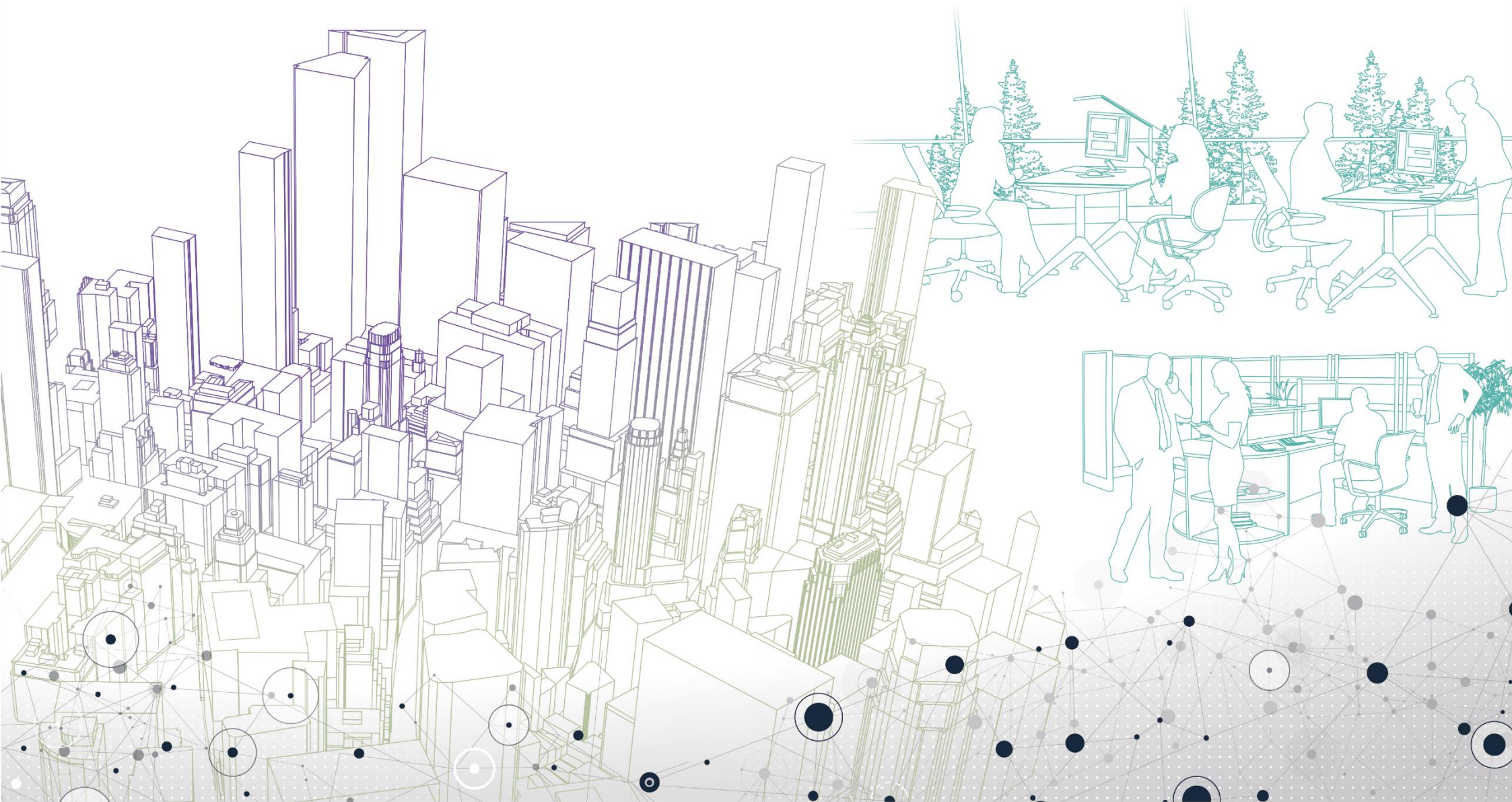


Hitachi Group IT Performance Report 2018–2019



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Message from CIO

Under the 2021 Mid-Term Management Plan, Hitachi aims to become a global leader in the Social Innovation Business by leveraging our IT, OT (Operational Technology), and product strengths to digitally transform social infrastructure and accelerate the creation of new value in the social, environmental, and economic domains.

Our IT departments have also collectively developed the 2021 IT Mid-Term Management Plan. In addition to optimizing IT resources, we are implementing a variety of measures to address our most recent management challenges, which are to facilitate the reorganization of global business and strengthen business competitiveness through DX*1.

In order to accelerate a global business reorganization and transformation, we formulated the “Hitachi Group IT Principles” based on the Hitachi Group’s IT philosophy. In addition, while consolidating and standardizing our ERP*2 systems, we are adopting an autonomous decentralized IT architecture that can respond quickly to changes, and we are promoting IT-PMI*3 on a global basis.

With respect to DX, we have established an in-house environment for Lumada*4 to enable advanced use of digital technologies such as AI*5 and RPA*6. We are promoting expansion of the use and application of data and the accumulation and sharing of know-how, including by expanding the scope, resolution and accessibility of our global management information. In addition, we are working on applying analytics to auditing and quality control.

By making use of these initiatives for collaborative co-creation with customers, we hope to increase the value of our customers’ businesses. I hope this report will be of assistance to you in that regard.

Vice President &
Executive Officer, CIO
Hitachi, Ltd.



