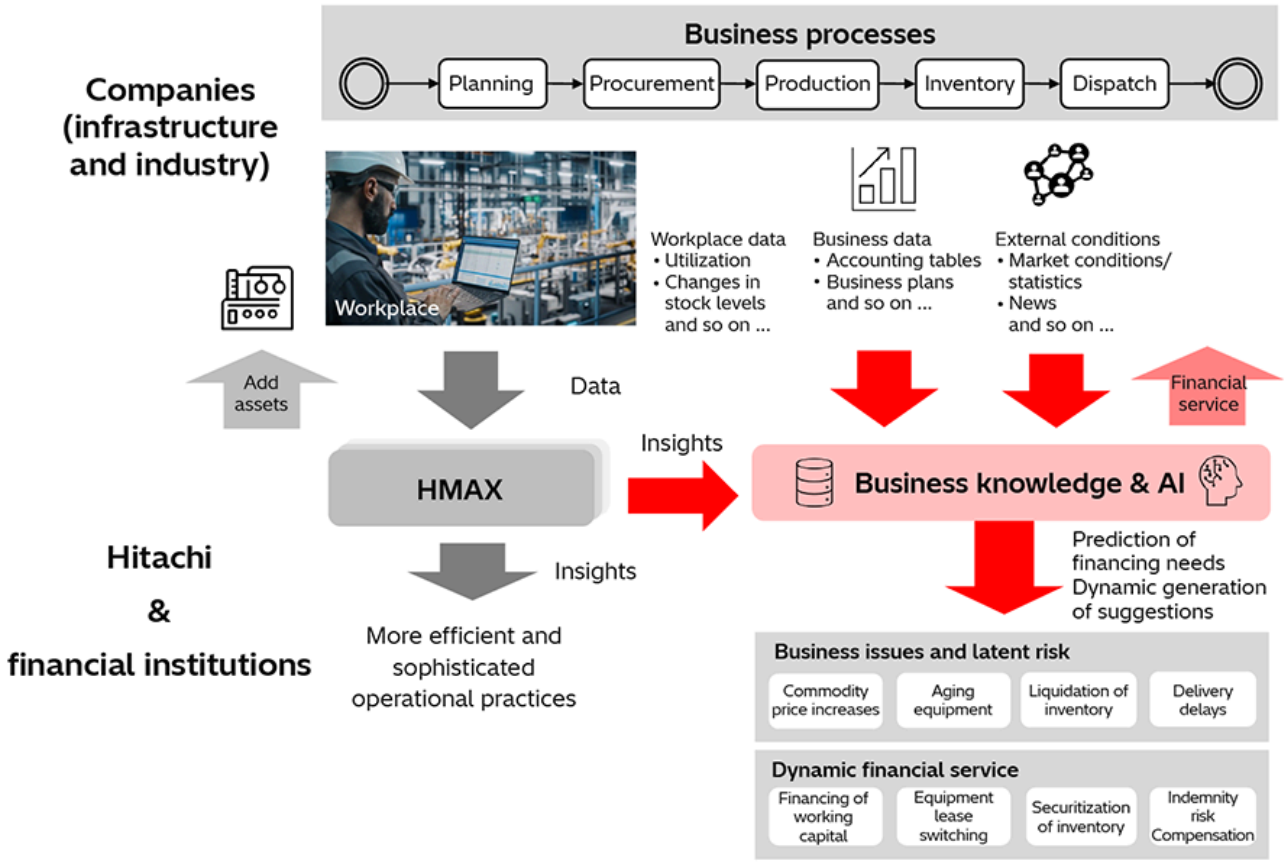
May 28, 2026

Innovation & R&D, Digital

1. Data-driven Finance to Boost Business Agility

The environment in which businesses operate has been changing at an unprecedented pace over recent years, with disruptions that include tariffs, conflicts, and environmental regulation. With this has come a need for improved business agility, with rapid and accurate identification of risks in the workplace and farther afield so that they can be addressed proactively.

Hitachi supplies HMAX by Hitachi as a means of extracting insights by using artificial intelligence (AI) and domain knowledge to analyze operational data from social infrastructure. These insights from operational data can be used to deliver new data-driven financial services, combining data on the business or external conditions and analyzing it from a financial risk perspective to identify risk indicators such as asset price rises or equipment deterioration and to offer dynamic suggestions about appropriate financing, insurance, or other measures. When applied to areas like the project financing of social infrastructure, this will help build a sustainable society through solutions that combine social infrastructure and finance to support the essential funding requirements of infrastructure construction and maintenance while also reinforcing the security of infrastructure operations and their ability to react to change.



