

Advancing global transformation strategy with agile development

HITACHI

Reliable Solutions

Industry

Manufacturing

Headquarters

Tokyo, Japan

Employees

26,230 (March 2024)

"By 2025, we will have an agile development team of 300 permanent members, creating an extremely agile organization and corporate culture."

Seimei Toonishi

Executive Officer, CDIO (Chief Digital & Information Officer), President of the New Business Creation Unit, Hitachi Construction Machinery Co., Ltd In 2022, Hitachi Construction Machinery Co., Ltd ended its business partnership in the Americas with a large American agricultural equipment manufacturer and restructured its business. To strengthen its network of sales dealers, it launched the Dealers Network Acceleration (DNA) project, a cross-functional internal organization focused on sales and service personnel. With the help of Red Hat Consulting and Red Hat OpenShift Service on AWS, it has pushed forward its agile development framework together with the DX Department. Rapid, agile development has significantly boosted the number of commercial releases while implementing Red Hat's single sign-on (SSO) technology functionality has greatly enhanced operational efficiency, marking a major leap forward in solution-building environments.



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Benefits

- Released Solution Linkage CONNECT that integrates with the existing after-sales solution ConSite
- Established agile development with 805 commercial releases in 2023
- Cut 700 hours from the monthly workload with Red Hat SSO
- > Developed new solutions tailored to dealer and customer needs

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Innovation is the core of open source. Red Hat customers use open source technologies to change not only their own organizations, but also entire industries and markets. Red Hat Innovators in the Open proudly showcases how our customers use enterprise open source solutions to solve their toughest business challenges. Want to share your story? Learn more.





(From left) Mr. Keisuke Nakagawa, Mr. Seimei Toonishi, Mr. Sam Inose

Accelerating North American expansion with the DNA project

In 2022, Hitachi Construction Machinery parted ways with its long-time partner, a large American agricultural equipment manufacturer, and began offering products, technologies, and services based on its own strategy.

"The Americas are the world's largest market for construction machinery, accounting for 40% of the construction sector and 30% of mining," said Seimei Toonishi, Executive Officer, CDIO (Chief Digital & Information Officer), and President of the New Business Creation Unit, Hitachi Construction Machinery. "There is demand for everything from small hydraulic excavators to massive mining machinery. Understanding customers and deepening relationships in the Americas is crucial for advancing our global strategy; however, entrusting product sales to a partner made it difficult to get a handle on essential customer data."

Toonishi noted a significant shift in the market environment since the partnership began in 1988. Since the 2010s, Hitachi Construction Machinery has been offering remote machine monitoring services such as ConSite and Global e-Service using IoT, quickly meeting customer needs. Building a value chain centered around customer data has become increasingly important for Hitachi Construction Machinery, as it translates directly to profits. Without access to customer data, however, the business would struggle to achieve performance growth.

The dissolution of the partnership in 2021 led to the creation of the Dealers Network Acceleration (DNA) project to establish a business base in North America, which was seen as crucial for expanding operations in the Americas.

"Most of our construction machinery dealers are independent, so if our machines and services are not attractive, they will not carry them," said Sam Inose, General Manager, DNA Development & Promotion Dept., Global Marketing Group, Hitachi Construction Machinery. "Hitachi Construction Machinery takes a Customer Interest First approach to problem-solving and we aimed to first address the needs of our customers, the dealers, and solve their issues. Based on that, we considered how to maximize value for both the dealers and their end users. That was the start of the DNA project."

The DNA project's 'big hairy audacious goal' (BHAG) is to build a network connecting 300 dealers worldwide with end users, and a system to quickly deliver the needed solutions, with the North American market as the first step. There were, however, challenges. "Looking back, the aspirations and ideas for this project were grand, but the hurdles we had to overcome were certainly not low," said Inose.

Focusing on challenges and solutions with minimal products

When the DNA project launched, its members had extensive sales and service experience, but there were no IT experts. The first step was to conduct extensive global interviews to highlight the current state of system development and related issues. The DNA project team identified 475 challenges from around the world.

