JFE

JFE Group

2025 DX REPORT

Contributing to society with the world's most innovative technology

DX Stocks 2025
Digital Transformation

Contents

DX Stocks 2025 Digital Transformation

JFE Holdings Named DX Stock for second consecutive year

JFE Holdings was one of 31 of roughly 3,800 listed companies, and the only company in the iron and steel industry, selected as a Digital Transformation Stock 2025 (DX Stock 2025) by the Ministry of Economy, Trade and Industry, the Tokyo Stock Exchange, and the Information-technology Promotion Agency, Japan. Since being named a Competitive IT Strategy Company under a predecessor program launched in 2015, the Company has been selected 10* times.

*JFE Holdings was named a Noteworthy DX Company in 2023.

Selection record	2015	2016	2017	2018	2019	2020	2021	2023	2024	2025
DX銘柄 Digital Transformation	●	●	●	●	●	●	●		●	●
DX注目企業 Digital Transformation	(Program not in existence)							●		

* Names prior to 2020: Competitive IT Strategy Company and Noteworthy IT Strategy Company

Disclaimer

Current plans, strategies, beliefs, and other content described in this report that are not historical facts are forward-looking statements that may involve risks and uncertainties. Actual results, performance, or achievements could differ significantly from the anticipated outcomes presented in this report due to various factors, including changes in the global or domestic economy, as well as unanticipated trends in the industries to which JFE Group companies belong. Readers should understand that JFE Holdings cannot guarantee the certainty of such forward-looking statements.

A top runner in DX promotion, implementing DX strategy that supports resilient profit base to achieve Eighth Medium-term Business Plan

Last year, JFE Holdings formulated the JFE Vision 2035 long-term strategy, looking 10 years into the future, and the Eighth Medium-term Business Plan, covering the period through fiscal 2027, toward achieving JFE Vision 2035.

To reach our goal of carbon neutrality by 2050, JFE Vision 2035 has set two goals: “become the leader in carbon neutrality (CN) technology development” and “expand consolidated business profit (segment profit: 700.0 billion yen).” Under the Eighth Medium-term Business Plan, which covers the first three years under the long-term vision, we need to steadily launch projects for growth investment and resolutely implement initiatives to expand profit at overseas businesses.

These efforts will be driven by DX, which we have positioned as the core of the strategy to strengthen our business competitiveness. The vast amount of “operational data and expertise” and the “technologies that have emerged from our wide range of business fields” accumulated through our businesses over many years are the sources of our competitive advantage and cannot be easily replicated by other companies. By combining these intangible assets with artificial intelligence and data science technology, we aim to use DX to transform our business and innovate production and administrative processes to build a resilient profit base.

Management is also taking the lead in strengthening our measures to counter increasingly sophisticated cyberattacks and risks of information leakage. We consider the simultaneous enhancement of our level of information security and DX promotion important management issues and are working Groupwide to address these increasingly severe and sophisticated threats, primarily through JFE-SIRT*1 and JFE Cyber Security & Solutions, Ltd.*2

This report introduces the specific initiatives being carried out at each Group company.

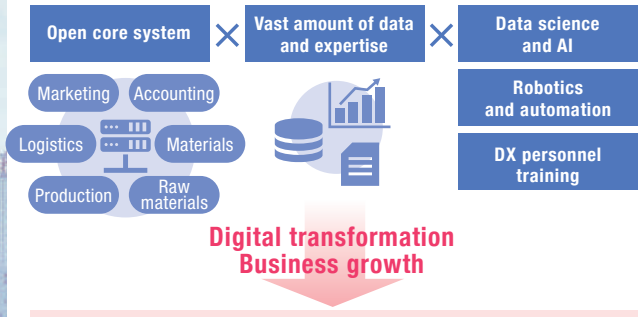
I hope that readers will find this information useful for gaining a better understanding of the JFE Group’s DX policies.

Toshihiro Tanaka
Senior Vice President
JFE Holdings, Inc.

*1 JFE-SIRT: JFE Security Integration and Response Team. An internal organization established in April 2016 (refer to pages 17–18)
*2 Established in April 2024 (refer to pages 17–18)

JFE Group’s DX Strategy

We **surpass other companies in operational data and know-how accumulated over many years** in a wide range of business fields. We will **promote DX using an open core system** and build a resilient profit base by innovating production and operational processes.



Initiatives under the Eighth Medium-term Business Plan

Eighth Medium-term Business Plan DX investment: 110.0 billion yen

Steel	● **Enhancing CPS integration** to make intelligent steelworks a reality ● **Improving flexible operational processes using cutting-edge technologies** that leverage our open core system
Engineering	Providing diverse solutions, including **next-generation plant remote monitoring and operation** in global remote centers
Trading	Upgrading internal systems by using DX to **further enhance operational productivity and our trading company functions**
Common to Group	**Visualizing, streamlining, and automating business processes** by using generative AI and renewing systems

JFE Group's Initiatives Through DX to Address Social Issues

The JFE Group is using DX to transform businesses and resolve social issues, making maximum use of the Group's technological capabilities. The following section introduces some of the initiatives being carried out internally, including efforts to develop and secure DX human resources.

Steel Business

Moving away from huge host computers

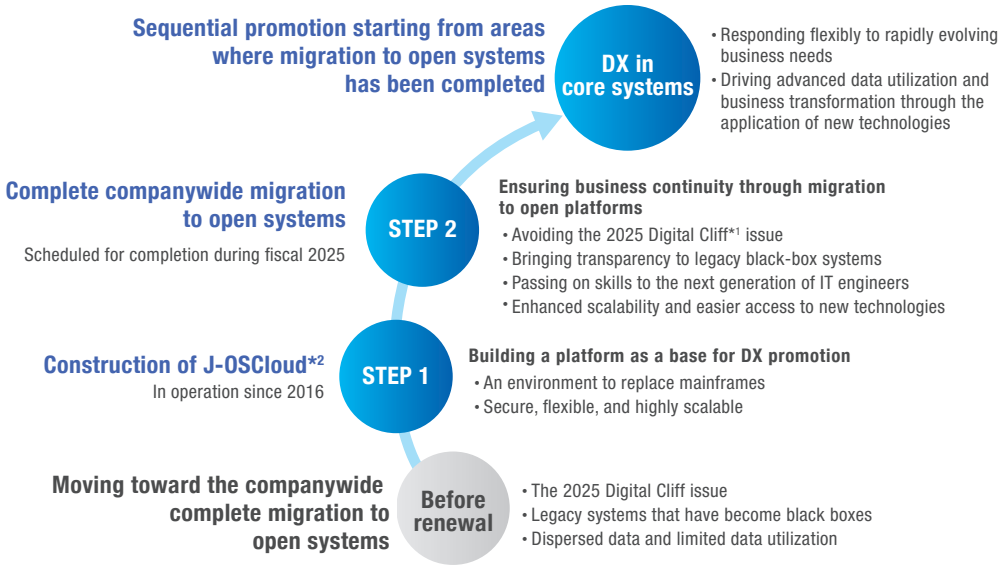
Transition of companywide systems to open architecture scheduled for completion within fiscal 2025

JFE Steel is advancing the renewal of core systems across all steelworks and manufacturing sites. Following the Sendai Works and Chita Works, the migration to an open environment was completed at the West Japan Works (Kurashiki district) in February 2025 and at the East Japan Works (Keihin district) in August 2025, bringing the percentage of JFE Steel's overall companywide systems with an open environment to 70%.

Migration to an open environment requires temporary suspension of existing systems. Accordingly, it is necessary to avoid long stoppages in processes, such as ironmaking, steelmaking, and rolling, and to complete migration to the production environment within a limited timeframe. With the full cooperation of all steelworks and manufacturing sites and all project members including JFE Systems working as one, the migration was successfully completed in each district with short planned plant shutdowns.

System upgrades at the West Japan Works (Fukuyama district) and the East Japan Works (Chiba district) are being carried out simultaneously. We plan to have roughly 200 million mission-critical system steps at all steelworks and manufacturing sites running on open environments during fiscal 2025.

Steps involved in opening core systems



*1 2025 Digital Cliff issue: A term designated by the Ministry of Economy, Trade and Industry, referring to the impact on business continuity from failing to address aging systems. To overcome challenges in maintenance, management, and security, and to respond to rapidly changing business needs, companies are required to renew their systems and migrate to environments capable of adopting new technologies.

*2 J-OSCloud: JFE Steel's private cloud, designed to guarantee security while enabling the application of advanced digital technologies.

Migration of companywide systems at JFE Galvanizing & Coating to open architecture completed (rolling out JFE Steel's expertise)

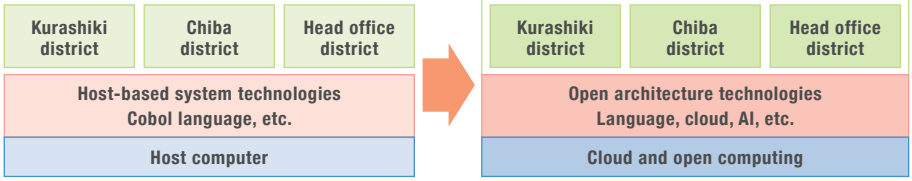
Consideration of this project began in 2018 with a basic policy of "migrating to open architecture," and work commenced on rewriting the programming language of the various systems that had been operating on mainframe computers.