Basic IT Policy

In line with the 2021 Mid-Term Management Plan, our IT departments have collectively developed the 2021 Hitachi Group IT Mid-Term Plan. Under the 2021 Hitachi Group IT Mid-Term Plan, we will use IT and digital technologies to help increase growth potential and improve profitability.



2021 IT Mid-Term Plan (basic strategy to achieve the vision)

Hitachi, Ltd. has announced its 2021 Mid-Term Management Plan to become a global leader in the Social Innovation Business. To support this, our IT departments have collectively formulated its 2021 Hitachi Group IT Mid-Term Plan, which is based on two themes: using IT and digital technologies to help increase growth potential and improve profitability, and transforming into an organization that drives digital transformation of management and business in partnership with related departments.

The mission of the IT departments is to become a partner that can identify management, business, and operational needs and challenges, and then apply technology and data to solve these challenges and create value. To that end, we are working to provide a common platform that will maximize the value of the IT and DX technologies utilized and promoted within the Hitachi Group and achieve overall optimization.

For commodity IT in particular, we have reduced costs through widespread consolidation and standardization to improve profitability. To do our part to increase growth potential, we are also restructuring the IT departments by shifting IT personnel and investment resources into core areas for business transformation (such as DX). In addition, we are evolving our IT architecture to better handle diversity and changes in the business environment, and we are implementing IT controls compatible with these goals.

*1 DX: Digital Transformation

*2 ERP: Enterprise Resource Planning

*3 IT-PMI: IT-Post Merger Integration

*4 Lumada: Hitachi's advanced digital solutions, services, and technologies for turning data into insights to drive digital innovation.

*5 AI: Artificial Intelligence

*6 RPA: Robotic Process Automation

Establishment of the IT Principles

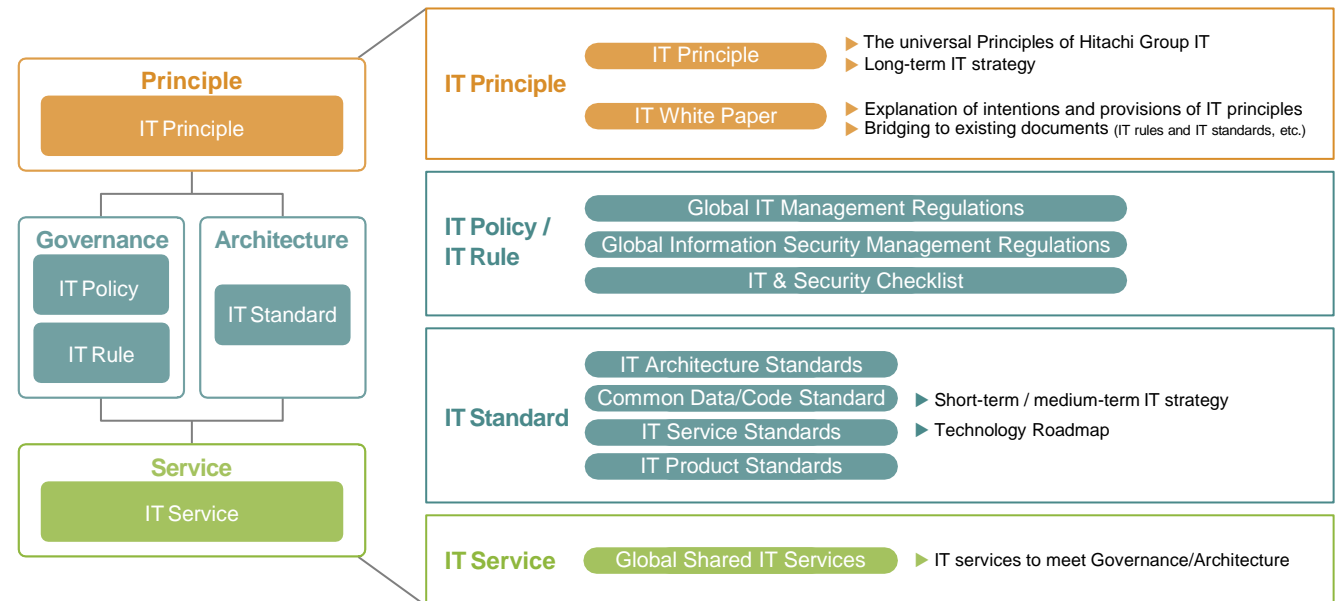
The Hitachi Group is actively engaged in M&A as part of its business restructuring. In order to reap the benefits of M&A quickly, it is necessary to integrate the IT infrastructure of new Hitachi Group affiliates and businesses as early and as efficiently as possible. To achieve this, it is important for our new colleagues to understand the Hitachi Group's IT philosophy and for both sides to work together to integrate our IT infrastructures.

In order to effectively implement this IT infrastructure integration, we have formulated the "Hitachi Group IT Principles." The Principles state that the IT departments should play a role in each of the following areas: IT contributions to management /business, decision-making support, appropriateness of

disclosure of information, adapting to environment changes (responsiveness), ensuring business continuity, and ensuring IT security.

In addition, we have created a white paper to systematically explain the concepts required to achieve these goals, namely the concepts of IT strategy, IT architecture, IT governance, and the division of roles among the IT departments of the corporate and business units and Group companies. These documents indicate new roles in which existing Hitachi Group IT departments, not just the IT departments of Group companies newly added through M&A, can help increase growth potential and improve profitability. We believe that the IT departments themselves can be compasses for transformation.

