

Improving prosperity for all people and cultures

The NTT Group is committed to contributing to the development of society by acknowledging diverse cultures.

message

Message from Management
(Senior Executive Vice President)



Naoki Shibutani

Representative Member of the Board
(Senior Executive Vice President)

Announcing our Transformation to a New Management Style

The list of issues that affect society these days is almost endless—economic disparity, shrinking birthrate and aging population, energy problems, deteriorating infrastructure, human rights, discrimination, and many more. To address such social issues, we announced “A New Management Style Suitable for a Decentralized Network Society” in October 2021 as the direction that the NTT Group will be taken for its transformation. More than ever, the world is counting on the management of companies to tackle social issues and help shape the future of society through their businesses, rather than simply focusing on corporate growth and profits like companies had done in the past. Underpinning the announcement of this new management style is the NTT Group’s commitment to responding to requests like this from society. More specifically, society during the spread of COVID-19 was supported by a social framework based on remote working styles, online seminars, deliveries, and more. We have worked towards developing a framework that allows working from home, created an environment where people can work anywhere, and been a major driving force behind DX (digital transformation) for the automation and standardization of actual business operations. Even after COVID subsidies, the NTT Group will be taking an active role in increasing and expanding remote work and the online society, creating an environment with a high level of productivity and secure operations.

Our proactive stance in implementing various systems enabling employees to work from anywhere demonstrates our views for pioneering the creation of an inclusive workplace. The Work in Life initiative is also one of our goals for enhancing the quality of both work and private life, and aims to achieve open, global and innovative business operations.

And we hope to contribute to DX of society as a whole, by associating our activities with support for our customers’ DX, promoting the vitalization of local economies, increasing resilience, and helping to achieve a decentralized society.

Contributing to Work in Life building a decentralized society

- Developing the right environment -

We are implementing initiatives in three major areas on our way to promoting Work in Life. The first of those is developing the right environment. Enabling remote work requires development of a Zero Trust IT environment that is easy to work in and offers a high level of productivity and security. With this approach we are aiming to achieve the Work from Anywhere concept, which provides an environment where anyone can work at any time, from a broad range of locations as their workplace. Even essential workers who need to work on site inspecting telephone poles or cables, or performing maintenance on equipment and other infrastructure are examples that highlight the approach we are developing—driving mobile mapping trucks means GPS, imaging and inspection data can be centralized in a database and processed as data science using AI, to automatically identify the condition of aging equipment, or conduct equipment inspection and design work from remote locations. Drones can also be used to take images of steel towers used for wireless communications, and compiled into a database to automate the deterioration diagnosis, design, installation, and ordering processes. Around half of our personnel, including those at our communications partner companies, will be involved in these changes to working styles by 2025. We hope to apply this type of smart infrastructure platform to help resolve other social issues, by rolling it out throughout society to electricity, gas, water, roads and other types of infrastructure services to achieve more efficient maintenance of infrastructure where deterioration is becoming a serious problem.

- Promoting DX -

The second area is from the perspective of business transformation and DX by making full use of IoT, digital technologies, AI, and more. Developing an IT environment where anyone can work at any time from a range of locations not only requires cloud-based systems to be used for equipment and sales, but also for other operations like accounting, administration, and human resources. Implementing DX calls for Fit to Standard, which requires unified customer IDs, standardized codes, automated tasks, and business operations that comply with global standards. Customer contacts will need to change from labor-intensive approaches to sales harnessing digital marketing, to achieve a balance between customer convenience and operational efficiency. By employing DX and revising operations in these ways, we are aiming to reduce costs in fiscal 2023 by some 1 trillion yen compared to fiscal 2017. We will also provide our customers and partners with digital marketing platforms, to help build new value creation with what can be considered an open and trusted connected supply chain.

- System and framework development -

The third area is revamping systems and frameworks related to human resources and labor. This approach cannot be achieved solely by developing an environment or systems that allow for a creative working style. Instead, I believe that it will be extremely important to forge a new corporate culture by coordinating the management team's commitment and raising everyday awareness amongst all employees. We currently have systems in place that allows employees to select a flexible working style, but the small number of women in management roles or the fact that people receiving care have to give up their careers are just

some examples of areas that are lacking. To address these deficiencies, the management team will need to take the lead and reform our corporate culture. While our efforts thus far have given employees more flexibility away from regular working hours, we hope to roll out even more changes by using remote-based working styles regardless of working location, so we can avoid undesired transfers or employees working away from their families. We will also be introducing a job-based system as a way of reforming the seniority-based hierarchy so that employees are able to develop their own careers, as we aim to create a workplace environment where anyone can enjoy both their work and private life.

Achieving reliability and innovation

As an infrastructure company, NTT provides secure and reliable ICT services as part of its mission to connect people together. We use cutting-edge digital technologies to assist with our customers' digital transformation and achieve a sustainable society with the Your Value Partner approach. Looking forward, we will continue pioneering advanced methods of harnessing ICT and digital technologies across a wide range of fields including reforming work styles, moving toward a remote world, implementing DX, and renewable energy. We are aiming to become an innovative company that leads reforms throughout society by providing our knowhow and experience as services.



Feature 2: Transformation to a New Management Style

New style premised on remote work

These days there has been a growing need for increased spread and uptake of digital services (including deliveries and video streaming) as part of individual lifestyles. Companies have also had to face sudden changes in working styles toward remote work, and there is greater need for online access and digitalization of social infrastructure. As COVID-19 is now part of our lives, the time has come when society will be utilizing remote and online access technologies.

Under the approach of “Transformation to a New Management Style,” the NTT Group set a range of targets with the aim of transforming to a new style based on remote work.

1. Promotion of Work in Life (Health management)
2. Contribution to a decentralized society (facilitate regional economic development)
3. Improve social resilience
4. DX transformation

The management style was a typical one based on office work—where employees commute to offices or job transfers—with regular working hours and personnel allocated by the company.

Looking ahead, the NTT Group will be working towards a diversity-rich management style based on remote work. This will allow employees to choose where they work and reside, freeing them from the pressures of job transfers or working away from their family, give them the option to choose their own working time away from regular working hours, and let them choose their own career path without the constraints of a seniority-based system.

The system of governance we are using will also be re-examined to take into consideration the implementation of zero trust systems and systemization of IT security that is appropriate for remote work, enhanced resilience against epidemics, natural disasters and cyber-terrorism, and conduct risks. Various systems will also be revised for promoting DX transformation, together with reforms to business operations and development of the right environments so that the office is enhanced as a space for creation and co-creation.

We will also contribute to DX to society as a whole, by expanding customer reach with digital marketing as well as providing customers with platforms harnessing our own DX. These initiatives will be used to promote Work in Life (health management) and achieve work processes that are more open, global, and innovative. The NTT Group will be taking this approach based on its core concept of “Improving prosperity for all people and cultures.”

Transformation to a New Management Style

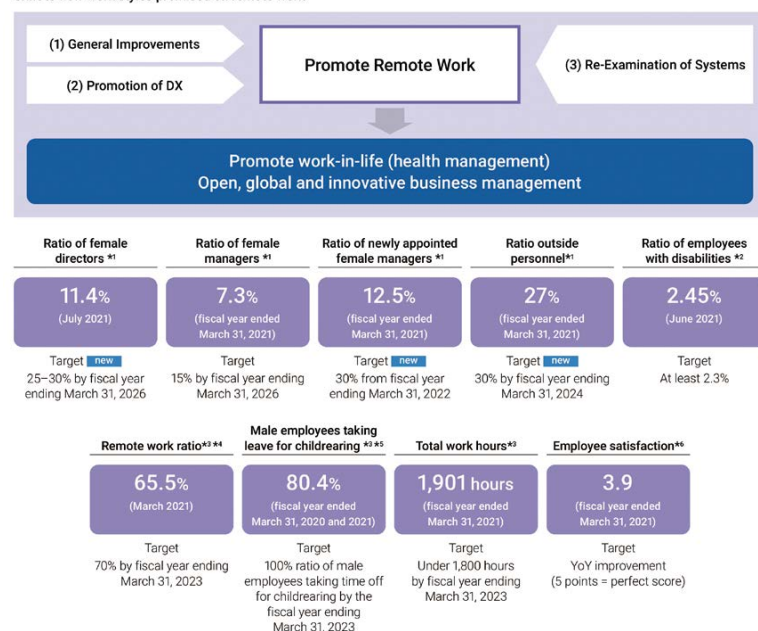


Promotion of Work in Life

As work styles change, it is necessary to review work processes in order to accommodate diverse ways of working. Allowing diverse work styles leads to greater opportunities to employ people of diverse backgrounds, while improving their motivation to work and ease of working. This results in better employee engagement and sparks innovation.

The NTT Group engages in a variety of initiatives to promote diverse work styles. In particular, we are changing work styles while focusing on better treatment and environments for mainly remote work. When changing work styles, it is important to ensure openness, globalization and innovative work management from a business perspective. From the standpoint of employees, we believe the first step is to promote healthy workstyle-in-daily life and their well-being.

Shift to new work styles premised on remote work



^{*1} Six major domestic companies (NTT, NTT East, NTT West, NTT Communications, NTT DATA, NTT DOCOMO)

^{*2} Domestic Group companies (at least 43.5 employees)

^{*3} NTT (holding company) only

^{*4} Work-from-home ratio (excluding essential workers)

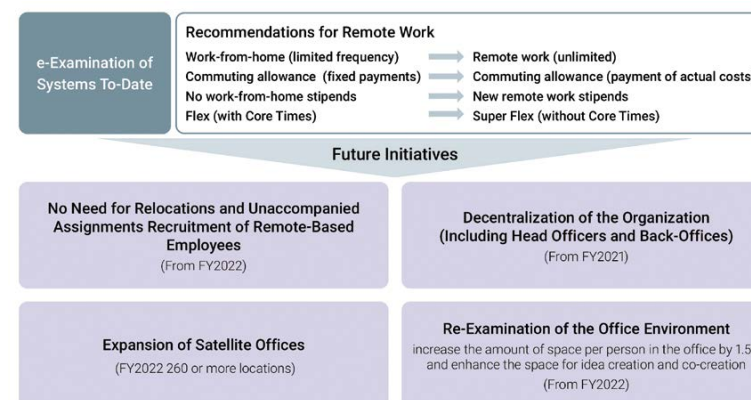
^{*5} Percentage of total number of male workers using paternity leave or leave for purposes of child rearing (as disclosed by companies with "Platinum Kurumin Certification") (Number of employees with children entering elementary school in FY2019 to FY2020 who took time off work for child rearing) / (Number of employees who gave birth (or whose partners gave birth) in FY2019 to FY2020.)

^{*6} Domestic Group companies

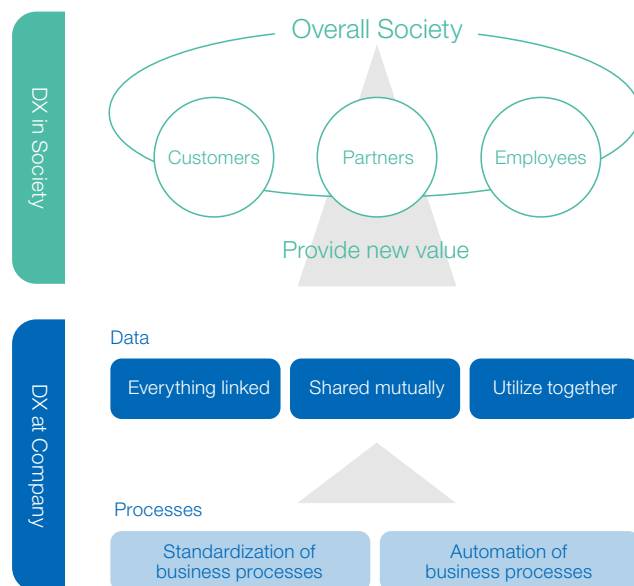
Changes in Work Styles

NTT Group intends to shift toward new work styles centered on remote work, by upgrading IT environments and reviewing various systems, in addition to advancing DX projects and work reforms with an eye on the post-pandemic world.

During fiscal 2020, NTT introduced a super flex-time system, stopped subsidizing commuter passes, and created an allowance for employees working at home and other remote locations, in a bid to promote remote work styles. To encourage more remote work, we will update systems and work environments and advance reforms toward a decentralized, self-disciplined network-style organization. We aim to create a work-from-anywhere environment that frees employees from time and location constraints, allowing everyone to work anywhere and anytime.



Overview of DX Transformation



Promotion of DX

The NTT Group will be reforming various systems with the aim of promoting DX to create an IT environment where anyone is able to work in any location, at any time. In addition to the introduction of a cloud-based system, we will digitize processes to facilitate automation and standardization while expanding sales approaches by applying digital marketing to implement these initiatives. Some 100 automated processes will be rolled out under ten DX initiatives with the aim of increasing productivity of service provision operations 1.7-fold (in FY2025), to achieve cost reductions of more than ¥200.0 billion in fiscal 2023 (aggregate total of more than ¥1.0 trillion in cost reductions from FY2017).



Promote work-in-life (health management)
Open, global, and innovative business management

Achieving a decentralized society

The NTT Group will be promoting Work-in-Life (health management) by adopting a diversity-rich management style based on remote work that will enabling employees to work close to home.

More specifically, employees residing further out but working at headquarters, and the organization itself (including headquarters and back-office functions) will be decentralized and spread among various regions to create hubs that serve to revitalize those regions, while regional decentralization will also contribute to BCP operations by ensuring functionality in the event of disasters. Office environments will also be re-examined to enhance space for idea creation and co-creation.



Improve social resilience

As a corporate group with the mission of serving society by sustaining telecommunications infrastructure in normal times, the NTT Group is committed to building highly reliable telecommunications networks that connect people anytime, anywhere, as part of helping to build a society that is resilient against disasters arising from the three major threats of this century—plagues, natural disasters, and cyber terrorism.

We will also be making a concerted effort to further reinforce communications infrastructure, ensure even better disaster response, and provide adequate information to affected people.

Social Challenge 4

Establish shared ethical standards

Business Activity

12. Establishing and thoroughly complying with ethical standards
13. Appropriately managing conduct risk
14. Thoroughly reinforcing corporate governance and compliance
15. Sharing high ethical standards with business partners



Why it matters

As maintaining high ethical standards with society and sharing those high ethical standards with business partners is an essential part of resolving social issues and ensuring sound corporate activities, a range of initiatives will be implemented for establishing and sharing such ethical standards.

Future vision

The NTT Group is committed to contributing to the development of society by acknowledging diverse cultures, and thus we will contribute to solving social issues by connecting people, goods, and cultures, including communities, nations, and society, while promoting high ethical standards, diversity, and inclusion in fair and equitable ways, and work towards creating a better workplace through powerful and new digital technologies.

What can be accomplished

We set high ethical standards for ourselves and share them with our business partners.



Business Activity 12–13

Establishing and thoroughly complying with ethical standards / appropriately managing conduct risk

Our commitment

We set high ethical standards for ourselves and share them with our business partners

Our objectives

100%

Participant rate of training of corporate ethics policy

0

Cases of legal actions for anti-competitive behavior, bribery

Policies and Concepts

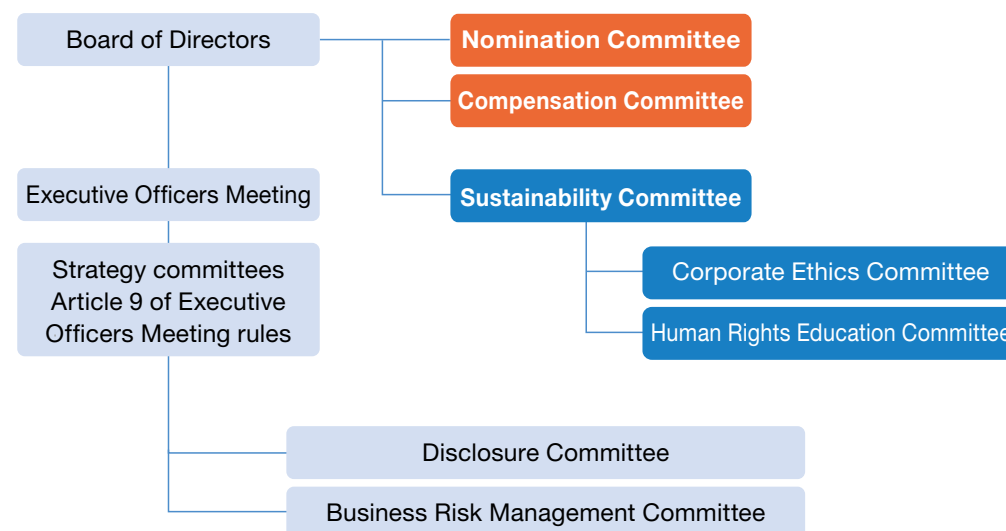
It is imperative to conduct business in compliance with laws and regulations in the jurisdictions where we operate, and maintain high ethical standards in order to promote sound corporate activities. Recognizing this, NTT established the “NTT Group Corporate Ethics Policy.”