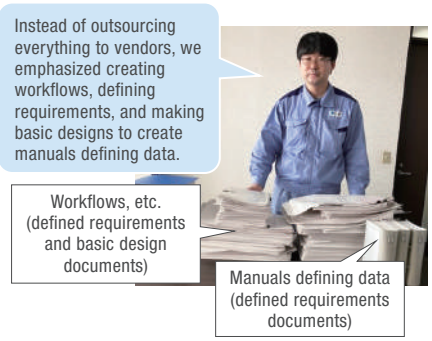
First, the production control systems (Fujitsu host computer) were upgraded at Kurashiki in 2020 and at Chiba in 2024. With the upgrade and cloud migration of the head office's mission-critical marketing system (IBM host computer) completed in July 2025, the upgrade of all companywide mission-critical systems was finished. The Ministry of Economy, Trade and Industry sounded an alarm in 2018 with the publication of its "DX Report: Overcoming '2025 Digital Cliff' Involving IT Systems and Full-fledged Development of Efforts for DX." We achieved "completion during 2025."

As this project moved forward, “modernization support”*3 was provided by sharing internally and externally the expertise that JFE Steel has acquired (actual experience, accumulated technologies) from large-scale system upgrades already successfully carried out. The project proceeded from the perspective of actual operations rather than systems development.

Throughout the project, we took the approach of “not outsourcing everything to vendors” and used processes like “creating workflows” and “visualizing and standardizing transfer operations” to “increase productivity and quality.”

From host-based system to open architecture





JFE Galvanizing & Coating completed the upgrade of its companywide mission-critical systems supporting production and sales management and converted to open architecture in July 2025.

This development meant that we overcame the risk of the “2025 Digital Cliff” and made major advances in “strengthening our sales and production structures” and “building a foundation for future DX promotion” to provide customers with products of reliable quality when they want them.

Going forward, we aim to be a company that customers choose by responding even more quickly and flexibly to changes in the environment and customers’ needs.

Shigeru Kuroda
President
JFE Galvanizing & Coating Co., Ltd.

*3 Modernization support: A solutions business offered by JFE Steel that upgrades legacy systems to “modern systems that conform to the latest technologies”
https://www.jfe-steel.co.jp/en/products/solution/data-science/33-core-system.html

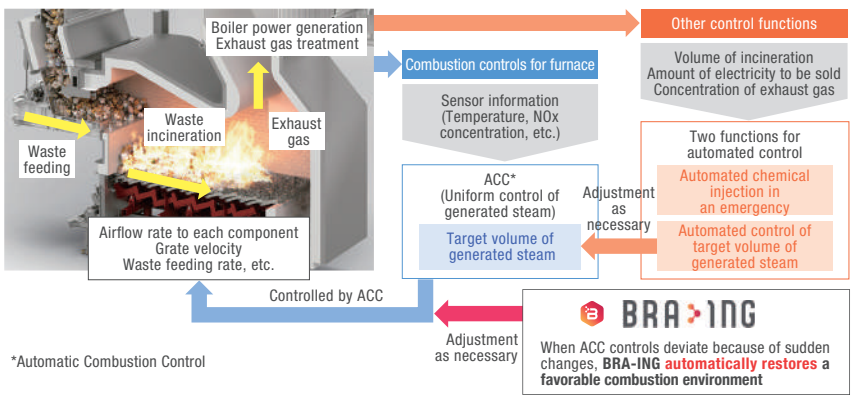
Engineering Business

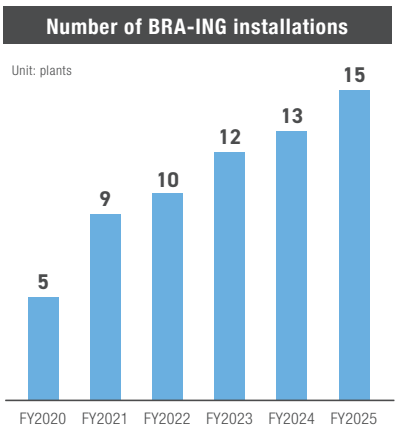
Responding to decrease in working-age population and reducing environmental impact

“BRA-ING” AI system for automated operations of waste-to-energy plants

With the contraction of the working-age population due to the aging of society, the industrial plant sector is facing a serious shortage of plant operators. JFE Engineering is continuously developing technologies to fully automate waste-to-energy plants. As part of this development, along with the increased sophistication of the existing automatic combustion control (ACC) function, we have developed and are introducing the BRA-ING automated operation AI system for incinerators. The stable combustion achieved with automated operation raises the energy recovery rate, reducing the wasting of resources while alleviating the environmental impact by cutting CO_2 and other exhaust gas emissions. This technology has been introduced at 15 waste-to-energy plants across Japan over the six years since 2020.

The introduction of digital technologies at infrastructure facilities will continue to contribute to resolving social issues including the decrease in the working-age population and environmental considerations.





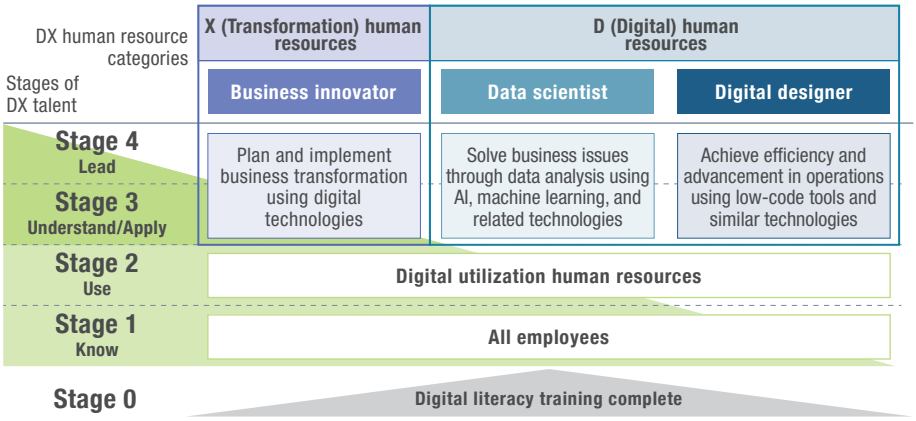
Human Resource Development

Steel Business

Promoting DX

We are focusing on systematically developing DX talent to drive the transformation of production and business processes. At JFE Steel, we have cultivated data scientists and other specialists by reskilling employees with deep expertise in on-site operations and manufacturing processes. From fiscal 2025, we redefined advanced DX human resources to include business innovators and digital designers, and are fostering them through structured, stage-specific training programs.

Development framework for advanced DX human resources at JFE Steel



Human resource development curriculum

Role	Business innovator	Data scientist	Digital designer
Development stage	Stage 3	Stages 3, 4	Stage 3
Main targets, solicitation method	Management, selected in FY2025	Young staff in technology positions free to apply	Free to apply, including those currently involved
Number of times held	1	3	5
Number of trainees expected in 2025	20	Stage 3: 10 Stage 4: 90	110

Business innovator **Stage 3 training**

Participants use this course to learn the basics required of X (transformation) human resources.

Because this was the first year, participants were selected from departments that had specific issues. As advance preparation, participants completed an e-learning program and identified important issues within their respective divisions. The first day began with Senior Vice President Akira Nitta discussing current macro trends and what was expected of participants, and substantive issues were identified through lectures and group work. On the second day, workflows were sorted and specific measures considered. On the third day, plans were written and presented.

Digital designer **Stage 3 training**

This course gives participants the grounding needed as D (digital) human resource digital designers.

Participants were divided into five-person groups with a curriculum alternating between lectures and group work to systematically acquire knowledge of product management and design, and the agile development and scrums required of digital designers.

Notes were stuck on a board that participants stood around as they discussed topics and made design proposals. This analog activity created networks among participants that will lead to DX promotion.

12th DX achievements presentation held

More than 700 people from the head office and Teams attended the event. Thank you very much!

Comment from President Masayuki Hirose

Today's DX achievements presentation showed many more major successes than expected, examples of large contributions to earnings, and numerous cases that can be immediately applied in other areas. I must say that I am very impressed.

I always consider pursuing challenges toward the company's long-term vision an important part of DX. Today's presentations focused on achievements made during business operations. Those achievements are the result of constantly moving forward despite various hardships and issues. I hope that you will continue to pursue challenges proactively and produce even greater achievements.

Our company will continue to expand use of artificial intelligence and digital technologies as we work toward realizing our long-term vision, leading to dramatic increases in productivity including ones through expedited decision-making and more efficient operations.

Engineering Business

JFE Engineering considers securing and training resources and reforming our organizational culture to create a foundation for DX promotion important issues. We are working to create an environment in which all employees engage in DX on their own initiative.

To cultivate mindsets and increase digital knowledge, we have been carrying out literacy training for all employees and holding the companywide "DX-day!" event since fiscal 2022 to introduce internal initiatives and demonstrate the latest digital technologies. Also since fiscal 2020, we have continuously offered data-scientist training covering data analysis and utilization, artificial intelligence, and systems development to cultivate DX human resources. Through fiscal 2024, 210 employees had participated in this program.

To accelerate DX further, since fiscal 2025, we have included level-specific training to teach skills, basic knowledge, and mindsets at various levels, in addition to the existing literacy training for all employees. We have also set up a new DX planning human resource (DX business planner) training program to develop personnel who are highly motivated and capable of planning and promoting DX initiatives aligned with business needs. Going forward, we will focus on nurturing such talent.

