Accelerating our self-transformation to become

Your Value Partner
Accelerating Our Transformation into “Your Value Partner”

The telecommunications industry is expected to be transformed going forward by the rapid and astounding developments taking place in the realms of the Internet of Things (IoT), Big Data, and Artificial Intelligence (AI). There are also significant events on the horizon in Japan, such as the Olympic and Paralympic Games Tokyo 2020 and the migration from public switched telephone network (PSTN) scheduled for 2024.

In this highly fluid operating environment, NTT Group will undertake a digital transformation while supporting its customers as they make similar transformations, rooted in our Shared Values—the core principles that support our activities—“Connect,” “Trust,” and “Integrity.”

This environment also served as the backdrop for our new medium-term management strategy, “Your Value Partner 2025,” in November 2018. Looking ahead, NTT Group will act as “Your Value Partner” as we strive to resolve social issues together with our partners through our business activities.

I thank you in advance for your understanding and support, which are more valuable than ever, as we embark upon a great new journey.

Jun Sawada
President and Chief Executive Officer, Representative Member of the Board
**NTT Group Formation (As of March 31, 2018)**

**Main Businesses:**
- For NTT Group as a whole, formulation of management strategies and promotion of basic research
- NTT, Inc. (global holding company), was established with the goal of enhancing NTT Group's overall competitiveness and profitability in the global market. The transference of control of NTT COMMUNICATIONS CORPORATION, Dimension Data Holdings, NTT DATA CORPORATION, and NTT Security Corporation was completed in November 2018.

**Composition by Segments**

<table>
<thead>
<tr>
<th>Segments</th>
<th>Revenues (¥)</th>
<th>Income (¥)</th>
<th>Capital Investment (¥)</th>
<th>Number of Employees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regional Communications Business</td>
<td>100.00%</td>
<td>100.00%</td>
<td>100.00%</td>
<td>100.00%</td>
</tr>
<tr>
<td>Long Distance and International Communications Business</td>
<td>66.65%</td>
<td>66.65%</td>
<td>66.65%</td>
<td>66.65%</td>
</tr>
<tr>
<td>Mobile Communications Business</td>
<td>54.21%</td>
<td>54.21%</td>
<td>54.21%</td>
<td>54.21%</td>
</tr>
<tr>
<td>Data Communications Business</td>
<td>43%</td>
<td>43%</td>
<td>43%</td>
<td>43%</td>
</tr>
<tr>
<td>Other Businesses</td>
<td>16.1%</td>
<td>16.1%</td>
<td>16.1%</td>
<td>16.1%</td>
</tr>
</tbody>
</table>

**NTT Group**

| Total Assets:                  | ¥21,675.8 billion |
| Consol. Operating Revenues:    | ¥11,799.6 billion |
| Consol. Operating Income:      | ¥1,642.8 billion  |
| Number of Employees:           | 282,550          |
| Consol. Subsidiaries:          | 922              |

**Competitive Advantages**

- Regional telecommunications operations in Japan and related businesses, etc.
- Long-distance telecommunications operations in Japan, international telecommunications business, solutions business, and related businesses
- Mobile phone business and related businesses, etc.
- System integration, network system services, etc., in Japan and overseas
- Real estate, finance, construction / electric power, system development, advanced technology development, etc.

**Number of Employees**

<table>
<thead>
<tr>
<th>Business Area</th>
<th>Number of Employees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regional Communications Business</td>
<td>100.00%</td>
</tr>
<tr>
<td>Long Distance and International Communications Business</td>
<td>100.00%</td>
</tr>
<tr>
<td>Mobile Communications Business</td>
<td>100.00%</td>
</tr>
<tr>
<td>Data Communications Business</td>
<td>100.00%</td>
</tr>
<tr>
<td>Other Businesses</td>
<td>100.00%</td>
</tr>
</tbody>
</table>

**Percentage of simple sum of all segments (including intersegment transactions):**

- Regional Communications Business: 32.8% (¥926.8 billion)
- Long Distance and International Communications Business: 16.4% (¥2,218.9 billion)
- Mobile Communications Business: 21.7% (¥576.4 billion)
- Data Communications Business: 11.5% (¥549.6 billion)
- Other Businesses: 7.3% (¥122.1 billion)