These standards, which apply to all officers and employees of the NTT Group, lay out the basic principles of corporate ethics and provide specific guidelines for ethical behavior. These stipulations are intended to remind everyone of their duty as members of a corporate group that bears significant responsibility to society in terms of preventing dishonesty, misconduct, and the disclosure of corporate secrets, as well as refraining from exchanging excessive favors with customers and suppliers, and ensuring that they conduct themselves according to the highest ethical standards in both private and public activities.

Organization for Implementation

NTT has a Corporate Ethics Committee with a senior executive vice president as chair. The committee meets twice a year with the aim of thoroughly promoting the NTT Group's corporate ethics and maintaining discipline. It reports to the Board of Directors twice a year, particularly concerning the status of reports made to the Corporate Ethics Help Line, and the Board of Directors discusses reported matters when necessary.

The NTT Group has Corporate Ethics Committees and corporate ethics officers at Group companies. We foster a corporate climate of observing laws and corporate ethics, investigate wrongful acts and scandals based on our Corporate Ethics Help Line operational rules, hold regular meetings for the compliance officers of Group companies, and work across the Group to promote compliance.



NTT Group Corporate Ethics Policy

1. Recognizing the establishment of corporate ethics as one of its most important missions, top management shall exert its leadership to ensure that the spirit of these Standards is adopted throughout the Company, and shall assume full responsibility for solving any problems when any event inconsistent with that spirit occurs.
2. Every person with subordinate employees shall not only act in a self-disciplined manner, but shall also always provide guidance and assistance to his/her subordinate staff to ensure that their conduct is in conformity with our corporate ethics.
3. Every officer and employee of the NTT Group shall not only comply with all laws and regulations, social standards, and internal company rules whether in Japan or overseas, but officers and employees shall also hold the highest ethical philosophy within himself/herself both in public and in any private situations. Among other things, each officer and employee, as an officer or employee of a member of a Global Information Sharing Corporate Group, shall keep himself/herself fully aware that any disclosure of customer or other internal privileged information constitutes a materially wrongful act. Also, as a member of a group of companies which holds great social responsibilities, he/she shall strictly refrain from giving or receiving from customers, business partners, and other interested parties excessive gratuities. Furthermore, when interacting with public officials and politicians, officers and employees shall not commit bribery or commit any other acts that cause the other party to violate the National Public Service Ethics Act/Code of Ethics and the Ministerial Code, or that cause suspicion that such a violation has occurred.
4. Each NTT Group company, at the first opportunity, shall take initiatives to provide training programs in order to help its officers and employees enhance their awareness of our corporate ethics.
5. Every officer and employee of the NTT Group shall direct his/her efforts to prevent wrongful or scandalous acts which may potentially occur as specialization and advancement of our business proceeds. Each NTT Group company shall improve its system to prevent such acts, including, for instance, the re-assignment of contract representatives who have remained with the same customers for a long period of time, and the improvement of monitoring tools to protect customer and other information.
6. Any officer or employee who may come to know of the occurrence of any wrongful act or any scandal shall promptly report the wrongful act or scandal to his/her superior or other appropriate persons. If he/she is not able to make such a reporting, he/she may contact the Corporate Ethics Help Line (External Contact Point). It should be noted that every officer and employee who reports the occurrence of any wrongful act or scandal shall be protected so that the reporting party shall not suffer any negative consequences due to such reporting.
7. In the event of an occurrence of any wrongful act or scandal, each NTT Group company shall be committed to the settlement of the problem by taking appropriate steps through a speedy and accurate fact finding process, and responding in a timely, suitable, and transparent manner in order to fulfill its social accountability.

Main Initiatives

Prevention of Bribery

The NTT Group Corporate Ethics Policy mandates compliance with all laws and regulations, social standards, and internal company rules whether in Japan or overseas. With regard to the prevention of bribery, we have an Anti-Bribery Handbook containing important matters to be understood and complied with by our employees. The contents of this handbook are made known to all employees in Japan and overseas through emails and other means.

In addition, NTT, NTT East, and NTT West stipulate that taking bribes is forbidden under the Act on Nippon Telegraph and Telephone Corporation, etc. (hereafter "the NTT ACT") and that breaches are punishable by law. Following the Act on Prevention of Unjust Acts by Organized Crime Groups, contributions and other types of support are only given to charitable organizations deemed suitable by the NTT Group. We have a zero tolerance approach to corruption. In fiscal 2020 no illegal conduct associated with bribery or contribution/support was confirmed within the NTT Group.

Political Contributions

As a holding company, and in compliance with Japan's Political Funds Control Law, NTT does not make political contributions, while a few Group companies make political contributions at their own discretion and in accordance with the relevant laws and regulations as well as the companies' respective codes of corporate ethics.

Request to Business Partners for Compliance and Risk Assessment

The Guidelines for Sustainability in Supply Chain, the operational guidelines we issue to our suppliers, clearly outlines fair trade practices and business ethics (nine articles). With respect to critical suppliers, we conducted a survey on the status of Sustainable procurement. We checked activities concerning compliance in general, including their response to preventing corruption, illegal political contributions and antisocial forces, and also requested further improvements where necessary.

Compliance with Anti-Monopoly Laws

The NTT Group has adhered to the Anti-Monopoly Act to ensure its business activities align with a fair and competitive business environment. These initiatives have been effective, as evidenced by the fact that continuing from the previous fiscal year, we were not fined for violation of anti-monopoly regulations in fiscal 2020.

Initiatives to Promote Awareness of the NTT Group Corporate Ethics Policy

At NTT, top management demonstrates that compliance requires the NTT Group to comply with laws and conduct business with everyone having strong ethics. Also, the presidents of each NTT Group company have declared their commitment to identify risks related to illegal or illicit activities and never tolerate any form of impropriety. To ensure the effectiveness of the NTT Group Corporate Ethics Policy, we offer training sessions on corporate ethics to employees and, through a website for employees, we explain the declaration in detail and give examples of corporate ethics issues. Employees are reminded of the importance of ethics in June and December each year in an effort to raise their level of understanding. Furthermore, NTT conducts annual surveys of employees to measure their awareness, and the results are then used for awareness enhancement initiatives.

Corporate Ethics and Compliance Training

Corporate ethics training is conducted as part of continuous educational activities for all officers and employees. This training is tailored to meet the specific compliance and corruption risks of each company throughout the NTT Group. Furthermore, training for officers is also conducted every year.

Anti-Bribery Handbook

As a tool to help employees prevent corruption, we created the new Anti-Bribery Handbook in fiscal 2014, which is made known to all employees at NTT Group companies inside and outside of Japan through emails and other means. Along with a message from the president, the Anti-Bribery Handbook provides examples regarding the basics of bribery and facilitation payments to instill correct knowledge and understanding in all employees.

Competition Law Handbook

The NTT Group created a Competition Law Handbook
Sustainability Report 2021

in fiscal 2019 as a tool for ensuring compliance with competition law among employees and it has been made known to all employees at NTT Group companies inside and outside of Japan. The handbook contains the basics regarding compliance with competition law within a Q&A format, as well as specific examples that might be found within the Company's business activities, in order to instill correct knowledge and understanding of competition law compliance in employees.

Check System for Penetration of Corporate Ethics

NTT conducts an annual survey that includes NTT Group companies in order to ascertain the extent to which employees are aware of compliance. At each NTT Group company, monitoring is performed under four different functions, comprising the departments in charge of business operations, compliance and internal auditing, as well as the Audit and Supervisory Board members, to ensure neutral and multifaceted checks are being performed.

NTT checks the status of compliance audit implementation at NTT Group companies with an internal auditing department and directly confirms the status of compliance initiatives inside NTT and at NTT Group companies without an internal auditing department.

Establishment of Corporate Ethics Help Line Contact Point

To prevent illegal conduct or a scandal, each Group company has set up an internal consulting center to handle reports of improper activities. In addition, NTT has established the Corporate Ethics Help Line as an external contact point for NTT Group companies and outsources its operation to a law firm. The help line also handles consultations and reports related to human rights issues. The NTT Group Corporate Ethical Standards clearly state that people who file reports with these help lines will be protected from any disadvantage arising from the fact that they filed a report. The content of the consultations and reports are investigated and

handled by the staff member in charge, and a report is submitted to the Corporate Ethics Committee of each Group company. All reports are collected at least once a year by NTT, where the response status is ascertained and reported to the Board of Directors.

In addition, since the contact point is independent from management, there is an independent reporting route to Audit & Supervisory Board members. Reports made through our Corporate Ethics Help Line (external contact point) are in principle sent directly to Audit & Supervisory Board members at the same time; reporting only to Audit & Supervisory Board members is also possible.

Corporate ethics helpline
<https://group.ntt.jp/corporate/compliance.html>

Number of Reports Received by the Corporate Ethics Help Line (External Contact Point)

We monitor the number of reports received by the Corporate Ethics Help Line, and publish this number in our Sustainability Report and on the NTT Group's Sustainability website. The Whistleblowing Mechanism Guidelines, revised in December 2016 by the Consumer Affairs Agency, recommend that neutral and fair third-party assessments be carried out. We had such

an assessment carried out in May 2017 and received the comment that overall, a whistleblowing mechanism is in place and is being administered appropriately.

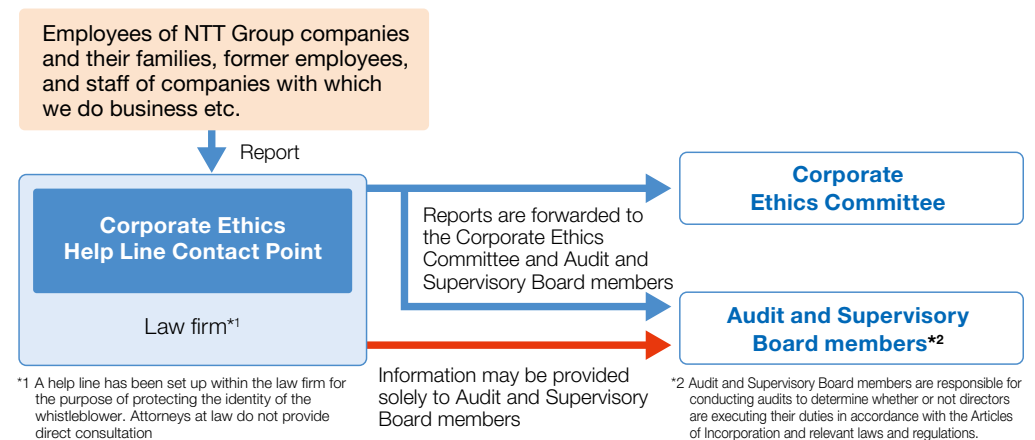
Reports to the corporate ethics help line by type of violation
<https://group.ntt/en/csr/governance/compliance.html>

Details of assessment

- Investigation of the mechanism and operational status of the help line in order to verify its effectiveness in terms of utilization and reliability.
- Sample survey on the establishment of regulations and responses to whistleblowers, etc.
- Confirmation of compliance with the Whistleblowing Mechanism Guidelines.
- Interviews with administrators and discussion about operational issues.

Disciplinary Actions against Confirmed Violations

A compliance violation or breach of the NTT Group Corporate Ethical Standards is dealt with using the disciplinary measures taken in accordance with the disciplinary code established at each Group company. This includes pay cuts and work suspension, and may also be reflected in assessments (evaluations) and personnel transfers.



Business Risk Management

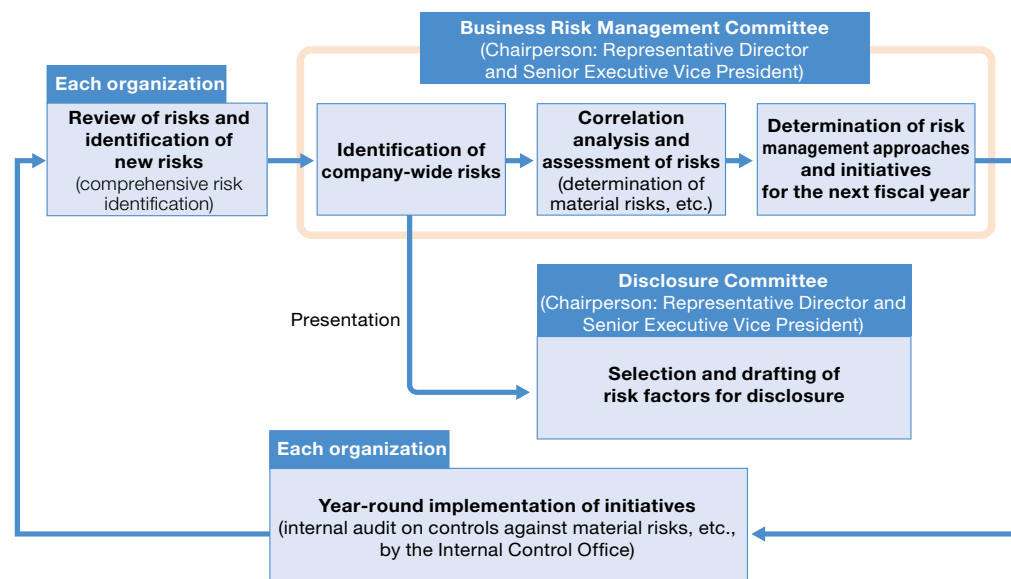
The NTT Group faces a rapidly changing business environment, including intensified competition in the information and telecommunications sector. In this context, NTT Group companies are exposed to an increasing amount of business risk. The NTT Group strives to minimize the impact of losses that could result from the materialization of risk by anticipating and preventing the occurrence of potential risks. As part of these efforts, NTT has formulated the NTT Group Business Risk Management Manual and has distributed it to all Group companies so that the entire Group can work together to conduct risk management. This manual contains policies for addressing various forms of risk facing the NTT Group's business operations and approaches to coordination among NTT Group companies.

In addition, each Group company has formulated its own manuals and other guidelines, which

reflect its specific business operations, business environment, and other factors, and is using these materials to control business risks.

Organization for Implementation

At NTT, Risk Management Regulations are in place, which define fundamental policies concerning in-house risk management for effective and efficient business operations. Risk management is carried out based on a continuous PDCA cycle under the leadership of the Business Risk Management Committee, chaired by the representative director and senior executive vice president, and comprised of heads of departments and offices as committee members. At the NTT Group, the representative director and senior executive vice president of NTT is assigned ultimate responsibility for risk management, while each executive officer serves as the risk officer for the business area they are placed in charge of.



Identifying Material Risks

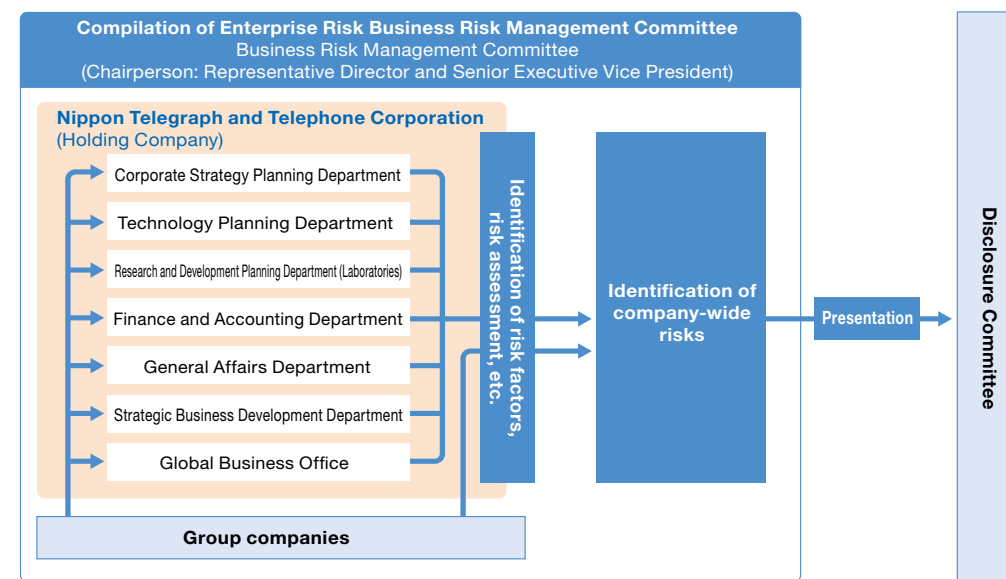
From time to time, NTT reviews assumed risks and management policies based on changes in the social environment.

In the identification of Companywide risks, the Business Risk Management Committee leads analysis processes for the risks faced by the NTT Group are formulated and periodically implements risk analyses in accordance with these processes. In addition, after a correlation analyses on these risks, it specifies those risks with the potential to have the greatest impact as material risks, and we decide on countermeasures.

Matters pertaining to risk management are discussed at meetings of the Business Risk Management Committee. As part of risk monitoring, each department in charge reports on the status of monitoring and risk mitigation effects to the Business Risk Management Committee, while the Internal Control Office conducts individual audits on the status of ini-

tiatives to address material risks and reports results to the Board of Directors in the subsequent fiscal year.

Among other things, risks are also identified by focusing on the perspective of conduct risk—where customers and other stakeholders suffer negative consequences as a result of actions taken by the NTT Group—by ensuring better planning and implementation of appropriate measures.