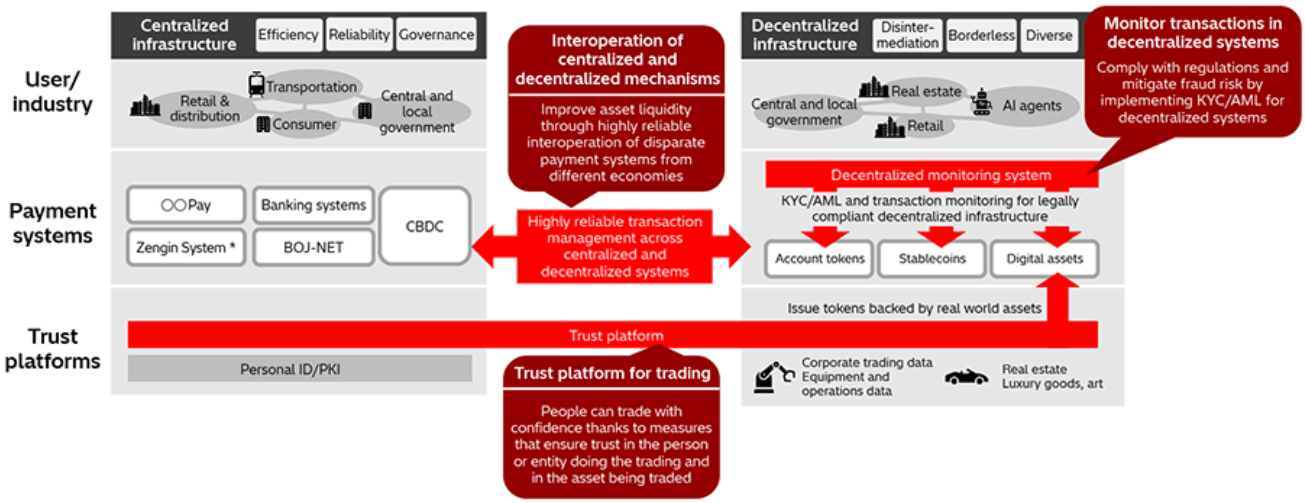
[1] Dynamic Proposal of Financial Services Using Data-Driven Finance

2. Platform for Highly Reliable Digital Trading

Progress is being made in Japan and internationally on putting rules in place to govern digital assets such as tokens, with America in particular showing growing interest in stablecoins that hold their value. Of particular importance in this is that decentralized and centralized mechanisms work together. Here, decentralized mechanisms refer to those managed by multiple participants (such as the blockchains used for trading these tokens or stablecoins) and centralized mechanisms refer to practices like traditional banking systems or payment by quick-response (QR) code*.

Hitachi has been researching and developing techniques for achieving this interoperation with a high degree of reliability. It also has technology for monitoring and trust platforms that deal with know-your-customer (KYC) and anti-money-laundering (AML) compliance. Use of these to enable secure trading of a wide range of assets should help to make these assets more liquid. Hitachi will also help to boost economic activity by proposing new payment methods that draw on knowledge acquired from work on data centers, transportation, energy, and other forms of social infrastructure, and by pioneering new financial markets.

* See the list of “Trademarks.”



[2] Future of Payments Infrastructure and What Hitachi is Doing to Bring it About

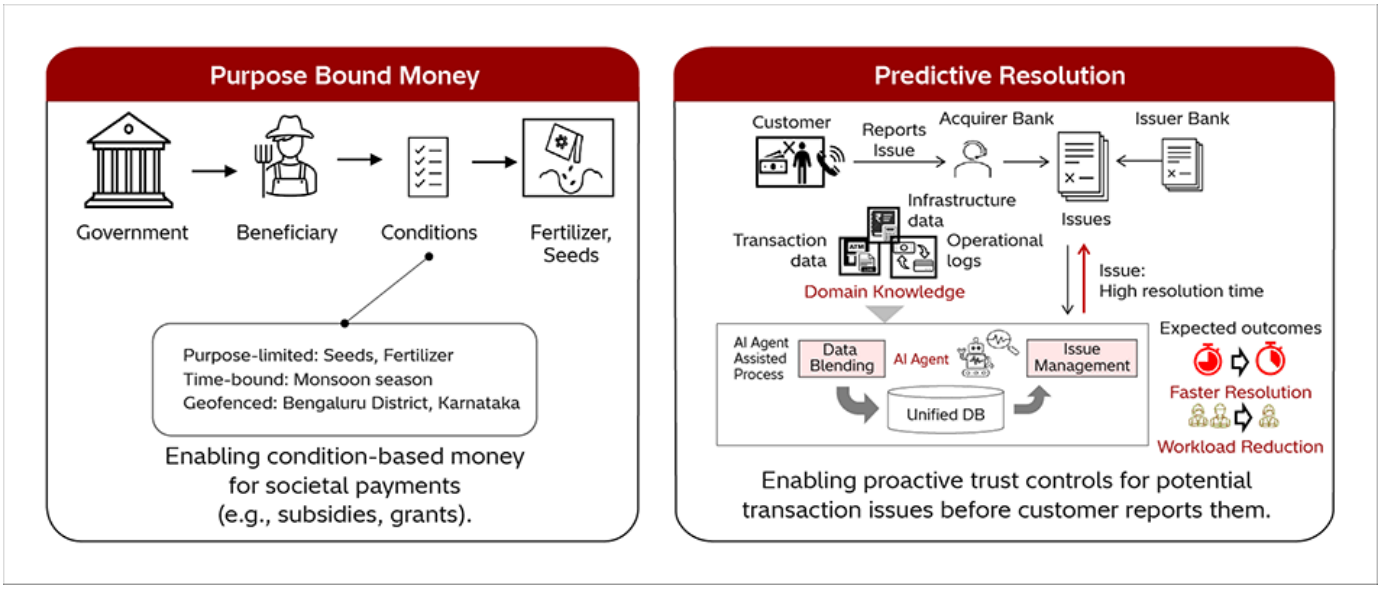
BOJ-NET: Bank of Japan Financial Network System, CBDC: central bank digital currency, PKI: public key infrastructure