**Total Assets:** ¥21,675.8 billion

**Consolidated Operating Revenues:** ¥11,799.6 billion

**Consolidated Operating Income:** ¥1,642.8 billion

**Number of Employees:** 282,550

**Consolidated Subsidiaries:** 922

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*1 Voting rights to major subsidiaries (As of March 31, 2018)

*2 NTT, Inc. (global holding company), was established with the goal of enhancing NTT Group's overall competitiveness and profitability in the global market. The transference of control of NTT COMMUNICATIONS CORPORATION, Dimension Data Holdings, NTT DATA CORPORATION, and NTT Security Corporation was completed in November 2018.

*3 NTT Group's competitive advantages in the global market.
Our Vision

Society is currently faced with various issues, including population growth and resource and water shortages on a global scale and population aging and birth rate decline in Japan. As seen in the government of Japan’s promotion of “Society5.0” initiatives to address these issues, there is a need for ICT-driven digital transformations throughout society.

Acting as “Your Value Partner,” NTT Group seeks to help resolve social issues. The Group is utilizing its various management resources and capabilities, including those pertaining to research and development, ICT infrastructure, and human resources, through its business activities as part of its efforts to resolve such issues. We are also collaborating with our partners and promoting digital transformations. NTT Group is convinced that the resolution of social issues will contribute to the realization of a smart society that takes advantage of ICT and to the accomplishment of the United Nations Sustainable Development Goals.*2

*1 “Society5.0” refers to a society based on the Cabinet Office’s 5th Science and Technology Basic Plan that is centered on people and that achieves economic development while resolving social issues through the use of systems that realize the sophisticated integration of virtual and physical spaces.

*2 The Sustainable Development Goals are a set of 17 goals needing to be addressed leading up to 2030 that were approved at the UN Sustainable Development Summit held in September 2015. NTT Group declared its endorsement of these goals in September 2016.

Support our customers’ digital transformations
1. Promote B2B2X model
2. Roll out 5th-Generation Wireless System
3. Provide personal services

Accelerate our own digital transformation
4. Enhance competitiveness in global business
5. Drive self-digital transformation in domestic business
6. Migrate PSTN to IP Networks

Leverage talent, technologies, and assets
7. Enhance and globalize R&D
8. Create new lines of business (Real estate, etc.)
9. Contribute to vitalization of regional societies and economies
10. Disaster Countermeasures

Promote ESG management, and enhance the returns of shareholders to improve corporate value

Pillars of Medium-Term Management Strategy

We will advance initiatives based on the pillars of our medium-term management strategy in order to accomplish our newly defined medium-term targets and achieve our vision.
Under the B2B2X model, NTT Group supplies service providers for contributing to the realization of a smart society. The B2B2X model will be a central pillar of NTT Group’s initiatives for promoting the digital transformation of companies and government organizations to-date. Looking ahead, we aim to further evolve the B2B2X model to incorporate digital services and data management.

Examples of value creation through B2B2X model

- Special Feature 1: “Your Value Partner 2025” NTT Group Medium-Term Management Strategy
  - Roll Out 5th-Generation Wireless System
  - Support Our Customers’ Digital Transformations
  - Accelerate Our Own Digital Transformation
  - Enhance Competitiveness in Global Business

Provide Personal Services
  - Create simple rate plans that offer great value. On the service front, we will enhance our lineup of electronic payment options and contents. Meanwhile, AI and big data will be utilized to bolster communication on an individual customer basis.

NTT Group looks to cultivate synergies through the combination of integrated solutions for promoting the digital transformations of customers and innovative initiatives that leverage cutting-edge technologies. In addition, we will accelerate the growth and swiftly enhance the competitiveness of our global business as a united “One NTT” in conjunction with global talent development and branding.

Business Modernization
  - Financial Services
  - Healthcare
  - Converged Media
  - Public Sector

Disruptive Innovation
  - Global Innovation Fund
  - NTT Global Procurement Company

Co-Creation
  - Collaborate with leading enterprises, startups, and universities.

