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Special Issue

DX For All

Developing Next-generation Systems
From the Customer's Perspective

Hitachi Construction Machinery Group

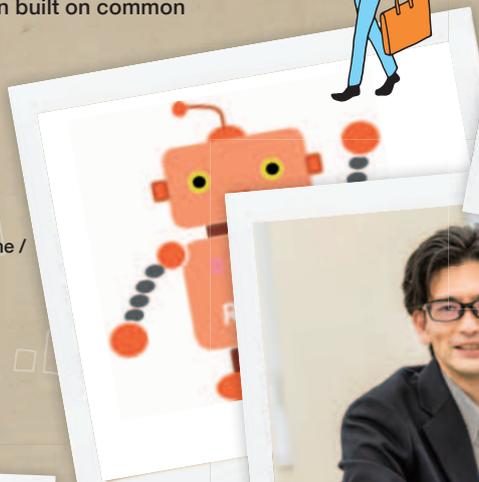


DX For All

Developing Next-generation Systems From the Customer's Perspective

DX (digital transformation) has been a hot subject for quite a while. But what is DX with real value, beyond just moving operation processes to IT? Through exhaustive debate, the DX Promotion Group of Hitachi Construction Machinery reached a revolution built on common ground with the customer. In this issue, we present a round-table talk between the team members leading Hitachi Construction Machinery's DX efforts, with specific examples of their DX actions.

Text by Toshiaki Saito. / Photographs by Norio Sekine / Illustrations by Joe Okada



The “DX-CONSULTING” sales support application is a successful example of Hitachi Construction Machinery’s DX strategy. It’s an app that enables a quick approach to solving the customers’ challenges, such as applying customer data and linking with inventory management. In its development process, we set a shared vision for DX promotion, and practiced agile development. We went behind the scenes of the development work behind this success.

DX is just the means. What we ultimately aimed for is solutions for the customers’ challenges.

What was the background to the formation of the DX Promotion Group, and what did you work on first?
Hisatomi Our management strategy is to deepen our value chain outside the sale of new machines, and to use digital technologies to help our

customers to solve their problems. In that context, the DX Promotion Group was established as the organization to lead DX throughout the company, and to promote DX together with business divisions. The business divisions and IT Division come together to work on DX based on the approach of CIF (Customer Interest First), which prioritizes solving customers’ challenges. We started from discussion of how we could transform contacts with

customers. We did that because, from headquarters, we can’t see the customers’ faces, so discussions tend to become abstract.
Abe We advanced the discussion with measures such as collecting questionnaires from a few tens of employees. At first the discussion among the members was along the lines of “For us, DX probably means using digital techniques to improve our business operations to a state which other companies cannot

mimic”.
Hisatomi Before customer contact transformation, we were basically on “what is DX?” We started from zero and didn’t know what we should be doing, so our discussion of DX also devolved into the abstract, with no customers in front of us. Without understanding DX itself, we were struggling to set targets. We incorporated the Design Thinking approach of seeing things from the other person’s perspective

TIERRA+ round-table talk
 Seminar on DX for Everyone

Hitachi Construction Machinery’s DX Strategy for Fitting Closely With The Customer

What do you

want to make on the other side of DX?

The members had mutual respect for each other.

At first, the sense of speed in development was overwhelming.

We talked everything out for an hour every morning



Hitachi Construction Machinery
 Global Sales Division
 Planning Department
 Assistant department manager
 Junji Fukagawa



Hitachi Construction Machinery
 DX Promotion Group DX
 Transformation Division
 DX Application Strategy Department
 Application Promotion Group
 Assistant manager
 Takako Shinooka



Hitachi Construction Machinery
 DX Promotion Group DX
 Transformation Division
 DX Application Strategy
 Department Application
 Promotion Group
 Assistant manager
 Naoki Tamukai



Hitachi Construction Machinery
 DX Promotion Group DX
 Transformation Division
 DX Application Strategy
 Department
 Department manager
 Norio Hisatomi