3. Enabling Trusted Payments Ecosystem in India

Hitachi is advancing digital payments and services through secure, cost-efficient platforms that address critical challenges: digital trust, financial inclusion, and operational efficiency.

By leveraging digital currency and blockchain-based frameworks, these platforms support programmable payment mechanisms in which transaction execution is governed by predefined conditions, enabling transparent and auditable value transfers. Such capabilities are applicable to use cases including targeted subsidy disbursement and event-driven payments in supply chain settlements.

In parallel, intelligent automation represents a major opportunity to reduce operational overhead and improve Return-on-Investment in payment operations. To achieve this, Hitachi is building agentic AI solutions driven by multi-agent language models for data unification, and workflow automation. For example, the AI agent-assisted issue resolution process proactively identifies potential transaction issues by using diverse data inputs and accelerates resolution processes, providing better customer experiences and reducing internal operational workloads by automation. Aligned with HMAX, these innovations help deliver tangible benefits such as lower operating costs, faster compliance, and enhanced customer trust.



[3] Trusted Payment Solutions

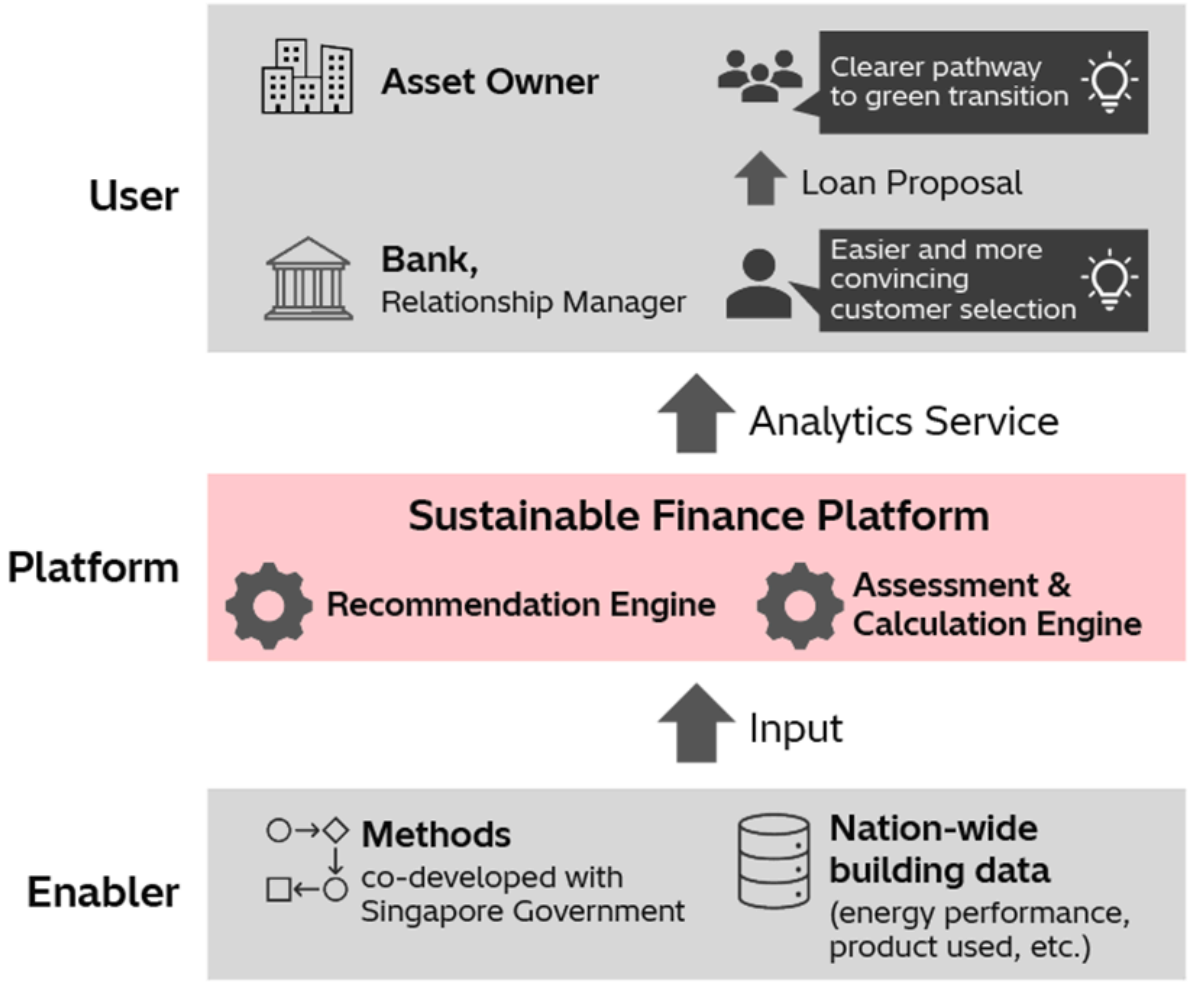
DB: database

4. Advanced Assessment and Prospecting Services Powered by High-Integrity Building Data and AI

As sustainable finance expands, financial institutions face a growing challenge in assessing building decarbonization potential: the lack of standardized, reliable, and efficient evaluation methodologies. Existing assessments often require extensive data collection, expert judgment, and long lead times, limiting their practical use in financing decisions.

Starting from Singapore, Hitachi is advancing a Sustainable Finance Platform that addresses these challenges. In 2024, Hitachi co-developed with the Singapore government, Monetary Authority of Singapore (MAS) and Building and Construction Authority (BCA), a standardized methodology to quantify energy-saving potential in buildings. By applying AI, the approach significantly reduces input requirements and computation time, while establishing consistent procedures for data collection and verification, baseline performance estimation tailored to building characteristics, and calculation of energy and CO_2 reductions.

Leveraging this methodology together with high-integrity building environmental data enabled through government collaboration, Hitachi provides analytics services to banks. These include building- and tenant-level performance comparisons and scenario analyses, supporting relationship managers in structuring credible loan proposals and accelerating the green transition in building environments across ASEAN.