Global Talent Development
  - One NTT

Global Branding
  - NTT Communications plans to create this company, then it will be transferred to NTT (under discussion)


Special Feature 1: “Your Value Partner 2025” NTT Group Medium-Term Management Strategy (announced on November 6, 2018)

## Accelerate Our Own Digital Transformation

### Drive Self-Digital Transformation in Domestic Business

Chief digital officers were appointed at major Group companies in August 2018 to facilitate our dedicated effort to promote the digital transformation measures formulated by cross-organizational working groups. Initiatives on this front will include the AI-energized digitalization of NTT Group processes, which will be aimed at improving efficiency. In addition, we hope to realize a connected value chain that links all processes in a series, including those processes performed by subcontractors, in order to install smart operations not requiring human involvement into various processes. By promoting self-digital transformation, NTT Group will create new services such as Cognitive Foundation®, a corporate service that integrates and optimally manages ICT resources, and personal solutions for individual users that utilize digital marketing.

**Digitalize own operating processes (Realize Connected Value Chain by leveraging AI)**

- Achieve efficiency through smart operations not requiring labor
  - Apply NTT Group’s VFA (Virtual Factory Assistant) to operating processes
  - Further expand scope of work
  - Optimize enterprise service processes from service order/delivery with IT
  - Optimize construction/maintenance-related processes with IT (in collaboration with partner companies)
  - Diversification/optimization of Web service order procedures to enhance customer convenience
  - Reduce service/attendance time at telecom shops

**New services made possible by self-digital transformation**

- Cognitive Foundation® (which contributes to resolution of management issues by leveraging IT (optimization/evaluation; decision making; operation of ICT services such as services, networks, data))
- Personal solutions through digital marketing

**Enhance and Globalize R&D**

NTT Group plans to promote disruptive research and development to transform the world while also reinforcing basic research at overseas bases. To accomplish these objectives, we will establish research bases overseas, capitalize on the achievements of our R&D activities on a global basis, and globalize research targets. In addition, the Group intends to step up joint R&D activities with various research institutions and proactively use new external technologies as it expands R&D investment in new growth areas.

**Utilize Real Estate (Promote Urban Solutions)**

Fully utilizing NTT Group’s real estate, ICT, energy, and environmental technologies, we will promote a new lineup of urban solutions that go beyond conventional real estate development (urban digitalization).

### Implement Disaster Countermeasures

Up until now, NTT Group’s basic disaster countermeasure policies have entailed initiatives to improve communications network reliability, secure critical communications, and ensure prompt service restoration. Going forward, these initiatives will be supplemented with efforts based on the following policies.

1. Further reinforce communications infrastructure based on large-scale blackout risks and water and landslide hazard maps
2. Promote proactive disaster responses utilizing AI-based damage predictions
3. Improve information transmissions to adequately provide visible information to the people affected in times of disaster

Guided by these policies, we will strive to secure the reliable ICT infrastructure that is the very DNA of NTT Group.

### New Financial Targets

Growth in earnings per share (EPS) has been defined as the most important indicator among our medium-term financial targets, and we are thus pursuing growth in income alongside shareholder returns. Our target for EPS in the fiscal year ending March 31, 2024, is approximately ¥640, which represents an increase of 50% from the level of the fiscal year ended March 31, 2018. To heighten EPS, we will pursue ongoing cost reductions and higher earnings in growth fields in Japan as well as in overseas operations. At the same time, ongoing share buybacks will be conducted to improve capital efficiency. Meanwhile, targets have been set for the group of companies placed under the jurisdiction of the newly established global holding company to measure the successes of our efforts to enhance the competitiveness of overseas operations.