Business Activity 14

Thoroughly reinforcing corporate governance and compliance

Our commitment

We set high ethical standards for ourselves and share them with our business partners

Our objective

0 Cases of legal actions for anti-competitive behavior, bribery

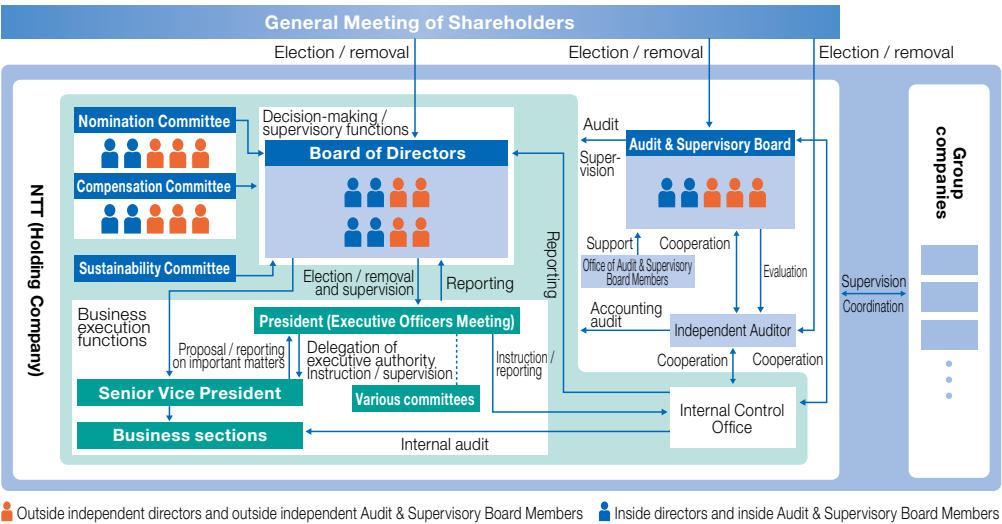
Basic Policy

As the holding company of the NTT Group, NTT believes that raising the effectiveness of corporate governance is an important management issue for meeting the expectations of various stakeholders, including shareholders and other investors, as well as customers, business partners, and employees, and for maximizing corporate value. Accordingly, NTT is working to strengthen corporate governance based on the purpose of the principles of the Corporate Governance Code promulgated. Based on NTT's "Your Value Partner 2025" Medium-Term Management Strategy, which was formulated and announced, in order to work together with all its partners to promote initiatives to resolve social issues in its role as "Your Value Partner," NTT will work toward ensuring sound management, executing appropriate decision-making and business activities, clarifying accountability, and maintaining thorough compliance as basic policies.

NTT is implementing all the principles of the Corporate Governance Code it revised in June 2021.

Corporate Governance System

NTT, in order to strengthen functions for appropriately supervising and auditing business execution, seeks to strengthen its auditing system by appointing several outside independent Members of the Board, and by establishing an Audit & Supervisory Board, of which outside independent Audit & Supervisory Board Members make up a majority. With our adoption of an executive officer system, we are also configured to clearly separate the functions of managerial decision-making / supervision and business execution, and we are working to improve our business mobility. Additionally, NTT has voluntarily established the Nomination Committee and Compensation Committee, which consist of five members, including three outside independent Members of the Board, to further increase the objectivity and transparency of decisions related to appointments and compensation for directors, and it has determined that the governance functions of the Audit & Supervisory Board structure are thoroughly effective. In addition, NTT has established various meetings and committees as has been deemed necessary on important business execution, in order to ensure that appropriate decisions are made for facilitating Group management.



Committee name	Overview
Board of Directors	The Board of Directors is sized according to the content of our business portfolio and is structured in consideration of balance and diversity of fields of specialization. The Board consists of eight directors, including four independent outside directors, who have been appointed in order to enhance the supervision of business execution. In addition, in principle, a regular Board meeting is held once a month, with extraordinary Board meetings held as necessary. The Board determines matters stipulated by the "Board of Directors Regulations," which include matters stipulated by law and important matters pertaining to Company and Group management. It also supervises the execution of duties by directors and executive officers by regularly receiving reports on the status of duty execution from those directors and executive officers.
Audit & Supervisory Board	From an independent perspective that differs from that of individuals responsible for business execution, the Audit & Supervisory Board implements operational audits and accounting audits and audits the status of the execution of duties by members of the board.
Appointment and Compensation Committee	For the purpose of improving objectivity and transparency, NTT has established the Appointment and Compensation Committee, which consists of four members of the board, including two outside independent members of the board, as a preliminary review institution of the Board of Directors, and is increasing the effectiveness of governance.
Executive Officers Meeting	Important corporate matters to be decided are, in principle and in advance, discussed at the Executive Officers Meeting, which is made up of senior vice presidents and others. The Executive Officers Meeting is held about once a week. To improve the transparency of management decision-making, one Audit & Supervisory Board member participates in the Executive Officers Meeting.
Various Committees	A number of committees have been established below the Executive Officers Meeting to discuss specific important business execution-related matters. Major committees include the Technology Strategy Committee, which deliberates on the Group's R&D vision and technology development strategy; the Investment Strategy Committee, which examines investment projects that are larger than a certain scale; and the Finance Strategy Committee, which discusses basic financial strategies and issues. These committees, which are held as necessary throughout the year, are in principle chaired by the president or a senior executive vice president and are attended by relevant senior vice presidents and other designated members.

A History of Strengthening Corporate Governance

2020–	Separation of the functions of managerial decision-making / supervision and business execution	2021	- Expanded ratio of performance-linked compensation: 30% → 50% - Increased number of outside directors on Nomination Committee and Compensation Committee: 2 → 3 - Transfer the existing Appointment and Compensation Committee into the separate Nomination Committee and Compensation Committee based on their application functions - Disclosed skill matrix for Members of the Board and Audit & Supervisory Board members
		2020	- Optimizing the size of the Board of Directors: 15 → 8 - Ratio of outside directors: 27% → 50% - Adoption of executive officers system Separation of the functions of managerial decision-making / supervision and business execution - Disclosure of specific KPIs for officers' earnings-linked remuneration
2018–	Further reinforcement of oversight function by enhancing diversity, advancement of disclosure	2019	- Establishment of NTT, Inc. (strengthening of the governance of the global business), appointment of three foreign-national directors - Conducting of evaluation questionnaire on the effectiveness of the Board of Directors - Commencement of ESG information disclosure in notices of convocation
		2018	- Appointment of two female directors (one inside and one outside), a Company first - Increase in the number of outside Members of the Board: 2 → 4 - Strengthening of the reflection of KPIs in performance-linked compensation - Expansion and improvement of statements regarding the compensation of directors, strategic shareholdings, succession plans, and evaluations of the effectiveness of the Board of Directors
2011–	Strengthening of information disclosure with an awareness of dialogue with stakeholders	2017	Introduction of notices of convocation that are viewable via smartphones
		2015	- Response to Corporate Governance Code - Establishment of independence standards for independent Members of the Board and independent Audit & Supervisory Board Members - Commencement of issuance of sustainability reports - Commencement of disclosure of the notices of convocation before they are sent (henceforth, 42–45 days before the date of the convening of the Ordinary General Meeting of Shareholders, in Japanese and English on the same date)
		2011	Appointment of first female corporate officer (1 outside Audit & Supervisory Board Member)
2006–	Strengthening of supervisory function and improvement of corporate governance transparency	2006	- Increase in number of outside Audit & Supervisory Board Members: 2 → 3 - Appointment of financial expert as Audit & Supervisory Board Member - Commencement of disclosure of Corporate Governance Report
		2005	- Establishment of Disclosure Committee - Establishment of Nomination Committee and Compensation Committee - Commencement of issuance of CSR reports
		2003	Increase in number of Audit & Supervisory Board Members: 4 members (2 inside members, 2 outside members) → 5 members (3 inside members, 2 outside members)
	Establishment of a foundation for corporate governance	1985	Appointment of multiple outside Members of the Board

Tax Policy

Basic Policy

All directors and employees of NTT Group have declared their commitment to complying with all laws and regulations (including their spirits), social standards, and internal company rules, whether in Japan or overseas, and acting in accordance with the highest ethical standards in both private and public activities. In tax-related operations, we also strive to maintain and enhance tax compliance by setting up guidelines and educating our employees.

1. NTT

NTT establishes the basic policy and guidelines of tax-related operations and promotes appropriate measures in cooperation with its consolidated subsidiaries. NTT strives to gather information regarding regulations, notifies subsidiaries of any changes to regulations, and supervises subsidiaries.

2. NTT's Consolidated Subsidiaries

NTT's consolidated subsidiaries fulfill their tax duties including preparing and filing tax returns, making tax payments, and dealing with tax audits appropriately in accordance with the basic policy and guidelines. NTT's consolidated subsidiaries report information and submit relevant documents to NTT as necessary.

Governance Structure

NTT has established a basic policy of internal control systems for NTT Group to deal with various risks including tax risks which has been approved by NTT's board. We define each company's roles in tax-related operations as shown on the right.

Optimizing Tax costs

NTT and its consolidated subsidiaries should strive to utilize appropriately and effectively the tax relief measures with a view to maximizing shareholder value of NTT Group. NTT and its consolidated subsidiaries shall not implement any measures which may be considered or interpreted as tax evasion by regulators.

Tax Risks

When undertaking international transactions, NTT and its consolidated subsidiaries should ensure such transactions are given due consideration in advance of execution. NTT and its consolidated subsidiaries should consult with tax advisors and seek advice as necessary. Furthermore, we have laid out the follow-

Transfer Pricing Taxation

- Prices that are applied to NTT Group's international transactions will be calculated in accordance with the laws and regulations of each country or region and the Transfer Pricing Guidelines published by the OECD and also in accordance with the "arm's length principle."
- In cases where the documentation of the price calculation method is obligatory, or where such documentation is necessary due to factors such as transaction size and potential taxation risks, we will generate the documents in an appropriate manner.

Controlled Foreign Companies Rules

- NTT and its consolidated subsidiaries shall not use a low-tax country for tax avoidance. When investing in a low-tax country for business reasons, we will make appropriate tax payments in accordance with the laws and regulations of the relevant country or region.

ing measures regarding transfer pricing taxation and controlled foreign companies rules.

Relationship with Tax Authorities

NTT Group aims to maintain good relationships with tax authorities through communication with them. All explanations given to tax authorities should be based on facts. NTT and its consolidated subsidiaries should work with them in a sincere and appropriate manner. If tax authorities were to notify NTT and its consolidated subsidiaries of tax adjustments, NTT and its consolidated subsidiaries should determine the cause of such issue(s) immediately, and take appropriate measures to prevent similar recurrences, unless NTT and its consolidated subsidiaries file a petition of objection or tax lawsuit.

Revenues (FY2019)

Revenues (billions of yen)	Approx. 12,735.5	
	Japan Approx.	10,536.7
	U.S.A. Approx.	704.5
	Germany Approx.	218.9
	Australia Approx.	134.8
	Others Approx.	1140.6

Profit before Income Tax (FY2019)

Profit before Income Tax (billions of yen)	Approx. 2,295.8	
	Japan Approx.	2,265.1
	Overseas Approx.	30.6

Taxes Incurred (FY2019)

Income Taxes Paid (billions of yen)	Approx. 436.4	
	Japan Approx.	419.0
	Overseas Approx.	17.4

Income Taxes Paid (FY2019)

Income Taxes Paid (billions of yen)	Approx. 438.1	
	Japan Approx.	400.2
	Overseas Approx.	37.9

The above amounts are based on "Country-by-Country Report" submitted to Japanese Tax Authorities, and not directly related to the Consolidated Financial Statements.

Business Activity 15

Sharing high ethical standards with business partners

Our commitment

We set high ethical standards for ourselves and share them with our business partners

Our objective

0

Cases of legal actions for anti-competitive behavior, bribery

Prevention of Bribery

Understanding that it is essential to comply with laws and regulations and to operate its business with high ethical standards, NTT Group prohibits all forms of corruption, including bribery, improper benefits and facilitation payments*¹. In particular, with respect to the prevention of bribery, NTT Group has created a “Anti-Bribery Handbook” and distributed it to employees of Group companies, including its overseas subsidiaries, and has also posted the handbook on its internal website to ensure thorough awareness.

Furthermore, for NTT, NTT East, and NTT West, bribery is prohibited pursuant to the NTT Act, and any violations are subject to legal penalties.

NTT Group CSR Conferences*²

In order to share superior CSR initiatives horizontally across the NTT Group, we have held the NTT Group CSR Conference every year since fiscal 2013. This initiative involves having each operating company implement various measures in line with the CSR Priority Activities and announce their results in a conference setting. In addition to the best measures being commended as “superior CSR measures” at the conference, the single best measure is also awarded a President’s CSR Award by the NTT Group Presidents’ Meeting.

With COVID-19 infections continuing to spread around the world, CSR Conferences for fiscal 2020 were held in an online format. There were 69 submissions by group companies in Japan and overseas, with the Grand Prize going to three of those measures.

A People’s Choice Award was created specifically for this online conference, where employees could offer

their direct support of measures submitted by each company. The People’s Choice Award was eventually given to two measures as a result of voting. The voting system was particularly valuable in increasing employee awareness as it allowed them to better understand each particular measure before submitting their vote.

In addition to holding the conference in the next fiscal year and beyond, we also aim to further spread CSR awareness among employees by improving the content of initiatives and enhancing measures that involve employee participation.

Details of successful examples are also released outside the company so that they can be viewed by business partners.

NTT Group CSR Conferences
https://group.ntt/en/csr/management/management_system/conferences_7th.html
 NTT Group activities around the world
https://group.ntt/en/csr/sustainability_action/



NTT DATA Romania and NTT Ltd. Australia won the Grand Prize in the social contribution section



NTT EAST won the Grand Prize in the CSR section

*¹ Facilitation payments: Small payments used only for the purpose of ensuring ordinary administrative services are processed smoothly

*² The name is planned to be changed to NTT Group Sustainability Conferences in the future

Social Challenge 5

Prepare for a new future with the power of technology

Business Activity

- 16. Promoting the B2B2X Model
- 17. Protection and Respect for Intellectual Property
- 18. Contribution to the Revitalization of Local Communities and Economies



Why it matters

In recent years, various social issues have come to the fore: rapid increase in the global population, growing severity of natural disasters, worsening of food supply and environmental problems, and in Japan, low birthrates and an aging population are leading to a rapid shrinking of the working-age population and shortage of labor. To solve these problems, significant social and economic transformations are being demanded in every society and economy, and the advancement of digital transformation utilizing ICT (Information and Communications Technology) is required in every situation.

What can be accomplished

As a leader in digital transformation, we will act and contribute to helping resolve the social challenges unique to each country. For example, the aging population, proper education, equitable healthcare, regional economic development, and long-term value through technology for the next generations.

Future vision

The NTT Group is committed to contributing to the development of society by acknowledging diverse cultures, and thus we will contribute to solving social issues by connecting people, goods, and cultures, including communities, nations, and society, while promoting high ethical standards, diversity, and inclusion in fair and equitable ways, and work towards creating a better workplace through powerful and new digital technologies.

Business Activity 16

Promoting the B2B2X Model

Our commitment

As a leader in digital transformation, we will act and contribute to helping resolve the social challenges unique to each country. For example, the aging population, proper education, equitable healthcare, regional economic development, and long-term value through technology for the next generations.

Our objective

Generate ¥600 billion in B2B2X revenue by 2023
(Number of B2B2X projects: 119 (current as of end of September 2021))

Policies and Concepts

In recent years, various social issues have come to the fore: rapid increase in the global population, growing severity of natural disasters, worsening of food supply and environmental problems, and in Japan, low birthrates and an aging population are leading to a rapid shrinking of the working-age population and shortage of labor. To solve these problems, significant social and economic transformations are being demanded in every society and economy, and the advancement of digital transformation utilizing ICT (Information and Communications Technology) is required in every situation.

Collaborating with companies in different industries and local governments as Your Value Partner, the NTT Group has been applying its management resources and capabilities, including human resources, research and development, and the ICT base to promote digital transformation and resolve social issues.

Going forward, we will seek to make a greater contribution to society based on our awareness that

promoting the B2B2X business model that constitutes one of the pillars of our medium-term management strategy will be particularly effective.

Organization for Implementation

The NTT Group has made promotion of the B2B2X business model one of the pillars of our medium-term management strategy and has been taking action by establishing a B2B2X Strategy Committee with the president as chairman to facilitate Group collaboration while expanding projects.

We are also deepening discussion about future deployment of the B2B2X business model at regularly held Board of Directors meetings and reporting on progress at general meetings of shareholders.

What is the B2B2X model?

B2B2X is a business model aimed at resolving social issues by creating new value through collaboration with various partners.

This business model aims to provide our part-

ner's customers (users) with new value by combining the industry expertise and customer platforms of our partners with the NTT Group's "data services" and "data management technology."

Development of B2B2X business

The model is being developed as an All NTT Group initiative in areas like (1) Advancing industry value chains (2) Providing better customer service (3) Utilization of mobile data (4) Community-based service and urban development.

