Progress is being made! JATCO's DX

In recent years, "X" has been sweeping the world, with concepts such as CX (Corporate Transformation), SX (Sustainability Transformation), and GX (Green Transformation). I believe the original origin of "X" was DX (Digital Transformation). JATCO launched its Digital Innovation Promotion Department in 2020 and has been promoting digital transformation ever since. What is the current state of DX at the company?

This time, we spoke with Kato, Miyazaki, and Iwao from the Digital Solutions Department, and Miyazono from the JEPS General Affairs Department.

Digital Solutions Department, Mr. Kato

Q: What are your roles?

Kato: I am in charge of promoting DX and developing digital technology. My main tasks are holding events such as DIF (Digital Innovation Forum) and digital contests. Although we haven't decided on a specific theme yet, we would like to develop digital technology focused on in-house production and decide on a theme for what

we need to do in the medium to long term! I'm trying to do something like this.

Miyazaki: I collect factory data and make it visible so that it can be used for improvements. Rather than completing each piece individually, we link various pieces of data together to make them appear the same. Rather than creating a single closed system, we are creating something that includes a foundation that will act as a platform-like mechanism.

Miyazono: The Digital Solutions Department handles things like the platforms and systems used across the entire company. How can we use this in production? I work on tools to be used on-site, systems that can be used to improve the site, automating data conversion and reporting using Excel, and supporting the on-site DX team. We are also working to develop human resources who can do this in the field.

Iwao: In order to improve operations in the indirect areas, I am promoting the business app "Kintone", creating an environment where everyone can use data together, and creating a data analysis infrastructure in the form of a big data platform to collect data to be used in indirect operations. It's like a digital transformation foundation.

JEPS General Affairs Department: Miyazono

Do you see any changes happening at JATCO towards digital transformation?

Miyazono: What I've noticed recently is the improvements that have been made. In the past, when people on the front lines would make requests such as "I want to change this in a certain way," they would often say things like, "I want to automate the printing and transcription of this document." However, with the rise of smartphones, we are increasingly hearing requests to incorporate new technologies such as AI among the ideas coming from the front lines. Originally, the QC conferences covered things like "I want to improve this on-site" or "I want to improve this type of work," but when it comes to the "how" part, for example, "Let's change the way we fill out forms," more and more people are talking about things like, "I want workers to enter data on tablets and foremen to be able to tally that data themselves."

Kato: At first it was common to hear things like, "Please don't change the way you do your work," but I feel like that's starting to happen less and less. I feel like when you buy an app, you're starting to think of it as something that fits the standard, but are we still not there yet?

Miyazaki: I don't think it will really fit the standard in the field. If anything, I think it's more important that we adjust the system to meet the needs of the business side.

Miyazono: The foreman also wants to produce the output that is determined by the process in accordance with the company's standards, but he is quite free to come up with ideas for the indicators that he manages himself.

Miyazaki: Overall, it may be only a small increase, but I think there is definitely more interest in making use of data than before.

Kato: There are steps to "take," "save," and "use" data, but the process is completely different depending on the item.

Miyazaki: The reason we originally started trying to make factory data visible was to improve OEE (Overall Equipment Effectiveness), so I think we have now gone so far as to use the data in that area. We have collected quite a bit of data to help improve OEE. We analyze OEE and record the duration of breakdowns and malfunctions, so we generally have that information. So, there are a lot of voices from people who want to see it and want to use it in certain ways, but the weak point is in the quality-related data. For example, we often refer to it as the system of factors required to create the product. Other considerations include values that fluctuate when electricity or objects are being processed, the motor current and vibration, the condition of the cutting edge, the relationship between hole position and assembly quality, and the relationship between the processing precision of gears and the excitation force when they are made into a unit. We are currently working hard to get enough data to use in the quality area.