**Financial Targets**

<table>
<thead>
<tr>
<th>Financial Targets</th>
<th>Target</th>
<th>FY2023</th>
<th>FY2023 vs. FY2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>EPS Growth</td>
<td>+50%</td>
<td>FY2023</td>
<td>(vs. FY2017)</td>
</tr>
<tr>
<td>Overseas Sales /</td>
<td>¥2.3tn</td>
<td>FY2023</td>
<td>(at least ¥1.8tn)</td>
</tr>
<tr>
<td>Overseas Operating Income Margin*1</td>
<td>5%</td>
<td>FY2023</td>
<td></td>
</tr>
<tr>
<td>Cost Reductions</td>
<td>(in fixed-line/mobile access networks)</td>
<td>At least ¥800bn</td>
<td>FY2023</td>
</tr>
<tr>
<td>ROIC</td>
<td>8%</td>
<td>FY2023</td>
<td></td>
</tr>
<tr>
<td>Capex to Sales</td>
<td>13.5% of less</td>
<td>FY2023</td>
<td></td>
</tr>
<tr>
<td>Domestic Network Business*2</td>
<td>8%</td>
<td>FY2023</td>
<td></td>
</tr>
</tbody>
</table>

*1 Excludes the effects of the arbitration award received from Tata Sons Limited
*2 Including results from the global holding company, its subsidiaries, and its affiliates; operating income excludes temporary expenses, such as ATM-related depreciation costs on intangible fixed assets
*3 Excludes NTT Communications’ data centers and certain other assets

Specifically, we aim to increase overseas sales from the U.S. $18.0 billion achieved in the fiscal year ended March 31, 2018, to U.S. $25.0 billion in the fiscal year ending March 31, 2024, and to raise the overseas operating income margin from 3% to 7% over the same period. In addition, a reduction in costs of more than ¥800.0 billion will be targeted by the fiscal year ending March 31, 2024. Other targets have been set with capital and investment efficiency in mind. For example, NTT Group will strive to boost return on invested capital (ROIC) from 7% in the fiscal year ended March 31, 2018, to 8% in the fiscal year ending March 31, 2024, while also working to lower the capex to sales ratio of the domestic network business from 14% to 13.5% or less.

**Further efforts**

- Further reinforce communications infrastructure
- Adequately provide visible information to the people affected
- Disaster which causes wider, bigger, or lasting damage

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

Past initiatives

- Adequately provide visible information to the people affected
- Disaster which causes wider, bigger, or lasting damage

**Implementation of Disaster Countermeasures**

- Further reinforce communications infrastructure
- Adequately provide visible information to the people affected
- Disaster which causes wider, bigger, or lasting damage
The digitization of information will allow for a variety of data to be collected, processed, and distributed via networks, making it possible for previously under-utilized information assets and expertise to be used more effectively.

The advancement of the Internet of Things (IoT), meanwhile, will enable for the conditions of various articles to be monitored in a timely fashion through smartphones and other mobile terminals as well as through network-connected sensors and monitors attached to machinery, buildings, and infrastructure.

In addition, artificial intelligence (AI) will greatly increase the ability of service providers to create new value by instantaneously processing and analyzing massive amounts of collected data.

NTT Group looks to accelerate the development of B2B2X businesses in order to deliver value to end users. NTT Group will achieve this acceleration by providing backstage support to service providers in various fields as a catalyst while at the same time taking advantage of information digitization, the IoT, AI, and other social and technological developments.

Grounded on its B2B2X model, NTT Group will collaborate with other left B global IT partners to provide comprehensive support for smart initiatives in various industries through a Groupwide effort. In this effort, we will seek to fully draw out the latent potential of ICT to effectively deploy smart initiatives to other sectors within said industry. Rather, we will form solutions by accumulating differentiated and reproducible technologies and intellectual properties from various industries that can be applied to others. Specific areas of focus will include managed and infrastructure sectors such as PaaS and IaaS services. Armed with such solutions, NTT Group will increase the overall competitiveness of its solutions and its profit margins.

In this manner, NTT Group aspires to promote smart initiatives in all industries by fostering problem-solving capabilities and technologies that boast cross-industry applicability through actual cases of service provision. Moreover, NTT Group aims to deploy such smart initiatives inside Japan and throughout the global market in order to create a B2B2X model that extends beyond the boundaries of both companies and industries.