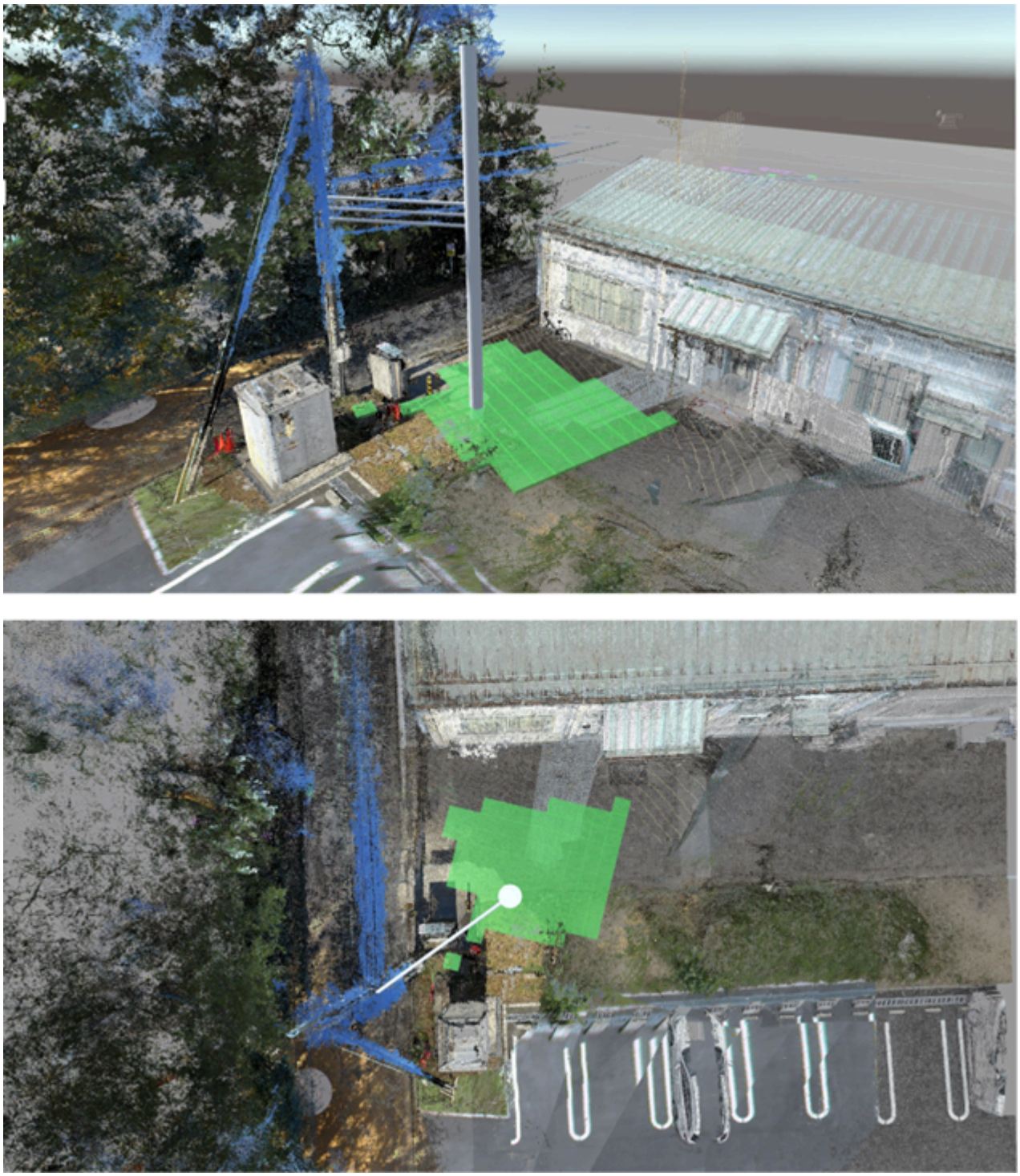


[4] Business Model of Sustainable Finance Platform

5. Digital Twin for Infrastructure to Support Operation of Cities

The maintenance of social infrastructure has become an issue for society, driven by policies for expanding the geographical scope of local government operations, the consolidation of essential services, and demographic change. The infrastructure of urban areas is intertwined in complex ways, meaning a lot of time is spent formulating upgrade plans and coordinating across different operators. In response to these challenges, Hitachi has developed technologies that collect the required information and help different operators reach a consensus. This is done using digital twins that provide centralized management of information about infrastructure together with techniques for accurate situation assessment and for assessing impacts before and after upgrades.

One example involves the design of power line installation, including work on power poles. This requires not only that the lines be located in accordance with the rules, but also that obstructions to stringing the lines be identified and that their visual appearance be checked after installation. Hitachi's technologies make planning and design more efficient by automatically calculating the range of locations within which structures can be positioned safely and efficiently, and by overlaying virtual structures onto the site. They can also help stakeholders reach a consensus more quickly by using three-dimensional (3D) display to help people gain an intuitive understanding of what is being proposed. These technologies are suitable for use in areas like electricity, telecommunications, water, roads, and railways. They contribute to the sustainable operation of cities by serving as a platform for the digital transformation (DX) of social infrastructure.