Hitachi Construction Machinery Japan
 Marketing Strategy Division
 Assistant department manager
 Satoshi Abe

and empathizing with them, and I remember that our discussions became very lengthy.
Abe The discussion became heated, and after a while Mr. Fukagawa joined us when we were about to determine the specific themes and verify their value. Mr. Fukagawa, who is a specialist in field work, made a lot of suggestions based on how sales staff do their work. The discussion certainly leapt forward after Mr. Fukagawa joined the team.
Fukagawa I worked in sales for 14 years, so I was always talking directly with customers. When I

joined the team and had to put that experience into words, a lot of new ideas occurred to me.
We worked through that kind of discussion to move onto the development of DX-CONSULTING.
Hisatomi Talking with members of the Sales Division, not just from the IT Division, was very important, because it gave us a shared world view that led to common objectives. Ms. Sasaoka and Mr. Tamukai, who handled system development, joined the team as we were deepening the discussion, but how

did our work look to you then?
Tamukai In the position of developers, our mindset is always going to be on the manufacturing side, but in this project we started from the keyword of customer contact transformation, so I think we were able to address the job with the attitude of considering the company as a whole.
Shinooka I was in charge of the production management system, so I was also far away from the customers, and in some areas I was like an onlooker, thinking that if we

made something good, the sales and headquarters people would be able to sell it. Therefore, I got face to face with DX and CIF for the first time in this team. My first impression when I joined the team was that the time spent in conversation was overwhelmingly long. Because the talk time was so long, it brought the members closer together, and we were able to gain a deeper understanding of the client contact transformation approach, and of the world view of “for the client” that Mr. Fukagawa had

experienced for so long in the field.
Tamukai This team went beyond departments to bring together members with outstanding individual skills. Rather than pulling closer to their own specialist fields, the members worked on the basis of making an app that would realize the principle of client contact transformation, offering opinions that used their own specialties. I think that led to good monozukuri.
Abe Looking at it a different way, the lengthy discussions meant that

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The App Development Process

What is DX-CONSULTING?



It’s an iPad app to enable quick responses by linking with customer data and inventory management, and making suitable proposals tailored to clients’ challenges.

- **April 2020**
Creation of the DX Promotion Group
- **April to September 2020**
Questionnaires of employees, agile development study group sessions, exhaustive discussion
- **October 2020 to March 2021**
A small team comprising Hisatomi, Abe, and Fukagawa prepared the concept and prototype, and set the target of October the next year for development completion
- **April 2021 onwards**
Shinooka and Tamukai joined the project and development moved ahead on an agile basis
- **December 2021**
Operation started for pilot users
- **December 2021 to March 2022**
Consideration of additional functions, development
- **April 2022 onwards**
Start of official operation, with ongoing development of additional functions



it was an environment that allowed flowing conversation. In practice, we could offer opinions that were just ideas, and bring in ideas that seemed off base at first sight. That's how we were able to find good points of compromise. I think that, as a result, that kind of environment contributed to the speed of agile development.

Shinooka Mr. Fukagawa always backed what I said, saying "that's certainly true", and never opposed me. Having such an environment, which made it easy for us to state our views, made the conversations much more lively.

Fukagawa Mr. Hisatomi taught me the trick of not opposing people's views. Even so, I've met Ms. Shinooka and Mr. Tamukai online over 150 times, but this is the first time we've met in person.

Hisatomi In particular, the two developers joined after the project had been running about a year, so even though I never met them in the real world, the way we all united so well was very moving. Maybe that's an example of DX success right there.

But the two developers came in after a lot of the decisions had already been made, so maybe they were under more pressure than we were.

Shinooka When I first joined,

the target date for development completion in October 2021 was only half a year ahead, so I honestly thought it was really harsh...

That's what I felt, so I prepared some documents and grounds for explanation, so the others would understand the difficulty. Mr. Fukagawa took the Hitachi Construction Machinery position in making adjustments within the company, and we reorganized towards meeting the development completion target. When I requested people with certain skills, he found Mr. Hisatomi and Mr. Abe, so we were able to finish development with a satisfactory result.