Examples of value created with the B2B2X model

(1) Advancing industry value chains in sectors like agriculture, forestry and fisheries, manufacturing and construction, and logistics

Example 1 Digitalization of agricultural growth and cultivation process management

Example 2 Digitalization of manufacturing processes and machine tool management

(2) Providing better customer service in logistics, services, and financial sectors

Example 3 Digital integration into a unified channel for bank customer contacts

Example 4 Logistics branch reform utilizing digital payment and purchasing data

(3) Utilization of mobile data x company owned data (mobile cross data)

Example 5 Support for financial services credit

Example 6 Attracting more customers by harnessing data from sports teams

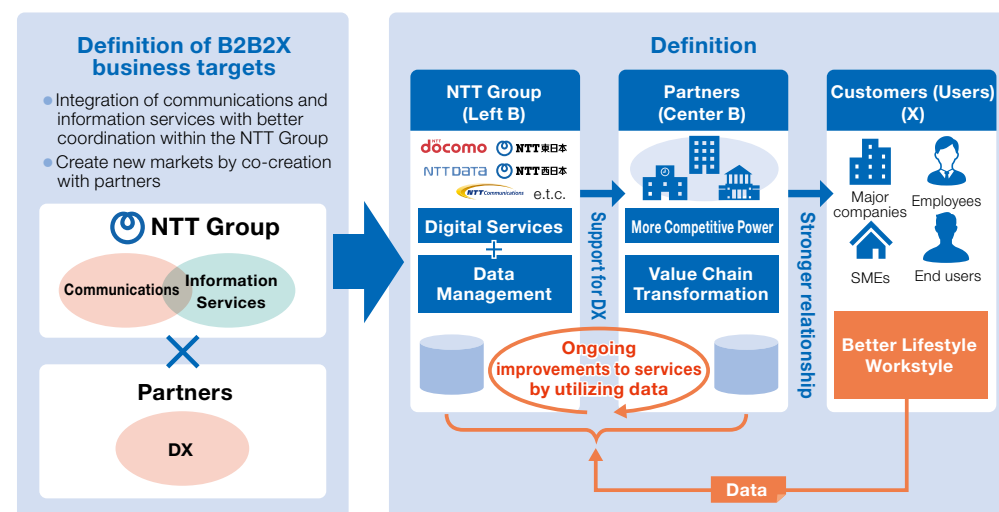
Example 7 On-demand type ride sharing services

(4) Community-based service and urban development

Example 8 Increasing business opportunities for local businesses by analyzing tourist patterns

Example 9 More efficient budgeting, transportation and logistics in communities with digitalization of snow removal work

Example 10 Using sensor data to quickly detect accidents or other incidents and minimize damage



Facilitating collaboration with partners

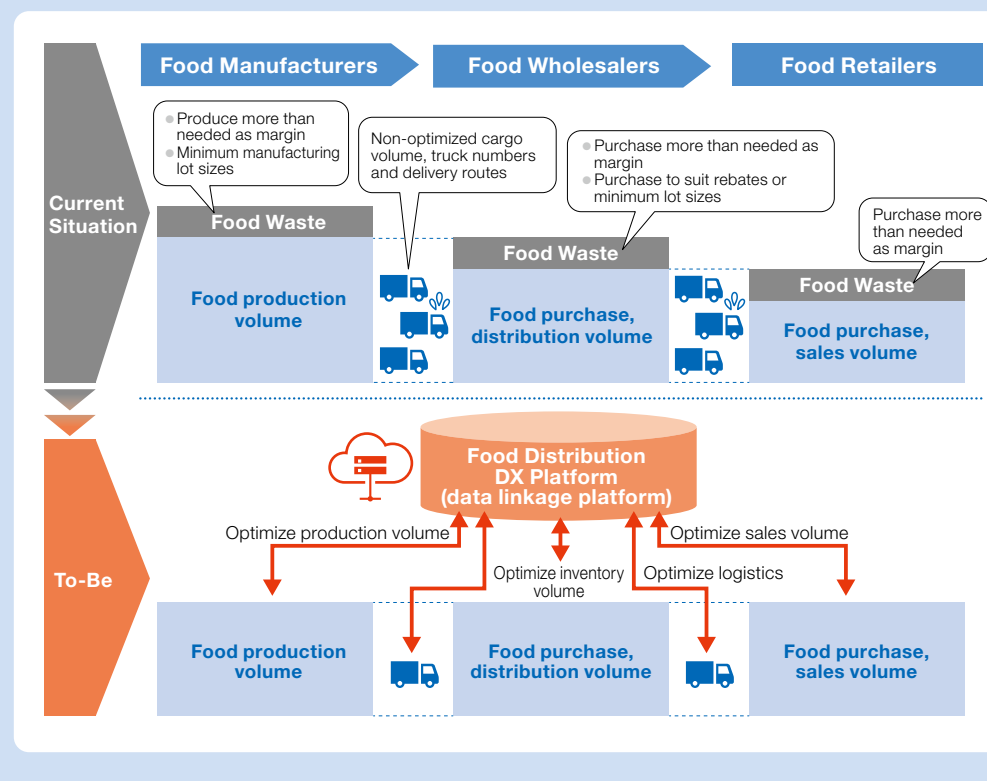
- Entered into a business alliance with Mitsubishi Corporation in December 2019 to transform industrial value chains and to generate new value through digital transformation (DX), and in July 2021 established the joint venture company “Industry One” for providing DX services.
- Agreed to form a multi-year strategic alliance with Microsoft Corporation in December 2019 to promote the creation of a Global Digital Fabric, development of digital enterprise solutions, and co-innovation of next-generation technologies to deliver secure, reliable solutions that help enterprise customers accelerate their digital transformation.
- Entered into a business and capital alliance with Toyota Motor Corporation in March 2020 to establish a long-term, ongoing cooperative relationship that enables the commercialization of businesses to realize smart cities that continue to evolve in accordance with resident needs.
- The entire NTT Group is implementing initiatives aimed at achieving regional growth and developing smart cities by working with municipalities around Japan, with examples including a Community Development Partnership Agreement, concluded with Sapporo City (2015), a Comprehensive Partnership Agreement related to joint regional initiatives concluded with Fukuoka City (2015), an Agreement for Comprehensive Collaboration for developing a super-smart society by utilizing public and private data concluded with Yokohama City and Yokohama City University (2018), and a Comprehensive Partnership Agreement for future urban development concluded with Chiba City (2019).

*1 Industry One, Inc.: Company providing cross-industry DX solutions, established as joint venture with Mitsubishi Corporation

<https://industry-one.com/>

Business Alliance with Mitsubishi Corporation

“Initiatives to Support DX in the Food Distribution Industry to Reduce Food Waste (inventory-optimization using demand forecast AI engine)”



Food waste is one of the most significant problems in today's food distribution industry, and is on the scale of a trillion yen annually. Industry One, Inc.*1 was established with Mitsubishi Corporation with the aim of reducing food waste caused by excess inventory, and will play a key role as part of an inventory optimization system that is being developed with partner companies.

Together with NTT DATA Corporation, a platform is being jointly developed that uses digital technologies to seamlessly and securely link data in various locations within and among companies, including information on retail, wholesale, and manufacturers' inventories, order receipts, demand forecasts and weather forecasts. A proprietary AI engine developed by Mitsubishi Corporation and MC Digital, Inc. was used in a proof-of-concept trial covering some 10,000 products resulted in a reduction in inventory of up to 40% at some distribution centers, while also successfully cutting down product shortages that tend to be the trade off when minimizing inventories.

More services are being planned to expand DX throughout Japanese industry as a way of contributing to sustainable development in food distribution while also achieving the UN's Sustainable Development Goals (SDGs).

Research and Development to Promote the B2B2X Model

Promoting the B2B2X business model is a central pillar of the NTT Group's initiatives contributing to the realization of a smart society. In the B2B2X model, instead of providing services to customers directly, the NTT Group supports service providers by offering ICT tools such as AI and IoT, to which various values are added before being delivered to customers. In addition, the NTT Group has been working to create B2B2X models with many partner companies and local governments. We will further develop them and advance a model that uses digital services and data management.



Initiatives

- We have been working together with Mitsubishi Heavy Industries, Ltd. to promote the transformation of manufacturing technology in the social infrastructure industry. By applying communication-grade optical fiber technology with laser processing, we have succeeded in transmitting high-power single-mode laser light, whereas, conventionally, such transmissions have been possible only up to several meters. This research success opens the door to higher efficiency and precision in laser processing while expanding applications into new fields. The technology is expected to spark innovation in manufacturing.
- Signed a multi-year partnership with Major League Baseball (MLB) in the United States as a smart sports initiative aimed at promoting NTT's latest technologies to deliver next-generation baseball viewing experience. A Proof of Concept using NTT's Ultra Reality Viewing technology (URV) was conducted in October 2019 during the post-season games of the MLB, providing the world's first successful demonstration of an immersive live-viewing experience by combining and transmitting 12K super-wide-screen video images.



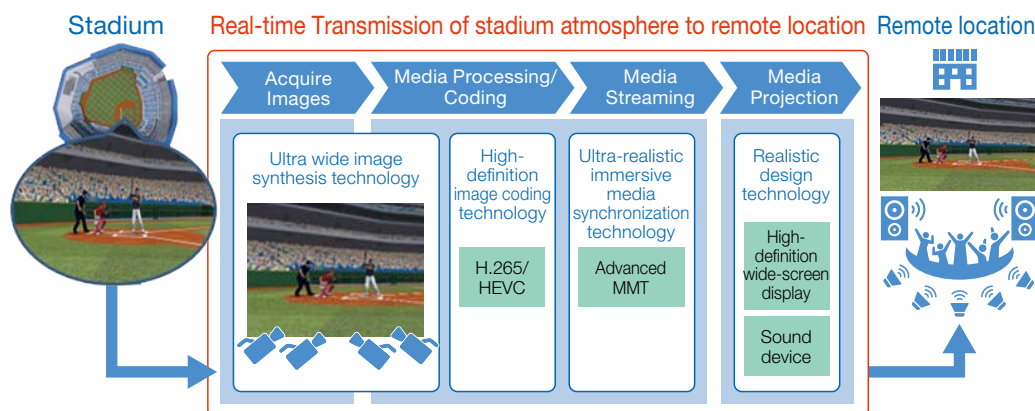
Research and Development Aimed at Achieving Immersive and Natural Worlds

NTT has further evolved its Kirari!® processing technology, which aims to create worlds that provide "just like being there," ultra-high immersion experiences in real time that can be accessed anywhere. The newly developed techniques not only enable the acquisition and transmission of the images of subjects from video broadcasts, along with 3D positioning information, but also allow them to be reproduced at the destination in a pseudo-3D display that generates the sensation that the subjects also move toward and away from the viewer. This results in the achievement of an audience experience in which the subjects appear to move in three dimensions at the destination.

For example, in a sports match, the technology

can project a pseudo-3D display of an athlete onto a stage and give a real sense of the projected athlete moving nearer or further away through synchronization with the movements of the athlete in the actual event being broadcast.

- In the ongoing migration from Public Switched Telephone Networks (PSTN), we have developed fundamental technologies that enable the use of metal cables of conventional telephone networks to connect with the IP networks operated by NTT East and NTT West (next-generation networks, NGNs) through transfer switches, which connect with other carriers through IP and migrate tandem/signal switches to IP. We will continue to pursue the initiative toward its scheduled completion.



As a Gold Partner for the Olympic and Paralympic Games Tokyo 2020, the NTT Group implemented B2B2X model using a broad range of technologies, and rolled out technology with the potential for future B2B2X.

(1) Real-time Remote Cheering Project: Delivering real-time cheers



Providing direct support to athletes despite COVID-19. The NTT Group organized the “Tokyo 2020 Real-time Remote Cheering Project,” which delivered real-time cheers from the people of Tokyo to the marathoners in Sapporo, successfully sharing space beyond distance in which even the athletes in the event venue themselves could feel the excitement, emotion, and sense of unity.

(2) Sailing: “Bring the excitement of competing on the wind and waves closer”



Until now, only binoculars or small monitors could be used to view sailing events. The sailing competition at the Olympic and Paralympic Games Tokyo 2020 was transmitted live to a massive offshore wide screen floating near the spectators' seats using Kirari!, the ultra-realistic communication technology that was used to synthesize video feeds from multiple cameras close to the competition and transmit them using 5G communications services. This provided a new way to experience spectator events with ultra-realistic, ultra-wide videos.

(3) Brand new sports viewing experience for golf with 5G x multi-live broadcasts



Harnessing the high-speed, high-capacity and low-latency capabilities of 5G communications means users can use their own device to select which video to watch from multiple live feeds of events located far away. Fans of golf have different preferences when it comes to watching events at the course, like watching from a fixed spot or follow their favorite players around the course. This project used 5G communications to transmit multiple video feeds of matches from all holes on the course as well as player score cards and other high-capacity event data, so that users could select which video to watch in real-time directly on their own device.

(4) “Supporting the Tokyo 2020 Games with science fiction-like technology”

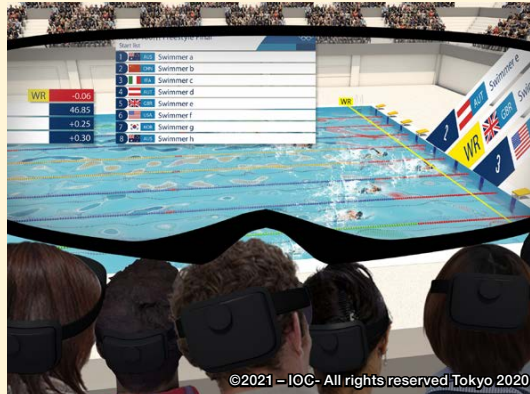


The NTT Group provided “CUzo” communication technology for AR guidance to support the management of the Tokyo 2020 Olympic and Paralympic Games, demonstrating how technology can be used for more natural and exciting multi-language communications. This technology assisted event staff during the games and helped to handle any issues or concerns athletes or tournament staff had in a smooth manner.

NTT was a Gold communications service partner of the Tokyo 2020 Olympic and Paralympic Games.



(5) 5G x AR for a brand new swimming viewing experience



Event data was streamed in real-time to users' AR devices by utilizing the low-latency capabilities of 5G technology. Event spectators wearing AR devices at venues will be able to view athlete details or times and other race information superimposed over the race playing out in front of them. Event data on sports that are decided at the one hundredth of a second level could not be transmitted with past communication technology due to issues with latency. The use of 5G communications allowed this data to be displayed in real-time, which meant spectators not only experienced the thrills directly at the venue directly, but also could also view detailed race information in a brand new type of viewing style.

(6) A new way to enjoy sports: "Badminton x Kirari!®"



NTT's Kirari!® ultra-realistic communication technology was used during badminton events at the Olympic and Paralympic Games Tokyo 2020, with networks to link up remote locations and the tournament venue in real-time. Players and shuttles were extracted from images captured at the venue, and transmitted to be displayed holographically to demonstrate this brand new way of watching badminton tournaments.

NTT was a Gold communications service partner of the Tokyo 2020 Olympic and Paralympic Games.



Technology to be hot conditions



NTT played a key role during global sporting events held throughout 2021 as it provided reliable communications environments protected by tough IT security measures. To achieve these goals, some 2,000 engineers worked as a team installing network infrastructure throughout sporting venues in August 2020. Yet there was the risk of workers suffering from heatstroke given that installation work had to be conducted in the midday sun. NTT's communication technology was utilized to provide a safe working environment for those performing installation work.

"Japan Walk Guide" accessibility and transportation guidance web app for people with limited mobility like wheelchair users



In cooperation with the Eco-Mo Foundation, the NTT Group developed the "Japan Walk Guide" accessibility and transportation guidance web app for sports venues using the barrier-free information collected by the All Japan Business Committee and the Ministry of Land, Infrastructure, Transport and Tourism (MLIT). This web app was launched by the All Japan Business Committee as a service for spectators watching sporting events and officials on July 13, 2021, with the service limited to some venues and officials. (currently not available)

Creating New Lines of Business

Initiatives in the Location Business

There is growing expectation that the connection of all things and people via the Internet will advance intellectual productivity and enhance the quality of offices and daily lives, leading to a broader use of location technologies that make this possible.

Investment in HERE Technologies

NTT will strengthen location information services as a core function of the Industrial DX Platform that is being established in collaboration with Mitsubishi Corporation. As a concrete example, we will seek to develop a service that identifies optimal distribution routes by utilizing the world's largest and most accurate location information database owned by HERE Technologies to visualize vehicle locations and operational status. We are studying alliances with logistics partners involved in home delivery (last-mile delivery) and trunk line transportation (mid-mile delivery), where demand is expected to increase, toward launching several Proof of Concept projects by the end of fiscal 2020.

Capital and business tie-up with ZENRIN

NTT entered into a capital and business tie-up with ZENRIN Co., Ltd. to expand its respective businesses in the fields of infrastructure management, MaaS and autonomous vehicles as well as smart cities and contribute to the "4D digital platform®" envisioned by NTT. Beginning in fiscal 2020, we will jointly construct a high-precision Advanced Geospatial Information Database with an abundance of location information. In doing so, we will draw on the know-how of the NTT Group in high-accuracy positioning and mapping technology as well as infrastructural maintenance and management and ZENRIN expertise in the production of maps incorporating a broad range of collected information.