[5] Technique for Improving Efficiency of Stringing Power Poles

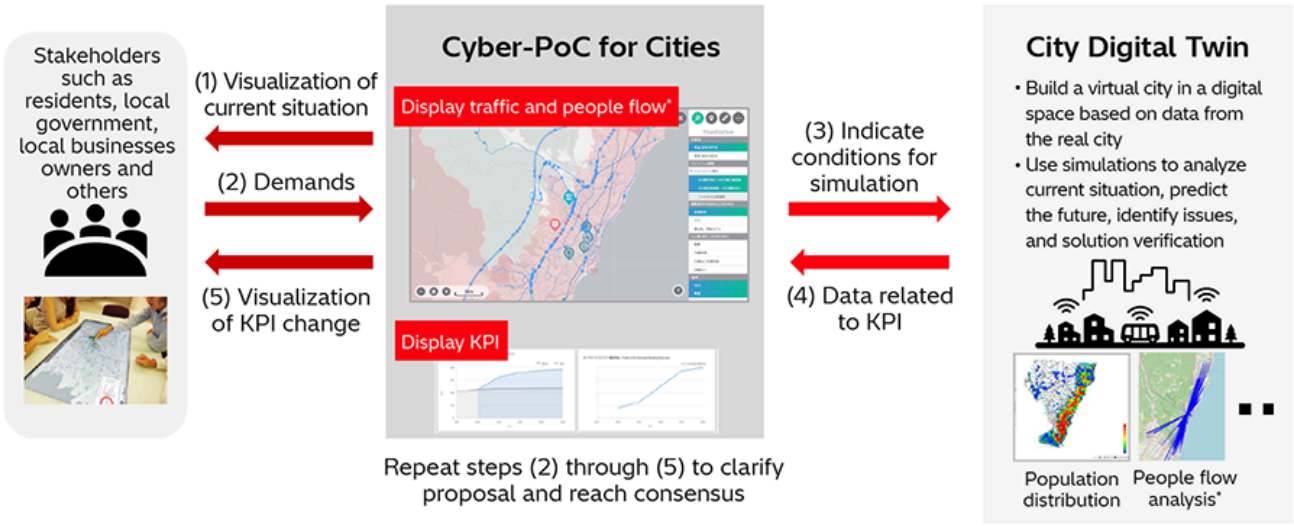
6. Collaborative Creation in Hitachi City for Building Next-generation City Using Digital Technology

Hitachi City in Ibaraki Prefecture and Hitachi, Ltd. are working on a collaborative creation project for becoming a smart city. At the heart of the project is Simulation-Based Policy Making (SBPM) using City Digital Twin and Cyber-PoC for Cities. As congestion on its

main arterial roads is one of the major issues facing Hitachi City, it is seeking to alleviate this problem by using SBPM to trial traffic initiatives in a digital space.

SBPM can assess the benefits of a variety of traffic initiatives by simulating them on a City Digital Twin that uses a wide range of data to replicate its population distribution and community characteristics. It also expedites decision making on urban development by helping to forge a consensus between residents, local government, and businesses. This is done by using Cyber-PoC for Cities to present information on the advantages and disadvantages of different traffic initiatives obtained by trialing them on the City Digital Twin, which it can do interactively and from a range of viewpoints.

Through data-driven urban development in Hitachi City, Hitachi is seeking to build a model of a sustainable next-generation city that is compatible with Society 5.0 and to realize the Integrated World Infrastructure Model (IWIM).