IT governance and IT architecture to realize IT strategy



Strategic policy: Use IT and digital technologies to increase growth potential

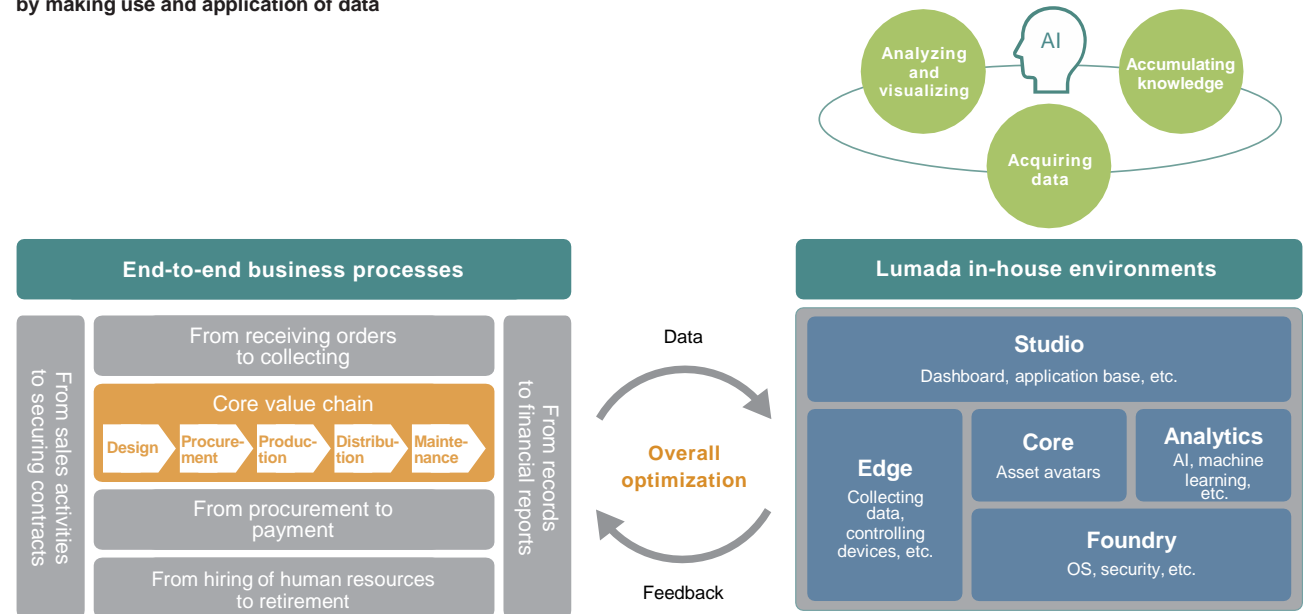
We will continue to improve the data storage and analysis environment and strengthen data utilization across the Group. In addition, we are strengthening PMI in IT to accelerate our handling of global business reorganization.

Development of a platform for DX and examples of in-house DX utilizing OT data

In order to expand the utilization of data and gain the benefits of incorporating the results into our business operations, it is essential to streamline the process of data analysis. We have prepared an in-house Lumada environment as a platform for capturing knowledge accumulated through the results of projects within the Hitachi Group, and for reusing this know-how in the form of analysis templates and an analysis knowledge portal. This know-how is not intended solely for improving effectiveness within the Hitachi Group. By offering this know-how outside the Hitachi Group in the form of analysis templates, we aim to contribute to the business units through internal sharing of common Lumada know-how.

Our in-house Lumada environment is utilized in a wide range of business areas, including sales, procurement, production, and management. The number of projects using this environment in FY 2018 increased by about five times compared with FY 2016. In the OT field in particular, in addition to wider rollout of our know-how in failure prediction and failure location inference, which are our traditional strengths, we are also working on areas like predicting causes of defectiveness in products to improve the yield rate, and analyzing trends in product demand to optimize maintenance inventory. We are also working to further expand the scope of application of Lumada technology by investigating analytical technologies that make use of limited data to streamline maintenance operations for legacy installations not equipped with sensors.

Optimizing entire end-to-end business processes by making use and application of data



Strategic policy: Use IT and digital technologies to increase growth potential



Expand global management information and improve management decisions

We have established a common platform for the utilization and application of digital data with the goal of making it easier to monitor sales profit and loss information and cost information on a consolidated basis among Group companies. This will make it possible to make consolidated Hitachi Group management decisions faster and more flexibly when needed.