Continuous initiatives　New initiatives in fiscal 2025

DX human resources
Lead and promote DX across the company and at one's own division

All employees
Understand background of DX and need for it
Use digital technologies

Target	Training programs		Training plans	
DX-planning human resources	• DX business-planner training	Knowledge, skills, mindsets needed to plan and promote initiatives in response to needs	Through 2024 —	2025–27 150 employees
Data scientists	• Data-scientist training • Pla'cello training	Data analysis and use AI and systems development	210 employees	Increase as appropriate
All employees Enhanced DX literacy	• Level-specific DX training	Knowledge, skills, mindsets by level	—	1,200 employees
	• DX literacy training • DX events (DX-day!), study groups	Understand background of DX and need for it Obtain latest information	All employees (approx. 10,000)	

Our focus during the current medium-term business plan is on the DX business-planner training program, which aims to teach skills and mindsets to scrutinize the essence of issues and propose appropriate DX initiatives by engaging with people involved in addressing those issues.

The program consists of four sessions of training in basic skills, followed by six sessions of implementation skills training and group work and, at the final session, presentations of the measures proposed during the training.

We also plan to create opportunities for networking and strengthening companywide cooperation among those who complete the program and to establish a framework to support the DX initiatives that they propose.

Steel Business (JFE Steel Corporation)

To establish a superior competitive position making maximum use of the wealth of data we have accumulated over many years, JFE Steel has been proactively implementing various measures to transform existing businesses, dramatically raise productivity, and create new businesses under the leadership of the DX Strategy Headquarters, established in April 2024.

Under the Eighth Medium-term Business Plan, covering fiscal 2025 through fiscal 2027, JFE Holdings' operating companies are set to invest 110.0 billion yen in DX.

By the end of fiscal 2025, we plan to complete all system upgrades at steelworks and use open mission-critical systems to pursue flexible improvements in operational processes.

We aim to achieve intelligent steelworks by expanding single-process cyber-physical systems (CPS) to build integrated CPS. We are using the J-DNexus™ CPS platform introduced during the Seventh Medium-term Business Plan to make application development more efficient. The solutions business is expanding its product lineup to increase product adoption by customers.

Akira Nitta
Senior Vice President
(General Manager of DX Strategy, in charge of Cybersecurity Department)

DX Strategy and Policy

The main pillars of JFE Steel's DX are the introduction of technologies like the Internet of things (IoT), artificial intelligence (AI), and data science (DS) for gaining a competitive advantage by proactively utilizing data (= data-driven). Our accumulated expertise in high-grade steel manufacturing, responses to aging equipment, and data related to predictive management are the sources of our competitiveness, as we make advanced use of data—one of JFE Steel's important strategies. We are pursuing DX with three main areas of emphasis—"raise our level of data use" mentioned above, "execute IT structural reforms," and "reinforce our IT risk management."

JFE Steel's major initiatives under the Eighth Medium-term Business Plan

- **Enhancing CPS integration to realize intelligent steelworks**
- **Improving flexible operational processes using cutting-edge technologies that leverage our open mission-critical systems**

JFE Steel's vision for DX promotion

We surpass other companies in operational data and know-how accumulated over many years in a wide range of business fields. We will promote DX using open mission-critical systems and build a resilient profit base by innovating production and operational processes.

Maximize value

Three pillars of DX promotion

1 Execute IT structural reforms
(Scheduled for completion by March 2026)
Upgrade systems at steelworks
Realize a flexible, change-tolerant IT structure

2 Raise our level of data use
Promote business reforms and the latest advancements in IT
Actively utilize data science and AI

Synergistic effects

Operational and R&D data assets

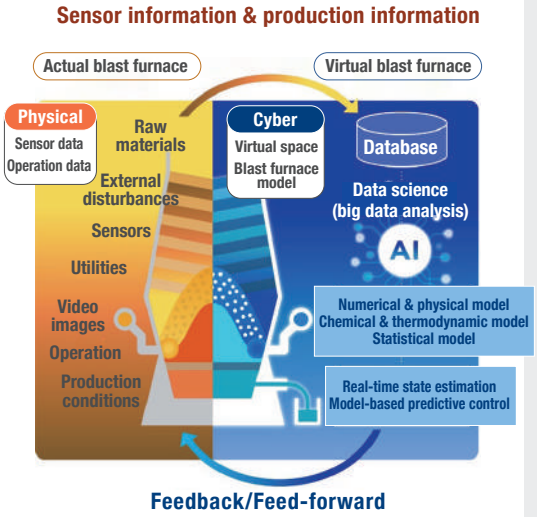
3 Reinforce our IT risk management
Enhance security and standardized controls
Enhance the security environment for IT

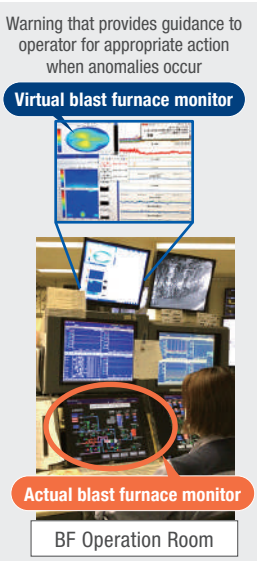
Aiming for intelligent steelworks through DX

As part of JFE Steel's DX strategy, we are aiming to utilize cyber-physical systems (CPS) to realize universally intelligent steelworks. CPS combine virtual models (cyber) with actual processes (physical) in real time to automate blast furnace operations, predict and detect anomalies, and perform virtual tests. CPS have already been introduced in all our blast furnaces, preventing serious issues and improving efficiency and stability while helping reduce CO_2 emissions. In addition, we plan to explore ways to market this know-how through the solutions business.

Since the DX Strategy Headquarters was launched in April 2024, major achievements include the advanced integration of the operational technology (OT) domain (operational data) and the IT domain (manufacturing performance and product quality data), as well as the creation of J-DNexus™, which uses this integration to efficiently centralize CPS development and execution. According to the testing conducted thus far, we have been able to reduce the time required to build a CPS 30% compared to conventional methods.

CPS introduced at all blast furnaces, allowing achievement of stable, high-efficiency operation by visualization of the condition in the furnace in real time





Previous

Inability to see directly inside the very hot blast furnace, with operations relying on the experience of skilled operators

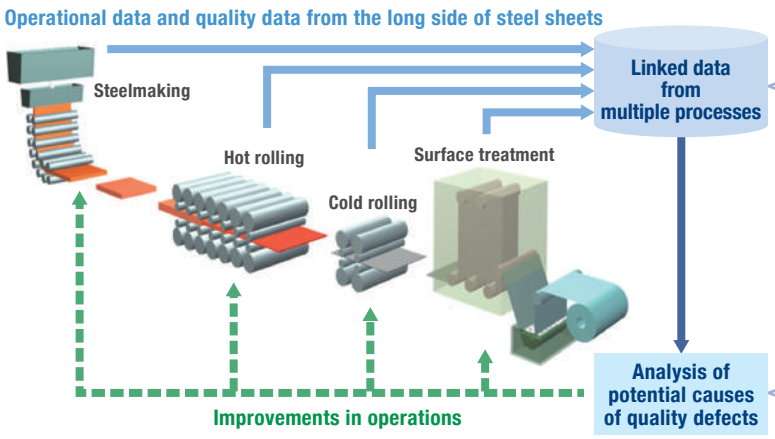
Introduced blast furnace CPS

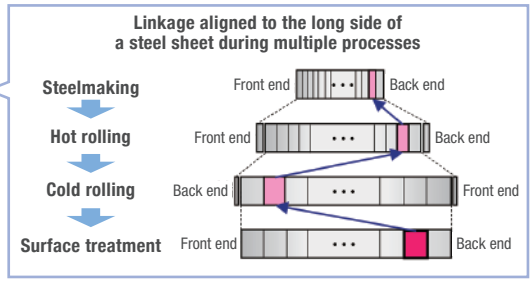
- Prediction of furnace heat maximum 12 hours in advance
- Early detection of BF permeability anomalies
- Accuracy of predictions increased roughly 80%

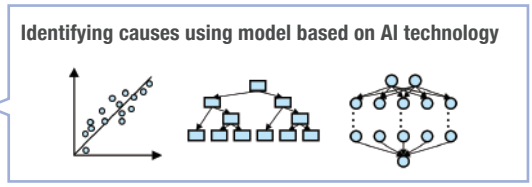
- Time from banking (temporary shutdown) to restart reduced up to 70% (estimated effect: 300,000-ton production volume, roughly 2 billion yen/month*)
- No furnace cooling problems
- Aiming for remote operations during period of Seventh Medium-term Business Plan and automated operation during period of Eighth Medium-term Business Plan

* 2H FY2020 profit/ton basis

J-astquad™ multiprocess integrated quality data analysis system utilizing J-DNexus™



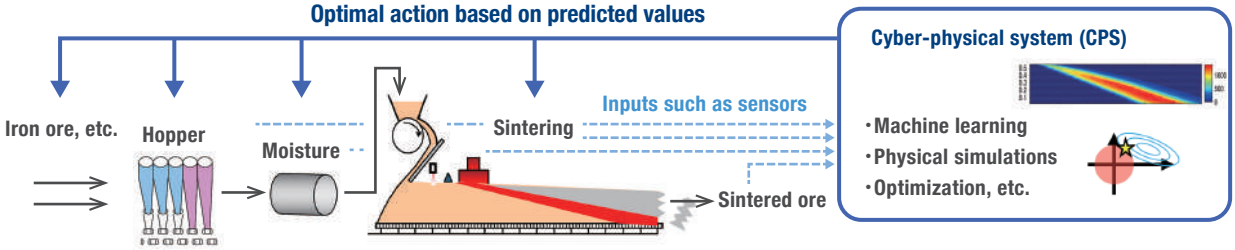




We use the J-astquad™ multiprocess integrated quality data analysis system as a framework for analyzing the effects of operations on the quality of automotive-use thin steel sheets by using operational data and quality data collected from manufacturing processes on the J-DNexus™ platform. J-astquad™ is used in processes from steelmaking to treating surfaces for accurately positioning coils, even if a coil's front and back ends are reversed or cut off, and link data. AI models using large amounts of data then make estimations using standard methods without relying on designated operators. J-astquad™ then follows the long side of the coil and displays potential operational conditions that could lead to quality defects. As a result, we have been able to accelerate operational improvements, contributing to the stable production of automotive-use thin steel sheets.