Providing Services that Support Healthcare Management

In April 2020, NTT Life Science launched the "Genovision®" corporate wellness support service to help companies promote healthcare management and boost employee health. In Japan, low birthrates and the aging population have led to rising medical costs, with expenses for treating lifestyle diseases accounting for a major proportion.

Meanwhile, companies are being required to consider maintaining and improving employee health from a management standpoint and conduct healthcare management as part of their corporate management strategy. To address these needs, Genovision will help improve lifestyles optimized for each individual employee by harnessing the NTT Group's accumulated technologies in ICT and security to conduct big data analysis based on healthcare data and genomic information.

Business Activity 17

Protection and respect for intellectual property

Our commitment

As a leader in digital transformation, we will act and contribute to helping resolve the social challenges unique to each country. For example, the aging population, proper education, equitable healthcare, regional economic development, and long-term value through technology for the next generations.

Our objective

More than in the previous fiscal year

Number of patent applications per employee

Intellectual Property Management Our Approach to Intellectual Property

The business activities of the NTT Group are sustained by products and services derived from the results of our aggressive R&D. For this reason, we believe that appropriate protection and utilization of intellectual property generated by R&D is vital for the NTT Group to achieve continuous growth, which in turn will enable us to continue contributing to our customers and society at large. We strive to protect the intellectual property of the NTT Group and promote activities that respect the intellectual property of others in every aspect of our business activities.

System of Intellectual Property Management

NTT protects the results of its R&D to maintain its competitive edge but at the same time makes its intellectual property available to a wider audience by licensing technologies that would contribute to the development of industries and businesses as well as standardized technologies that are already used in society.

Under the leadership of the NTT Intellectual Property Center, NTT has established policies for intellectual property activities involving the entire NTT Group and also provides support and coordination for the use and management of intellectual properties, aggregates the opinions within the Group on the intellectual property system and disseminates information outside the Group.

Protection of Third Party Intellectual Property

In order to prevent the infringement of domestic and overseas third party rights, NTT examines the third party rights of technologies used in our business at every step from the early stage of research and development up to the provision of the developed technologies to Group companies. NTT also strives to enhance the Group's compliance with intellectual property laws and regulations in Japan and abroad and mitigate potential business risks by sharing among the Group companies information on system amendments, and trends concerning intellectual property including disputes and court cases.

NTT Intellectual Property Center
<https://www.rd.ntt/e/chizai/>

External Utilization of R&D Outcomes

Since its founding, NTT has promoted cutting edge technological development as a leading company in the information communication industry. For this reason, we own a vast number of patents.

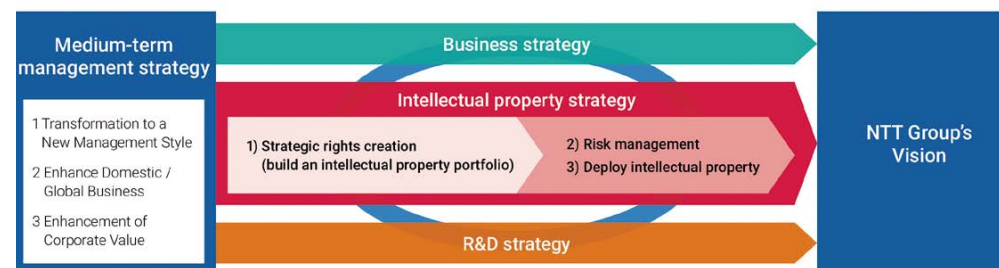
NTT licenses its proprietary technologies so that they can be used broadly by all for the benefit of the telecommunications market as well as other markets. For example, as part of our initiatives for standardization, we efficiently promote the spread of technology by licensing patents on standardizations to many companies through various patent pools.



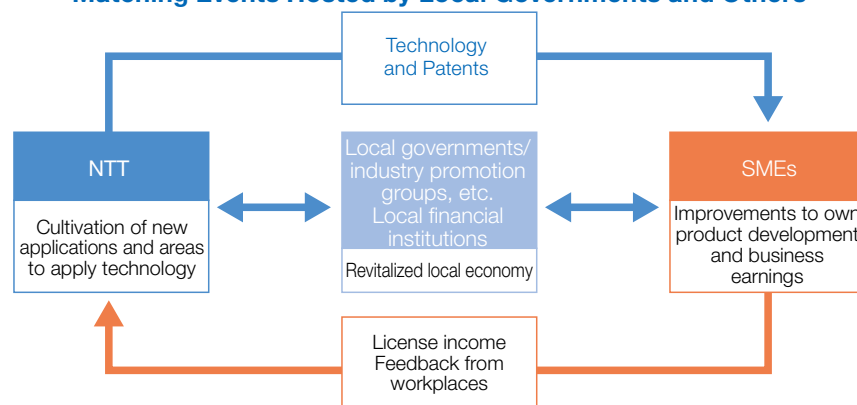
IP Open Access Declaration Against COVID-19

Recognizing the need to contain the spread of COVID-19, the NTT Group expressed its consistent support for the IP Open Access Declaration Against COVID-19 in May 2020 and declared that it will "not assert any patent, utility model, design or copyright (hereinafter referred to as the "Intellectual Property Rights") against any individual or other entity during the period starting with the date of this declaration and ending on the date on which the World Health Organization declares that the COVID-19 outbreak no longer constitutes a Public Health Emergency of International Concern, with respect to activities whose sole purpose is stopping the spread of COVID-19, such as diagnosis, prevention, containment, and treatment of COVID-19." NTT discloses its licensing policy and procedures along with detailed information on its R&D activities and technological licenses.

R&D Activity
<https://www.rd.ntt/e/>
NTT Technology Licensing Site
<https://www.rd.ntt/e/ntt-tec/>
Licensing policies and procedure
<https://www.rd.ntt/e/ntt-tec/procedure/index.html>
Participation in the "IP Open Access Declaration Against COVID-19"
<https://group.ntt.jp/topics/2020/05/29/oacvd19/>



Model for Regional Revitalization through Intellectual Property Matching Events Hosted by Local Governments and Others

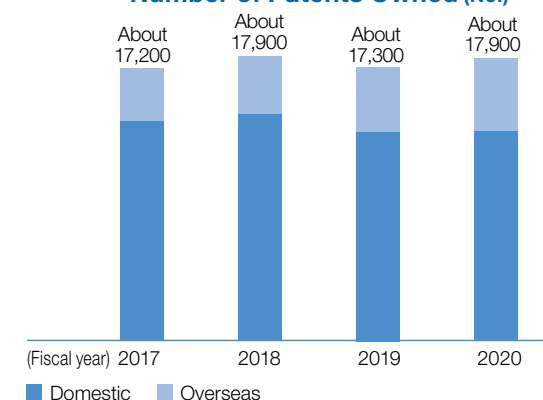


Participation in Intellectual Property Matching Events Organized by Local Governments and Organizations

In an effort to help vitalize regional business structures, we actively participate in intellectual property (IP) matching events sponsored by local governments to offer licensing agreements that enable local companies to use NTT's proprietary technologies in developing their own products. In the case of a company based in Kawasaki City, Kanagawa Prefecture, we signed a licensing agreement through a matching event organized by Kawasaki City and the Kawasaki Institute of Industrial Promotion that has enabled the company to use NTT's patented technology to provide a new service starting in 2019. We are committed to continue contributing to the vitalization of regional economies through this initiative.



Number of Patents Owned (No.)



Selected as "Clarivate Top 100 Global Innovator" for 10 consecutive years

The results of R&D, which plays a major role in the creation of intellectual property for NTT Group, has translated into ownership of approximately 17,900 patents around the world in a wide range of technological fields. NTT Intellectual Property Center is putting more effort into filing patent application in foreign countries with the intention of reinforcing the global operations of NTT Group.

Clarivate Analytics, which analyzes trends in intellectual property based on patent filings, has selected the NTT Group as a Clarivate Top 100 Global Innovator, which names the world's most innovative companies and institutions, for ten consecutive years, in recognition of NTT Group's activities and track record on this front.

Reinforce and Globalize Research and Development

Policies and Concepts

As ICT companies leading the world, the NTT Group recognizes R&D as a material issue that gives Group companies their competitive edge. R&D supports the digital transformation of our customers and lifestyle transformations tailored to individuals, and the R&D department works with operating companies to develop new technologies that provide the wellspring for new value creation in a variety of domains to enhance the NTT Group's R&D, a pillar of our medium-term management strategy.

The NTT Group seeks to overcome numerous problems involving safety, disaster readiness, and the improvement of productivity through R&D and, as a result, strengthen industrial competitiveness and resolve social issues. Since ICT is applied in a variety of fields, we are forging partnerships with counterparts in wide-ranging industries as we pursue our R&D initiatives.

Organization for Implementation

With respect to R&D undertaken by the NTT Group, NTT's three laboratory groups are responsible for conducting basic research that serves as the backbone of telecommunications, such as basic and component technologies related to services and networks, while each operating company conducts applied research that is more closely related to its business. Also, we promote general producer activities, in which we formulate marketing and business plans and forge alliances so that the results of research by NTT laboratories can be transformed into Group businesses.

In these general producer activities, we seek to develop business in a timely manner by combining the wide-ranging basic technologies of NTT laboratories with external technologies in collaboration with Group companies and with various other companies to create new services. In order for innovation to continually be an important driver of the NTT Group well into the future, we will aim to contribute to the realization of a sustainable society by promoting innovations for social issues. These efforts will include patent applications and the publication of scientific papers.

Laboratories

NTT IOWN Integrated Innovation Center	Achieving a sustainable society by mapping the world with photoelectric merging technology
	NTT Network Innovation Center
	NTT Software Innovation Center
	NTT Device Innovation Center
Service Innovation Laboratory Group	Shaping of a world in which everyone can be happy, healthy, safe, and secure
	NTT Human Informatics Laboratories
	NTT Social Informatics Laboratories
	NTT Computer and Data Science Laboratories
Information Network Laboratory Group	Creation of innovative network technologies with an eye to 2030
	NTT Network Service Systems Laboratories
	NTT Access Network Service Systems Laboratories
	NTT Space Environment and Energy Laboratories
Science and Core Technology Laboratory Group	Research on world-first and world-best innovations that will surprise society
	NTT Network Innovation Laboratories
	NTT Device Technology Laboratories
	NTT Communication Science Laboratories
	NTT Basic Research Laboratories

Research Centers in Specific Fields

NTT Machine Learning and Data Science Center	NTT Bio-Medical Informatics Research Center
NTT Research Center for Theoretical Quantum Physics	NTT Institute for Fundamental Mathematics
NTT Digital Twin Computing Research Center	NTT Nanophotonics Center
NTT Innovative Photonic Network Center	NTT Smart Data Science Center

NTT Group's Overall R&D Organization	Number of Researchers	Approx. 5,000* ¹
	R&D Expenses	¥360 billion* ²

*1 As of March 31, 2020), *2 R&D expenses and total equipment investment and expenses related to system development

Enhance and Globalize R&D

The NTT Group is advancing innovative research and development that drives change worldwide while stepping up basic research at overseas centers.

Specifically, we will use the research centers established overseas to strengthen joint research with a varied range of research bodies, actively utilize the latest external technologies, and increase investment in research on new growth fields.

We will also promote the global rollout of R&D results and globalization of research targets.

More specifically, in July 2019 we opened NTT Research, Inc., which operates three research laboratories, in Silicon Valley in the United States for the purpose of reinforcing fundamental research. We have launched a collaboration with universities and research institutes in the United States and Europe in the fields of quantum computational science, medical/health/healthcare, and basic cryptography/blockchain. We will further globalize our research and development by opening research centers in areas around the world, starting with Silicon Valley.

To concentrate efforts on IOWN research and development, we established IOWN Global Forum, Inc., a new industry forum based in the United States, together with Intel Corporation and Sony Corporation in January 2020, which expanded to include 79 member organizations as of October 31, 2021.

The creation and utilization of photonics-electronics convergence technology that combines optical and electric signals will be key to the development of IOWN. The "NTT IOWN Integrated Innovation Center" was established on July 1, 2021 in order to advance development and accelerate the creation and utilization of these technologies.

NTT also assembled researchers who are known authorities in their respective fields to

form the NTT R&D Authority Team. These researchers take part in R&D activities at NTT to contribute to the development of IOWN and help shape our vision after making this concept a reality. Specifically, they are responsible for driving research in their fields of expertise by directing, providing guidance, and advising activities regarding research themes. As one facet of our efforts to accelerate R&D from a long-term perspective, NTT established the new Institute for Fundamental Mathematics, headed by Dr. Masato Wakayama, a member of the NTT R&D Authority Team who serves as the Fundamental Mathematics Research Principal. It will work on establishing a basic theoretical framework for modern mathematics and will accelerate research towards innovation in quantum technology by challenging to uncover the basic principles behind the superior power of quantum computing. It will also seek to contribute to NTT's R&D aimed at achieving IOWN by proposing the use of modern mathematics in groundbreaking new approaches to addressing various research problems, including the elucidation of unknown diseases and the discovery of new drugs.



Promoting Other Cutting-Edge Research

- In collaboration with the Tokyo Institute of Technology, we achieved an all-optical switch that operates at ultra-high speeds while using the lowest energy consumption in the world. By combining a technology called plasmonics for guiding light into a nano-sized optical pathway with graphene, which has excellent optical properties, we achieved ultra-high-speed switching operation with low energy consumption that exceeds the potential of electronic control. We plan to utilize this technology for ultra-high-speed control of future optical integrated circuits for information processing.
- We successfully developed a method of rebuilding microscopic nerve cell fibers at a micrometer to millimeter scale by forcing graphene, a sheet of carbon material, to spontaneously adapt to a three-dimensional cylindrical structure and culturing nerve cells inside it over a long period of time. This is expected to lead to new bio-device applications such as a fundamental technology for reconstructive surgery using stem cells, a manufacturing technology for the flexible stimulation of electrodes implanted in damaged tissues, and a technology to create tissues for pharmaceutical screening.

- With large capacity optical networks expected to evolve further to facilitate the widespread use of IoT and 5G services, we are newly developing our own digital signal processing and ultra-broadband optical device technologies, and we have become the first in the world to successfully test the long-distance transmission of a wavelength division multiplexed optical signal. We also successfully used two technologies for large-volume wireless transmission, as mentioned in Business Activity 2 Increasing the Capacity of Optical Fiber Communication Networks.
- In cooperation with Hokkaido University and the City of Iwamizawa, toward achieving unmanned, fully automated operation in agricultural equipment using remote monitoring, we have started testing an optimal positioning and positional information transmission method, optimal network technology, collection of IoT device data, and AI analysis.
- NTT concluded an agreement with the Japan Aerospace Exploration Agency (JAXA) for implementing an ultra-high-speed, high-capacity, secure optical/wireless network infrastructure to seamlessly connect land and space. In preparation for merging the technologies of both entities to create social infrastructure, the two parties are undertaking joint research in areas such as optical wireless communications in space, next-generation Earth observation, and communication between ground stations and low Earth orbit satellites.
- As part of our efforts to enable communications beneath the surface of the sea where radio waves cannot easily penetrate, we achieved subsurface communication speeds of 1 Mbit/s, a double-digit improvement over current levels by using ultra-sound MIMO multiplexing technology to overcome variations in the subsurface propagation path.

NTT Research and Development
<https://www.rd.ntt/e/>

Business Activity 18

Contribution to the revitalization of local communities and economies

Our commitment

As a leader in digital transformation, we will act and contribute to helping resolve the social challenges unique to each country. For example, the aging population, proper education, equitable healthcare, regional economic development, and long-term value through technology for the next generations.

Our objective

97%

Development rate of 5G infrastructure maintenance (by FY2023)

Contributing to the Vitalization of Regional Societies and Economies

- NTT ArtTechnology Corporation was established in December 2020 to protect various tangible and intangible cultural and artistic assets, and to promote the appeal of regions both domestically and abroad by broadly spreading new online-based styles of cultural and artistic appreciation.
- Provided a simple and secure online storage service for SMEs. "Cowork Storage" was released in March 2021 to provide a more flexible and extensive service with file sharing functions to build secure computing environments, and used in a similar way to NAS or file servers.
- Established Co-Designing Institute for Polyphonic Society in July 2021 to promote regional vitalization by providing consulting services aimed at supporting the activities of municipalities, companies, organizations and other associated groups (local communities, public private partnerships) that are facing issues achieving revitalization at a local level.
- Established NTT EDX in October 2021, for improving higher education with the aim of developing an educational ICT platform and other electronic textbook and online learning services.

Advancing Personalization by Supporting the Transformation of Lifestyles

We support customers as they transform ever-diversifying lifestyles by providing personal solutions centered on DOCOMO that closely align with individual needs. Subscribers**1 to Gigaho and Gigalight, which are simplified and reasonable billing plans introduced in June 2019, totaled 17.87 million as of the end of June 2020.

In terms of service, we are enhancing electronic payment and contents while utilizing AI and big data to improve communication with every customer.

