IT REPORT

2018

Contributing to society with
the world's most innovative technology

JFE
JFE Group

2018
攻めのIT経営銘柄
Competitive IT Strategy Company

JFE Group technology—powered by advanced IT Solutions—working to realize a more ideal society

CONTENTS

Global Remote Center Opened
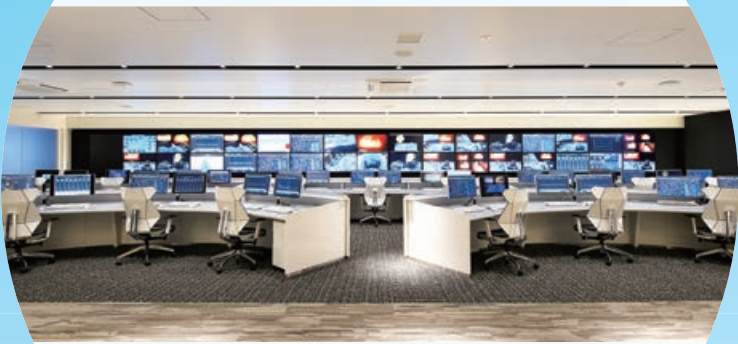
JFE Engineering opened Global Remote Center for remote monitoring and maintenance of various types of plants in March 2018.

"Competitive IT Strategy Company" for Fourth Straight Year

2018
攻めのIT経営銘柄
Competitive IT Strategy Company

「攻めの IT 経営銘柄 2018」
「IT 経営注目企業 2018」 発表会

JFE Holdings was named as a 2018 Competitive IT Strategy Company, marking the fourth consecutive year that the Company has been included in the list. The Competitive IT Strategy Companies are determined jointly by Japan's Ministry of Economy, Trade and Industry (METI) and the Tokyo Stock Exchange (TSE) to encourage Japanese companies to implement competitive IT strategies. Under this program, METI and the TSE look at all TSE-listed companies to choose those that actively utilize IT to hone their competitiveness.

Going forward, JFE Holdings will continue to guide JFE Group efforts to maintain sustainable growth and boost corporate value as well as position the Group as a global organization delivering world-class technology and services.

Regional Choice Award in SAP Innovation Awards 2018

SAP Innovation Awards 2018

The success of a Group project to upgrade J-FACE, an accounting system shared by companies within the JFE Group, earned the Asia-Pacific Regional Choice Award in the SAP Innovation Awards 2018. SAP presents regional awards for outstanding examples of innovation leadership in various regions including Asia-Pacific.

Competitive IT strategy to improve productivity and competitiveness exponentially, create new value and contribute to society

The JFE Group's core businesses are steelmaking, engineering, and trading, and its corporate vision emphasizes "contributing to society with the world's most innovative technology."

The Group's sixth medium-term business plan, which runs from April 1, 2018 to March 31, 2021, is driven by this corporate vision. The plan emphasizes four core measures that are being implemented groupwide: 1) leverage growth that meets social needs through the application of leading-edge technologies, 2) expand the profit base and reinforce manufacturing capabilities in Japan, 3) promote business and expand the profit base overseas, and 4) thoroughly reinforce business structure to support sustainable growth. These four core measures will lead to higher corporate value for the JFE Group overall.

In rolling out these measures, JFE Holdings will aggressively utilize technologies such as artificial intelligence (AI), the internet of things (IoT) and big data, and robotics, steadily extending the scope of application for each. Also, business reforms are being pursued by upgrading large-scale legacy systems, such as existing mission-critical systems at steelworks.

The robust use of advanced IT and upgraded legacy systems are essential to the JFE Group's competitive IT strategy. With the right balance, they will drive business reforms forward and underpin efforts to integrate strengths in technology, sales, and business management, as well as lead to the exponential improvement of productivity and the development of products and technologies fine-tuned to society's needs. The process will require extremely large investments of time and human resources, but we are firmly convinced that moving steadily along this path will help leverage the four core measures in our sixth medium-term business plan.

In addition, given the risk of increasingly sophisticated cyberattacks and breaches of information, JFE Holdings has made it a priority to protect information assets through enhanced information security on a groupwide basis and is in the process of building a structure to ensure immediate and exhaustive responses to risks. To implement these initiatives and reinforce information security governance on a groupwide basis, we established a dedicated unit—our JFE Security Integration and Response Team (JFE-SIRT)—which provides us with a vital defense in support of our competitive IT strategy, which we aim to further enhance going forward.

As you review this report on the strategic IT initiatives of the JFE Group, I hope you find the information useful and gain a deeper understanding of our corporate group's IT initiatives.
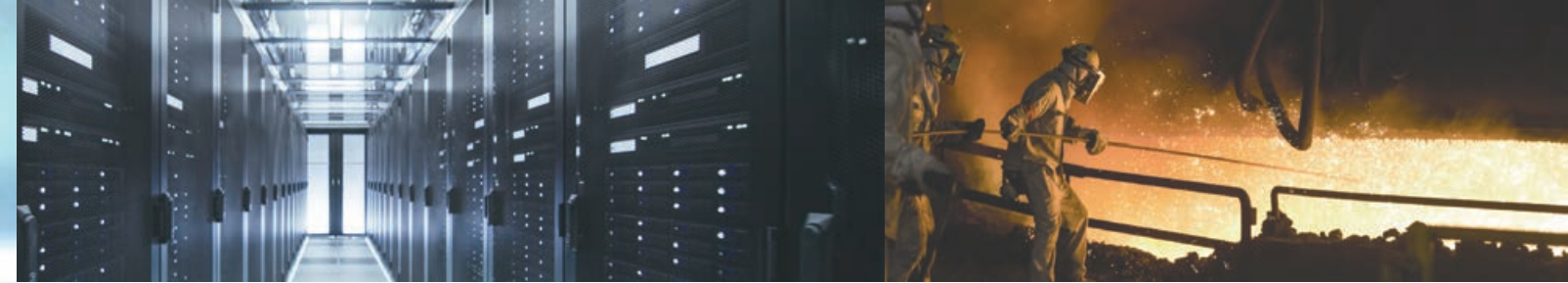
Hiroyuki Fujiwara
Vice President of JFE Holdings, Inc.

Steel Business

Global leadership in IT, creating customer-focused value, and responding quickly to changes through continuous reform and strategic IT

Hironori Fukushima Senior Vice President

IT Innovation Leading Department

To address key business issues and also structural issues related to our business operations, our department works with other business divisions to facilitate the use of the latest ICT and to implement business reforms. This is competitive IT.

We are also working to establish a secure IT environment in terms of infrastructure as well as application systems and then enhance this environment even further. This is defensive IT.

Akira Nitta Vice President

Business Process Innovation Team

Mission-critical systems at steelworks tend to become complicated and bloated. To remedy this situation, our team is reconfiguring business operations for such systems while applying the latest in ICT to fully upgrade these systems. The objective is to steadily reform our operations and create flexible systems that can adapt to operational changes. This is a major project that is unique in its inception.

Hiroshi Sekiguchi Vice President

Industrial structures and business models are changing at unprecedented speed, reflecting rapid advances in ICT such as AI, IoT, and big data analysis. The steel business is no exception. Our systems division actively supports management and business divisions by helping them respond quickly and flexibly to changes in the business environment through use of ICT, which ultimately contributes to corporate value.