Sintering CPS

Toward the realization of intelligent steelworks, the newly introduced CPS system is used to sinter iron ore fines at a high temperature to transform them into sintered ore with the strength and chemical properties necessary for use in blast furnaces. The quality of the sintered ore directly impacts blast furnace stability and the production of high-quality steel. Although quality based on multiple indicators is strictly managed, quality control and operational decisions often rely on the knowledge and experience of operators. Conventionally, this creates difficulties in balancing the assurance of sintered ore quality with production efficiency. Introducing a CPS into the sintering process has enabled JFE Steel to develop an advanced predictive model. The adaptation integrates a newly constructed statistical model, which is based on extensive sensor data collected from each production site, and a physical model that simulates thermochemical reactions. Conducting real-time operational simulations in digital space enables the efficient prediction of future operating conditions. The results are stable quality, improved productivity, and reduced GHG emissions due to decreased coke usage for heating during sintered ore production.



[Figure 1] Conceptual diagram of sintering CPS

Innovative increases in productivity using generative AI

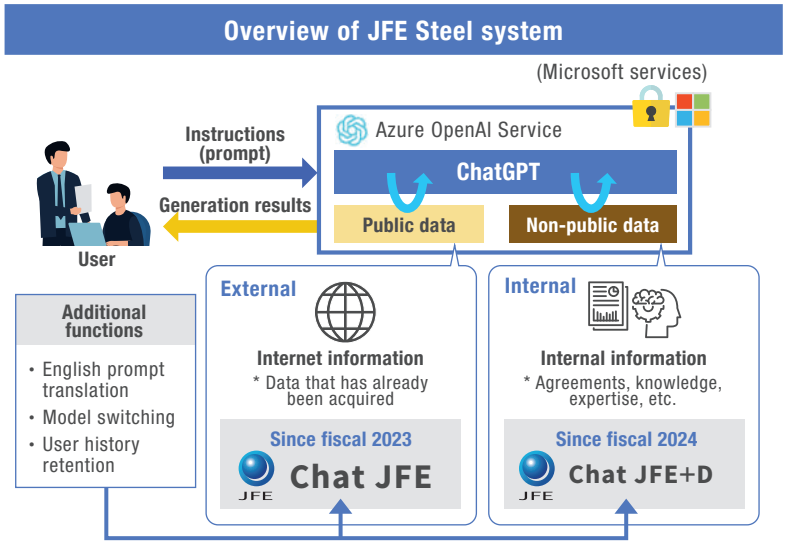
JFE Steel is continuously promoting the use of generative AI to increase operational productivity and operational sophistication, and to develop operational software more efficiently.

In fiscal 2023, we established the proprietary Chat JFE generative AI service and began using it for document creation and multilingual translation, and for other tasks like creating ideas. Since fiscal 2024, to effectively use the huge amount of internal data and knowledge that we have accumulated over many years, we have been applying AI to internal information searches and using multiple AI services aligned with the special features of specific operations, including Chat JFE + D, Copilot, and BOX AI. In particular, Chat JFE + D is a proprietary service that builds on Chat JFE's basic purposes with additional functions for searching, summarizing, and creating reports that are highly accurate and tailored to each operation, significantly reducing the time required for information searches and document creation, compared with those of previous systems.

In addition to information searches and document creation, we will promote overall operational efficiency through initiatives including beginning to integrate BI tools and generative AI to conduct highly sophisticated analysis and visualization to effectively use our huge amounts of data.

Through these efforts to use generative AI to increase operational efficiency, we expect to save more than 100,000 hours annually.

Going forward, we will increase innovative productivity by expanding the use of AI in operational processes overall, introducing AI agents tailored to operational features, and link these to existing systems.



Capabilities

Chat JFE＋D	**Information search** Comprehensively searches multiple data formats in addition to text, including images
	Information retrieval Manages internal data and knowledge in folders, replies interactively
	Reference Displays reference source when formulating replies
	Feedback AI replies evaluated and monitored to maintain quality
	Settings Flexible settings for search mode and generation options, etc.
	Access controls Usable search scopes and functions limited according to user's access authority

Aiming to expand solutions business

As part of its DX promotion, JFE Steel is developing the JFE Resolus™ business, which uses technologies developed in-house and our expertise in operational improvement to provide solutions to customers, with the aim of achieving innovative, highly productive, and stable operations. In 2024, a blast furnace CPS was installed at the No. 4 blast furnace of India-based JSW Steel's Vijayanagar Works, and trial operations commenced. We will look beyond the steel industry and proactively offer the product to customers in a wide range of manufacturing industries.

Companies within the JFE Steel group are also working more closely together toward further business expansion. By proposing specially selected technologies developed by JFE Steel subsidiaries and associates, the group as a whole is working closely together to provide customers with optimal packages tailored to their needs.

The crane automation system is one example of this deeper level of cooperation. By combining automated crane operation, a storage system to manage the location of transported items, and an automatic system to determine removal order, this system enables the automatic loading, replacement, and removal of items. Through cooperative development by multiple group companies, we are able to use these elemental technologies to provide optimal solutions that meet customers' needs.

Highly efficient control of entire crane and reduction of handling times

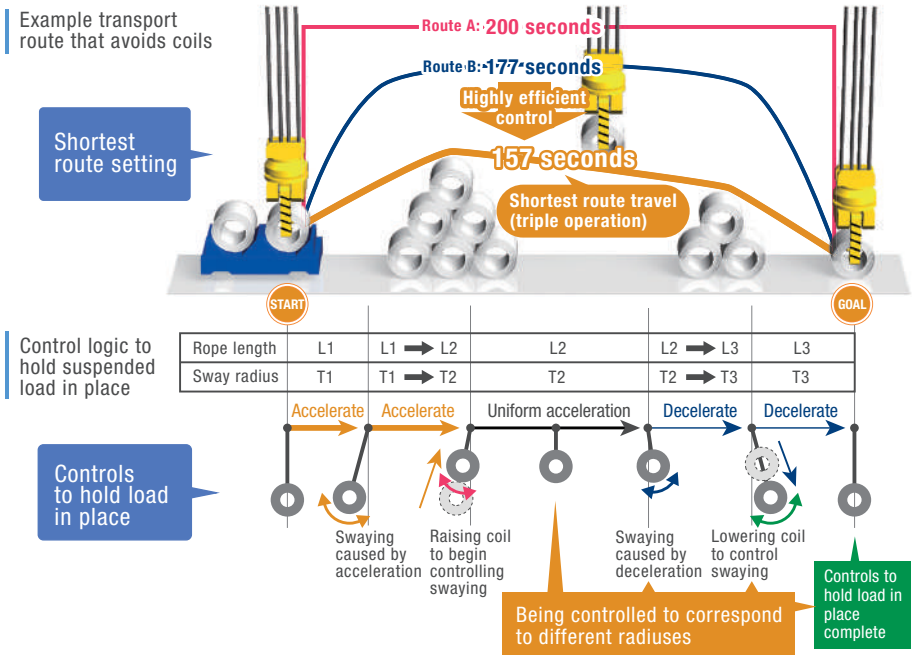
1.

Shortest route travel + maximization of triple operation*

*Triple operation: Moving the coil up and down, sideways, and along the route

2.

Controls to hold suspended load in place



Important technologies for crane automation

1.

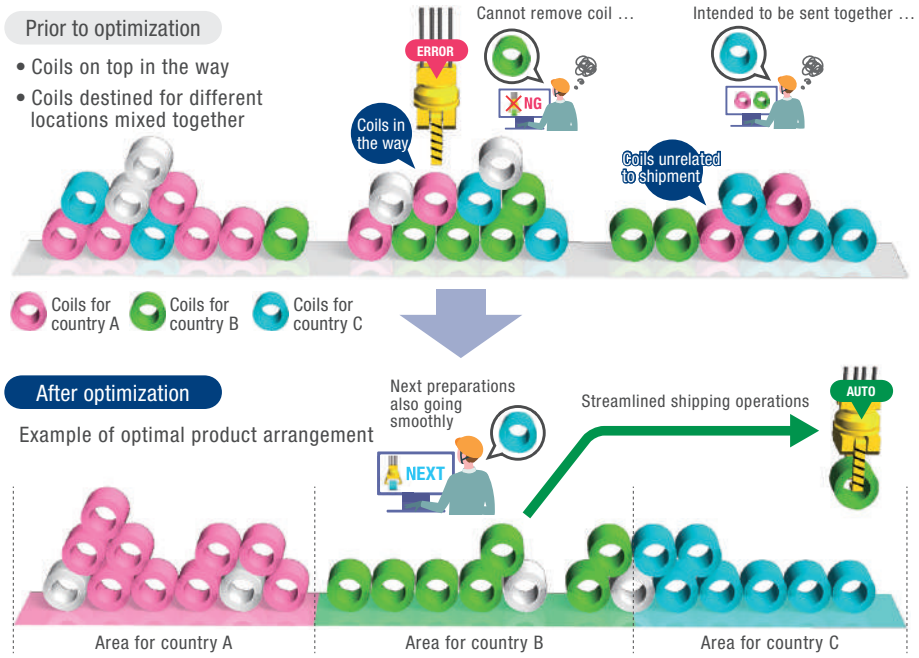
Shockless controls to hold load in place

2.