Promoting Digital Transformation

We are raising operational efficiency by introducing robotic process automation (RPA)**2. The operational process has been adopted in approximately 2,900 cases within the NTT Group as of the end of June 2020. We are also recommending the use of RPA among our customers, and more than around 5,200 of them have adopted the process as of the end of June 2020. We also sought to advance our Group management by actively introducing a unified enterprise resource planning (ERP)**3 system for our personnel, finance, and procurement operations.



Initiatives for the Realization and Deployment of 5G

We launched our commercial 5G services in March 2020, and we will provide billing plans such as 5G Gigaho and 5G Gigalight, seven types of 5G devices, services in the gaming, music and sports genres, and solutions that contribute to advancing industry and driving digital transformation.

Furthermore, we are promoting initiatives that will increase convenience and enrich people's lives by creating new value and offering solutions for social issues toward our goal of introducing 5G services in more than around 500 cities by the end of fiscal 2021.

*1 The number of subscribers is the combined total for the Gigaho, Gigalight, 5G Gigaho, 5G Gigalight, Keitai Plan, Kids Keitai Plan, Data Plus and 5G Data Plus billing plans.

*2 Solution for automating operations previously handled by humans by establishing procedural rules to replace humans with robots.

*3 Management method for implementing centralized management of corporate resources to achieve optimization across the entire company.

Initiatives for Universal Design^{*1}

The NTT Group actively encourages the broader adoption of universal design, which ensures that products and services are easy for all customers to use, regardless of age, gender or physical abilities.

Examples of Universal Design Products and Services in Fiscal 2020

- Oshaberi Annaiban, an AI-based information board capable of engaging in natural conversation
- Smart Room Mimamori, a system for monitoring elderly citizens
- Home Currency Anywhere, which allows consumers to use their own country's currencies anytime, anywhere
- Face Sharing, a technology that reproduces the mouth movements and facial expressions of someone else onto the user's own face
- Small self-driving mobility technology and free rental service for next-generation electric wheelchairs

^{*1} Products and services that can be used by senior citizens, children, persons with disabilities, and foreign visitors facing language barriers (includes expanded functions)

Establishment of the NTT Group Web Accessibility Policy

The NTT Group is working to ensure and improve the accessibility of its websites for a wide spectrum of customers, including senior citizens and persons with disabilities. Specifically, the Group established the NTT Group Web Accessibility Policy. The policy for official websites of the Group companies with head office functions in Japan is set according to JIS X 8341-3:2016*1 and each works to comply*2 with Level AA.

NTT Group "Web Accessibility" Initiatives
<https://group.ntt.jp/accessibility/>

User-Friendly Service Lineup

We offer a broad range of discount services for various users, including senior citizens and persons with special needs, to facilitate access to ICT services.

Special discounts on dedicated lines for educational facilities (NTT East and NTT West)

Since January 2001, NTT East and NTT West have offered special fees for schools on FLET'S services suitable for using the Internet at a fixed sum in an effort to promote educational use of the Internet.

NTT EAST
<https://business.ntt-east.co.jp/service/schoolplan/>
NTT West
<https://flets-w.com/limited/school/>

Discounts on mobile phone use for persons with special needs (NTT DOCOMO)

NTT DOCOMO offers the Hearty Discount programs for encouraging more social participation by persons with disabilities.

Examples of Hearty Discount Programs

- DOCOMO's GIGA plans ➡ **1,370 yen discount** (rate plan for subscribers after October 1, 2019. includes discount for sp-mode usage)
- Voice options ➡ **700 yen discount**
- Monthly fees on various services such as voice mail ➡ **60% discount**
- Video phone call charges ➡ **Set at same level as voice call charges**
- Charges for some subscription options ➡ **No charge**
- Support for setup of smartphones etc. ➡ **No charge**
- Dialing and obtaining information via 104 directory assistance ➡ **No charge**

<https://www.nttdocomo.co.jp/charge/discount/hearty/about/index.htm>

*1 JIS X 8341-3:2016: "Guidelines for older persons and persons with disabilities—information and telecommunications equipment, software and services— Part 3: Web content" of Japanese Industrial Standards

*2 Refers to compliance with the description defined in the "Compliance Performance Announcement Guidelines for JIS X 8341-3:2016. March 2016 Edition (published on March 22, 2016)" of the Web Accessibility Infrastructure Committee, Info-communication Access Council. This means that we have established and disclosed an accessibility policy and confirmed that the pages fulfilled all the requirements through the tests implemented and based on JIS X 8341-3:2016.



Mieru Denwa Speech-Text Cheering Service

We provided a new way for fans to send their support to athletes, by converting audio of their "cheers" to text.

NTT DOCOMO's "Mieru Denwa" service, which converts speech of the person on the phone to text in real time, was utilized to convert messages of support sent from all around Japan with the speech recognition function and shown on the display in the Olympic village plaza (in 8 languages).

This service was initially developed to assist with communications of users with hearing impairments, and was applied during the games to send messages of support to athletes staying in the Olympic village. This project maximized the feature of communications technology that allows people in remote locations to communicate with others in a non-contact manner, and has even been proposed as a new way of supporting athletes during events after COVID-19 subsides.



NTT was a Gold communications service partner of the Tokyo 2020 Olympic and Paralympic Games.

Tokyo 2020 Gold Partner (Telecommunications Services)

Policies and Concepts to Pursue Customer Satisfaction

The NTT Group serves various customers, from general consumers to corporate customers, providing a broad range of products and services.

Its main business fields, the telecommunications and ICT industries, continue to innovate, producing new products and services. Mobile devices such as smartphones and tablets continue to evolve almost daily, giving rise to a number of new services utilizing the NTT Group's network. At the same time, with the evolution of technology and services, the amount of information needed to use them has increased, and this has also increased opportunities for us to receive various confirmations, inquiries, feedback and requests from customers with regard to device malfunctions and questions about various fees and services.

The NTT Group believes that resolving customers' concerns or questions about the services they use and maintaining a high level of satisfaction for all customers will foster a relationships of trust with customers and lead to the acquisition of new customers.

Organization for Implementation

The NTT Group companies have built a system for making operational improvements that will lead to reductions in the time taken to respond to customers, enhancing products and services, and influencing development based on the voice of customers received through surveys, the Customer Services Center, and other departments. In turn, we work toward developing and providing services closely in tune with the voice of our customers. Specifically, we work continuously to improve our year-over-year results for the KPIs of the reduction in waiting and customer service times at DOCOMO shops, the number of improvements made based on suggestions from customers, and the response rate of our call centers, which will give rise to a positive cycle of improvement.

The NTT Group will keep on making efforts to raise the level of customer satisfaction, including service quality and on-site responsiveness required by customers, in conjunction with the business operations of individual NTT Group companies.

Main Initiatives

Customer Contact Points

Each Group company has set up a call center that responds to customer inquiries on products and services, requests for repairs, and complaints. Major call centers of the NTT Group receive over 180,000 calls each day and endeavor to respond promptly to customers. Each call center has set its own targets aimed at improving response rates and enhancing the quality of responses and support. They also engage in various efforts including telephone response competitions and training to enhance skills for providing better responses.

COVID-19 Outbreak and Support for Customers

In March 2020, NTT Group companies announced their policy of extending payment dates upon request from customers facing difficulties in paying for services on time, and this policy was extended through to the end of November 2021.

Recognizing that the government's stay home request created an environment that made it difficult for customers to use their d POINTS, NTT DOCOMO decided to reactivate d POINTS that

expired between March and May 2020 and award them to customers, effectively extending their expiration dates.

In light of schools implementing remote classes and online education, a partial waiver of data communication fees was announced to support the use of smartphones for online learning. NTT Group companies have also been supporting telework, education, and health by setting up customer contact points and providing some services free of charge as initiatives. At the same time, the NTT Group has been using the way cell phones connect to analyze demographic changes caused by government policies addressing the spread of COVID-19 and providing information to central and local governments and the media.

Reflecting the Voice of Customers

The NTT Group listens to the voice of its customers, including their opinions and requests, through its call centers. Each Group company has constructed a system for reflecting the voice of customers in making operational upgrades and improving and developing products and services, and they are making an active effort in related activities as well.

For example, NTT Communications collects the voice of customers through various contact points in an effort to reinforce initiatives for enhancing services and improving operational processes. This includes not only annual surveys, but also soliciting customer feedback at the time of application and during various support processes.

For more information on these initiatives, please refer to each company's website, Sustainability Report, and other materials.

NTT East "Service with a Smile" activities
<http://www.ntt-east.co.jp/smile/>

NTT West "Customers First" activities
<https://www.ntt-west.co.jp/withc/>

NTT Communications "For Increased Customer Satisfaction"
<https://www.ntt.com/about-us/cs>

NTT DOCOMO "Initiatives That Utilize Feedback from Customers"
<https://www.nttdocomo.co.jp/support/cs/case/index.html>



"Mobile Spatial Statistics®"

A new approach to population statistics capable of monitoring Japan's entire population 24-hours a day, all year round, based on service data of around 82 million*1 DOCOMO subscribers. As society moves toward a new type of lifestyle aimed at avoiding crowded places due to the increase in COVID-19 infections, DOCOMO InsightMarketing, Inc. released the Mobile Spatial Statistics Population Map from May 2020, which showed the nationwide distribution of people in real-time. This technology was used by countless people and helped to prevent the spread of COVID-19 infections.

*1 As of the end of March 2021, excludes corporate and other contracts.

Social Challenge 6

Moving towards a safe, secure, and resilient society

Business Activity

- 19. Ensuring the stability and reliability of services
- 20. Strengthening information security and personal information protection
- 21. Contribution to the revitalization of local communities and economies



Why it matters

As a company that supports the vital infrastructure of a digitalized society, the NTT Group believes one of its responsibilities is to make use of technology to keep people safe and secure from the major threats of this century: epidemics, natural disasters, and digital disasters like cyber-attacks.

What can be accomplished

As a company that supports the vital infrastructure of a digitalized society, we will make full use of technology to keep people safe and secure from epidemics, natural disasters, digital disasters like cyber-attacks, and achieve a more resilient society.

Future vision

The NTT Group is committed to contributing to the development of society by acknowledging diverse cultures, and thus we will contribute to solving social issues by connecting people, goods, and cultures, including communities, nations, and society, while promoting high ethical standards, diversity, and inclusion in fair and equitable ways, and work towards creating a better workplace through powerful and new digital technologies.

Business Activity 19

Ensuring the stability and reliability of services

Our commitment

As a company that supports the vital infrastructure of a digitalized society, we will make full use of technology to keep people safe and secure from epidemics, natural disasters, digital disasters like cyber-attacks, and achieve a more resilient society

Our objectives

0

Number of major accidents

99.99%

Stable service provision rate

Policies and Concepts

As a corporate group with the mission of serving society by sustaining telecommunications infrastructure in normal times, the NTT Group is committed to building highly reliable telecommunications networks that connect people anytime, anywhere. Since telecommunications takes on a greater importance in the event of a disaster, we endeavor to secure the means of communication necessary for maintaining public order and for rescue and restoration operations at times of disasters, and for emergency communications, such as 110, 118, and 119. Japan is a country particularly prone to natural disasters such as earthquakes and typhoons. The importance of telecommunications networks was reaffirmed by the devastating Great East Japan Earthquake. Facing the possibility of an earthquake directly underneath Tokyo or the Nankai Trough off Japan's southern coastline, there is a pressing need for society to prepare for such potential disasters while ensuring the stability and reliability of its telecommunications infrastructure.

The NTT Group has defined three key themes for disaster countermeasures: securing critical communications, prompt restoration of telecommunications services, and improving network reliability. We have been strengthening efforts based on these themes since the Great East Japan Earthquake. We have also included Disaster Countermeasure Initiatives in our medium-term management strategy and are making a focused effort to further reinforce the communications infrastructure, seek proactive disaster response, and adequately provide information to the affected people.

Organization for Implementation

Five Group companies—NTT, NTT East, NTT West, NTT Communications, and NTT DOCOMO—are designated public institutions under the Basic Act on Disaster Control Measures. Accordingly, based on this Act, in preparation for a disaster, the NTT Group has formulated the Disaster Management Operation Plan for the purpose of smooth, appropriate implementation of measures to prevent damage. Each company has prepared their respective Disaster Management Operation Plan by organizing response efforts that are mobilized at the time of a disaster in a manner proportionate to the scope and circumstances of the situation. At the same time, we will maintain close contact with the relevant government institutions to ensure a smooth and appropriate recovery from the disaster and secure critical communications.

We are also taking measures in normal times

to improve the reliability of our telecommunications infrastructure. To ensure that our telecommunications services operate without interruption at all times, we employ transmission trunk line multi-routing, have enacted blackout countermeasures for telecommunications buildings and base stations, and are making telecommunications buildings more quake-proof. In addition, we are expanding the assortment of power supply vehicles and other disaster response equipment that we have positioned throughout Japan and are repeatedly conducting training to prepare for major natural disasters. We are making a daily effort to secure the necessary emergency and critical communications.

NTT Group Disaster Management Operation Plan
<https://group.ntt.jp/disaster/plan/>



Main Initiatives

Securing Critical Communications

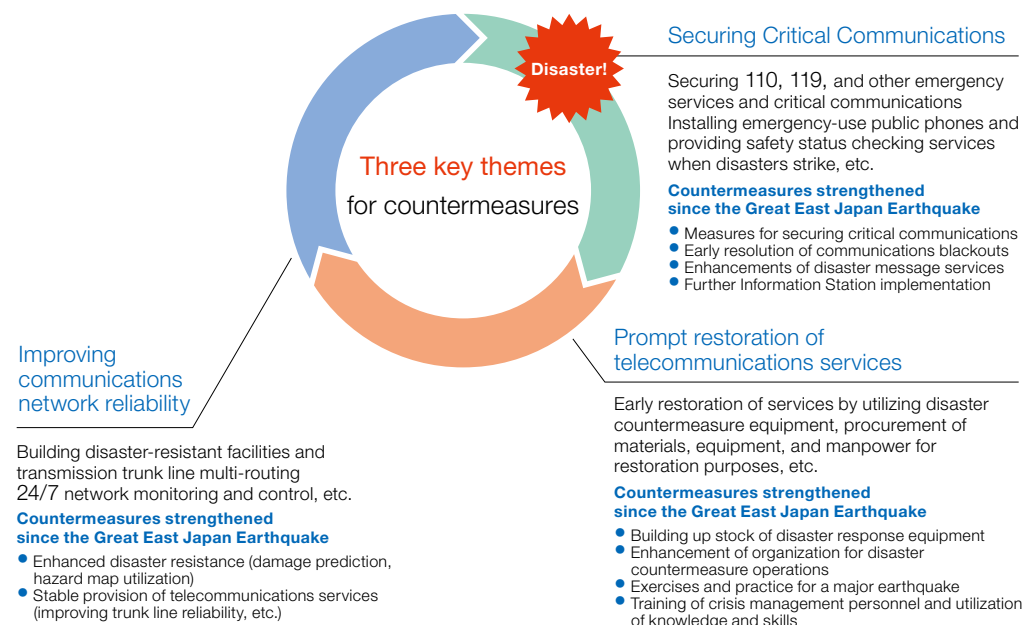
To secure necessary communications in the event of a disaster, the NTT Group is implementing various response measures, including the installation of emergency-use public phones, a mobile phone lending service in affected areas, and providing means to confirm the safety of people in affected areas. We simultaneously install multiple lines to secure connections to the headquarters of the police department, fire department, and coast guard to prepare against the possibility that the 110, 119, and 118 emergency call services may be damaged.

A major disaster could also lead to social disorder, such as the disruption of transport systems.

In such an event, we would consider the overall situation, including whether other telecommunications carriers have put restrictions on mobile and fixed line phones and, if necessary, offer the use of public phones for free.* We will not charge carriers for which we have set call fees and will not settle payments between carriers for which we have set connection fees. For the specific names of carriers, please refer to the following websites. (Japanese only)

Free charge public phone policy for areas covered by NTT East
<https://www.ntt-east.co.jp/info-st/saigai/>

Free charge public phone policy for areas covered by NTT West
<https://www.ntt-west.co.jp/ptd/basis/disaster.html>



Providing Services for Easy Safety Status Checking and Information Gathering When Disaster Strikes

The NTT Group launches and provides the following services to enable people to confirm the safety of relatives and friends in areas hit by a major disaster that has disrupted phone connections.

When we launch these emergency services in the event of a disaster or other contingency, we promptly inform our customers through the mass media, website, and other means.

By integrating the Web 171 Disaster Message Board with the Disaster Message Board Service for mobile and PHS phones (i-mode/sp-mode), we have also made it possible to conduct one-stop searches spanning both services from the companies providing those services. There are additional functions for notifying designated contacts by e-mail or voice when safety status information is posted.

We are continuing to make improvements, such as by offering support in English, Chinese, and Korean for the Web 171 Disaster Message Board, and in English for the Disaster Message Board Service (i-mode/sp-mode), increasing the number of messages that can be posted and extending message storage time.