[6] City Digital Twin and Cyber-PoC for Cities

PoC: proof of concept, KPI: key performance indicator

* This screen-shot shows use of the tool to present data on traffic and people flows together with Digital National Land Information (Railway Data), Ministry of Land, Infrastructure, Transport and Tourism, and results of the 2020 Population Census of Japan (data on commuter numbers for different modes of transportation). The map data is from OpenStreetMap.

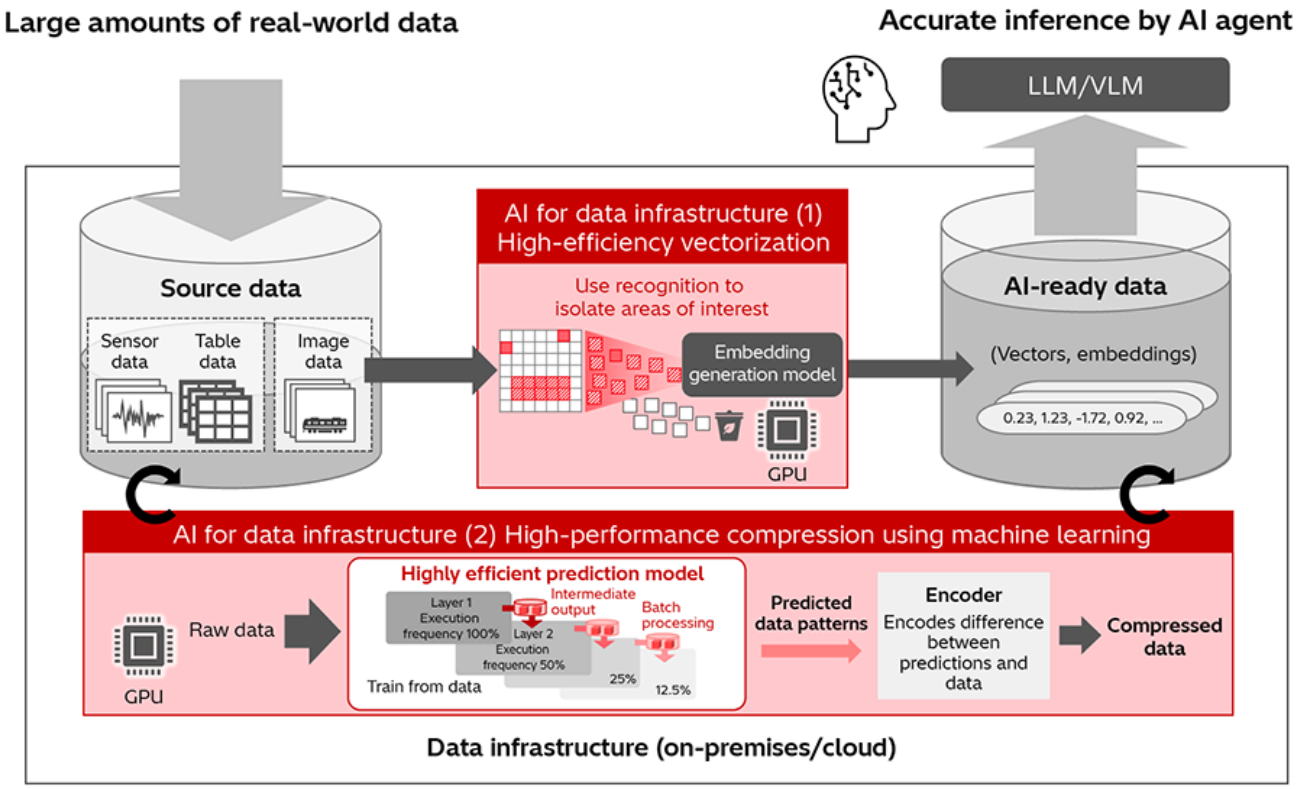
7. Efficient Data Infrastructure for AI

Large-scale data infrastructure is vital if AI agents are to deliver accurate inferences that help to boost operational efficiency in various industries. Given the expanding scale of

this infrastructure, cost control will be crucial. Recognizing this trend, Hitachi is researching highly efficient AI techniques for data infrastructure.

The data infrastructure used for inferences by AI agents executes vector data generation to convert large amounts of real-world source data into a representation that AI can work with, and stores these high volumes of source and vector data. Hitachi's technologies make vector data generation more efficient by tuning it specifically for image data and achieves a high compression ratio for various types of data by using our original computationally efficient prediction model. With these technologies, it aims to reduce the resource requirements when inference by industry-specific AI agents involves large amounts of real-world data, make them more efficient to use and improve the return on investment in data infrastructure.

Further research will be conducted to commercialize these technologies in anticipation of the use of AI in industries such as finance, manufacturing, and healthcare.