Under our sixth medium-term business plan, we are emphasizing three strategic themes—execute IT structural reforms, raise our level of IT use, and reinforce our IT risk management—to realize our corporate vision.

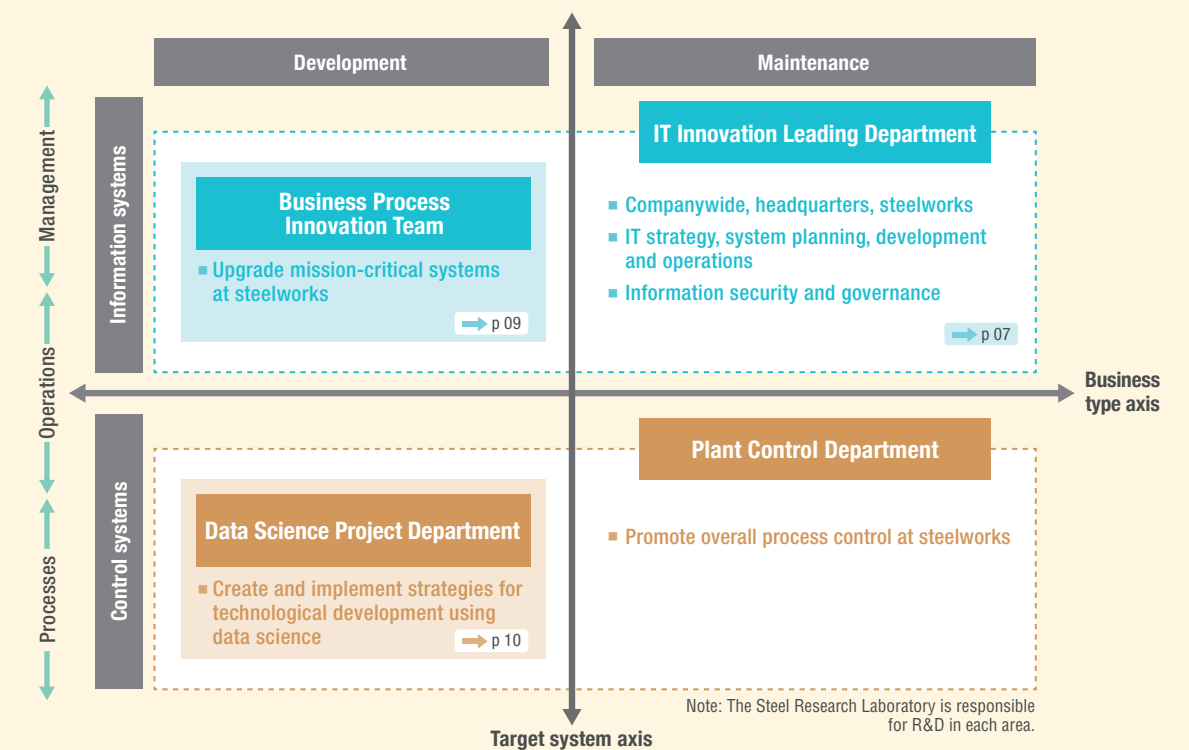### JFE Steel's IT Vision and Three Strategic Themes

JFE Steel's Vision

Be a global steel supplier that always creates new value and grows with customers

Provide restructuring support for better business management

Address the needs of management and business divisions

JFE Steel's IT Vision

Global leadership in IT, creating customer-focused value, and **responding quickly to changes** through continuous reforms and strategic IT

Achievements

Synergistic effects

1 Execute IT structural reforms

Upgrade systems at steelworks

Realize a flexible, change-tolerant IT structure

2 Raise our level of IT use

Promote business reforms and the latest advancements in IT

Improve dramatically in speed of business operations

3 Reinforce our IT risk management

Enhance security and standardized controls

Enhance the security environment for IT

System Division Structure

		Development	Maintenance
Management	Information systems	**Business Process Innovation Team** ■ Upgrade mission-critical systems at steelworks ➡ p 09	**IT Innovation Leading Department** ■ Companywide, headquarters, steelworks ■ IT strategy, system planning, development and operations ■ Information security and governance ➡ p 07
Operations / Processes	Control systems	**Data Science Project Department** ■ Create and implement strategies for technological development using data science ➡ p 10	**Plant Control Department** ■ Promote overall process control at steelworks

Business type axis

Target system axis

Note: The Steel Research Laboratory is responsible for R&D in each area.

Data Science Project Department

We take a companywide perspective in efforts to systematically and efficiently apply IoT technologies, AI, and data science mainly for equipment, processes, and operations. We have begun by strengthening our data-collection platform for all kinds of processes, and are working to raise quality assurance and quality control levels through data usage consistent across multiple processes, while also using data seamlessly throughout the company to boost operating efficiency and cut costs.
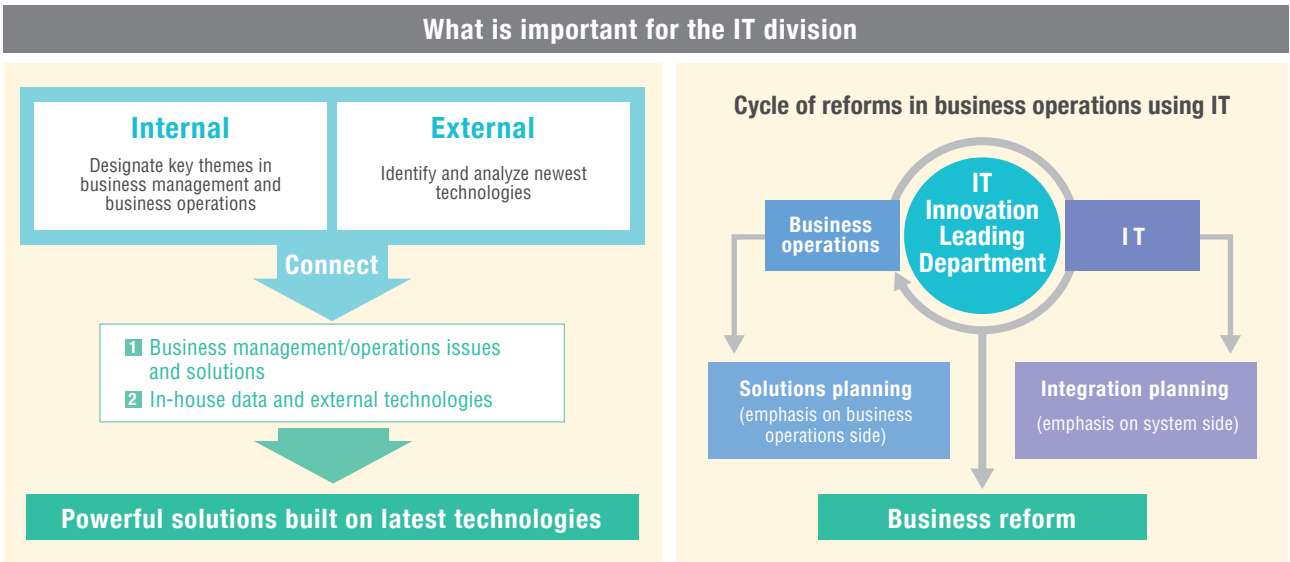
Akira Kazama Fellow

IT Innovation Leading Department

The IT Innovation Leading Department's mission is to encourage reforms in business operations using the latest technologies, see that changes are implemented and then track the results in terms of IT optimization, particularly for infrastructure and security. What is important for us right now as an IT division is to work as a team, with each business division designating key themes in management and business operations. Together, we implement solutions that tie in the latest research in ICT and possible applications. Significant projects require coordination with the basic IT strategies of our IT Steering Committee and have the management team sign off on the plan before solutions are implemented.