Abe I think if we'd worked with an old-fashioned waterfall development approach, not using any advanced IT like smartphones or the Cloud, we would have made the October target. But on this occasion we went crazy for all kinds of things, like wanting to use agile development, make it easier to use the Cloud, work on the design to make more legible, and so on. With all that, I think it was really tough on the two developers.

Please tell us about the advantages of DX-CONSULTING, its impact after it started operating, and its prospects for the future.

Fukagawa DX-CONSULTING

delivers quick responses when the sales staff ask it questions. If they use that, the sales staff can make proposals which fit each individual client, while leading the conversation to generate strong relationships of trust. We think that makes closer bonds between sales staff and clients, and is also effective in differentiating us from other companies. On the other hand, using DX-CONSULTING makes it easier to pass on knowledge and experience that are tough to convey, so we expect it to be useful in educating and nurturing young staff. Before the start of operation, we envisaged it mainly being used by young and mid-career staff. In practice, we were delighted to find that many veteran staff also welcomed it. Apparently about 30 years ago the company had this document called "The Sales Record Sheet", which was like a book of secrets. Some people told us that the things written there and the support from DX-CONSULTING were much the same.

Shinooka I think it was good that we kept it simple enough and easy to use, without trying to pack in too much information.

Tamukai I'm surprised it has such a good reputation. Many systems are developed but never get used, so I'm

glad so many sales staff use it. For this project, the impact of Covid-19 obliged us to telework, so we didn't get cooped up in meeting rooms, but I think introducing agile development meant that we could move forward swiftly with value verification while maintaining close communication online.

Fukagawa Until now, Hitachi Construction Machinery had a very earnest corporate culture, so that even when it had ideas, it waited for each one to reach 100% completion. Our introduction of agile development in this project meant we could start operation before full completion. I feel that really gave us a revolutionary weapon.

Hisatomi Even so, we still haven't gone beyond sending the first example of DX out into the world. From now on, we want to initiate all kinds of projects and use the power of digital to create things that never existed before.

The atmosphere of being able to say anything without getting shot down deepened the discussion and unified our mindsets and goals.

I could speak up with the confidence of knowing I wouldn't be denied

Sorry for getting carried away (laughs)

Diversity blended together so well in this task force



Junji Fukagawa

Joined the development project in October 2020, as a concurrent job while working in the Hitachi Construction Machinery Japan Marketing Strategy Division. App development reflected his views as a salesman with field experience. Moved to the Hitachi Construction Machinery Global Sales Division in April 2022.



Takako Shinooka

After working on the development and maintenance of production management systems in overseas factories, she was assigned in April 2021 to the DX Promotion Group, DX Transformation Division, DX Application Strategy Department. Taking the position of development team leader, she took over from Mr. Abe from April 2022 as the manager responsible for systems.



Naoki Tamukai

After working on the development, operation, and maintenance of systems for production in Japan, he was assigned in April 2021 to the DX Promotion Group, DX Transformation Division, DX Application Strategy Department. In April 2022, he took over Ms. Shinooka's role as development team leader.



Norio Hisatomi

He was moved from the Sales Division Planning Department to the DX Promotion Group in April 2020, and is now the head of the DX Transformation Division, DX Application Strategy Department. From the beginning, he had a central role in propelling the DX-CONSULTING development project.



Satoshi Abe

At the Client Solutions Group (*), he is involved in setting up "ConSite" and developing and promoting ICT solutions. He was moved to the DX Promotion Group in April 2020, and became system manager for DX-CONSULTING. He joined Hitachi Construction Machinery Japan in April 2022.

* The name of his division is as of April 2020. The department name changed to New Business BU.

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The demo pitch deck shared the world view that DX aims for

This project wasn't just about making and releasing an app. It also applied thorough promotion to share Hitachi Construction Machinery's DX strategy, and the world view CIF aims for, with the app's users.

The pitch deck content posted on the DX information sharing site was part of that.

We use a realistic and clear demo story to introduce the real value that can be realized by using DX-CONSULTING.