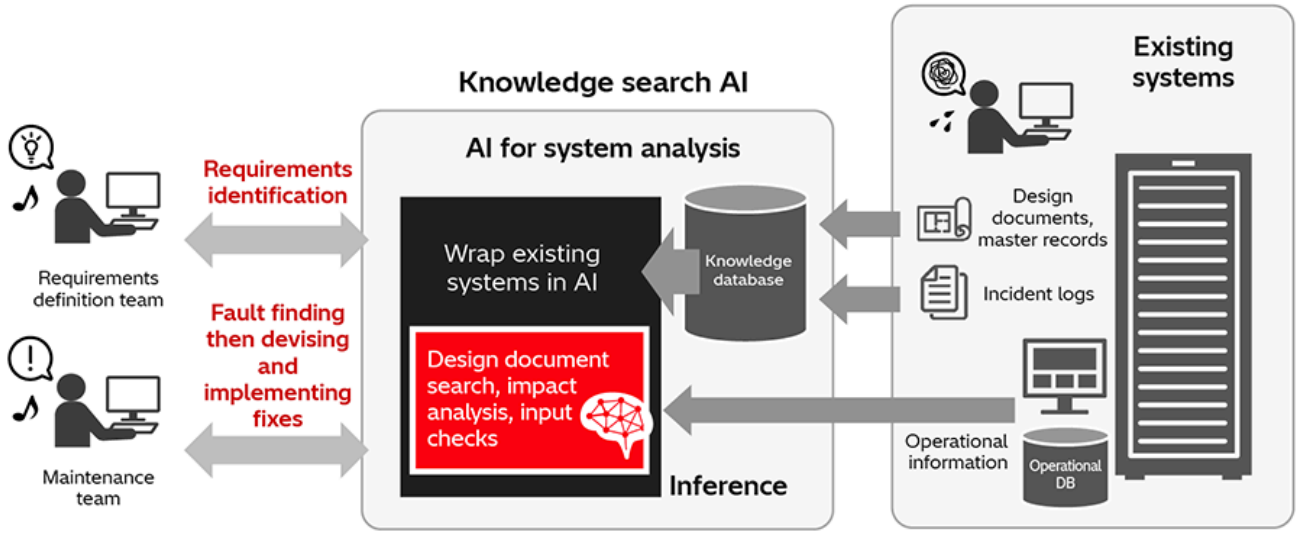
[7] Highly Efficient AI for Data Infrastructure

8. Knowledge Search AI for Easier Development and Operation of Core Business Systems

The development and operation of core business systems requires that the current specifications and potential impacts be reviewed whenever new functions are added or associated software is updated, resulting in the design, requirements, and other relevant documentation being referenced multiple times. Given that this documentation can run to several thousand items, however, finding the desired information is a very complex task.

Hitachi is developing techniques for using AI to reduce the volume of manual work in the development and operation of core business systems. One example is knowledge search AI for the rapid and accurate identification of design documents that are relevant to the desired information. By doing so, it can make work easier and faster, assisting tasks such as reviewing current specifications during the requirements definition phase or performing a cause analysis when responding to a customer inquiry.

Hitachi is contributing to the development and operational efficiency of core business systems through knowledge search AI that utilizes the added-value functions that generative AI can provide without having to modify the systems themselves.



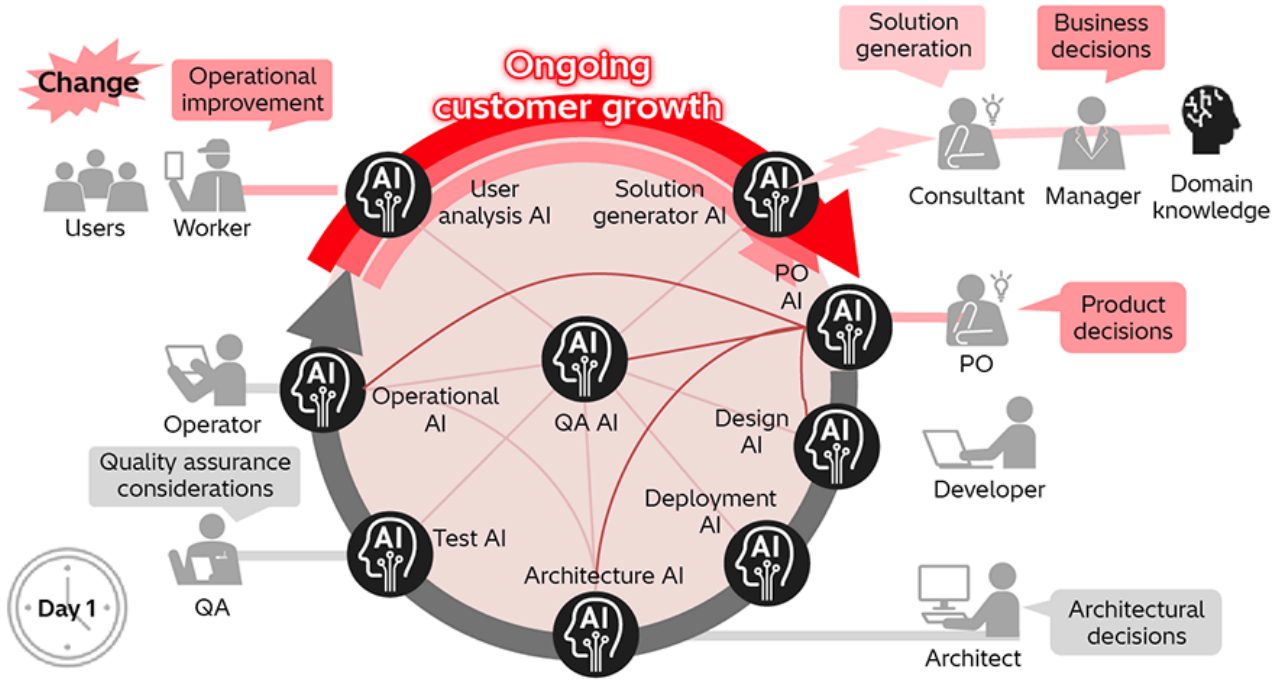
[8] Use of Knowledge Search AI to Retrieve Relevant Design Documents