We encourage reforms in business operations using IT, see that changes are implemented and then track the results in terms of IT optimization. (IT Innovation Leading Department's mission)

What is important for the IT division

Internal
Designate key themes in business management and business operations

External
Identify and analyze newest technologies

Connect

1 Business management/operations issues and solutions
2 In-house data and external technologies

Powerful solutions built on latest technologies

Cycle of reforms in business operations using IT

Business operations — IT Innovation Leading Department — I T

Solutions planning (emphasis on business operations side)

Integration planning (emphasis on system side)

Business reform

Major activities to date

Projects	IT applications	Improved corporate value	Other (patents, awards, etc.)
J-Smile[®1] (sale of steel products)	▪ Establish change-tolerant information structure based on data-oriented approach	▪ Make business reforms and sales activities more efficient ▪ Establish system platform that immediately adjusts to changes in business	▪ Patent 4826211 ▪ 2006 Ministry of Economy, Trade and Industry Minister's Award (IT strategy division) for contributing to greater use of IT in Japan ▪ 2nd Prize at IT Japan Awards 2007, sponsored by Nikkei Business Publications, Inc.
J-Flessa[®2] (sale and production of steel products)	▪ Enhance ability to formulate plans using dedicated software package ▪ Connect planning data and evaluation data from peripheral systems using service-oriented architecture	▪ Quickly respond to external changes through shorter PDCA cycle ▪ Improve accuracy of sales and production targets ▪ Share management information companywide	▪ Patent 5499559

1：J-Smile ＝ JFE Strategic Modernization & Innovation Leading System
2：J-Flessa ＝ JFE Flexible Efficient Speedy Sales and Operation Management System
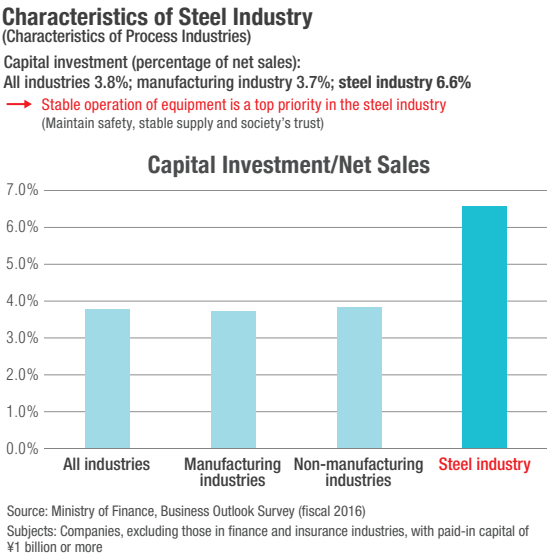
JFE Voice!

Promote workstyle reform with business divisions

Through logistics divisions at steelworks and marketing divisions at the head office, I oversee the planning, development, and maintenance of head office systems. Drawing on insights gained through large-scale systems development projects, such as J-Smile and J-Flessa, in cooperation with the Accounting Department, we upgraded an accounting system shared by 81 companies groupwide. I will continue to work with business divisions and encourage changes in workstyles through the use of IoT technologies as well as changes in supply chain management systems.

Yuko Tamura IT Innovation Leading Department and Business Process Innovation Team

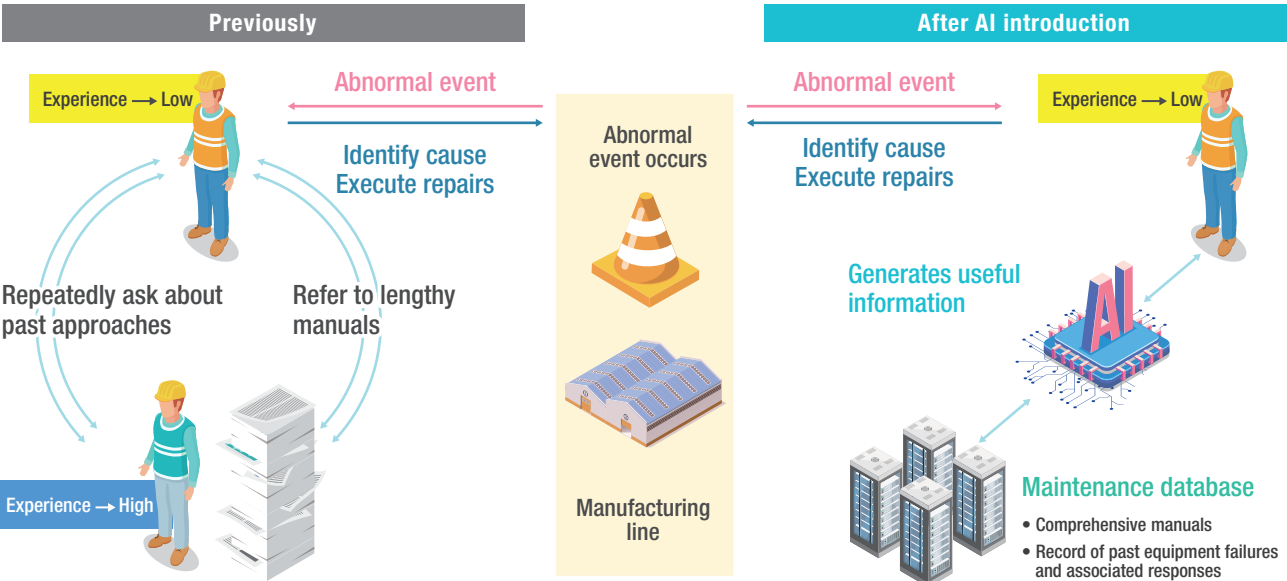## First Domestic Application of AI for Steelmaking Equipment Maintenance

JFE Steel introduced AI for the maintenance of steelmaking equipment, the first time that AI was applied in the Japanese steel industry. When an equipment failure occurs, operations must be resumed quickly to minimize the impact of downtime on production. Previously, efforts to pinpoint the location and cause of a failure required referencing various manuals or consulting veteran engineers. Using AI, however, the company created a database of work that had been performed by veteran engineers, as well as the content of many operating manuals to facilitate cross-checking with past events and troubleshooting efforts. Engineers with limited experience can use this system to quickly retrieve helpful information and get equipment online again, thereby shortening any downtime. The system has been installed for selected equipment on a test basis. Based on initial successes, it was decided to roll out the system companywide in fiscal 2018.

Characteristics of Steel Industry
(Characteristics of Process Industries)
Capital investment (percentage of net sales):
All industries 3.8%; manufacturing industry 3.7%; **steel industry 6.6%**
→ Stable operation of equipment is a top priority in the steel industry (Maintain safety, stable supply and society's trust)

Capital Investment/Net Sales

All industries | Manufacturing industries | Non-manufacturing industries | Steel industry

Source: Ministry of Finance, Business Outlook Survey (fiscal 2016)
Subjects: Companies, excluding those in finance and insurance industries, with paid-in capital of ¥1 billion or more

Use of AI for troubleshooting equipment issues

When equipment trouble occurs at a steelworks, employees use AI to search through records, standards, manuals, and other sources of guidance on dealing with the situation.