Going through all the issues, Inose saw that "old Hitachi Construction Machinery systems were running side by side with new ones, creating the need to confront fundamental issues in terms of data utilization. Meeting the needs of North American dealers effectively involved challenges in reforming processes and cutting development times," said Inose.



"What makes Red Hat unique is its ability to offer various options while anticipating the future from a neutral standpoint."

Sam Inose

General Manager, DNA Development & Promotion Dept. Global Marketing Group, Hitachi Construction Machinery Co., Ltd The DNA project narrowed down the top priorities to be addressed to three: creating basic connectivity, developing convenience tools, and determining the next steps.

While considering how to move these three top priorities forward, partner selection became a challenge. Of the several available options, Hitachi Construction Machinery spoke with Red Hat, which had provided support for Hitachi's successful Lumada solution. "We were surprised by their passion and high level of knowledge about open source," said Inose. "Red Hat confidently stated that it could achieve our envisioned BHAG concept using open source. That was the deciding factor in choosing Red Hat as our partner."

With Red Hat's support, the DNA project team built a minimum viable product in the first four months and gave a presentation that included the management team.

"We were able to get management to understand the direction we were moving in, and the DNA project was able to secure an ordinarily unavailable special budget," said Inose. "In a do-or-die situation where failure would mean the project's cancellation, the DNA project and Red Hat took on the challenge working hand in hand."

First, the DNA project used Red Hat technologies and services to build a commercial environment cluster in one month. By the third month, it had created 18 modern information APIs required by Hitachi Construction Machinery Americas and started providing them in production.

"We verified the system's usability by actually operating it on-site, and it was well received as an easeof-use-boosting tool," said Inose. "We were able to deepen our connection with Hitachi Construction Machinery Americas, working as a single team. Also, we were able to build the commercial environment cluster so quickly because of the understanding and cooperation of the DX Division, which oversees IT. Here too, we were able to realize a one-team approach that transcended business divisions."

Steering toward agile development through team building

Integrated the fleet management system and after-sales solution

The DNA project initially tackled the challenges of reforming the development process and shortening development times by participating in an immersive Red Hat Consulting residency and adopting Red Hat OpenShift Service on AWS.

"We wanted to establish agile development practices with other business units, including the DX Department (IT Department), and use organizational learning support to improve our development processes and timelines," said Inose. "But shifting from the familiar waterfall methodology to agile was not easy for our developers."

The Solution Linkage CONNECT portal was designed to achieve unprecedented equipment management and was one important strategy in advancing the DNA project. However, as development progressed, conversations within the development team became extremely rare, and metrics indicating productivity also declined.



"The impact of COVID, which led to fully remote development, was also a factor making dialogue difficult. Developers tend to become absorbed in developing only the modules within their own area of responsibility, often neglecting the customer experience of the finished product," said Inose. "So, we temporarily halted development and held a meeting with everyone. What everyone saw there was the goal of 'providing value to customers' and the need for 'active communication' to achieve this."

The development team members returned to the basics of agile development, emphasizing dialogue and quickly incorporating customer needs into the development process to improve efficiency. They successfully released Solution Linkage CONNECT, which could become a highly popular app for customers, and achieved integration with existing solutions such as after-sales solution ConSite.

Established agile development with 805 commercial releases in 2023

According to Toonishi, team building is crucial in agile, as is the development of each team member. Having consultants from Red Hat provide coaching from the start played a significant role in bolstering Hitachi Construction Machinery's agile framework.

"In agile, the point is not to never fail," said Toonishi. "It is all about failing small, making quick adjustments, and developing nimbly and efficiently in short cycles, each focused on specific features. By repeating this process, we can reach our ultimate goals."

As agile development cycles became entrenched within the team, commercial releases soared from 401 in 2022 to 805 in 2023, slightly more than double.