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Terminology



CIF (Customer Interest First)

The action attitude that Hitachi Construction Machinery aims for, which gives the highest priority to solving the clients' challenges. In DX strategy, the subject is always the customer, and it aims to use digital technologies to transform all kinds of processes. With DX-CONSULTING, the transformation starts from the parts in contact with the client, and proposes total solutions with RSSU (Rental Sales Service Used, which is to say rental, sale, maintenance service, and pre-owned machines in construction machinery) to solve clients' challenges and realize CIF. It's the first round in that DX strategy.

Design Thinking

This is an approach designers use to derive solutions when considering a design for an issue that is as yet unsolved. The key point is to think from the position of the user. In DX promotion too, the designer thinks from the user's perspective to discover unseen needs. This approach is useful for deriving solutions for unprecedented themes.

Agile Development

This development method for systems and applications has been in the spotlight in recent years. "Agile" here means fast and nimble. The conventionally-used waterfall development method starts by creating the overall design and then the planned development process follows that design. With agile development, no strict design is created, and development moves forward with broad specifications and conditions. This approach can respond flexibly and swiftly if a specification change is needed, so it can develop in line with client needs in a short period.

New Working Methods and Value Creation, Enabled by DX

Hitachi Construction Machinery is using RPA “robots”, which process routine tasks on PCs, and Microsoft’s Office 365 business software, to promote operational transformation, raising efficiency and productivity and realizing new ways of working. We examined these two actions which have been key to DX for internal operations.



If repetitive tasks that are performed by humans can be automated, the working time expended on routine work can be cut, and the time that is freed up can be reassigned to work that only humans can do.

Tanigawa says “The Office Transformation Group in the DX Promotion Group tries out digital tools to the full for changing operation processes and creating an easier working environment. It then introduces the good tools within the company and promotes their use”.

Conventionally, it would have been the norm to ask the IT Division to develop systems and applications for automating routine tasks, but the Office Transformation Group is promoting a change of approach, to one in which the employees of each department take the lead in development.

Actions using RPA began in the second half of 2018.

RPA software was introduced that allows people to develop robots even if they have no expert knowledge or skills.

Our first step was to spend half a year asking the whole company what kinds of operations should be replaced by RPA. Tanigawa reveals that “at first we didn’t get a lot of answers”.

Then, in 2019, they made a companywide search to identify routine operations.

The search found around 4,000 routine operations, equivalent to around 24,000 hours of work.

That triggered a rapid acceleration of action, and now every department is developing robots tailored to its own operations, to advance its improvements.

“Such operations were particularly numerous in the Production and Procurement Headquarters, and by March 2022 we’d developed 104 robots that had saved 1,279 hours in improvements. That was amazing progress in RPA use” (Tanigawa).

The introduction of Microsoft’s Office 365 business software began in 2018.

To make effective use of the various

tools included in Office 365, they first thought of using Microsoft Teams, which enables chat and video conferencing within teams, to improve work efficiency.

“Our starting point was that meetings we don’t need to meet up for should be completed without meeting.

But people didn’t really understand what was different from email, and the number of users didn’t increase, so it was ineffectual at first”, says Kudo, looking back.

But after that, Microsoft Teams sank in, partly because of the Covid pandemic, and people started using other functions too, like task management.

In the last two years or so, they have been working to promote the use of Power Platform, and that makes it easy for people to make their own apps, which help with operation improvements in their departments. Apparently in-house app creation has begun in some departments.

The RPA Award for in-house work promotes usage

The RPA Award is given to recognize outstanding RPA work, and work on developing robots to match each department’s needs is steadily getting traction.

But Kudo says in-house creation of business apps is “still only halfway there”.

“Particularly in administrative departments, there are hurdles to overcome even if the interest is there, so we’re just ready for questions people ask us.

Therefore, we’re sending the message that people should feel free to consult us, even if it’s just at the level of ‘I think I’d like to do something like this’”.

The examples of apps made with Power Platform present simple apps, like a temperature measurement app allowing one-click submissions and approvals (see p.09), rather than more advanced apps.

The purpose of operational transformation by digital means is to achieve reforms in how employees work, not just to improve productivity.

“Thinking of how to get closer to clients and creating time for action leads ultimately to solutions to the client’s challenges” (Tanigawa).