Image processing to identify coils loaded on vehicle

3.

Technologies that optimize arrangement to reduce work required to remove coil



Engineering Business (JFE Engineering Corporation)

DX is an important growth engine for the innovation and acceleration of JFE Engineering's business.

By using our wealth of data from many years of infrastructure construction and operations to make decision-making more sophisticated and by optimizing operational processes to use DX to automate those processes and make them more advanced, we aim to increase business productivity and earnings strength.

DX is digitalizing a wide range of operations, creating new strengths and added value, and is a strong driver of JFE Engineering as a company that "creates," "cares," and "connects" infrastructure. We are contributing to realizing the global push toward carbon neutrality and the promotion of a circular economy.

This DX advance is also being supported by "people." We continue to emphasize enhanced digital literacy among all employees and the creation of a corporate culture that pursues challenges.

Tateki Koyama
Member of the Board
(Senior Managing Director of Digital Transformation Headquarters Sector)

DX Strategy and Policy

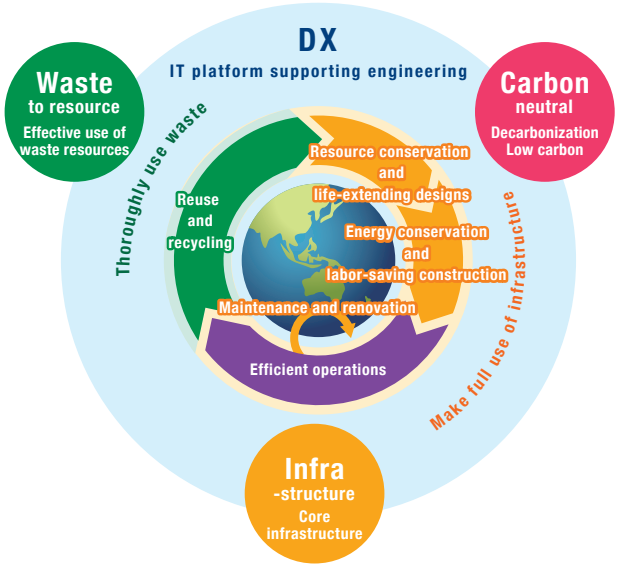
JFE Engineering has designated waste to resource, carbon neutral, and infrastructure as our three priority business areas. We are working to expand these areas to contribute to global initiatives toward a circular economy.

We consider DX an important initiative as a platform to support achieving this.

By building and proactively making (data-driven) use of a common data platform that can comprehensively manage JFE Engineering's business data including knowledge and expertise related to our wide range of operations, we are working to optimize operations and make them more efficient by transforming operational processes, introducing robotics, and using AI.

We are also working continuously to train DX human resources and strengthen information security to support these efforts.

We see these measures leading to the strengthening of existing businesses and creation of new businesses.



Circular economy that is JFE Engineering's goal

Build common data platform

Integrate and proactively use business data including many types of knowledge and expertise

Transformation of operational processes/ Use of AI, automation

Introduce cross-company optimization of operations/labor savings, full automation

Human resource training, strengthening of information security

Increase human resources for DX planning/respond to increasingly sophisticated cyber threats

Strengthening of existing businesses

Enhance competitiveness, increase added value

New business creation

Create new business models

Using generative AI for innovative improvements in productivity

JFE Engineering has been utilizing generative AI since the release of Pla'cello xChat™, a text generative AI service for internal use, in September 2023.

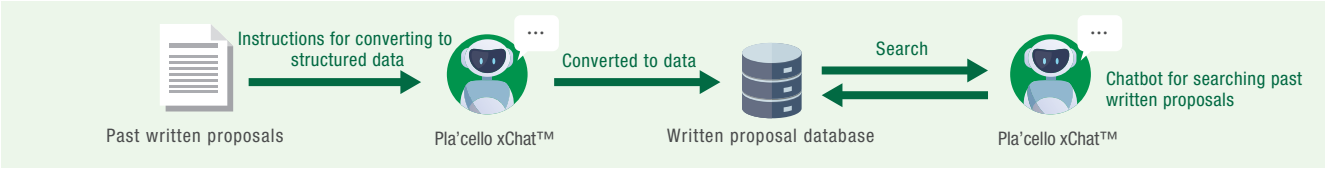
Regarding generative AI as a key technology for improvement in business operations, we have established an internal working group engaged in the following three activities for practical use of generative AI:

01. Technical exploration to leverage generative AI for business reforms

We are developing multiple systems to use generative AI to improve operations.

Specifically, this approach has included using AI-OCR technology to convert analog technological information to data, create a database for the preparation of various documents, install data search functions, and create chatbots for internal regulations and other internal information.

We have also introduced RAG technologies to create responses while searching and referencing information from designated databases as we proactively develop technologies that can be commonly used in a wide variety of operations.



02. Promotion of daily use of generative AI in business operations through introduction of its useful tips

We are continuously carrying out activities to promote more widespread use of generative AI, including showcasing examples on a portal site that all employees can view and training beginners.

We are also carrying out trial verifications on Microsoft's M365 Copilot and other SaaS (software as a service) models and publicizing examples of their use by trial users to roll out effective ways of using these services companywide.

A seminar on using generative AI in operations

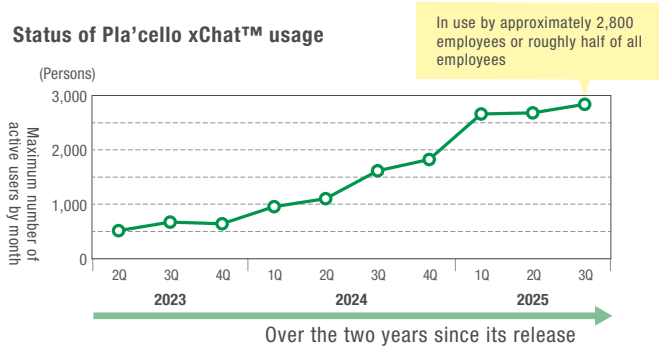
03. Providing an environment for safe and easy use of generative AI

We have internally developed and provide Pla'cello xChat™ and APIs for the expansion of internal systems and have built an environment that makes them easy for employees to use without worrying about leaks of confidential information or personal data.

Additionally, the usage guidelines inform users of important considerations when using generative AI to prevent the infringement of intellectual property rights and the generation of false information. During June and July 2025, we carried out e-learning for all employees that covered internal rules for the use of generative AI and copyright compliance in the age of DX.

As of November 2025, over 2,800 employees—roughly half of all employees—were regularly using Pla'cello xChat™ in daily work.

In addition to improving operational efficiency, in the future we aim to link operations to the Pla'cello™ data analysis platform to innovatively transform them and increase productivity, including through the promotion of data-driven management and the automatic creation of design documents.



JFE Engineering dedicated DX website

We have set up an official dedicated website to introduce DX initiatives. Please visit the site, which includes a message from the CEO and introductions to our DX strategy, solutions, and latest initiatives.

The site can be accessed via the URL below or QR code.

https://www.jfe-eng.co.jp/dx/en/

Initiatives to transform existing businesses

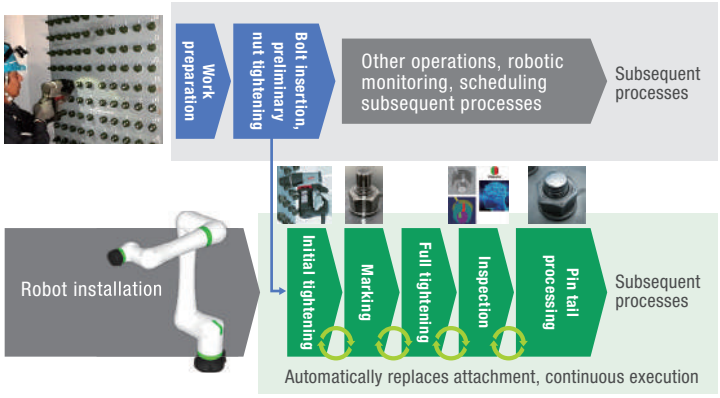
Development of robotic system that automatically fastens high-strength bolts —Automating simple operation of tightening tens of thousands of bolts for labor savings of 40%—

JFE Engineering is promoting automation of construction works.

As one initiative, we have developed the world's first robotic system for automatically tightening high-strength bolts on bridges. We have fully automated the entire process in bridge construction, from initial tightening to marking, full tightening, inspection, and pin tail processing.

This system was developed to address the issue of worker shortages at construction sites and involves collaborating robots equipped with a control system developed in-house to automatically tighten a large number of bolts, with an inspection system also linked to significantly improve operational efficiency. A test installation at a bridge construction site showed that the labor required for tightening operations overall was reduced 40% and also had the effects of enhancing safety by having fewer workers working at high elevations and reducing construction times.

We will continue working to address construction industry issues by dealing with labor shortages, ensuring safety, and making operations more efficient.