More information on NTT Group’s B2B2X initiatives can be found on NTT’s corporate website.

http://www.ntt.co.jp/activity/en/b2b2x/
Digital Transformation of Regional Economic Spheres—Initiatives in Sapporo and Yokohama

Sapporo Smart City Initiatives (Population of Sapporo City: 2.0 Million; Project Budget: ¥1.6 Trillion)

In July 2016, NTT Group joined the Sapporo City ICT Utilization Platform Study Panel, and the Group has since proceeded to advance smart city initiatives in Sapporo City. Targeting a wide range of fields, including tourism, transportation, and snowfall countermeasures, these initiatives have been aimed at investigating and resolving the issues faced in the region. As one facet of these initiatives, the DATA-SMART CITY (SAPPORO) ICT platform open data website was established in January 2018 through a public-private partnership. Regional economic stimulus measures are being advanced through cooperation between Sapporo City and local companies, with examples of such cooperation including the sharing and analysis of data that is beneficial to business growth. Today, the number of companies participating in these initiatives is gradually expanding, and we are seeing participation from various industries, including the commercial facility, lodging, and tourism industries. With the aim of accelerating these initiatives, NTT Group is coordinating with the Ministry of Economy, Trade and Industry's project for promoting sharing of industry data* to facilitate more sophisticated utilization measures. These initiatives have been aimed at invigorating regional economic development.

Sapporo City is known globally for its heavy snowfall, and, being a massive city with a population of 2.0 million, this metropolis is forced to spend exorbitant amounts on snow removal each year. Moreover, snow impedes people’s everyday lives as well as distribution in the city for roughly half of each year. NTT Group sought to address this situation by using ICT to share the expertise of snow removal skilled operators and to compile daily snow removal measure reports (Figure 1). These measures targeted massive improvements in snow removal efficiency. In addition, we have conducted the first automated driving trial on public roads (Figure 2). Take place in the heart of Sapporo City, this trial was geared toward alleviating traffic congestion in the city. As seen in these initiatives, NTT Group is working to resolve various social issues in Sapporo.

B Center B (G) X (B)

NTT Group

Data Management Platform

Digital Services

Local Distribution Companies

Digital Transformation

Ongoing support for service evolution

Sapporo City

DATA-SMART CITY

SAPPORO

Travel data management

Vital data analysis

Vehicle location data

Near miss locations

Location data mapping

New needs

1) Digital marketing services based on pay-as-you-go vehicle location data
2) Vital sensing using wearable terminals
3) Sharing of expertise of skilled operators

Supervised husbands- wives

Local Snow Removal Companies

Manual preparation of daily snow removal reports

Yokohama Smart City Initiatives (Population of Yokohama City: 3.7 Million; Project Budget: ¥3.6 Trillion)

Yokohama City is promoting open innovation for utilizing data and creating new value through cooperation with private-sector companies via means such as the use of data to accurately track conditions and identify issues when formulating municipal government policy. Following the formulation of Yokohama City’s plan for the utilization of public and private data as well as the establishment of the School of Data Science at Yokohama City University, NTT signed the Agreement for Comprehensive Collaboration for Realizing a Super-Smart Society by Utilizing Public and Private Data. This agreement is part of Yokohama City’s efforts to step up public-private-academia collaboration regarding the utilization of public and private data to realize a super-smart society.

Based on this agreement, we will expand the scope of our initiatives for utilizing data in various fields, including healthcare, welfare, child-rearing, and education, to improve the convenience of people’s lives and for realizing more efficient and effective governance through data-based policy making. Yokohama City and NTT Group will seek to address the increasingly complicated and diverse needs of citizens.

In conjunction with government policy, NTT Group will expand the initiatives it is conducting in Sapporo City, Fukusui City, and Yokohama City to ordinance-designated cities, communities, and regional economic spheres across Japan. These efforts will function as a platform for working together with communities to resolve the issues they face and to invigorate these communities.