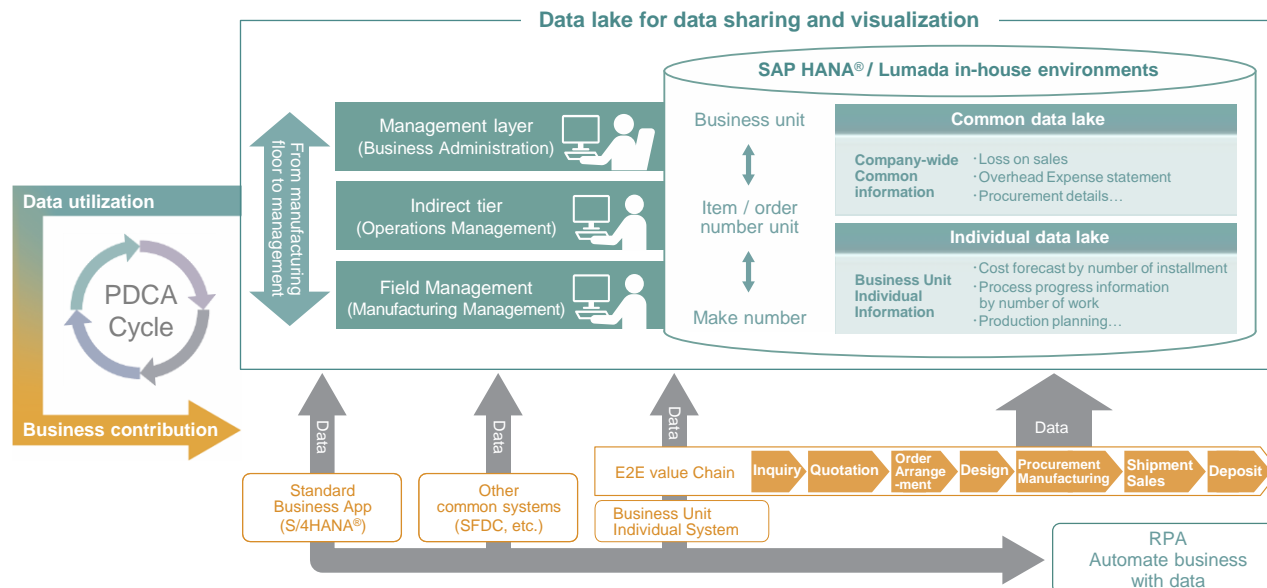
For example, by visualizing sales profit and loss information in consolidated Group companies from order performance data, we can use the data to make globally optimal investment continuity judgments and trend-focused decisions on future policies. Furthermore, by analyzing indirect cost data in detail by organization, expense, and job category, we are able to help optimize SG&A*1 and improve gross margin. We also hope to use CRM*2 data to make decisions on the allocation of management resources in marketing, sales activities, project management, and so on.

We adopted the SAP HANA® platform as a fast, flexible platform for centralizing common information company-wide. We are working to create an environment in which we can efficiently collect, accumulate, analyze and visualize data from many data sources. In addition to providing self-service BI*3 tools that allow users to utilize data when they need it, we are also promoting education to foster and improve data utilization readiness for managers, back-office managers, and on-site managers.

Data governance is also an important consideration for data storage and utilization platforms that require accuracy, completeness, and consistency. In addition to establishing common rules for the Hitachi Group on data utilization, we will establish a data quality monitoring system to continuously maintain and improve quality.

*1 SG&A: Selling, General and Administrative expenses
 *2 CRM: Customer Relationship Management
 *3 BI: Business Intelligence

Developing data lake that supports data utilization



Accelerate our handling of global business reorganization (IT-PMI)

In its 2021 Mid-Term Management Plan, Hitachi, Ltd. spells out aggressive investment in priority areas. As part of this effort, there is an increase in large-scale global M&A. In order to maximize the integration benefits of M&A, IT departments are required to quickly achieve IT-PMI.

We have established PMI guidelines that systematize the standardized contents of IT integration and separation in order to shorten the work period and reduce risks associated with M&A. The PMI Guidelines provide an overall picture of the PMI process and measures to address issues in promoting PMI, based on specific cases from the Hitachi Group. Each company's careful promotion of these measures has led to the speeding up of IT-PMI and risk avoidance.

For example, we are improving the accuracy of IT asset evaluations and transition cost estimates, and providing objective and fair prices during negotiations to optimize IT due diligence. The cost of IT integration and separation itself cannot be ignored, especially in a large global M&A. We are making sure that all departments involved in M&A, not just IT departments, have a common understanding of the magnitude of the impact. Therefore, in addition to deploying the Guidelines tools, our IT department also participates directly in large M&A projects to evaluate the applicability of the Guidelines and to maintain and improve the quality of the Guidelines.

Strategic policy: Use IT and digital technologies to improve profitability

To optimize our IT resources to a level comparable to global leading companies, we are promoting the expansion of strategic growth-oriented IT investments. We are transforming our IT cost portfolio.

Overall optimization of IT resources

The IT departments are working with one another to optimize IT resources (people, things, and money) across all of the Hitachi Group's IT departments in order to expand our business contribution in accordance with Hitachi's management and IT strategies.

First of all, with regard to IT talent, talent development is essential for shifting resources into differentiated and growth areas. To this end, we have defined standard IT talent types for the Hitachi Group, and we are monitoring our IT talent map on a regular basis and planning and promoting common development initiatives. Currently, we are focusing on expanding the number of data scientists, who are essential for data-driven management.

Secondly, with regard to IT assets, in the past, Corporate provided application asset management tools, and Hitachi Group companies managed their IT assets individually. In the future, from the perspective of overall optimization of the Hitachi Group, Corporate will monitor the IT assets of each company. By providing visibility into each company's applications in each business area across the group, we will further optimize IT assets, for example by sharing assets and decommissioning underutilized assets.

With regard to IT investments, we are accelerating integration into the Hitachi Group common IT platform, which leverages the public cloud. We have continued our efforts to reduce routine IT spending and redirect resources to strategic IT investments. As a result, the strategic IT investment ratio expanded from 25% to 35%. We achieved the targets of the 2018 Hitachi Group IT Mid-Term Plan. Going forward, we will work to make effective IT investments while maintaining our IT-to-sales ratio and strategic IT investment ratio so that we can further contribute to the business.