Workflow of bolt tightening using collaborating robots

Pilot test of bolt tightening using collaborating robots

Development of automated operation logic for kiln-type gasification melting furnace

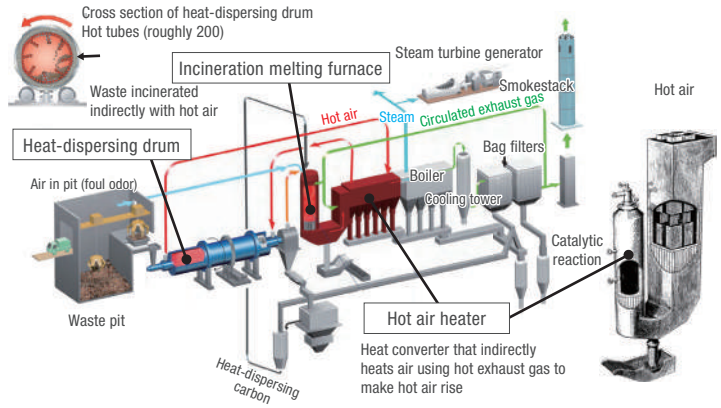
Together with JFE Environment Technology Company, Limited, we have developed and installed logic for the automated operation of a kiln-type gasification melting furnace at the Hamamatsu city Western Incineration Plant.

This initiative was based on the development method for our proprietary BRA-ING automated operation AI system for a stoker furnace. Previously, the operation of a kiln-type gasification melting furnace involved differences between individual human operators for standards on when to intervene, which involved issues including the excessive use of kerosene to control the temperature of hot air. To address this, we used cluster analysis to create models of operators' operational expertise and developed logic for automated operation that incorporates those models to achieve more stable and efficient operation.

The results after the installation were remarkable, with a major reduction in operator interventions, an improved managed temperature range, and a reduction in the kerosene consumption rate.

The change significantly reduced the amount of kerosene used, which represents a large portion of operating costs, and also achieved stable operations, environmental preservation, and major cost reductions.

Going forward, we will roll out this technology at similar facilities and pursue the development of technologies for automated, efficient operation of waste incineration facilities.



Equipment flow of a kiln-type gasification melting furnace

Effects of introduction of automated operation

Item	Effect
Intervention by operator	97 % reduction
Managed temperature range	47 ℃ improvement
Kerosene used	16 % improvement

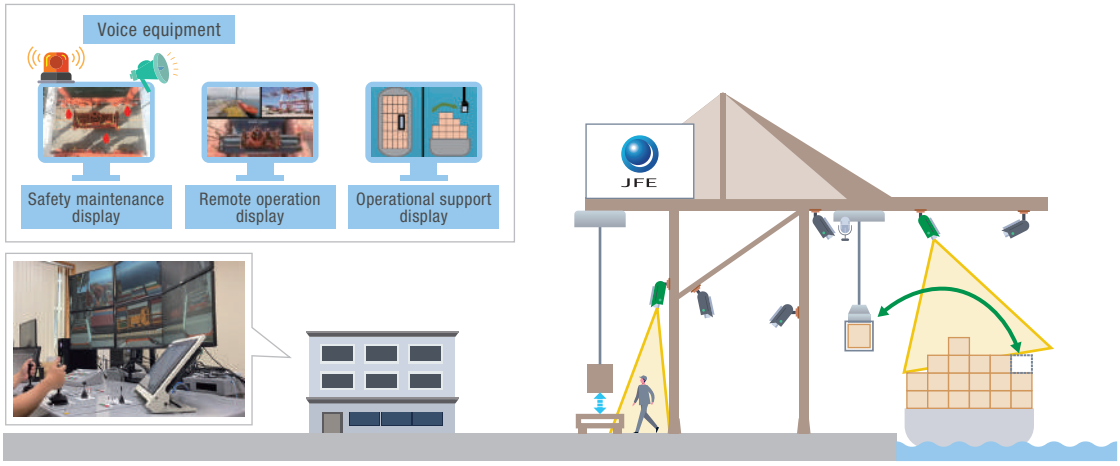
Beginning pilot testing of Japan's first remote operation of large gantry crane in Yokohama Port —Contributing to greater sophistication and international competitiveness of container terminals—

JFE Engineering has begun pilot testing the remote operation of a large gantry crane for the first time in a Japanese harbor.

Against the backdrop of Japan's aging, contracting population, support for dock workers has become an important issue. To address this, in fiscal 2023, JFE Engineering was selected to pursue "technological development for introduction of remote operation of gantry crane" as part of the Ministry of Land, Infrastructure, Transport and Tourism's program to develop port technologies.

In fiscal 2025, we installed cameras and sensors on one of Japan's largest gantry cranes, owned by the Yokohama Kawasaki International Port Corporation, began collecting and analyzing data on cargo-handling tasks and container conditions, and are studying issues related to introducing the remote operation of cranes used with large container vessels.

We will use those results to contribute to realizing remote operation of gantry cranes and the greater sophistication and international competitiveness of container terminals.



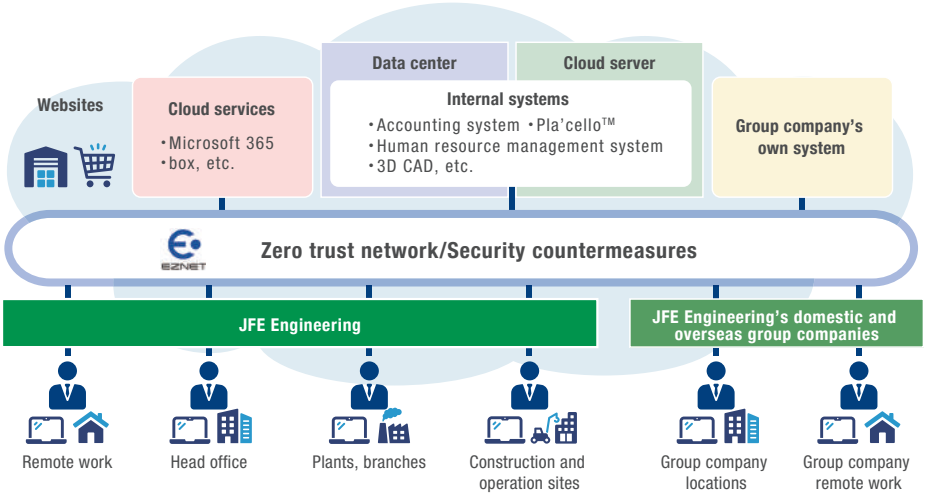
Overview of remotely operated gantry crane

Building a digital environment

In response to increasingly diversified work styles including remote work, JFE Engineering is striving to build an information and communications technology (ICT) environment that allows employees to work securely anytime and anywhere. As part of this effort, in fiscal 2023, we became the first JFE Group company to introduce zero trust security, a security approach that takes measures without automatically trusting all network accesses, both internal and external. This initiative has achieved the following three benefits:

1. Enhanced functionality and convenience when employees use ICT systems and networks
2. Ability to install new systems and add business locations to the network quickly to increase agility in business development
3. Minimized risks with upgraded network security design

We have completed introduction of zero trust security at major locations in Japan, making it possible to centrally manage information including telecommunications content from every location, security policies, and mobile client connection information, significantly increasing both the speed of cause analysis when a failure occurs and maintenance efficiency. In addition, with the migration from previous remote access environments that had a high risk of being breached, we have simultaneously achieved a lighter workload during emergencies and risk mitigation. We are currently rolling this approach out at Group companies to promote efficient management with consistent security Groupwide.



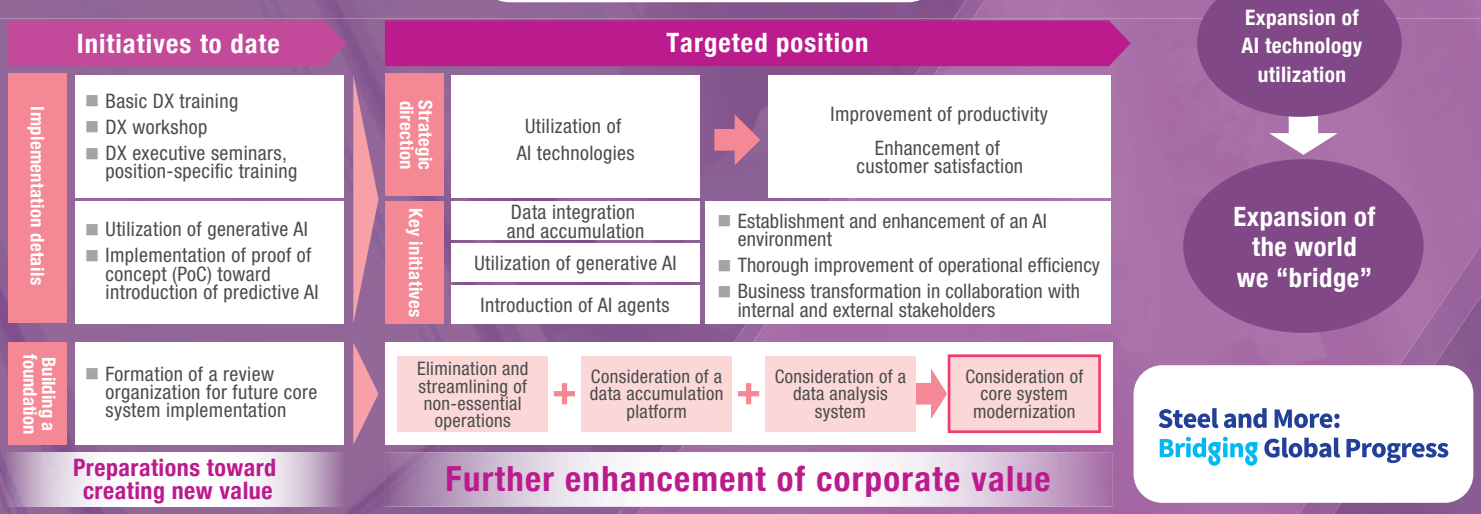
Trading Business (JFE Shoji Corporation)

In May 2025, JFE Shoji created the group's corporate purpose, "Steel and More: Bridging Global Progress." alongside the Eighth Medium-term Business Plan and Long-term Vision. By bridging people, goods, and functions, we provide "solutions that meet customers' needs" and "newly created value," aiming to expand the world we "bridge."