Results: 1 Reduces problem duration (production-line downtime) 2 Facilitates skills transfer and human resources development

Previously

Experience → Low

Abnormal event

Identify cause
Execute repairs

Repeatedly ask about past approaches — Refer to lengthy manuals

Experience → High

After AI introduction

Abnormal event occurs

Abnormal event

Identify cause
Execute repairs

Experience → Low

Generates useful information

Maintenance database
• Comprehensive manuals
• Record of past equipment failures and associated responses

Manufacturing line

JFE Voice!

Raise ability of young employees to deal with equipment failure using AI

Steelmaking facilities operate around the clock, so we watch over the equipment in shifts. I was keen to find a process that would enable us to pinpoint the causes of equipment failures more efficiently as we transition from one generation of engineers to the next at our steelworks. The recently introduced AI system is great for drawing on the knowledge of veteran engineers possessing vast experience in dealing with malfunctions. The system enables young engineers to obtain knowledge from experienced engineers and raise their ability to respond to equipment failure.

Yasuhiro Shimamura West Japan Works (Kurashiki), Line Manager, Plant Control Department
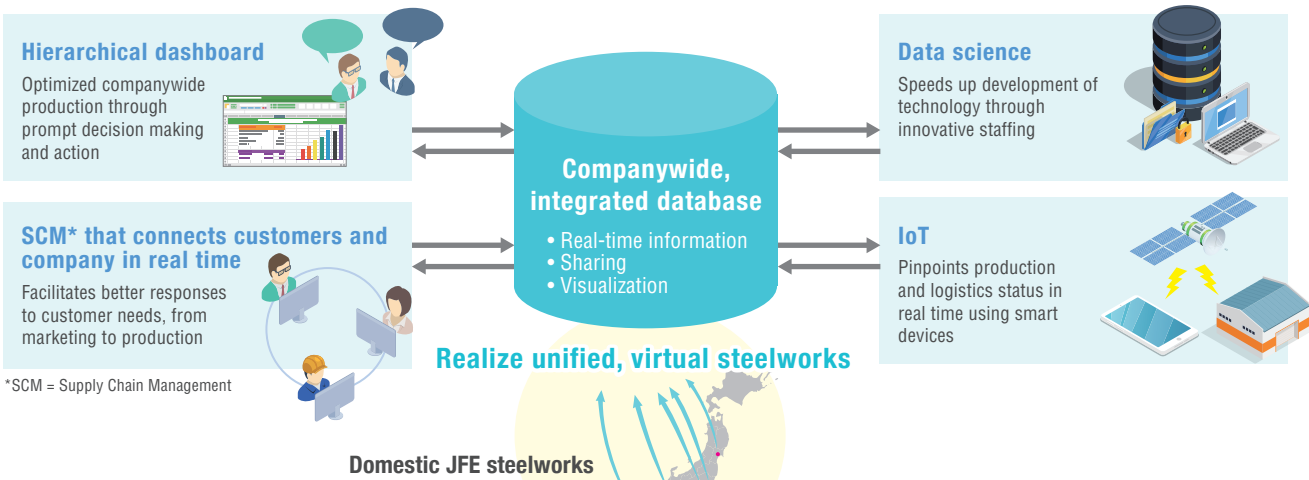
Business Process Innovation Team

Upgrade mission-critical systems at steelworks using the latest ICT
Create new value through reforms in business operations

JFE Steel is pursuing the following strategies to upgrade fragmented mission-critical systems at steelworks: 1) achieve standardization and consistency in business operations at steelworks that may differ by location, 2) create a companywide integrated database using standardized terminology and a standard structure, and 3) build simple, open architecture through system sharing and modularization.
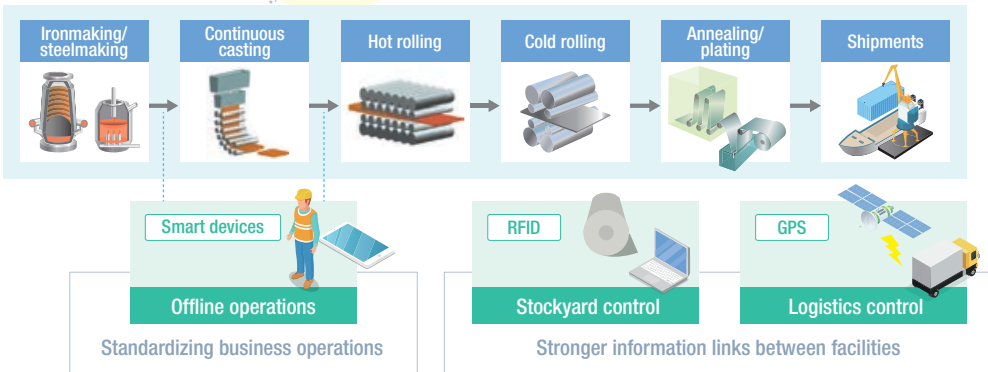
Through this system upgrade, all employees at JFE Steel will be able to access information companywide. Integration of business operations will allow domestic steelworks to form a unified virtual steelworks. Furthermore, JFE Steel will implement workstyle changes to create new value.

New workstyles realized through system upgrades

Hierarchical dashboard
Optimized companywide production through prompt decision making and action

SCM* that connects customers and company in real time
Facilitates better responses to customer needs, from marketing to production

*SCM = Supply Chain Management

Companywide, integrated database
• Real-time information
• Sharing
• Visualization

Data science
Speeds up development of technology through innovative staffing

IoT
Pinpoints production and logistics status in real time using smart devices

Realize unified, virtual steelworks

Domestic JFE steelworks

Enhanced production control

JFE Steel fell behind in its systemization of offline operations but has been working to reverse the situation and realize standardization, and also link the movement of objects and equipment at manufacturing sites in real time using advanced IoT options. The companywide integrated database pulls together all this information for the formulation of ideal overall production targets and the realization of integrated production control beyond the domestic network of steelworks.

| Ironmaking/ steelmaking | Continuous casting | Hot rolling | Cold rolling | Annealing/ plating | Shipments |

Smart devices → Offline operations
RFID → Stockyard control
GPS → Logistics control

Standardizing business operations | Stronger information links between facilities

JFE Voice!

Working toward a unified virtual steelworks of the future

Since joining JFE Steel, I have been involved in the development of manufacturing and operating technology for production facilities at the company's steelworks. The project I'm working on now is a system for product design that creates a process for manufacturing based on the customer's order. A big part of this process is dependent on the skills of veteran engineers, making the system problematic in terms of sharing know-how. It's my goal to facilitate comparisons between steelworks with a structure common to all manufacturing sites, and enable quick confirmation of product designs using this solution.