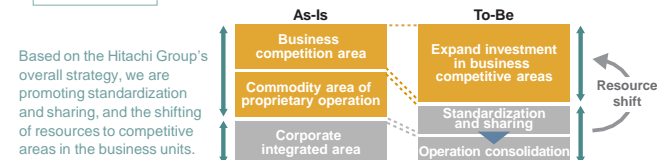
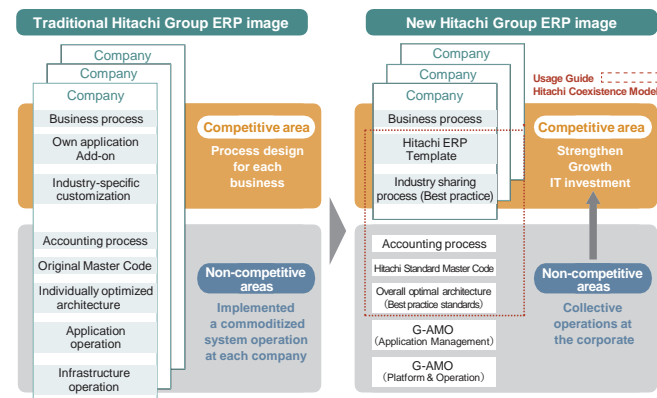
Promoting consolidation and sharing of ERP systems

Maintenance of the current version of our ERP system, which each Hitachi Group company installs and operates individually, will expire in 2027. We are using this opportunity to promote the consolidation and sharing of applications across the Hitachi Group. We are making improvements in the way we handle applications in order to facilitate the shift of talent and assets to competitive business areas, and accelerate our handling of business reorganization events.

In this effort, it is important to find ways to make progress while minimizing the impact of changes on business operations. In particular, it is important to discriminate between those business areas where overall optimization and common processes need to be promoted, and competitive business areas where the individuality of each business needs to be respected. By FY 2019, we had already established a roadmap and progress plan, and we had completed construction of an application sharing model. Going forward, we will continue to consolidate the 47 application instances*1 that require consolidation by 2027.

*1 Results at the end of FY 2018

Hitachi Group ERP Landscape



Based on the Hitachi Group's overall strategy, we are promoting standardization and sharing, and the shifting of resources to competitive areas in the business units.

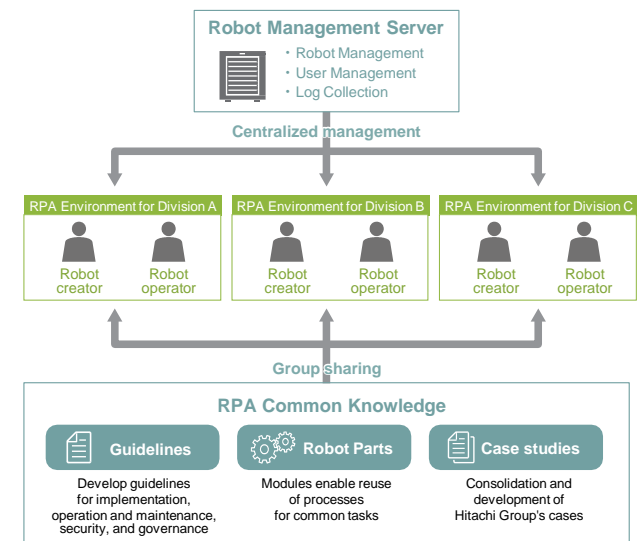
Automation of tasks by RPA

The Hitachi Group is promoting business automation using RPA. In order to expand the use of RPA, in addition to developing a common platform that can be used efficiently by each department for everything from selection of target tasks to creation and operation of robots, it is also essential to establish compliance and security policies and countermeasures against unattended robots.

We are therefore publishing guidelines to promote governance in the implementation and operation of RPA, and we are establishing a common platform for centralized monitoring of the results of RPA. We are also preparing shared knowledge resources such as robot examples and components with the goal of shortening adoption lead times and expanding the range of deployment.

Going forward, we will continue to intensify our activities to expand business automation, such as by hosting meetings of users assembled by leaders of the Hitachi Group RPA community.

Overview of RPA Activity



Strategic policy: Use IT and digital technologies to improve profitability



Initiatives for audit analytics and quality control analytics

Digital technologies have made great strides in recent years, and increasingly there is a desire to harness these technologies for the purpose of strengthening compliance and governance. The Hitachi Group is therefore exploring ways to utilize IT to proactively detect potential fraud and eliminate the potential for unauthorized access.

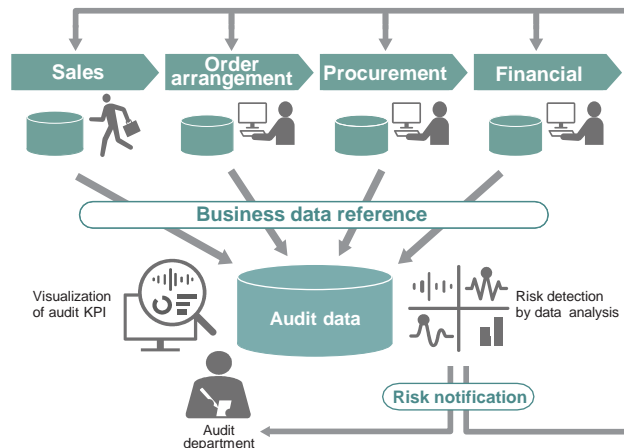
With respect to proactive detection of potential fraud, we are strengthening risk management by analyzing business data such as sales, order arrangements, procurement, and financials to allow early implementation of risk notification and follow-up with the relevant parties (audit analytics).