Are there more and more voices within the company wanting to use digital tools?
Miyazaki: The number of cases has increased, and we have become better able to deal with them. We don't outsource all of this either; we do it all in-house, so if we ask what someone wants to do, we can generally figure out how to do it. We divide up the work like this, saying things like, "We can do this much, so please prepare up to this point," and we collect data while doing so.

Kato: One example is that some places are moving towards predictive maintenance,

where they monitor the condition of equipment using data and, if something starts to go wrong, they fix it before it breaks down. Going back to the topic of processing, there are also examples of processing quality prediction in the world. It is used in a way that allows you to tell during the processing process, "When vibrations are coming and the current value is about this, the dimensions will be about this," and equipment manufacturers sell it as processing equipment.Also, when it comes to welding, if you weld under certain conditions it will either be OK or NG, so you should carefully check the welding conditions. There are things being done in the world that allow you to predict quality and imagine the result system based on the state of the cause system.

Miyazono: Packaging has been on the rise for about five years now, but other companies are putting it in their cutting-edge model lines. If you try to deploy it on an existing line, or a second or third line, whether it's a new company or an existing company, there's the question of how they got the budget, so I feel like there are still not many places in the world that are able to deploy it all in its entirety, as they have to think about how to narrow it down to just the necessary functions in a simple way. I think what's really been done is probably something that has been in place for 20 to 30 years, and is fully incorporated as standard specifications within the company.

Manufacturing is slow?
Kato: It is generally said that the manufacturing industry is slow to advance. When you talk to consultants, their proposition is to quickly create examples of traditional Japanese manufacturing companies that have implemented and successfully implemented digital transformation. This fierce competition is taking place between consultants. On the other hand, this means that no progress has been made anywhere yet. In short, even if we make suggestions, they never move forward because the costs are too high. Apparently, even when consultants are involved, things don't always go smoothly.

Digital Solutions Department: Miyazaki

Miyazaki: I don't think anyone knows where the goal is. What is DX in manufacturing? I don't think anyone knows what the goal is. What is DX in manufacturing? JATCO says we should aim for ultra-high efficiency.

Kato: However, we are still searching for specific targets, deadlines, and organization. The goal is always changing, and with each passing year, more and more is accomplished, so I keep chasing it.

Miyazono: The goal is for it to "ultimately not stop," but the question is what measures to take against the losses that occur along the way.

Kato: There's no doubt that it's difficult for the industry as a whole to move forward. There are extensive, heavy manufacturing lines, and each line has its own way of ensuring quality, work methods, and organization, so it can't be stopped. I think everyone has a hard time changing things as they go.

Miyazono: There are many people involved in the manufacturing industry, and the backroom work environments of the workers are diverse. For example, in the

financial industry, all systems are already in place when you join the company. It's become a part of the work process. I think it would be relatively easy to move forward with discussions like, "Let's make automation and data analysis easier." Manufacturing may be more difficult than that. For example, Yamaha is developing digital talent within its manufacturing operations. We are trying to increase the number of people who use this type of service as part of the supply chain, not just by ourselves, but by taking on people from our partners. The steel industry is also expanding its reach by creating educational programs such as "Let's develop digitally savvy people by a certain year." If you don't know, you won't come up with ideas, so this tends to be the case among companies in Japan that are making progress in DX.

So, is JATCO's digital transformation progressing?
Miyazaki: It's difficult to say in terms of DX, but I don't think it's a bad idea from the perspective of IoT and digitalization of factories. JATCO doesn't have any spectacular new manufacturing lines, but basic data is gradually being distributed to all factories. I feel like we're getting the data. What do you think?

Kato: When I visited a certain company some time ago, we were talking about "collecting" data, and I felt that JATCO was far more advanced in comparison. I think progress is being made on the ground in terms of "collecting" and "preserving" data.

Miyazono: There is a lot of effort being made by management, but I think there is also excitement globally. China, Thailand, and Mexico are also actively working to utilize it in the field.

Kato: I think Mexico was quite early. For example, we now collect data from coordinate measuring machines in real time and have established and begun operating a system for sharing that data with our partners.