Kazuya Mori Business Process Innovation Team
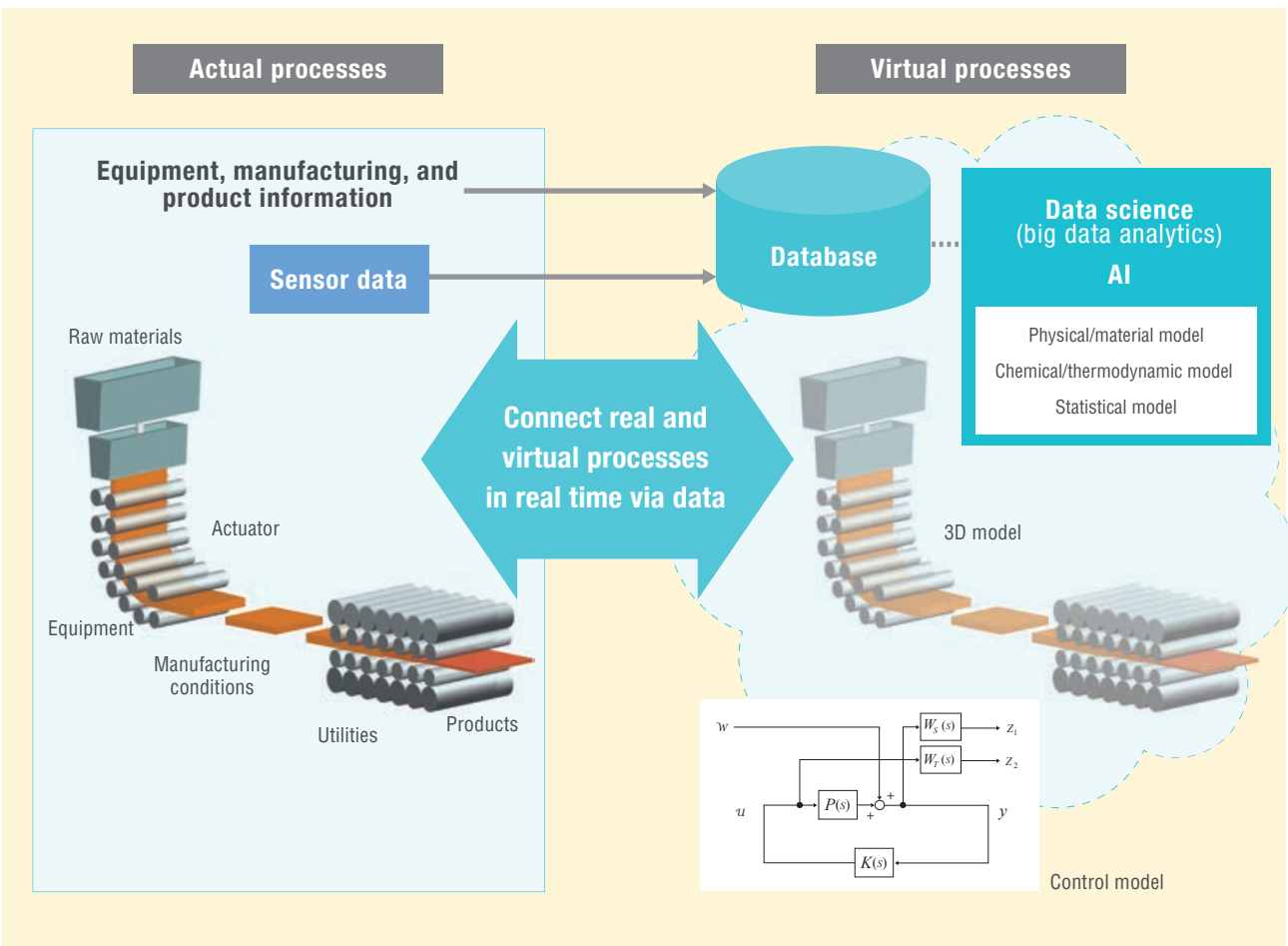

Data Science Project Department

Data science for integrated/total automation of steelworks processes

We use sensor data to combine actual processes with high-level virtual processes by merging disciplines such as physics, statistics, and AI, seeking a shift toward Cyber-Physical Systems (CPS) in steelmaking. It will then be possible to observe internal states and predict future states—conditions that are not visible in real space. The system will also underpin stable operations by monitoring equipment status to detect abnormalities, and it will lead to higher productivity by perceiving bottlenecks in any given process as well. In addition, virtual experiments can lead to process innovation and promote changes in workstyles by computerization of knowledge and expertise. In this department, our goal is to apply CPS to individual processes, then to individual factories, then to all steelmaking processes, and finally to the entire company. This will contribute to enhanced management from a business perspective.

CPS processes based on IoT sensor data

Actual processes

Equipment, manufacturing, and product information

Sensor data

Raw materials

Equipment

Actuator

Manufacturing conditions

Utilities

Products

Connect real and virtual processes in real time via data

Virtual processes

Database

Data science (big data analytics)
AI
Physical/material model
Chemical/thermodynamic model
Statistical model

3D model

Control model

JFE Voice!

I will boldly tackle whatever challenge appears in my path

I am currently working on the development of a control model for steelmaking processes. It's extremely difficult to grasp steelmaking processes in their entirety and build a model that encompasses all facets of manufacturing.I use data science to build models and run experiments on the actual process at manufacturing sites to develop improvements. Going forward, I'm keen to apply CPS in steelmaking processes through highly accurate models and establish a high-level automated control system.

Hiroto Kase Steel Research Laboratory, Instrument and Control Engineering Research Department
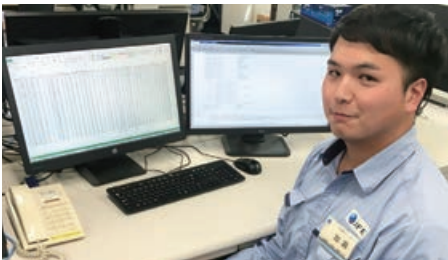
02
Engineering Business

Advanced Engineering with ICT—Creating and "*Ni-na-u*"* the Foundation for Life Powered by Manufacturing and Service Capabilities

* "*Ni-na-u*" is a Japanese word meaning supporting and remaining responsible.
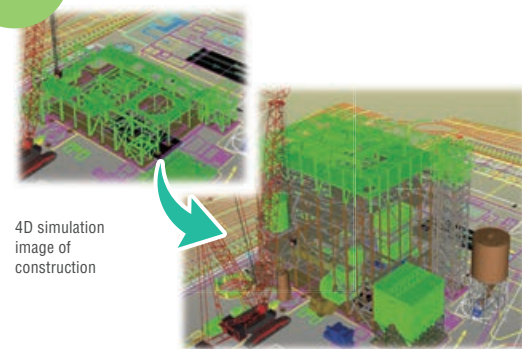
Atsushi Okamoto Senior Managing Director

Waste-to-energy plant

Biomass energy plant

Solar power plant

Our mission is to provide solutions to social issues through planning, designing, building and operating infrastructure supporting people's life and industries. We have a wide range of businesses such as waste-to-energy plant, water treatment plant, renewable energy power generation plant and bridges. As privatization of public services is requested, we are actively expanding "*Ni-na-u*" business in addition to creating social infrastructure. Advanced technologies such as IoT, big data analysis and artificial intelligence (AI) are key drivers for creating and "*Ni-na-u*" the foundation for life. We make the best use of such advanced technologies for state-of-the-art infrastructure business.
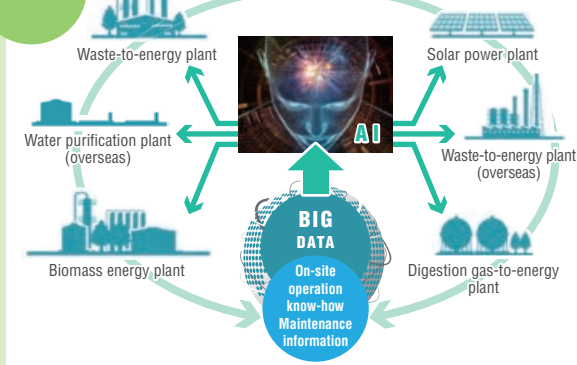
Creating the Foundation for Life   "*Ni-na-u*" the Foundation for Life