With respect to eliminating the potential for unauthorized access, in the manufacturing domain we are automating the preparation of inspection reports from data collected from the inspection equipment in order to eliminate potential tampering with inspection data (quality control analytics).

Currently, the IT and business departments are working together to come up with mechanisms that fit their business operations based on past cases.

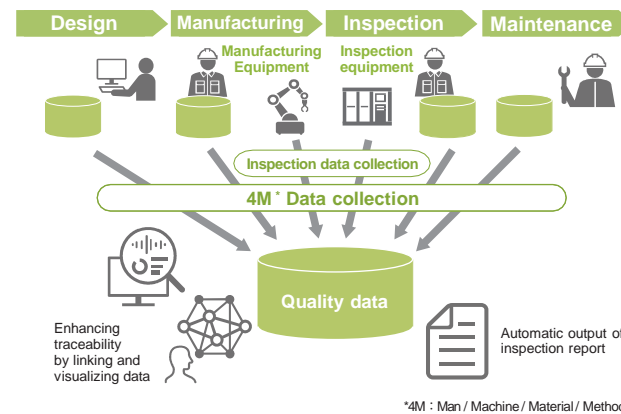
Audit Analytics

- ▶ By collecting and analyzing business data, we are able to detect risks, alert the relevant parties, and follow up with them.
- ▶ Monitoring audit KPIs to identify high-risk operations and departments.



Quality Analytics

- ▶ Automatic preparation of inspection reports from data collected from inspection equipment to eliminate potential tampering with that data.
- ▶ Enhancing traceability by linking and visualizing data.

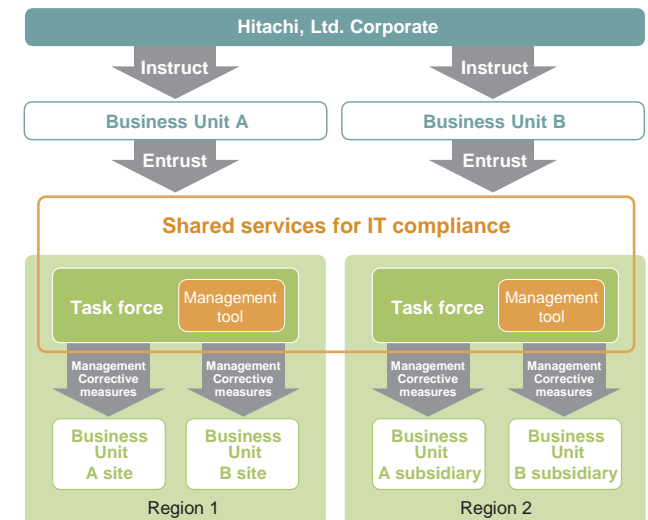


Making IT compliance a shared service

In 2020, we are expecting an increase in cyberattacks targeting the international events that are scheduled to be held in Tokyo. We are therefore preparing a shared service that centrally implements the IT compliance operations (vulnerability countermeasures and software management) that have been implemented at Hitachi, Ltd. and Group companies to date. Consolidating IT compliance operations in this way will also help us maintain a consistent level of IT compliance quality and contribute to maintaining the brand.

This shared service will be rolled out in Japan and piloted outside Japan in 2020. The global rollout is scheduled for 2021.

Operational image of shared services for IT compliance



Transformation to a flexible IT architecture

When new members and business partners join the Hitachi Group, the corresponding IT environments need to be linked and integrated at low cost and with high agility in order to unleash "open innovation" as rapidly as possible. To achieve this, we will continue to provide secure IT services by centrally managing and monitoring all communications in both Internet environments and on-premises environments.

Adopting an autonomous decentralized IT architecture that can respond quickly to changes

Traditionally, companies have positioned their IT environment on the corporate network and have adopted an architecture that incorporates security measures at the perimeter of the Internet.

However, changes in the environment, such as the globalization of the Hitachi Group's businesses, the increase in M&A, and collaborative creation with business partners, have necessitated a transformation to an architecture that is more flexible and responsive. Today, the Hitachi Group's architecture is not a closed architecture that brings IT environments together in a traditional corporate network, but rather an Internet-centric architecture that accelerates the flexible use of public clouds and collaboration with business partners.

To enable an Internet-based IT environment that can be securely accessed from anywhere, we are locating more functionality on the Internet, including authentication systems, device management, and remote access proxies. By not requiring a connection to the Hitachi Group's internal network, we are helping to accelerate innovation with our business partners, including new members of the Hitachi Group as well as our co-creation partners.

For example, we have deployed a global-standard, cloud-based collaboration tool in an IT environment on the Internet. This means that companies who have just joined the Hitachi Group through M&A, as well as business partners, can now use the same tools as the Hitachi Group to quickly share information and conduct online meetings.