While advancing digital transformation (DX) centered on the utilization of generative AI and other AI technologies, we will expand the scope of what we "bridge" to improve productivity and to enhance customer satisfaction, ultimately striving to further increase corporate value.

Takanori Adachi
Managing Executive Officer
(In charge of Information Technology Planning Department)

DX Strategy



Development of an AI-based customer credit rating assessment system

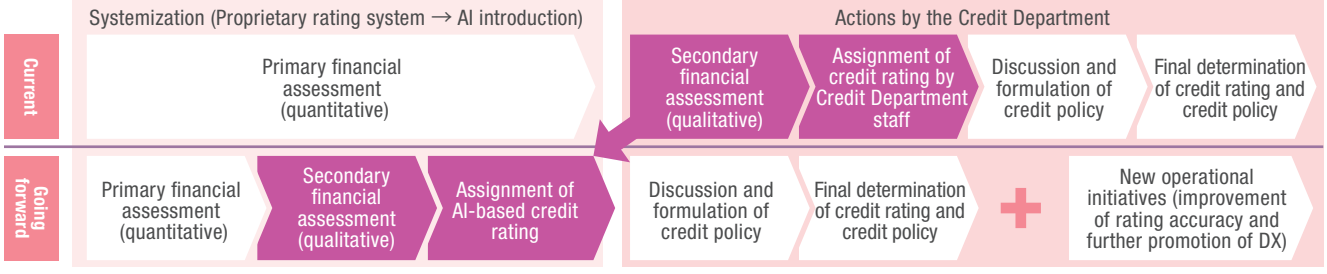
At JFE Shoji, we conduct credit ratings using a proprietary rating assessment system based on our customers' financial information and qualitative information (capital relationship, etc.). However, in response to changes in the business environment and the increasing diversity of bankruptcy risk factors, the introduction of a more sophisticated rating assessment system had become a challenge. Accordingly, leveraging the vast accumulation of financial data and the credit assessment expertise of our Credit Department, we conducted a verification of an AI-based customer credit rating system. As a result, we confirmed a high level of accuracy, with a 90% match rate with the Credit Department's assessments. In line with this outcome, we are currently proceeding with studies toward full-scale introduction.

Looking ahead, we aim to build an even more precise AI-based customer credit rating system by incorporating new qualitative information, such as market trends.

Verification results and initiatives going forward

- Since the consistency rate between the Credit Department's ratings and AI-based ratings exceeded 90%, in fiscal 2025, we have begun considering full-scale introduction in credit assessment operations.
- We will continue to accumulate information on customers' financial results as base data and to verify it with the additional qualitative data (market conditions, stock prices, affiliated company information, etc.), aiming to build an even more precise AI credit rating system.

Credit management process before and after introduction of AI



JFE Shoji Electronics' Jiot logistics DX solution

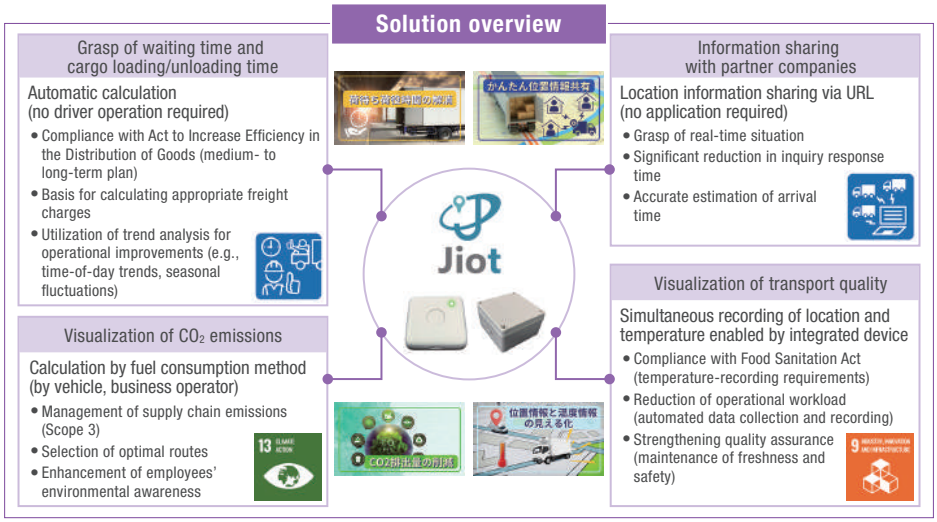
Against the backdrop of the logistics industry's "2024 issue" (caps on overtime for delivery drivers enacted in 2024) and tighter legal and regulatory restrictions, JFE Shoji Electronics released the Jiot logistics tracking system in August 2025. To comply with the revised Act to Increase Efficiency in the Distribution of Goods and the Food Sanitation Act, this solution uses a GPS tracker to visualize a truck's location and temperature conditions via a web-based application, thereby enabling the resolution of logistics industry challenges and the realization of improved operational efficiency.

JFE Shoji Electronics aims for a sustainable society and will continue to contribute to the resolution of the global issues of the reduction of CO_2 emissions, the achievement of carbon neutrality, and the attainment of the Sustainable Development Goals (SDGs).

Features of Jiot

Jiot is built on the following three core concepts, aiming to "digitalize logistics to make it simple and reliable."

	Features	Details
1	Ease of introduction	• Compact GPS tracker requiring no installation (Dimensions: 4.9 cm x 4.9 cm, Weight: 39 g) • Designed for easy on-site adoption, featuring USB Type-C charging and simple operation
2	No operation required by driver	• Automatic notification upon area entry, as well as automatic measurement of waiting time and cargo loading/unloading time, simply by carrying or installing the GPS tracker
3	Simultaneous record of the location and temperature	• Automatic recording of both location data and temperature data using the same device • Supports compliance with temperature-recording requirements for fresh food products mandated by the Food Sanitation Act by enabling the transition from analog to digital management



SDxV™ Thermal: An integrated monitoring solution that settles temperature monitoring issues for operational equipment

JFE Shoji Electronics has also announced "SDxV™ Thermal," a new product in the SDxV™ series—an integrated management system combining plant data and camera images—specializing in monitoring the surface temperature of operating equipment.

Compared with conventional optical-fiber sensing methods, this system can reduce initial costs up to 90%, while simultaneously resolving issues related to labor shortages in patrol inspections and the challenge of high capital investment costs.

Features of SDxV™ Thermal

	Features	Details
1	Overwhelming cost advantages	• 30%–90% reduction of initial costs as optical-fiber installation is not required • Easy to install on existing equipment • Reduction of downtime-related costs due to stopping operation of equipment
2	Advanced integrated monitoring capabilities	• Contactless temperature measurement using thermal camera • Real-time situational awareness by integrated management of video image data and various operational data • Aggregation of historical data to visualize temperature trends and to support traceability • Early anomaly detection enabled by automated alert functions
3	Excellent scalability and expandability	• Easy to connect to existing SCADA systems and DCS/PLC environments • Capable of full-scale alarm management installed in SCADA • Easy-to-use user interface • Easy data integration with upper systems • Support for advanced data management, including lot management

Explanation of abbreviations

SCADA	Supervisory Control and Data Acquisition: This system enables users to ensure monitoring, controlling, and data collection in a factory via their personal computer.
DCS	Distributed Control System
PLC	Programmable Logic Controller

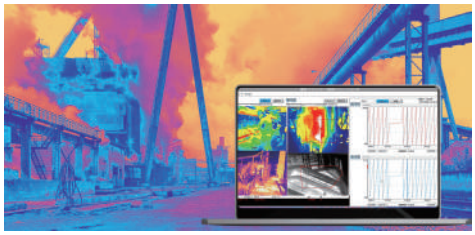
Simultaneously resolving issues of "labor shortages" and "high investment costs"

Temperature monitoring of important infrastructure equipment is essential for safe operation and accident prevention. SDxV™ Thermal comprehensively resolves the issues associated with manual patrol inspections and costly optical-fiber based monitoring systems.

Comparison of features

	 SDxV™ Thermal	 Optical fiber	 Thermal viewer
Installation cost	○ Low	× High	◎ Very low
Remote monitoring	◎ Possible	◎ Possible	× Not appropriate
Integrated management	◎ Possible	△ Limited	× Difficult
Installation time	○ Short	× Long	◎ Unnecessary
Ease of operation	◎ Intuitive	○ Simple	△ Depends on individual

Image



JFE Group's Cybersecurity

The JFE Group positions security as an activity of equal importance to DX promotion and is working to strengthen the entire organization against increasingly advanced and sophisticated threats. Security regulations are standardized across the Group, and initiatives are advanced under a unified policy. In addition to applying universal IT measures at each Group company, we conduct regular security audits and other activities to enhance security management standards Groupwide.

In April 2024, to accelerate DX promotion based on the Secure by Design*1 principle, we established JFE Cyber Security & Solutions, Ltd. under JFE Steel. In tandem with strengthening our security monitoring system, the new company strengthens supply chain security across roughly 300 JFE Group companies by securing and training advanced security specialists without relying on external resources.