Creating

4D simulation image of construction

EPC: Actively utilize ICT in fields of engineering, procurement and construction

"*Ni-na-u*"

Waste-to-energy plant

Solar power plant

Water purification plant (overseas)

AI

Waste-to-energy plant (overseas)

Biomass energy plant

BIG DATA
On-site operation know-how Maintenance information

Digestion gas-to-energy plant

Propose solutions to optimize operations through IoT, big data analysis and AI

ICT Platform with Advanced Security Supporting Creating and "*Ni-na-u*"

Secure and High Quality Connection from Plants to the Cloud
Data storage, Analysis and Application Development Platform in Scalable Cloud

Global Remote Center (GRC) Opened in March 2018

GRC was opened at Yokohama HQ to provide remote operation and maintenance support for a variety of plants utilizing AI technology. An advanced cloud based analysis platform with a high quality and secure network was established to support GRC activity. At the waste-to-energy plant, the combustion normalization AI and the interactive operation support AI have been developed and are being used. Also, the power supply and demand prediction AI supports power supply adjustment. We will expand the usage of AI, in such fields as predictive diagnosis to prevent operation failures and equipment diagnosis of pipelines, to provide a variety of highly value-added services.

Global Remote Center (Yokohama HQ)
• Integrate information from all plants, including those overseas
• Provide 24-hour remote operation support

Plant operation support
• Safe operation   • Reduced operating costs
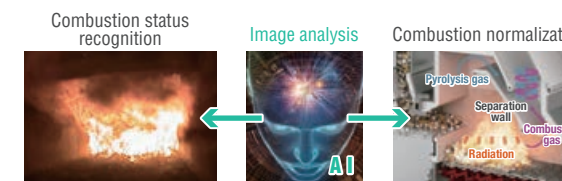• Overseas plant monitoring
• Recovery support if trouble occurs

Optimized power generation
• Optimize operations in conjunction with power supply and demand change

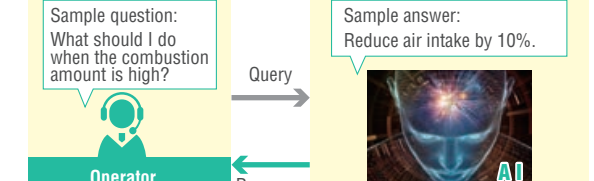**Diagnosis and maintenance of facilities, including industrial equipment**

Combustion image analysis system
AI analyzes the combustion status of waste-to-energy plants in real time. AI provides support to normalize combustion when necessary.

Combustion status recognition   Image analysis   Combustion normalization

Pyrolysis gas
Separation wall
Combustion gas
Radiation

Interactive operation support
Operators ask questions in natural language to AI and receive a vocal reply.

Sample question: What should I do when the combustion amount is high?

Query

Sample answer: Reduce air intake by 10%.

Operator   Response   AI

CSMS Certified!

Global Remote Center (GRC) acquired CSMS (Cyber Security Management System) certification, which validates GRC as a facility executing cyber security risk management efficiently. We will provide a variety of operation services globally with robust security measures.

Mitsutoshi Senoo Section Chief, GRC Operation Control Office, Control Technology

CSMS Promotion Team

Trading Business

Using advanced IT to promote global strategies and strive to create new value

Makoto Arai Executive Officer

The role of a trading company is to contribute to distribution. Its mission is to quickly and accurately convey precise and detailed information to manufacturers and users. Also, the need for faster and more optimized management decisions is growing. Consequently, we must utilize IT more extensively in our business operations. IT is a key building block of our management platform.

As the flow of business is equal to the flow of IT, we will strive to enhance our use of IT. In this effort, JFE Shoji Trade, its group companies and employees will be guided by the approaches outlined on the right.

Flow of Business = Flow of IT
- Clarify the purpose of systems construction and make it known to those who use the systems
- Have appropriate knowledge of work and facilities
- Understand systems functions (what systems can do)
- Allow systems to accept disruptions that might exist in business activities and tolerate them
- Have systems designed on the basis of business flow, with work categorized as typical or atypical

JFE Shoji Trade's Vision

Build a stable profit base and expand
profitability of trading and operating activities

Shift to marketing strategy operations	Strengthen on-site capabilities	Demonstrate group synergies

JFE Shoji Trade's IT Vision Themes in advanced IT to support growth

Improve office productivity
- Use RPA and AI to automate and elevate business operations
  (Shift to operations directly linked to marketing strategy)

Boost coil center productivity
- Use IoT technology to integrate sensor data
  (Various improvements through visualization of operating status)

Demonstrate IT-related group synergies
- Strengthen connections with JFE Holdings and JFE Steel (including SCM, shared security platform and joint procurement)

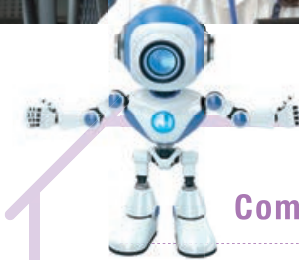**Enhance efficiency of consolidated management**
- Expand applications and upgrade standard systems
- Enhance domestic and international communication environment

Platform to Support Advanced IT

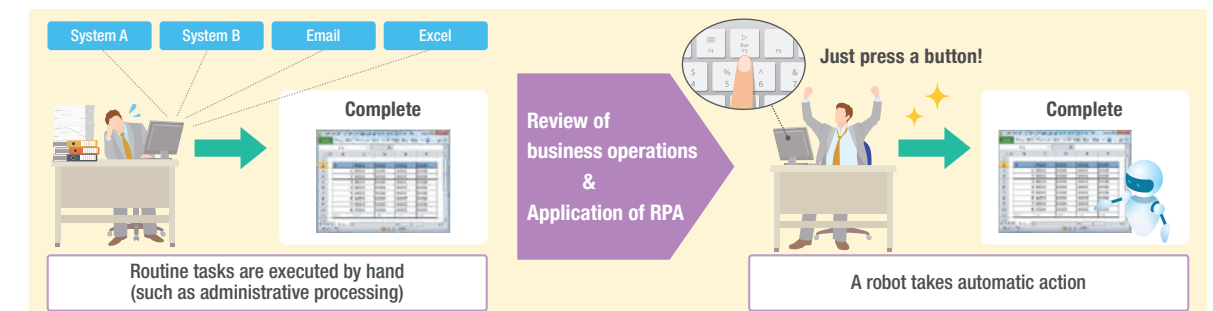| Enhanced information security	Stable systems operations	Retain and train IT staff

Companywide Effort to Promote RPA

Japan's working-age population continues to shrink. Responding to this situation is a pressing issue for all companies, and JFE Shoji Trade and its subsidiaries are no exception. We realized business operations had to be more efficient to offset the impact of fewer workers. About a year ago, we began looking into the potential of Robotic Process Automation (RPA) as a means toward this end.