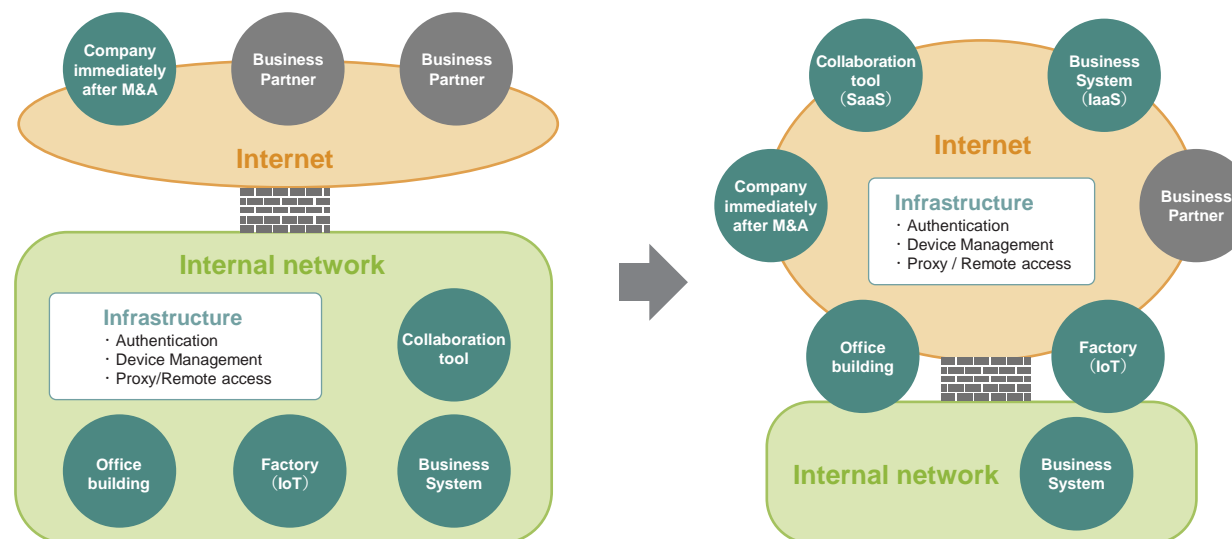
We have also adopted software-controlled SDN*1 technology on in-house network equipment in offices and office buildings to localize malware infections and virtualize the network. To improve network security, we are segmenting the networks on a per-application basis, for example by isolating OA networks from business networks.

We have also upgraded the physical infrastructure so that the dedicated lines, which were traditionally our primary lines, and

our Internet lines can now be used simultaneously. You can now connect directly to public clouds that require Internet communication from your office or office building via the Internet. The upgrades allow us to efficiently distribute increased traffic associated with greater use of the public cloud to the Internet lines, reducing the cost of the dedicated lines even under increased traffic.

*1 SDN: Software Defined Network

Transformation to an autonomous decentralized architecture centered on the Internet



Transformation to a flexible IT architecture



An IT environment that supports work style reform

We have prepared a wide variety of devices (smartphones, tablets, security-focused PCs, high-performance PCs, mobile PCs, and so on) to accommodate the diverse work styles of our employees. We are also expanding our network access points globally so that we can conduct business and hold online meetings in various countries and regions. In addition to developing a work-friendly IT environment, we also offer a range of training options to help employees learn to use the IT tools we have introduced.

We are assuming that commuting traffic and general traffic congestion will be heavy during the summer of 2020. In preparation for this, we are enhancing the IT environment so that employees can telework at home or in satellite offices.

IT-BCP

Because the Hitachi Group's IT infrastructure is based on servers installed and operated in robust data centers, we define a set of disaster recovery levels according to the recovery time objective and recovery point objective of each service. Depending on the disaster recovery level, we also maintain a secondary server and a data backup environment to protect the data. We are conducting regular training required for BCP*1, including BCP training for cyberattacks as well as BCP training for disasters.

*1 BCP : Business Continuity Plan

Examples of using IT services in work style innovation



Rigorous IT governance: In-house IT information security and IT controls for business continuity

To ensure information security and business continuity across the Hitachi Group, including at companies that join the Group through M&A, we are defining the requirements to achieve our IT Principles and developing the relevant rules and standards. We are working to implement daily improvements through self-checks, internal audits, and internal controls.

IT rules and standards

To support our global business and ensure information security and business continuity, we must set and share requirements that can be consistently accepted by our IT departments around the world, regardless of country or region. For this reason, the Hitachi Group IT departments are working together with the information security and audit departments to define a common set of Hitachi Group IT rules necessary for information security and business continuity. We have also established a set of IT standards as guidelines to which IT departments can refer when implementing the requirements set out in the rules.

Initiatives for self-checks and improvement of progress on the IT rules

In order to spread the Hitachi Group's common IT rules, we provide a checklist to the IT departments of Group companies, and we ask them to self-check their progress on the IT rules and work on improvement. Specifically, we ask them to check their "IT agility" against changing business conditions and vulnerabilities, including IT system configuration management and countermeasures against IT risk in the areas of information security, business continuity, and compliance.