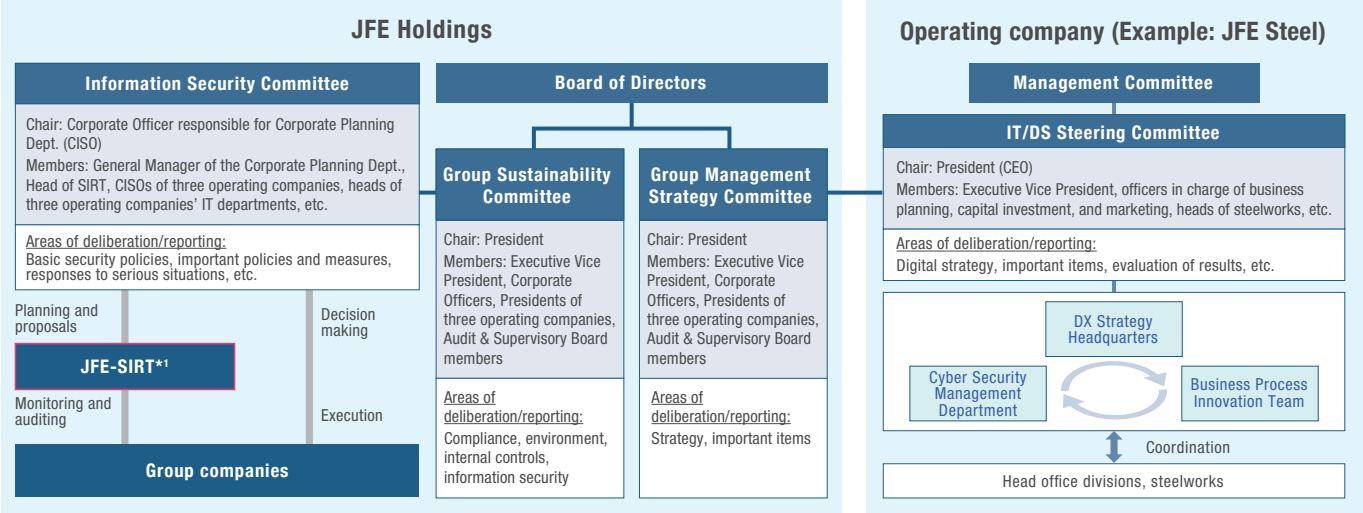
The following are the major themes we will pursue under the Eighth Medium-term Business Plan.

Field	Major theme	Details
Organization	Establishing comprehensive governance	Strengthening global structure
Technology	Strengthening cyber resilience*2	Formulating cyber BCP*3
People	Securing security specialists	Creating career paths and rotating human resources

*1 Secure by Design: The principle that incorporates security measures from the system design stage
*2 Cyber resilience: Ability needed by an organization to resist and recover from cyberattacks
*3 Cyber BCP: Business continuity planning for a cyberattack

JFE Group's digital governance and cybersecurity framework

A Group digital governance structure and security structure are part of our corporate governance framework.



*1 JFE-SIRT: A CSIRT*2 responsible for responding to incidents of information security, as well as planning, proposing, and promoting Groupwide measures, auditing Group companies, and reviewing security policy
*2 CSIRT: Computer Security Incident Response Team. A general term for a group that responds to internal computer security-related incidents

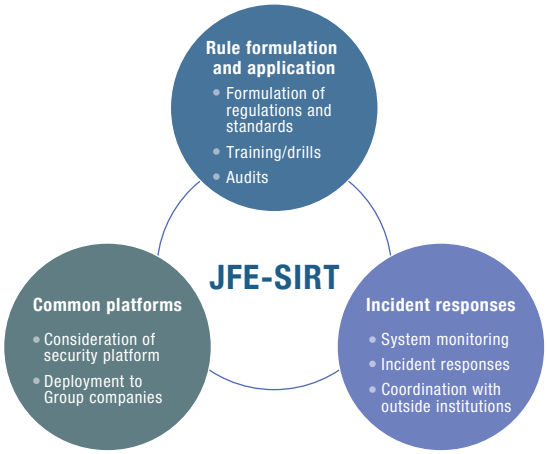
JFE Group Declaration of Cybersecurity Management

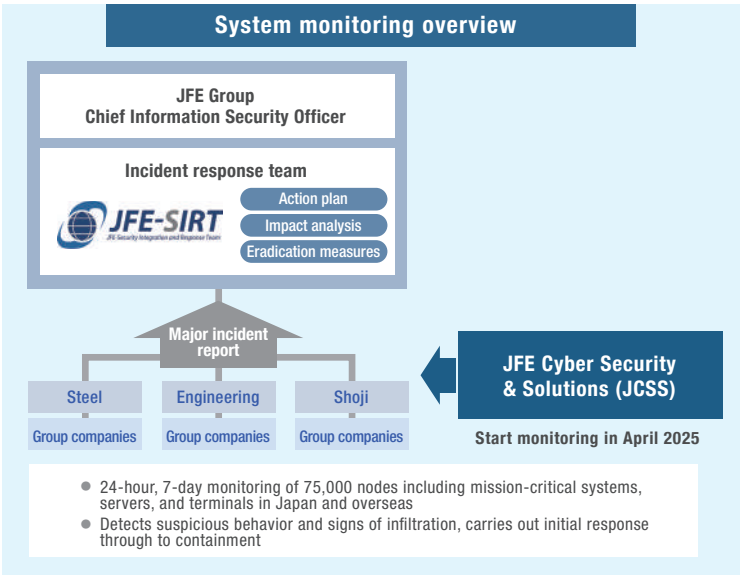
The JFE Group has formulated the JFE Group Declaration of Cybersecurity Management, based on the Declaration of Cyber Security Management, issued by the Japan Business Federation (Keidanren).

In light of the increasing seriousness and sophistication of cyberattacks, management is using this declaration to take the lead in further strengthening the JFE Group's cybersecurity response.

1. **Recognize cybersecurity as a management issue**
2. **Determine management policies and declare intentions**
3. **Build internal and external systems and implement security measures**
4. **Encourage widespread use of cybersafe products, systems, and services**
5. **Help build safe and secure ecosystems**

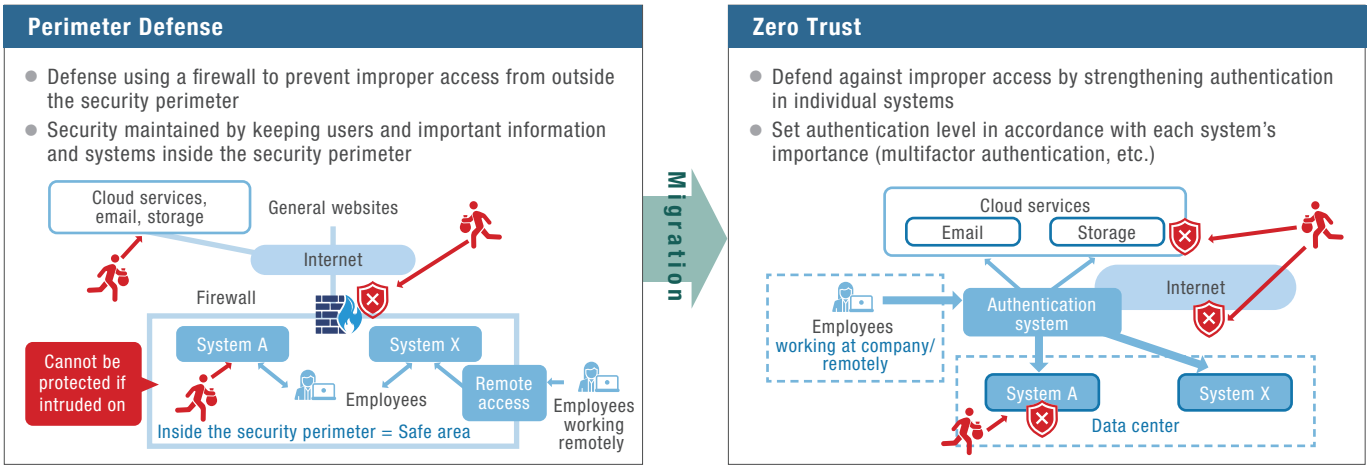
Cybersecurity monitoring initiatives





Zero trust security

Given a changing environment that includes a shift to cloud-based internal systems, the expanded use of external computing, and remote work becoming increasingly common, the entire JFE Group is migrating toward zero trust security as a common information technology measure for a high level of security.

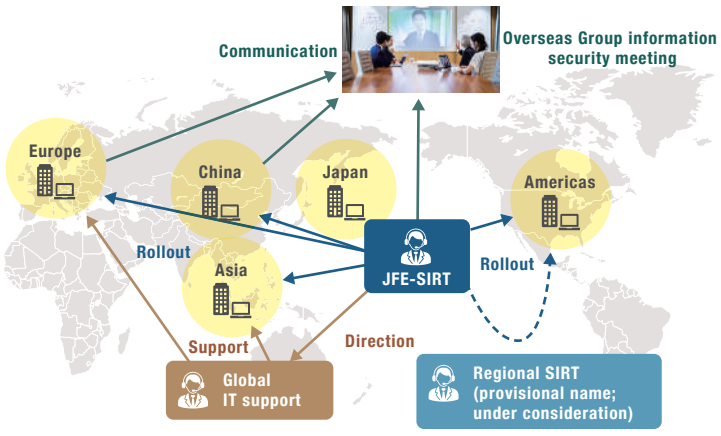


Strengthening the global structure

To maintain and enhance the JFE Group's level of security, SIRT measures (rules, IT measures, incident responses) are being rolled out globally, and a framework is being built for global IT support for overseas bases.

We also hold overseas Group information security meetings to promote productive communication with overseas bases (sharing information related to cybersecurity, detailed explanations of measures, etc.).

Going forward, for incident responses at overseas bases, we are considering establishing Regional SIRTs (provisional name) that can respond quickly and independently to emergencies on-site without being affected by time-zone differences, under the control of JFE-SIRT.



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