Enhanced efficiency is the objective in the automation of business operations through RPA. At the same time, our look at the potential of RPA provided an excellent opportunity to determine which business operations are necessary. As a result, JFE Shoji Trade linked this with J-SLIM, an ongoing program to promote improvement in business operations, and launched efforts to encourage activities in all divisions over the course of a three-year plan. By enhancing efficiency in business operations through RPA, we will transition to a higher level of strategic operations.

We will expand the insights gained through this approach to the rest of the corporate group.

Top: RPA Promotion Team
Bottom: Team meeting

System A	System B	Email	Excel

Just press a button!

Complete

Review of business operations & Application of RPA

Complete

Routine tasks are executed by hand (such as administrative processing)

A robot takes automatic action

I'll take care of it!

A robot handles routine tasks!

RPA contributes to workstyle reform!!

In the process of promoting RPA, we showcase the underlying purpose of automation—greater efficiency in business operations. Through automation, we increase the frequency and speed of information conveyed to customers, leading to higher customer satisfaction.

We heard from employees on the frontlines who said automation helped alleviate stress related to business operations with time constraints, specifically, situations where they were not able to take certain days off or where procedures had to be perfect with no room for error. With automation, new workstyles are possible.

Left: **Hideaki Ishikawa** General Manager, IT Planning Dept. Middle: **Tomoko Kamobe** Manager, IT Strategy & Planning Sec., IT Planning Dept.
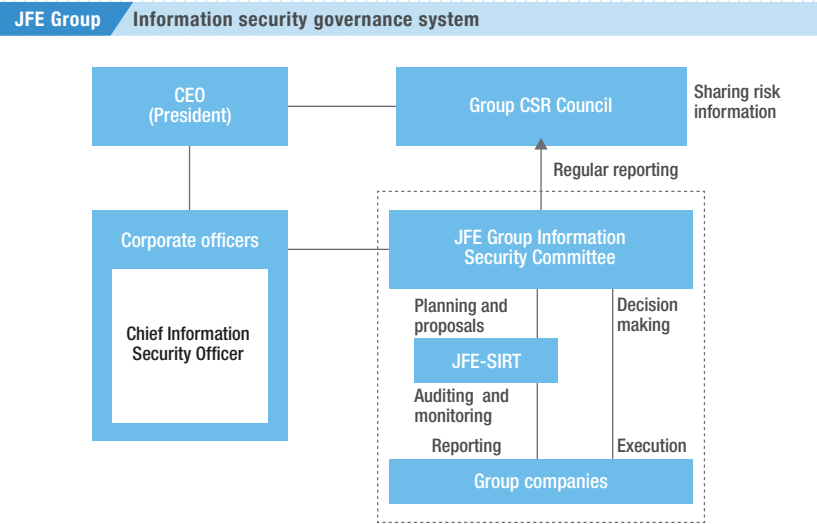Right: **Daisuke Sugimoto** Manager, IT Strategy & Planning Sec., IT Planning Dept.

Information Security Management

To prevent cyberattacks and unauthorized use of systems and thus confidently engage in business activities, the JFE Group is constantly working to improve its level of information security management through of the following measures.

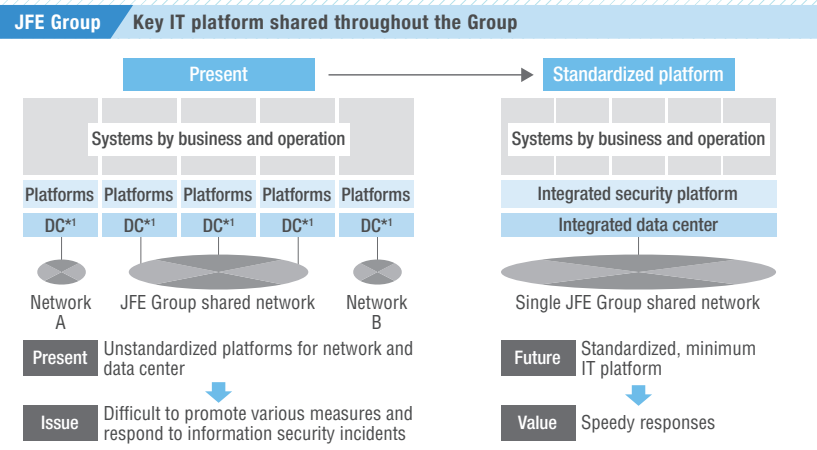## 1 Establish information security governance system

JFE Holdings established the JFE Group Information Security Committee as a substructure of the Group CSR Council. The committee is guided by JFE Group Chief Information Security Officer at the JFE Holdings and has the participation of officers responsible for IT divisions at each operating company. They discuss key issues related to IT, with an emphasis on information security, and determine the direction that the Group will take in that regard.

Based on the decisions made by this committee, the JFE-Security Integration and Response Team (JFE-SIRT), which has the participation of IT division managers from all operating companies, establishes rules and regulations, drafts and promotes the implementation of IT measures, performs information security audits and training, and offers guidance on responding to information security incidents. JFE-SIRT ensures the Group maintains a PDCA cycle for continuous improvements in information security.

JFE Group | **Information security governance system**

- CEO (President)
- Group CSR Council
- Sharing risk information
- Regular reporting
- Corporate officers
- Chief Information Security Officer
- JFE Group Information Security Committee
  - Planning and proposals
  - Decision making
  - JFE-SIRT
  - Auditing and monitoring
  - Reporting
  - Execution
- Group companies

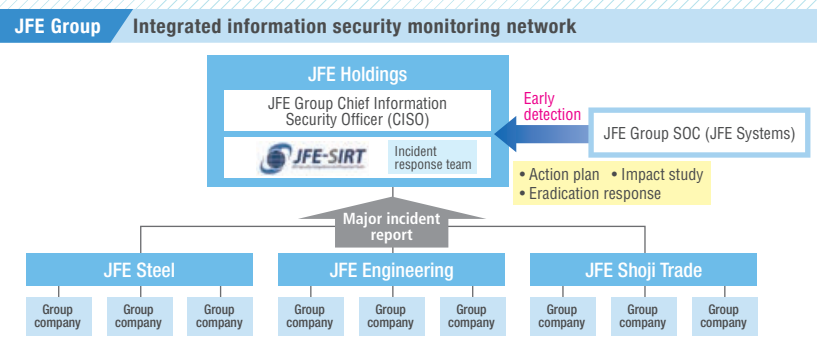## 2 Key IT measures shared throughout the Group

JFE-SIRT and Group companies work together, as a cohesive unit, promoting a common information security platform comprising such components as networks, IT equipment and security-related software, to achieve the same level of information security initiatives throughout the Group and facilitate an immediate response just in case an information security incident arises. Also, efforts are directed toward consolidating procurement and reducing costs.

*1: DC = Data Center

JFE Group | **Key IT platform shared throughout the Group**

Present → Standardized platform

Systems by business and operation

Platforms Platforms Platforms Platforms Platforms
DC*1 DC*1 DC*1 DC*1 DC*1
Network A — JFE Group shared network — Network B

Systems by business and operation
Integrated security platform
Integrated data center
Single JFE Group shared network

Present Unstandardized platforms for network and data center
Issue Difficult to promote various measures and respond to information security incidents

Future Standardized, minimum IT platform
Value Speedy responses

3 Establish information security incident response structure

JFE Holdings lays out the key points for responding when an information security incident occurs and, through JFE-SIRT, led by the JFE Group Chief Information Security Officer, the Company maintains a structure to ensure quick reporting, action and recovery should a situation occur and measures to prevent the situation from happening again.