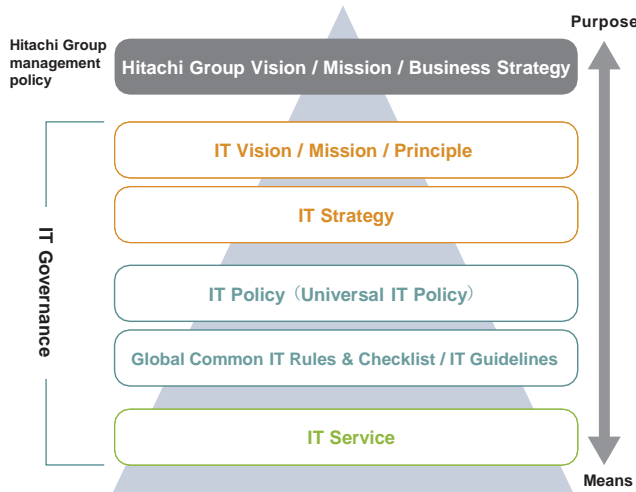
We started this initiative for Group companies in Japan, but we have since extended it to Group companies outside Japan as well. In order to spread the IT rules early and widely, we first identified ahead of time which companies in each business group would perform self-checks, and we then organized the checklist items into two categories: requirements for large companies with their own business systems, and requirements for the numerous small companies outside Japan. As a result, the checklist penetration rate, which was only 60% of the Hitachi Group in 2012, increased to 96% in 2018.

In addition, internal audits are conducted by the Audit Department to thoroughly verify progress in carrying out the IT rules and the status of any necessary corrections. We are also working on IT internal controls to support the reliability of financial reporting within the framework of J-SOX internal controls.

M&A support

In M&A, IT integration and separation play an important role in a successful business reorganization. We are therefore working to reduce the risks associated with integration and separation by identifying IT control requirements. For example, in the case of IT integration, we ask the company about to be integrated to check its status of compliance with the Hitachi Group IT rules, and to make corrections no later than the end of the transition period. In particular, we require that the necessary IT requirements for J-SOX internal controls be completed by the time of the first internal control effectiveness assessment.

IT Governance System



Internal IT organization of the Hitachi Group



The IT departments of the Hitachi Group, which have developed a wide variety of services and businesses, are working to achieve a balance between advanced IT to support business and common Group-wide IT on a global scale.

Organizational structure of the IT departments

Group companies have their own independent IT departments for each business segment. This is because advanced IT is required to maximize competitiveness in each business segment.

On the other hand, as IT costs fall, security risks increase, and business expands globally, it is also necessary to build common IT governance across the Group and implement common IT initiatives that apply to the Group as a whole.

The Hitachi Group's IT departments are organized into two tiers in order to achieve both quick decision-making for each business segment and implementation of common IT initiatives. Specifically, Group Corporate controls the business units within Hitachi, Ltd. and all major Group companies (Figure 1 on the right), while the business units and Group companies control the IT departments of subsidiaries (Figure 2 on the right). Group Corporate also provides shared services in order to implement common IT initiatives.

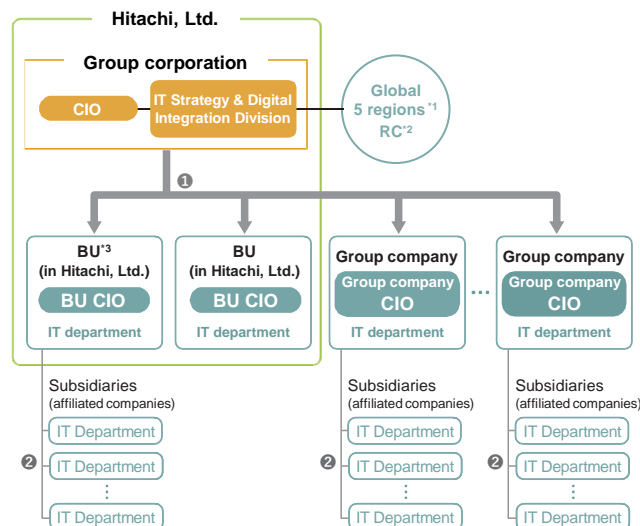
Global structure

By establishing a chain of command with one person responsible for Europe and the Americas and another for China and other Asian countries, it has become possible to formulate global IT plans and centrally manage budgets. In addition, to better share information, the Corporate and local subsidiary IT departments meet regularly to review global policies, specific measures, and local initiatives.

The Global Support Area supports Group companies outside Japan in five regional locations and nine branch offices.

Organizational structure of the IT department

- ① Group Corporate CIOs coordinate with the CIOs of each company to control the entire Group.
- ② Each company CIO controls the IT department of its subsidiaries.



*1 5 regions: Americas, Europe, China, India, Singapore *2 RC: Regional Company *3 BU: Business Unit

Selected as "Aggressive IT Management Brand 2019"

Hitachi, Ltd. was designated an "Aggressive IT Management Brand 2019" by the Ministry of Economy, Trade and Industry and the Tokyo Stock Exchange. This is the fourth time and the second consecutive year that Hitachi has been selected for this award.

The "Aggressive IT Management Brand" designation is awarded to companies that engage in strategic IT investment and IT utilization in a way that drives corporate value and competitiveness from a medium- to long-term management perspective. In 2019, the award assessment was focused on initiatives to drive DX.

Hitachi is focused on the Social Innovation Business, which combines OT, IT and products that we have been developing over many years. Since 2016, we have been supporting customers' digital transformations through Lumada, which utilizes Hitachi's advanced digital technologies. The "Aggressive IT Management Brand" award recognized our DX initiatives both inside and outside the company. These have included providing digital solutions that contribute to the achievement of the UN's Sustainable Development Goals, and building an integrated platform for global human resources management.





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