Cut 700 hours from the monthly workload with Red Hat SSO

The DNA project also boosted development efficiency and expedited the integration of old and new systems using Red Hat OpenShift Service on AWS.

"As I progressed through the thick introductory book, I became convinced that Red Hat OpenShift's technology and speed would greatly enhance our competitiveness," said Inose. "OpenShift achieves container orchestration that automatically tests, builds, and releases without stopping services, and Red Hat OpenShift Service on AWS's managed service doesn't require maintenance personnel, which perfectly fits our concept of scaling from small projects."

Hitachi Construction Machinery was able to achieve production operation in a short period of time.

"While collaborating with the DX Department, we brought a cluster with a three-tier structure for autonomous operation into production in just three months. For someone like me, accustomed to on-premises environments starting with load calculations and server selection, cluster building was a year-long job accompanied by the pain of manual monitoring and management," said Inose. "So when a cloud server was built in 30 seconds and could automatically become redundant according to the load, it was like being struck by lightning."

Solutions developed using Red Hat OpenShift Service on AWS have also improved the operational efficiency of Hitachi Construction Machinery Americas and its dealers.



"By establishing a basis for CRM and portals, which are critical for customer data, Hitachi created an environment where dealers can do business more easily," said Keisuke Nakagawa, Manager of the DNA Development & Promotion Dept., Global Marketing Group, Hitachi Construction Machinery. "Hitachi Construction Machinery Americas responded positively to this, and the introduction of Red Hat's single sign-on (SSO) technology functionality to link the legacy system with the new one has boosted efficiency."

So far, the global roll-out of SSO has saved around 700 hours monthly across the organization.

"Furthermore, we wanted to introduce an SSO mechanism to legacy systems such as ConSite and Global e-Service, which are indispensable tools for our company to collect information about customers and machines, in order to speed up and further expand our operations," said Inose. "The combination of our self-developed legacy IDaaS with its own IDP and open source technology was technically challenging, but after overcoming several setbacks, we achieved an implementation that is quite rare under normal circumstances. We were helped by the high level of technical expertise of Samurai Red Hat (Red Hat Japan)."

Developed new solutions tailored to dealer and customer needs

Multiple initiatives are now being advanced in collaboration with Hitachi Construction Machinery Americas by the DNA Development & Promotion Department and the DX Department.

"There are three main focuses: improving operational efficiency within Hitachi Construction Machinery Americas, enhancing dealer experience, and improving customer touchpoints," said Nakagawa. "We are currently prioritizing efforts to enhance the usability of the dealer portal and develop a system that can centrally manage customer-owned equipment as a customer portal.

"For customers, we launched Solution Linkage CONNECT in July 2024, beginning with the North American market where we are accelerating our own expansion. From executives to on-site personnel, users can easily access Solution Linkage CONNECT from various devices such as smartphones, tablets, and PCs, enabling efficient management of construction machinery operating at different construction sites. With the realization of SSO, customers can now seamlessly connect from the customer portal to our strengths like ConSite's fault diagnosis and parts selection system, which has become a major selling point for us.

"We sometimes receive requests from dealers or Hitachi Construction Machinery Americas for specific information they want to see, or for particular reporting functions for customers. We've made it possible to respond to such requests within a few days. This quick response is being implemented globally. For instance, in a case from Europe and the Middle East, we once responded on the same day to a request received in Arabic. The next day, we received words of surprise and gratitude from the local dealer's president. It would normally take about two months, but thanks to the ingenuity of our young team members who also fully utilize generative AI, we were able to respond quickly."

Toonishi believes that played a key role in Hitachi Construction Machinery's expansion.

"Managing the expansion in the Americas has also been assisted by Hitachi Construction Machinery gaining insights that were previously unavailable, making the forecasting process easier," said Toonishi. "Direct research has shown that the Hitachi brand is more trusted in the Americas than we had anticipated. Many dealers have perceived our new independence positively. In February 2024, we completed a new office building, and with an increase in IT personnel within Hitachi Construction Machinery Americas and ongoing technical investments, we will continue to expand our business without losing pace."