With regard to the Web 171 Disaster Message Board, NTT East, and NTT West agreed to collaborate with the disaster message boards operated by NTT DOCOMO, KDDI, and SoftBank to allow users to check each other's messages left with these carriers since August 2019.

Main Services

- 171 Disaster Emergency Message Dial
We store recorded voice messages left by users to confirm the safety of those in affected areas
- Web 171 Disaster Message Board
We store text messages left by users via the Internet
- Disaster Voice Messaging Service (i-mode/sp-mode/mopera U)
We deliver voice messages reporting the status of personal safety via mobile phone
- Disaster Message Board Service (i-mode/sp-mode)
We store text messages left by users via mobile phone

Securing the Stability and Reliability of Telecommunications Services

The NTT Group is devoted to early restoration of telecommunications services by deploying and enhancing the functions of mobile power supply vehicles, portable satellite equipment, and other mobile equipment as well as participating in disaster drills held in the respective regions. The NTT Group endeavors to build disaster-resistant communications infrastructure and maintain and operate it in a way that ensures its proper functioning at all times by conducting regular safety patrols, replacing devices as a preventive maintenance measure, and other such means, in an effort to develop disaster-resilient communication networks and equipment.

Ensuring the Disaster Resistance of Telecommunications Equipment

We also strive to enable telecommunications equipment housings, pylons, and other facilities to withstand contingencies such as earthquakes, storms, flooding, fire, and power outages in accordance with predetermined design standards.

Main Measures

- NTT's telecommunications buildings and pylons are designed to withstand earthquakes of a seismic intensity of 7 on Japan's intensity scale and 60 m/sec winds experienced during the strongest typhoons
- Our facilities are equipped with flood doors and other defenses according to location to prevent inundation of telecommunications equipment by tsunamis or floods
- We equip our telecommunications equipment rooms with fire doors or shutters
- Our telecommunications buildings and wireless base stations are fitted with backup power sources to keep them running for extended periods in the event of sudden power outages
- As a further fallback, power supply vehicles can be hooked up to them to supply power
- We use trunk line multi-routing to ensure that our telecommunications services operate without interruption at all times
- We deploy large-zone base stations capable of covering wide areas during disasters and other emergency situations
- We install emergency power supply fuel tanks



Increasing the Resilience of Equipment and Speeding Up Our Response

In recent years, disasters of greater magnitude have had significant impact. To address the increased impact on telecommunications equipment and services, as well as the longer time required to resume operations, we are also promoting additional initiatives toward such goals as increasing the resilience of our equipment and speeding up recovery.



Main Initiatives for Increasing the Resilience of Telecommunications Equipment

- Expansion in medium-zone base stations equipped to deal with disasters, such as blackout countermeasures
- Blackout countermeasures that use electric vehicles at base stations
- Centralized management and mobilization of approximately 400 power supply vehicles owned by the NTT Group
- Consideration of underground installation of power transmission cables and use of fixed line phones to deal with the impact of disasters

Initiatives for Maintaining Stable Telecommunications Services

- Operational system for monitoring and controlling the status of network operations on a real-time basis, 24-hours a day, 365 days a year
- Collection and analysis of performance data for telecommunications equipment under ordinary circumstances to identify and deal with signs of failure
- Application of lessons learned from past accidents to similar cases and thorough reinforcement of standard procedures based on an analysis of cases that may result in serious accidents
- Implementation of training and drills and development of related mechanisms for fostering personnel handling network maintenance and operations

Main Initiatives for Speeding Up Service Recovery

- Advanced launch of recovery framework (national wide-area support system and other frameworks) based on damage prediction using AI
- Reinforcement of the recovery framework and recruitment of personnel, including the use of retired NTT employees

Initiatives for Bolstering Support for Disaster Victims

- Delivery of realistic and concise information, including status of damage to communications, status of recovery, location of charging stations, public phones in operation during disasters, information for visitors and foreign residents, and more to support evacuation and other activities
- Response to consultations on problems related to communications through emergency 113 call centers dispatched to affected areas

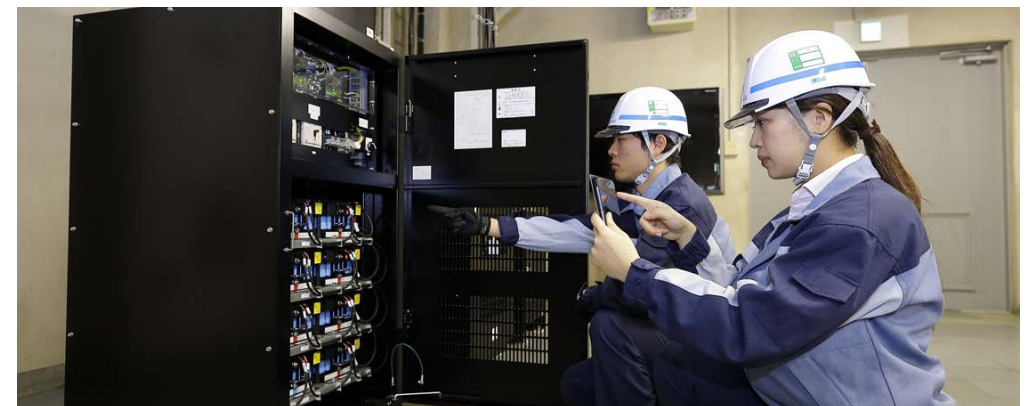
- Collaboration with local governments and other public offices for installing Wi-Fi and charging stations inside public phone booths to secure telecommunications during a disaster

Providing Stable Telecommunications Services in Normal Times

To consistently provide secure telecommunications services to our users, the NTT Group operates a system for monitoring its telecommunications networks, implements measures for preventing accidents and failures, and works to enhance the skills of personnel responsible for network maintenance and operations.

Providing Stable Telecommunications Services to Address a Large Spike in Demand Due to the COVID-19 Pandemic

NTT and its major subsidiaries in the telecommunications business have formulated operation plans to execute their responsibilities as designated public institutions and contribute to preventing infections from the standpoint of respecting human life. The spread of infections has been accompanied by an increased demand for Internet use and telework, significantly increasing data traffic, particularly between stationary communication terminals during daytime weekdays. The NTT Group companies have designed their existing networks to meet peak nighttime traffic and are currently capable of providing network capacity for daytime traffic. We will continue to bolster our equipment to deliver stable telecommunications services.



Operation of mobile phone base stations and terminals (NTT DOCOMO)

For more than 60 years, research has been conducted worldwide on the impact of radio waves on the human body. As a result, standards and systems have been put in place for the safe use of radio waves not only in Japan, but around the world, too.

In 1990, Japan's Ministry of Posts and Telecommunications (presently the Ministry of Internal Affairs and Communications) established its own Radio Radiation Protection Guidelines for Human Exposure to Electromagnetic Fields (RRPG) as a set of reference values for the safety of radio waves on the human body based on the results of research conducted over the preceding 40 years both inside and outside Japan. The reference values of these guidelines are the same as those recommended by the World Health Organization (WHO). Radio waves below these reference values are recognized internationally as having no adverse effects on health.

Mobile base stations and terminals of NTT DOCOMO are operated at levels lower than the reference values of the RRPG. Services are provided in compliance with related laws and ordinances incorporating the RRPG, which ensures DOCOMO mobile phones can be safely used.

NTT DOCOMO Radio Wave Safety
<https://www.nttdocomo.co.jp/corporate/csr/network/radio/safe.html>

Social Contribution Coordination Agreement with KDDI

On September 11, 2020, NTT formed a social contribution coordination agreement with KDDI to begin mutual cooperation for the joint utilization of ships transporting necessary supplies in the event of large-scale disasters, as well as joint disaster preparedness drills and awareness-raising activities.

Building resilient social infrastructure through these initiatives has the goal of developing a sustainable society. In addition to disaster countermeasures and job assistance, NTT and KDDI will coordinate efforts to identify areas that can benefit from the mutual use of assets of both companies, such as the sound use of smartphones and addressing climate change.



Cooperation with mutual utilization of ships owned by both companies for faster restoration

KDDI cable laying ship KDDI OCEAN LINK



NTT cable laying ship KIZUNA



Stable and Reliable Telecommunications Services in Preparation for Large-Scale Disasters

NTT Group has defined three key themes for disaster countermeasures—improving the reliability of communications networks, securing critical communications systems, and promptly restoring telecommunications services. We have been strengthening efforts based on these themes since the Great East Japan Earthquake.

Specifically, we are taking measures to improve the reliability of our telecommunications infrastructure. To ensure that our telecommunications services operate without interruption at all times, we employ transmission trunk line multi-routing, have enacted blackout countermeasures for communications buildings and base stations, and are making communications buildings more disaster resistant. In addition, we are expanding the assortment of power supply vehicles and other disaster response equipment that we have positioned throughout Japan and are continuously conducting training to prepare for major natural disasters. Furthermore, we are making a daily effort to guarantee that, in the event of a disaster, we are able to immediately set up a Disaster Countermeasures Office, implement other emergency preparations, and make the necessary emergency and critical communications as a public institution as designated by the Basic Act on Disaster Control Measures.

In recent years, natural disasters have been becoming more frequent and causing wider, bigger, and more lasting damage. Recognizing the potential for natural disasters to have greater impacts on telecommunications facilities and services and for recovery efforts to be prolonged, NTT is increasing the resilience of its facilities and taking steps to expedite recovery efforts.

Disaster-Resilient Networks and Equipment

Damage from natural disasters is becoming increasingly common in recent years as climate change causes more frequent instances of heavy rains, frequent typhoons, and other natural disasters. As a result, there is a growing risk of water and lightning damage and power outages, which now threaten to cause extensive damage should they occur. NTT is committed to building disaster-resilient networks and equipment to ensure that it is able to provide reliable communications services even in the event of a large-scale natural disaster.

Flooding Countermeasures at Communications Buildings

NTT implements countermeasures to prevent flooding at communications buildings as a result of tsunamis, floods, or other natural disasters. These measures include replacing doors with more durable, water-resistant doors, sealing windows and other gaps, and reinforcing walls with concrete to ensure they can withstand the force of tsunamis.

Past Initiatives

1 Improve Communications Network Reliability

- Employ transmission trunk line multi-routing
- Install large-zone base stations
- Build disaster-resistant facilities

2 Secure Critical Communications Systems

- Secure 110, 119, and other emergency services
- Provide tools to check safety status (171)



3 Promptly Restore Services

- Deploy disaster countermeasure equipment (power supply vehicles, portable satellite equipment, etc.)
- Procure and convey materials and equipment for restoration purposes
- Use drones

Lessons from the Great Hanshin-Awaji Earthquake and the Great East Japan Earthquake

Further Efforts

Major Facility Resilience Initiatives

- Expansion in medium-zone base stations equipped to deal with disasters, such as blackout countermeasures
- Blackout countermeasures that use electric vehicles at base stations
- Centralized management and mobilization of approximately 400 power supply vehicles owned by the NTT Group
- Consideration of underground installation of power transmission cables and use of fixed line phones to deal with the impact of disasters

Main Initiatives for Speeding Up Service Recovery

- Advanced launch of recovery framework (national wide-area support system and other frameworks) based on damage prediction using AI
- Reinforcement of the recovery framework and recruitment of personnel, including the use of retired NTT employees

Initiatives for Bolstering Support for Disaster Victims

- Delivery of realistic and concise information to support evacuation and other activities (status of damage to communications, status of recovery, location of charging stations, public phones in operation during disasters, information for visitors and foreign residents, etc.)
- Response to consultations on problems related to communications through emergency 113 call centers dispatched to affected areas
- Collaboration with local governments and other public offices for installing Wi-Fi and charging stations inside public phone booths to secure telecommunications during a disaster

Disasters causing wider, bigger, and more lasting damage

Blackout Countermeasures at Communications Buildings and Base Stations

Communications buildings and wireless communications base stations are equipped with batteries, engines, and other auxiliary power supplies that can be used as a prolonged source of electricity in the event of a blackout. Moreover, we are enacting the lessons learned from the Great East Japan Earthquake by implementing blackout countermeasures for engine generators and having batteries available for use around the clock at its roughly 1,900 base stations in important areas, such as those where municipal disaster response headquarters or city offices are located.

Transmission Trunk Line Multi-Routing and Distributed Location of Important Communications Buildings

Our nationwide network of trunk lines has been designed to secure communications and prevent disruption of services over the network as a whole by automatically diverting transmission through other routes when a certain route is damaged.

Meanwhile, if communications buildings (important communications buildings) fitted with transit switches suffer disaster damage, communications via such buildings may be severed. Distributing important communications buildings in different locations helps avoid the risk of multiple buildings suffering disaster damage at the same time.

Prompt restoration of telecommunications services

Should a disaster strike, swift action will be taken to restore service via the utilization of mobile disaster response equipment and the use of drones to confirm the situation.

Disaster Response Equipment

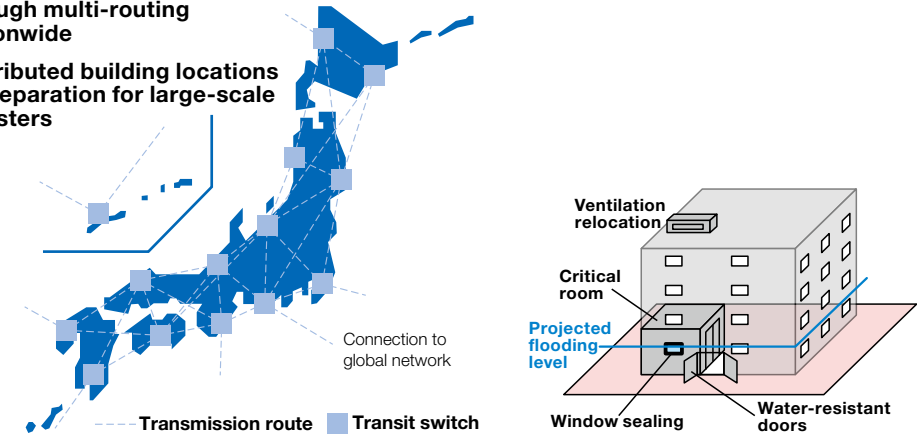
NTT has positioned mobile base stations and power supply vehicles across Japan that can be quickly deployed to disaster sites should a wireless communications base station be damaged by a disaster. Moreover, we have adopted off-shore base stations comprised of mobile communications base stations mounted on ships. Should a tsunami or other disaster knock out service over a wide spread of coastal area, we can provide service by using entrance satellite lines to transmit signals to the coastal areas from anchored ships.

Disaster Site Confirmation with Drones

When damage to roads or other conditions prevent us from reaching base stations, drones will be deployed to confirm the status of the site and facilitate the quick restoration of service thereafter.

Improvement of reliability through multi-routing nationwide

Distributed building locations in preparation for large-scale disasters



Large-scale power supply vehicle for powering communications buildings



Business Activity 20

Strengthening
information security
and personal
information protection

Our commitment

As a company that supports the vital infrastructure of a digitalized society, we will make full use of technology to keep people safe and secure from epidemics, natural disasters, digital disasters like cyber-attacks, and achieve a more resilient society

Our objective

0
Number of service suspensions due to cyber attacks (annual)

Reinforce information security

Policies and Concepts

With the progressing digitalization of society and the economy and changes in international circumstances, security threats are becoming more serious and sophisticated, particularly cyber-attacks. Within this environment, the NTT Group has a responsibility to protect ICT service infrastructure and customers' basic rights, freedoms, and information assets, as well as to provide a sound foundation for the growth of the digital economy.

When formulating our medium-term management strategies in 2018, we made it our mission in terms of security to contribute to the building and development of a free, open, and safe ICT platform for supporting the infrastructure of the digital economy.

We also made it our vision to realize the digital transformation of both customers and NTT itself, and for that reason, we will be chosen by customers. In order to realize these, we will strive to engage in research and development that leverages the scale of the Group, realize superior abilities for early detection and rapid response, cultivate human resources who share the values of sincerity and advanced skill, and transcend profit-focused principles to transmit pioneering knowledge to society.

Furthermore, to achieve the transformation to a New Management Style outlined in the medium-term management strategy refined in October 2021, the NTT Group is implementing security measures capable of facilitating the shift to remote work styles. As a member of the global community building the digital society, the NTT Group will contribute to solving social issues through our security business.

Organization for Implementation

The NTT Group enforces information security management under the charge of the Chief Information Security Officer (CISO), and is thorough in its information security management. We have also established a Group CISO Committee, and formulate Group information security management strategies, plan and implement related measures, undertake human resources training, and otherwise engage in activities in collaboration with companies across the Group.



Security Initiatives Supporting the Medium-Term Management Strategy

Security is one of the three pillars defined in the refined medium-term management strategy that is a particularly important for supporting “Transformation to a New Management Style.”

Transformation to a New Management Style

Introduction of zero-trust systems

Development of IT infrastructure with security measures prefaced on cloud and mobile usage for accommodating the shift to remote work styles.

Systematizing Information Security

Completely revised with zero-trust security measures. Regulations that are less ambiguous and more easily understood will be developed to ensure compliance, in order to increase the security awareness of all employees, not just information security staff.