Digital Solutions Department: Mr. Iwao

Iwao: I feel like that kind of environment is starting to take shape. The key point is that we now have a foundation for preserving and using data. I think we'll start working on ways to utilize this in the future. We created a digital transformation foundation called a big data platform. The aim is to have all the data collected there so that anyone can use it in a standard way they work. Currently, you have to go looking in various places, but now you can find out by looking at the data. Security is particularly important for data, and we are creating rules for handling standard information regarding security. Just follow the rules and apply and get approved. Data becomes available to everyone.

Could you please tell us what JATCO actually does?
Iwao: One interesting thing to mention is generative AI. Although it is not related to handling data, in terms of digital transformation, this year we introduced JATCO AI-Chat as a big project to dramatically change the way we work. JATCO AI-Chat is similar to the commonly known ChatGPT, but it was developed in-house. There are many ways to do this, such as purchasing external services, but we decided not to do that. The reason is that we want to accumulate generative AI technology and use it ourselves to create systems that are better suited to our work. We are creating

various systems with the keyword "walking together with AI." I guess it's an AI assistant. The idea is that AI is always there to support you in your work.
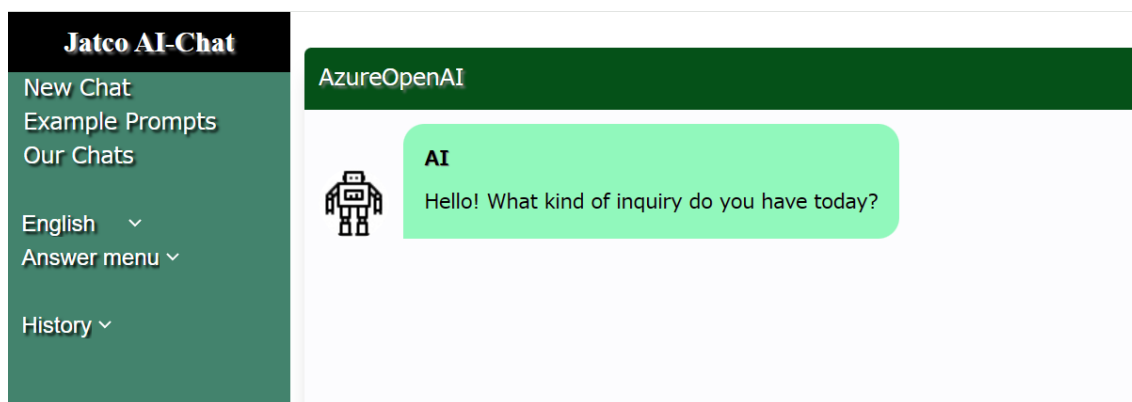
JATCO AI-Chat

Miyazaki: I use it every day!

Iwao: Thank you. File registration and image interpretation functions are also under development. Please wait a little longer.

What's interesting is that when you're creating a generative AI system, you can ask JATCO AI-Chat and it will create the code for you. Once you have verified it and it works properly, you can test it a few times and release it. In terms of creating software to make work more convenient, JATCO AI-Chat is effective. But that's not all. There are various ways to use it, but I think generative AI will probably become more prevalent in the way we make things. Therefore, I believe that our efforts to improve and create an environment that can be applied to a variety of tasks will be an important factor in promoting digital transformation in the company. It's not just about collecting and using data.

Kato: I think the next step will be to increase the number of jobs in which AI is introduced into processes that are currently done by humans. Going a little further, all the intermediate processes will basically be done by AI, and the finish will only be checked by a human. It's impossible to do it all at once, so I'd like to at least use AI in one area for now. I'd love to see a platform that makes this easy!

Miyazono: I think the key point is to do it ourselves. I think this may go against the trend in society of outsourcing non-core aspects of the business, but I believe they are actually quite ahead of the curve.