9. Coordination of Multiple Agents for System Development

Long a labor-intensive industry, system integration is now seeing moves to redefine how development is done, with the introduction of a “digital workforce” of AI agents into the development lifecycle, a process known as system engineering AI transformation (SEAIX). By coordinating suites of agents with sales, business, project management,

design and development, operations, quality assurance, legal, treasury, procurement, and other such roles, this can expand the roles and capabilities of humans, enable concurrent engineering (in which tasks are undertaken in parallel), and significantly increase the scope and quality of reviews. In doing so, it is enabling system releases to happen with a speed and quality that past practices have struggled to achieve.

To enable the coordinated development of these agents, Hitachi has developed an agent role-playing technique together with techniques for interoperation between multiple agents that accelerates their interactive coordination. Hitachi is also trialing the practicality and utility of using multi-agent development in scenarios that involve conceptual planning in the early stages of system development.



[9] How AI SEAIX Implements Coordinated AI Development

PO: product owner, QA: quality assurance

10. VM Migration Solution for Modernizing IT Systems and Improving Availability

The migration of VMs to containers has been a major trend in IT systems over recent years, turning the virtual machine (VM) architectures of the past into cloud-native environments that support both VMs and containers. The challenges that customers need to surmount when undertaking this migration include how to shorten the large

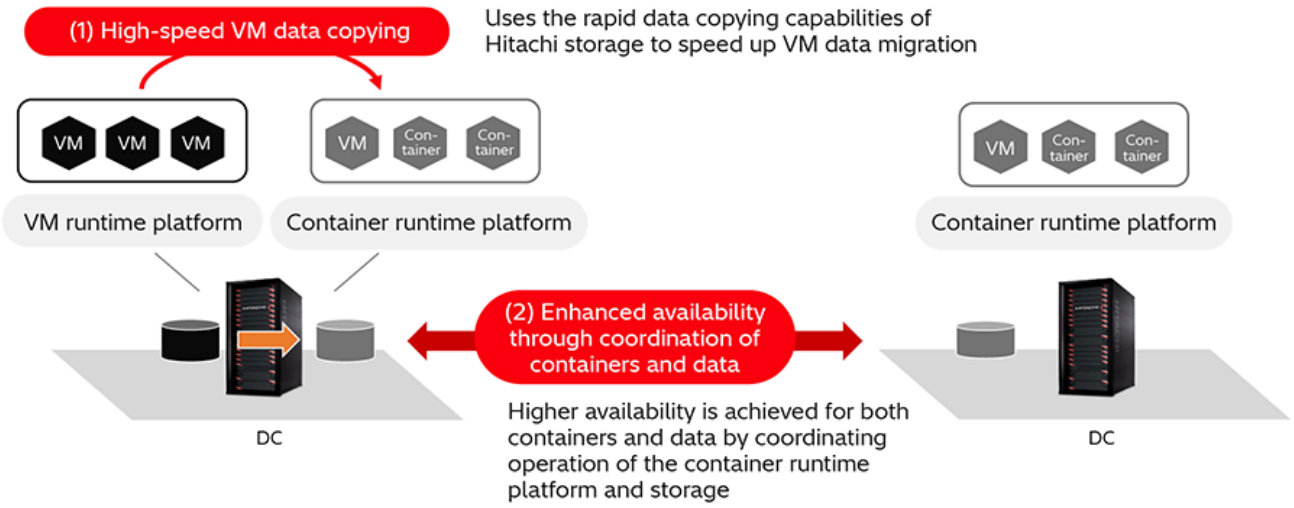
amount of time required for the transition and how to maintain availability levels post-migration that equal or better those achieved using the previous environment.

To address these issues, Hitachi has developed two innovative new techniques that coordinate the VM migration tools with the container operation platform.

(1) A high-speed method for making data copies of storage that overcomes a major bottleneck in VM migration by significantly shortening the time required for copying
(2) A method that coordinates operation of the container runtime platform and storage to ensure high availability across VMs, containers, and their data while also providing disaster resilience

This new technology is being incorporated into VM migration solutions where it is contributing to the modernization of customer IT systems.

(Hitachi America Ltd. and Hitachi Vantara, Ltd.)



[10] VM Migration Solution for Modernizing IT Systems and Improving Availability