Main Initiatives

Systematizing Information Security

The NTT Group will be completely revising information security regulations to implement zero-trust security measures based on flexible working styles that are not constrained by working location. The goal is to develop regulations that are less ambiguous and more easily understood, and ensure compliance in order to increase the security awareness of all employees, not just information security staff.

Strengthen Service Security

Information communication services are an important social infrastructure and a foundation for the digitalization of society and the economy, so to provide these services in a safe and secure manner, we are working to strengthen the security of telecommunications equipment, IT service environments, and all services provided by smart cities, smart buildings, and the like.

Global Cooperation within the NTT Group

We are advancing global partnerships in the security field in order to enhance competitiveness in global business under One NTT. This NTT Group cooperation includes many businesses and regions and incorporates an approach to risk-based management, the introduction of a framework that acts as a shared language, and the setting of standards that should be met by all Group members in regard to identification, defenses, detection, response, and recovery.

Engaging with and Contributing to the Global Community

We are engaging with the cybersecurity initiatives of governments and industries around the world, particularly in North America and Europe, by sharing information and best practices in regard to security threats and building a community of companies and organizations based on mutual trust.

NTT Group Information Security Policy

As “Your Value Partner,” NTT Group will aim to resolve social issues together with our partners through our business activities. As a trusted global provider of safe and secure ICT services, NTT Group will strive to ensure the security of the information entrusted to us and contribute to the sound development of the digital economy and the Remote World in accordance with the following policies.

1. NTT Group will (a) be fully aware of the importance of information security in the digital economy and the Remote World, (b) strive to establish a safe, secure and convenient ICT-related service environment and (c) strive the security of information entrusted to us.
2. Under the supervision of the Chief Information Security Officer (CISO), NTT Group will establish a unified information security management framework. Furthermore, NTT Group will continuously enhance its strict security measures (including Baseline Security Standards), employee security education, and audits, in order to prevent and minimize damage from unauthorized access, and information loss/falsification/leakage. NTT Group also require contractors and suppliers who handle confidential information to ensure appropriate information security, in order to strive to protect information throughout the entire supply chain.
3. All board members, executive officers, supervisors, managers and employees of NTT Group fully recognize that (a) information is a valuable asset for business and economic activities, and that (b) the protection of information is the basis of NTT Group’s business activities and a corporate social responsibility. Upon these recognition, NTT Group shall comply with relevant laws and regulations (country and jurisdiction), including those relating to the protection of personal information as well as the secrecy of telecommunications, and shall establish the information security management rules. If any violation of these rules is found, NTT Group will take strict action in accordance with its disciplinary rules.

NTT Group Information Security Policy https://group.ntt.jp/g_policy/

Information Security Training

Each Group company seeks to raise information security literacy by organizing training for all employees as well as the employees of partner companies. Training is offered through e-learning, and all employees are obliged to participate in the course once a year. Looking ahead, we are considering unifying training content throughout the Group to provide employees with a standard level of knowledge on information security required in their business operations. By doing so, we will seek to enhance the security capabilities of the NTT Group and reinforce its human resources to deliver safe, secure services for our customers and society at large.

Research and Development Initiatives

In addition to advancing the technological development of service security, we are focusing on developing elemental security technologies. In 2019, we established a global research center for research into cybersecurity and encryption technology centered around some of the world's leading researchers.

Basic Level Information Security Training

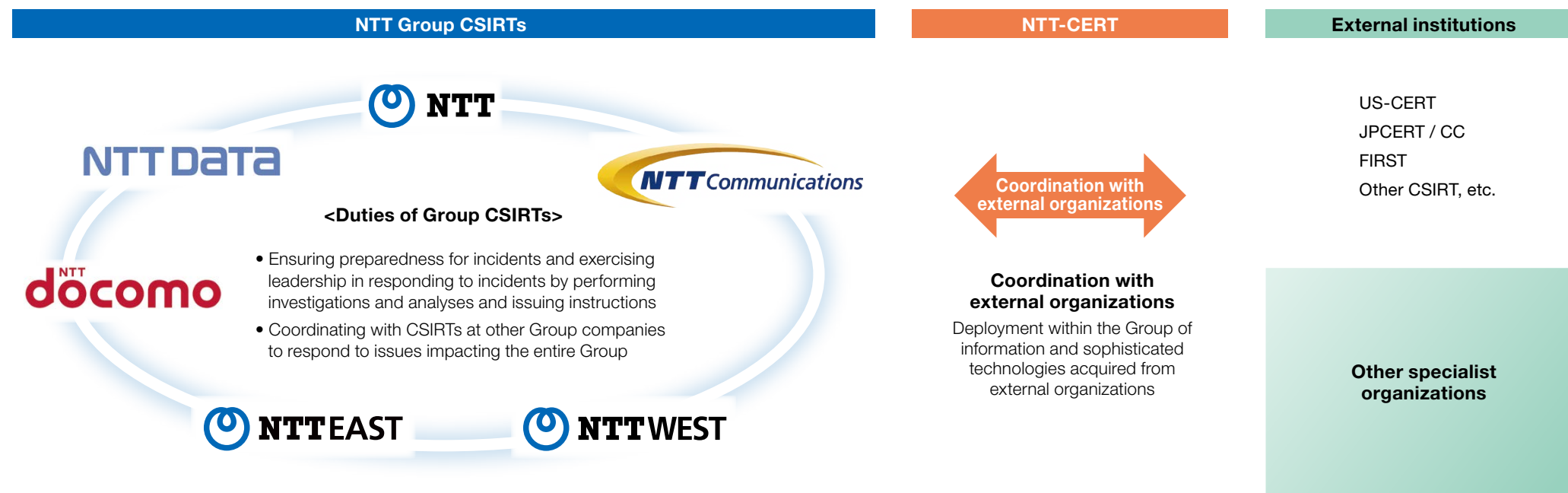
NTT Group launched a security expert certification system in 2015 with the aim of increasing the quality and number of its security personnel. This system defines three levels based on human resource type and skill level.

We must be constantly vigilant in our effort to remain abreast of the recent changes in security technologies and circumstances (zero trust, cloud native, DX, teleworking, etc.). As such, the effective and consistent training of security experts is a matter of utmost importance.

NTT used to offer basic level certification, but the rising number of certification holders coupled with the increase in awareness regarding the importance of security prompted us to develop security training programs targeting all employees worldwide.

People tend to shy away from security training due to its level of difficulty or by being turned off with the limited applicability of the subjects covered. To address this issue, we positioned raising employee interest in these subjects as our top priority, which we went about doing with animated videos and other endearing content, including a humorous introductory message by the CISO structured like a dramatic performance. Through these programs, we hope to make all employees recognize the necessity of security awareness and instill in them the basic practice of reporting any suspicious activities in their daily work. We thereby aim to motivate employees to participate in and contribute to our organization-wide drive to quickly detect and address security issues.

NTT Group CSIRT Activities



Management of CSIRT

The NTT Group established NTT-CERT in 2004 to function as a computer security incident response team (CSIRT). This team collects information regarding security incidents associated with the Group. It then offers support for addressing these incidents, formulates measures to prevent recurrence, develops training programs, and provides security-related information.

As a central element of the NTT Group's security initiatives, NTT-CERT provides a reliable venue for consultations regarding information security. The team also collaborates with organizations and specialists inside and outside the NTT Group to offer support for detecting and resolving security incidents,

minimizing damages, and preventing occurrence. NTT-CERT is thereby contributing to better security for both the NTT Group and societies that are permeated by information networks.

Moreover, NTT-CERT coordinates with the United States Computer Emergency Readiness Team (US-CERT^{*1}) and the Japan Computer Emergency Response Team Coordination Center (JPCERT/CC^{*2}) and is also a member of the Forum of Incident Response and Security Teams (FIRST) and the Nippon CSIRT Association^{*3}, which enables it to coordinate with domestic and overseas CSIRT organizations. This coordination makes it possible for NTT-CERT to share information on relevant trends

and response measures. In addition, NTT-CERT participates in the cross-industry drills held by the National Center of Incident Readiness and Strategy for Cybersecurity (NISC) to share expertise and gather information. NTT-CERT also plays a role in promoting the establishment of CSIRTs at Group companies and helping improve their response capabilities.

NTT-CERT will expand its collection of information on vulnerabilities and attacks to cover areas including the dark web and will strengthen its information analysis platform and further automate and enhance its response to cyber threats in order to continually respond to threats as they change.

^{*1} US-CERT: An information security preparedness organization under the Department of Homeland Security (DHS)

^{*2} JPCERT Coordination Center: An organization that collects reports inside Japan, supports responses, monitors situations, analyzes entry points, and reviews and provides advice on measures for preventing reoccurrences from a technical standpoint with regard to computer security incidents such as intrusions through the Internet or service interruptions

^{*3} NTT-CERT founded the Nippon CSIRT Association

NTT-CERT
<https://www.ntt-cert.org/>
 Nippon CSIRT Association
<https://www.nca.gr.jp/>
 FIRST Forum of Incident Response and Security Teams
<https://www.first.org/>

Personal Information Protection

Policies and Concepts

Every year, the importance of ensuring the protection of personal information and the comprehensive management of information around the world continues to grow. The NTT Group has been entrusted with a considerable quantity of personal information, ranging from data on individual customers to that of corporate customers, and as such ensure that personal information is handled appropriately in accordance with the laws and regulations of each country, such as Japan's Act on the Protection of Personal Information and the EU's General Data Protection Regulation (GDPR).

Under these circumstances, personal information leakage could have various repercussions for the NTT Group in the operations of its businesses, including damage to its corporate value and loss of customers, which makes it essential to rigorously manage personal information as the NTT Group's top priority.

Organization for Implementation

Under the NTT Group Information Security Policy, we disclose on our website specific policies for protecting the personal information of customers and shareholders and policies for protecting personally identifiable information required by Japan's Social Security and Tax Number System. In this policy, we also define how we respond to requests for disclosure, correction, and suspension of use related to the personal information retained by the NTT Group.

We have also put in place a security management system that ensures thorough and rigorous security practices, with the Chief Information Officer (CISO) placed in charge (see page 054).

Policy on Protecting Personal Information

About personal information protection
<https://group.ntt.jp/protection/>

Policy on Protecting Personal Information of Customers
<https://group.ntt.jp/protection/customers.html>

Policy on Protecting Personal Information of Shareholders
<https://group.ntt.jp/protection/shareholders.html>

Policy on Protecting Specific Personal Information of Business Partners
<https://group.ntt.jp/protection/partners.html>

Policy on Protecting Specific Personal Information of Shareholders
https://group.ntt.jp/protection/specific_personal_information.html

Main Initiatives

NTT has systematic security control measures, human security control measures, physical security control measures, and technical security control measures in place for handling our customers' personal information.

(1) Systematic security control measures

We have created a statement outlining the building of management systems such as placing a person responsible for management of the committee and each organization, the establishment of internal regulations, management ledgers and process management charts, and other matters. Furthermore, we are also building management systems for handling ongoing improvements and the like.

(2) Human security control measures

All employees who handle customers' personal information are informed and made aware of the importance of protecting this information, regardless of whether they are officers, regular employees, or temporary employees. We ensure employees conclude non-disclosure agreements and provide necessary auditing and supervision to ensure their effectiveness.

(3) Physical security control measures

We enact various measures including controlling access to physical equipment which handles customers' personal information and the floors where these are kept, measures to prevent theft, measures to prevent damage to customers' personal information during incidents such as fires and lightning strikes, and the use of locks when taking out, moving, or storing systems and documents.

(4) Technical security control measures

We have put in place various technical security control measures such as access management when accessing personal data including authentication, authority administration, control, and recording, countermeasures against viruses and malware in systems, measures for use when sending and receiving information including encryption and clarification of responsibility, and the monitoring of information systems.

Each domestic company in the Group has established a personal information protection system in line with its business and based on the Protection of Personal Information. We are consistently pursuing initiatives to protect information, including stringent measures on the physical and systems aspects of security and appropriate supervision of outsourcing contractors. Management of information is being further enhanced, as personal information acquired by group companies in Japan via individual or household services like cell phones and internet access will be retained and accessed from within Japan after May 2021.

Main Initiatives of Domestic Group Companies

- Establishment of internal rules and regulations
- Employee training to ensure appropriate implementation of the above rules and regulations
- Establishment of an organization to promote information security management
- Establishment of a security management system for preventing illegal access to information or the loss, alteration, or information leakage as well as managing antivirus measures and the physical transfer of information

Establishment of Contact Points on Personal Information

NTT has set up the Customer Contact Point on Personal Information, and similar contact points for services related to personal information have been set up at each NTT Group company. Since NTT is a holding company that does not directly provide telecommunications services, inquiries regarding personal information related to services are redirected to the contact points of the operating companies concerned.

Additionally, inquiries regarding the handling of personal information under laws and regulations are redirected to the person responsible for information security at the operating companies concerned.

Nippon Telegraph and Telephone Corporation Customer Contact Point on Personal Information
Email: ntt_kojin@ntt.com
<https://group.ntt.jp/protection/customers.html>





NTT's Contribution to Olympic and Paralympic Games Tokyo 2020

NTT provided critical communication services for operating the Games. It provided a broadcasting network to connect Games venues with the Tokyo Big Sight that served as an International Broadcast Centre (IBC), as well as various systems for running the event and data network services for the system to release game results to the media, supporting steady operation of the event. NTT built the LAN for the venues, including the 43 Games venues, IBC, the Main Press Centre and the Olympic Village, providing various communication services including distributing videos and land lines to associates.

All Games venues were turned to 5G mobile networks, whose commercial services had started in 2020 in Japan, to offer mobile phone services.



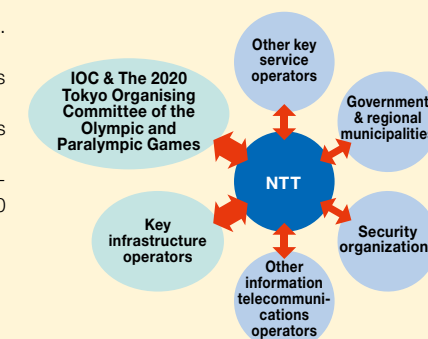
NTT's Contribution to Olympic and Paralympic Games Tokyo 2020 (Cyber Security)

While the cyber security of the Tokyo 2020 Games was considered to be more threatening than in the past, NTT implemented network security measures for communication services and various cyber security measures during the Games. The total number of security events detected during the Games was 450 million, but NTT responded by appropriately handling and blocking the communications, there were no security incidents that had an impact on the operation of the games or events.

Reference

- (1) Staff working at the Games venues: approx. 650
- (2) Staff working at the Technology Operations Center: approx. 350
- (3) Staff working at the Security Operations Center: approx. 90
- (4) Total NTT staff supporting the Games (including NTT's partner companies): 10,000 (including (1) - (3) staff)

Complex Stakeholder Management



Responding to the complexity of the ICT environment at the Tokyo 2020 Games, NTT maintained a "Cyber Hygiene" environment by adopting a whitelist (enumerating only possible communication protocols) format.

- ID (personal authentication: including multifactor authentication)
- Handling changes in communications traffic over time, carefully verifying venues in a short time before opening facilities
- Protection using multi-vendor products (for Defense in Depth)
- Handling of both officially provided devices and BYOD
- Application of R&D results (such as "Authenticity and Integrity Monitoring Technology" to detect tampering)



NTT was a Gold communications service partner of the Tokyo 2020 Olympic and Paralympic Games.

Business Activity 21

Promoting a decentralized society based on remote work

Our commitment

Shifting toward new work styles centered on remote work, by upgrading IT environments and reviewing systems, in addition to advancing DX projects and work reforms with an eye on the post-pandemic world

Our objective

0

Major personal data leaks (annual)

Policies and Concepts

NTT Group intends to shift toward new work styles centered on remote work, by upgrading IT environments and reviewing various systems, in addition to advancing DX projects and work reforms with an eye on the post-pandemic world.

Remote work will be the standard work style for employees going forward. By allowing employees freedom in choosing their work location, we will transition from a centralized organization to a decentralized and autonomous network-style organization.

An extremely high rate, 70% to 80%, of staff in departments like management and planning are already used to working remotely, and the concept of “working from anywhere” is becoming firmly entrenched. We will be making even more improvements to these working styles and working environments as we look further into how we can enable staff to work from anywhere.

In other areas, we will continue revising business processes with DX to increase the scope of work that can be performed remotely, while also systemizing information security systems suitable for remote work.

As we move our focus to remote work, we will look to developing a working environment that allows employees to choose where they want to live, instead of being constrained by specific working areas.

And as remote work becomes the norm, offices will become a space for the creation and co-creation of ideas with one-on-one interaction.

Specific ways to make offices even easier to work in for those working remotely as well as those commuting to the office include increasing the efficiency of office space by reducing seating arrangements to suit the number of staff actually coming into the office, ensuring social distancing with ample space for each person, as well as flexible seat selection with desks available for use by anyone and better spaces for holding remote conferences.

Office space will be reduced by 30% by systematizing information security suitable for remote work and revising the office environment from FY2022.



[Reference] Expansion of Satellite Offices
<Fiscal 2021>

- 62 company offices
(of which 52 are new offices added in FY2021)
- Around 200 external offices