“If efficiency improves in internal operations, we can achieve shorter response times, better precision, and lower costs, and we can contribute the results to the clients” (Kudo).

Following that approach, the Office Transformation Group will promote work on DX for internal operations, towards participation by all employees in future.



(Left)
DX Promotion Group
DX Transformation Division
DX Application Strategy
Department
Office Transformation Group
Assistant department
manager

Ryuichi Tanigawa

(Right)
DX Promotion Group
DX Transformation Division
DX Application Strategy
Department
Office Transformation Group
Assistant department
manager

Mitsuru Kudo

Automating 28 hours a week of indirect operations with RPA

RPA was introduced to automate routinely occurring indirect operations in production and manufacturing.

It automates the work of tallying expenses used in manufacturing and comparing against the current amount of work, to check where expense usage is appropriate, and informing the people concerned of the delivery status of the goods which generated the expenses.

Before RPA was introduced, the work of gathering, tallying, and reporting data was done manually, consuming large amounts of human resources. One example of effects after deployment is that RPA for expense management can now automate 1,680 minutes/month of indirect operations.

RPA replaced the work, allowing more time to be assigned to tasks which require human decision making. This project also raised my skills for the development of macros used in the development. We expect RPA to evolve into a more accessible form in future, so we urge everyone to try it.



Power and Information Control
Platforms Division
Device Production Engineering
Department
IoT Promotion Group

Jun Sato

Reducing the time for routine operations

Im in charge of operations related to tallying and analyzing daily sales in each Group company in parts and service, preparing budgets, and so on. I used RPA to automate the work of gathering daily parts and service business performance from each company’s core systems, visualizing it, and distributing the data.

Before, no unified core systems had been introduced across each Group company, so it wasn’t possible to gather each day’s data as a batch process. Even after we got the data, it took a lot of work for updating and correcting the data. Introducing RPA made it possible to keep track of performance on a daily basis, when that was previously done on a weekly or even monthly basis. I also built a system that distributed alarms via email if there were abnormal values, like unlinked data, enabling rapid responses. Using RPA saved a lot of time, leaving me free to analyze the data and think of ways to use it.



Parts and Service BU Customer
Support Division
CS Planning Department
Performance and Process Management
Group

Gaun Min

The key to success is shifting to internal production

Examples of in-house DX action

Thinking “Is this waste?” is a kaizen opportunity

The spread of Covid-19 made it essential for Hitachi Construction Machinery to report employees’ temperature records at the start of each day to superiors. At the start of the pandemic that was done in Excel, with submissions and approvals handled via email. Wanting to cut even a little of that workload, I used Power Platform to develop an app so that we could report to superiors with one click, and they could check and approve the content with one click. I added fields for entering work locations and other report info besides temperature readings to send to superiors, to facilitate communication.

I expected app development to be difficult, but I had support from the DX Promotion Group, so I could create the app even though I had no programming experience, which also improved my skills.

“This job is such a hassle...” “Is this is waste?” When you think something like that, it’s a kaizen opportunity.

I think the accumulation of little kaizen improvements can raise productivity.



DX Promotion Group
DX Transformation Division
DX Operational Transformation
Department

Emi Miyakawa

Using DX to achieve “small but convenient” things!

In my secretarial work, I’m in charge of managing the schedules of company directors and coordinating the related arrangements.

It used to take me a lot of work to register each individual meeting or event etc. to be attended by a director into Outlook schedule. So, I built in a system for automatically registering the directors’ meetings for a whole year into Outlook in one batch. Other than that, I introduced systems for automatically keep track of congratulation and condolence information posted in online newspapers, to partially automate updating directors’ information, and a few other tools to make previous operations a little easier.

This development work increased my knowledge of RPA, macros, and so on. Another big benefit was that I was able to communicate more smoothly than ever before with the people in the DX Promotion Group. When they hear “DX”, many people think of innovative systems and high hurdles, but I think achieving “small but convenient” things that we can introduce in our own departments is the best part of DX.



Human Resources Division
General Affairs Division
Secretarial Group

Hiroko Akimaru