Iwao: It's not easy to see, but the way we work has clearly changed. It's a transformation, isn't it? It is true that organizations and cultures have changed in order to transform the way we work using digital tools.

Miyazono: There is someone in the JEPS General Affairs Department named Ishiwa who is skilled in Excel. When collecting data on-site, Excel is one of our basic tools, and we also add data from sources such as Kintone to our training programs for on-site use. Until last year, it was a voluntary program, but starting this year it is also available to new graduates. We are also introducing Excel training to improvement leaders who will likely become plant managers in the future. I think that in a few years, there will be foremen and section chiefs who are adept at using digital tools.

EQ Connect

Miyazaki: When we first created EQ Connect, people often asked us what the point of making things visible was. However, I have always believed that simply making things visible can be valuable. If I were an engineer and, in a position, to make such improvements, I would continue to create screens that would be useful in a certain way. It does hit home with a certain group of people. I think that as people listen to this and make improvements little by little, more and more people are starting to use the data.

Unless you come into contact with the data, no ideas will come to you. I'm thinking about what I want to do next, and what kind of things I could do. Because that idea doesn't even occur to me. Even if you just want to take a look, I definitely recommend you check it out.

Kato: From what we've discussed so far, in order to successfully advance DX, there are limitations to saying that it's enough for just one person in the Digital Solutions Department to work hard. We want to encourage each and every individual to do the same thing: those who know their jobs should fix things themselves, try new things on their own, or try to fix something that they found problematic in their actions today.

Until now, even if there were good examples, they were not spread horizontally. DigiCon 2019 was started with the desire to let more people know about good examples. Last year, about 400 people came to watch, and the executives said they would like us to continue it. However, there is a problem. There are over 2,000 people in Japan who own a computer, but only 400 of them are involved. And what's more, they don't look at all the cases, only the ones they want to support. While I want to spread good examples further, there are also problems with them becoming difficult to imitate, so I wanted to see more casual examples and started Buzz Post. For example, there are some really simple tips that simplify the process of making reservations in Outlook's scheduler, and there is also an introduction to generating prompts. I would like those who post to feel free to do so. Give it a try!

The following is a summary of this article by JATCO AI-Chat based on audio data (with some additions). The editorial department is also amazed at the quality. Will My JATCO also move forward with AI?

Companies are taking on the forefront of digital transformation - the wave of

digital transformation spreading inside and outside the companyDigital transformation (DX) is rapidly spreading into the manufacturing industry as well. Our company has various projects underway to promote digital transformation, and these efforts are attracting a great deal of attention both inside and outside the company. First of all, Miyazaki, Kato and their team are at the heart of promoting DX. They are in charge of introducing digital technology within the company and planning events, and are working to change employee awareness, especially through DX events such as "DigiCon." Sudo says, "As a medium- to long-term goal, we are promoting the development of digital technologies to improve production efficiency within the company. Specifically, we aim to build a platform that utilizes data and makes it visible." In the factory division, efforts are underway to collect production data, analyze it, and use it to make improvements. For example, systems are being introduced that enable predictive maintenance based on vibration and current data, making it possible to predict equipment deterioration and take early action. In addition, data analysis to maintain product quality has also been strengthened, and by analyzing correlations with processing precision and assembly quality, it is now possible to produce higher quality products. Of particular note is the introduction of generative AI. Starting this fiscal year, we have introduced our own in-house developed AI generator, "JATCO AI-Chat," which is helping to improve business efficiency. **This AI supports a wide range of tasks, including answering employee questions in chatbot format and assisting with code creation and data analysis. "Generative AI is revolutionizing our business processes and has been particularly useful in program development and testing," says Iwao. In addition, a big data platform that serves as the foundation for DX was also built, and all data within the company is now managed centrally. This platform enables each department to share necessary data quickly and securely, further improving work efficiency. Especially with regard to security, strict rules have been established and data is handled with utmost care.**

A human alphabet made up of four people. Can you read it?