The DNA Development & Promotion Department now holds weekly follow-up meetings with Hitachi Construction Machinery Americas and maintains close communication by visiting the local sites.

"Originally, Hitachi Construction Machinery Americas dealt in wheel loaders. With the end of the contract with the large American agricultural equipment manufacturer, we quickly started handling a larger volume of hydraulic excavators, and it's been a challenge to keep up with the operational demands," said Nakagawa.

"We are therefore collaborating as much as possible to support and improve local operations with the DX Department, which is our IT Department, and the New Business Development Unit. With Red Hat's support, we are continuously thinking about what the best solutions are and putting them together."

Building an agile organization on a global scale

The DNA project started in 2021 with just five people and no budget; by March 2024 it had grown to 43 members across five teams. Hitachi Construction Machinery now runs regular scrums both with its employees and with external partners and Red Hat colleagues, creating a culture of open innovation.

"We want to build on the DNA project to horizontally deploy the agile development framework, boosting efficiency across the entire company," said Inose. "We also aim to leverage those DNA activities—initially started to accelerate business in North America—for global business expansion."

Toonishi shares his vision for the future development structure, explaining that agile development often conjures images of startups, but even for a business of Hitachi Construction Machinery's scale, creating an organization capable of agile development has led to success in various areas. "By 2025, we will have an agile development team of 300 permanent members, creating an extremely agile organization and corporate culture," said Toonishi.

Nakagawa credits the use of Red Hat OpenShift Service on AWS in integrating the old and new systems and developing solutions. "Using Red Hat OpenShift Service on AWS with hosted control planes (HCP), Hitachi Construction Machinery plans to cut management costs and unexpected problems, and decrease cluster setup times, further maximizing the cost benefits of Red Hat OpenShift Service on AWS," said Nakagawa. "With a rising number of inquiries from North American dealers about which solutions to use to approach customers most effectively, Hitachi Construction Machinery is also thinking of creating a more user-friendly structure by consolidating access points to solutions using Red Hat technology."

"What makes Red Hat unique is its ability to offer various options while anticipating the future from a neutral standpoint," said Inose. "This would be impossible without a broad knowledge base, including other companies' products, and its approach of showing both the pros and cons of in-house products, third-party products, and open source while leaving the final decision to us has helped us grow."

Toonishi notes that the current DNA team will not simply remain as the DNA team. As current members grow and move to other departments, they can mentor and help create new agile teams.

"This activity will spread, transforming the entire company into a globally expansive, highly agile organization and strengthening its market competitiveness," said Toonishi. "Eventually, we would like to create a template for Hitachi Construction Machinery's version of agile development."

And as Hitachi Construction Machinery's quest for global transformation continues, Red Hat remains committed to supporting this journey – both in practice and through technology.

About Hitachi Construction Machinery

Hitachi Construction Machinery Co., Ltd. is a global enterprise that develops, manufactures, sells, and services construction machinery. The company is transitioning from a business model focused on new machine sales to a value chain model targeting the entire machinery lifecycle, including parts and services, rentals, used vehicles, parts recycling, and financing.

Having faced significant changes in its management environment in 2022, including a change in the leading shareholder and the start of a fully independent business in the Americas, Hitachi Construction Machinery is positioning this as a 'second founding' and is aiming for further corporate growth from this new starting point.



About Red Hat

Red Hat is the world's leading provider of enterprise open source software solutions, using a community-powered approach to deliver reliable and high-performing Linux, hybrid cloud, container, and Kubernetes technologies. Red Hat helps customers develop cloud-native applications, integrate existing and new IT applications, and automate and manage complex environments. A trusted adviser to the Fortune 500, Red Hat provides award-winning support, training, and consulting services that bring the benefits of open innovation to any industry. Red Hat is a connective hub in a global network of enterprises, partners, and communities, helping organizations grow, transform, and prepare for the digital future.

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