To minimize damage caused by information security incidents, the Company has placed an integrated security monitoring net over the entire Group and is building a structure that enables the shared SOC*2 to detect emerging incidents at an early stage.

*2 SOC: Security Operation Center

JFE Group | **Integrated information security monitoring network**

JFE Holdings
- JFE Group Chief Information Security Officer (CISO)
- JFE-SIRT — Incident response team
- JFE Group SOC (JFE Systems) — Early detection
- Action plan • Impact study • Eradication response
- Major incident report

JFE Steel | JFE Engineering | JFE Shoji Trade
Group company (multiple)

Cyberattack Response Drills (Tabletop)

To raise proficiency in responding to a cyberattack if one should occur, JFE-SIRT regularly runs cyberattack response drills in cooperation with three operating companies and an information systems subsidiary.

The participants are people who would take charge in the event of an incident. The scenario is modeled on past events and publicly disclosed cyberattacks, and built around key points for responding when an incident occurs.

Through these drills, participants confirm their roles and how they would cooperate with others and then discuss problem points to deepen their understanding of cyberattacks and responses. Measures for improvement that are identified during the drills are reflected in the daily activities of JFE-SIRT.

JFE-SIRT practice formats and direction of implementation
- Four practice formats matched to participants and purposes
- Gradually expand scenarios and scale of exercises to enhance response capability and reinforce responsiveness on an organizational level

Target	To enable CISO and JFE-SIRT-related divisions to acquire the ability to respond precisely to situations			
Method	Meeting-style discussions based on cyberattack scenarios to confirm and improve procedures			
Type	Workshop	Tabletop drill	Function-specific drill	Integrated drill
Purpose	Clarify incident-response procedures	Verify incident-response procedures based on anticipated practice scenarios	Confirm reporting procedures based on practice scenarios in actual operating environment	Cross-functional drill based on real and assumed scenarios with several structures involved
Invited participants	People who take initial action in an incident JFE-SIRT	People who take initial action in an incident JFE-SIRT	CISO JFE-SIRT	CISO JFE-SIRT Divisions involved in the incident
Goals	Stable, balanced response level			
Rules/procedures	Set out procedures	Improve procedures	Identify incident-response issues, improve rules	
Organization/ structure		Improve incident-response structure and monitoring functions	Improve incident-response structure and monitoring functions and confirm internal and external contacts	Confirm internal and external contacts
People		Raise participants' level of responsiveness		Cultivate awareness among management

JFE Holdings sent young engineers to the Core Human Resources Development Program at the Industrial Cyber Security Center of Excellence, established in 2017 by the Information-technology Promotion Agency, Japan. The knowledge gained will support enhanced security of the Group's control systems.

JFE-SIRT

Like approaches preventing pollution during the years of high economic growth and more recent efforts curbing global warming, enhancing information security to safeguard corporate activities, in cooperation with stakeholders, including customers, business partners and government agencies, is one of top management's priorities that companies must proactively address to realize continuous growth.

It is thus important to establish a structure applicable on a groupwide basis and to maintain investment at a level commensurate to risk.

Every employee must also understand the vital significance of information security, taking a sense of ownership and treating systems and information carefully. This awareness and attitude have the potential to dramatically reduce the risk of major incidents, and I believe that cultivating a corporate culture that emphasizes information security through messages from management, education and drills is of great importance.

With this in mind, we created JFE-SIRT by gathering an elite team from all areas. As a team, we work with the three operating companies and other Group companies to promote measures covering systems, technologies and training on information security.

Michinari Tanaka
Team Leader, JFE-SIRT

Formulating the Declaration of Cybersecurity Management

The JFE Group*[1] formulated its Declaration of Cyber Security Management, based on the Declaration by Keidanren, the Japanese Business Federation, in March 2018.

The JFE Group acknowledges the importance of cybersecurity measures. In formulating our management strategy, we recognize the risk of cyberattack as a key management priority. We have drafted appropriate management strategies to counteract this threat. Also, we assign high-level professionals to cybersecurity management, hinging on JFE-SIRT. We take a variety of measures drawing on intelligence and advanced technologies gathered through links to external specialists, and also direct concerted efforts into human resources development from a medium- to long-term perspective.

Under this declaration, for fighting further serious and sophisticated cyberthreats, we are more greatly reinforcing management-led cybersecurity measures.

*1 Group companies subject to this declaration:
    JFE Holdings, Inc., JFE Steel Corporation, JFE Engineering Corporation, JFE Shoji Trade Corporation and all group companies of the three operating companies.

JFE Group Declaration of Cybersecurity Management

1 Recognize cybersecurity as a management issue
The JFE Group recognizes cyber-related risk as a key management priority. We shall enhance our own understanding of the latest cybersecurity developments and actively engage in management by positioning cybersecurity spending as an investment.

Management shall enhance their cybersecurity measures with responsibility while confronting realities, addressing risks, and exercising leadership. Members of management shall chair cybersecurity-related committees at JFE Holdings and its three operating companies, promote constructive discussions, validate various measures and allocate appropriate resources to whatever measures deemed necessary.

2 Determine management policies and declare intentions
The JFE Group shall determine management policies and draft a business continuity plan (BCP) aimed at quick recovery in the event of a cybersecurity incident, emphasizing not only identification and defense, but also detection, response and recovery.

Every year, the JFE Group shall lay out a cybersecurity action plan for the Group, reflecting a review of risk identification, defense mechanisms and guidelines for responding to an information security incident. Also, the JFE Group shall strengthen incident response capabilities through regular drills and prepare the BCP. Furthermore the JFE Group shall periodically conduct cybersecurity audits on JFE Group companies. Through these efforts, the JFE Group aims to steadily raise the level of the overall Group.

Management shall take the lead in declaring companies' intentions to internal and external stakeholders, and make every effort to voluntarily disclose recognized risks and measures to deal with them, in corporate reporting.

3 Build internal and external systems and implement security measures
The JFE Group shall establish internal systems mainly through JFE-SIRT, ensure sufficient resources including budgets and personnel, and take necessary human, technical, and physical measures.

Using various internal and external human resources development programs, the JFE Group shall cultivate the skills of high-level, professional staff with detailed knowledge of cybersecurity and shall work with external specialists to leverage the benefits of sharing know-how. The JFE Group shall strive to educate and motivate employees at every level in all divisions at each company under the JFE Group umbrella through in-house training and drills, as well as participation in cross-industry exercises.

The JFE Group shall manage cybersecurity throughout domestic and international supply chains by monitoring security measures at outsourcing contractors and others on the supply chain.

4 Encourage widespread use of cybersafe products, systems and services

The JFE Group shall manage cybersecurity across the full spectrum of corporate activity, including development, design, production, and supply of products, systems, and services.

5 Help build safe and secure ecosystems

The JFE Group shall collaborate with relevant government agencies, organizations, industry associations, and other bodies to actively share information, engage in dialogue, and build human networks, both in Japan and internationally. The JFE Group shall contribute to reinforcement of cybersecurity throughout global society by raising awareness of measures taken on the basis of such information.

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