* As defined by the 5th Science and Technology Basic Plan approved by the Cabinet Office. In January 2016, a super-smart society is one in which people can receive the items and services they need when and in the amount required. This society should be capable of providing fine-tuned responses to various social needs and making high-quality services available to all. In this manner, an ultra-smart society will enable people to overcome differences of age, gender, region, and language to live empowered and comfortable lives.
The recent rise in crime and disasters in urban areas is placing even more importance on the duty of local governments, police and fire departments, and other authorities to protect the safety of citizens at city and event sites where large numbers of people gather. Fulfilling this duty requires that these authorities be able to track the movement of crowds and traffic conditions and detect emergency situations. Facilitating swift initial responses is of particular importance. Accordingly, there is a need for public safety solutions that install various sensors to allow relevant organizations to maintain an up-to-the-moment understanding of situations and that predict and analyze incidents that are highly likely to be of a criminal nature.

To respond to this need in Las Vegas, NTT, NTT DATA, and Dell Technologies have partnered with Dell Technologies Inc. Working together with the city, these companies will pool their expertise to realize a public safety solution that accommodates the needs of both relevant authorities and citizens.

The public safety solution we are verifying in Las Vegas has three notable characteristics.

1. **Reactive nature** (Incident responsive actions) - Facilitates swift responses to accidents and incidents. Information from surveillance cameras and sensors is analyzed by micro data centers (edge systems) neighboring the monitored area to quickly detect accidents or incidents and dispatch police or firefighters or make prompt announcements as necessitated by the situation.

2. **Predictive nature** (Predictive actions) - Accommodates the needs of both relevant authorities and citizens. By utilizing multisource information to analyze trends based on information from various sources, this solution employs AI technologies to predict crowding, cars driving on opposite sides of roads, and incidents that are highly likely to be of a criminal nature.

3. **Swift deployment** (Rapid and effective deployment of ICT resources) - Utilizes advanced prediction and proactive response capabilities. By utilizing multisource information to analyze trends based on information from various sources, this solution employs AI technologies to predict crowding, cars driving on opposite sides of roads, and incidents that are highly likely to be of a criminal nature in order to furnish preemptive responses.

In Las Vegas, NTT DATA, NTT, and Dell Technologies have developed a solution using their built-in sensor installation infrastructure to predict large crowd and traffic situations and to alert relevant authorities. An AI solution is utilized to predict large crowds or traffic situations, and the alert is transmitted to both the city and relevant authorities for quick response.

The solution employs AI technologies to predict trends and situations such as large crowds and traffic conditions where NTT has installed a large number of sensors. The solution also employs AI technologies to detect and respond to accidents and incidents. The solution includes technology to predict the movement of crowds and traffic conditions and detect emergency situations. Facilitating swift initial responses is of particular importance.

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In Las Vegas, NTT DATA, NTT, and Dell Technologies have partnered with Dell Technologies Inc. Working together with the city, these companies will pool their expertise to realize a public safety solution that accommodates the needs of both relevant authorities and citizens.
Regional Communications Business

In the Regional Communications Business, NTT Group worked to develop its B2B2X business through the Hikari Collaboration Model, the wholesale provision of fiber-optic access infrastructure services to various service providers.

Financial Results for the Year Ended March 31, 2018

<table>
<thead>
<tr>
<th></th>
<th>Operating Revenues (Billions of yen)</th>
<th>Operating Income (Billions of yen)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>3,505.5</td>
<td>168.9</td>
</tr>
<tr>
<td>2016</td>
<td>3,407.9</td>
<td>165.0</td>
</tr>
<tr>
<td>2017</td>
<td>3,308.2</td>
<td>349.5</td>
</tr>
<tr>
<td>2018 (FY)</td>
<td>3,222.9</td>
<td>354.3</td>
</tr>
</tbody>
</table>

Details of Major Initiatives

1. Expanding Collaboration with Service Providers in Other Industries under the Hikari Collaboration Model

   With regard to the Hikari Collaboration Model, the number of service providers providing wholesale services was approximately 700 companies at the end of the fiscal year ended March 31, 2018, as NTT Group continued to expand collaborative projects with not only business operators in the communications industry, energy industry, real estate industry, security industry, and housing industry, but also with business operators in diverse industries including social infrastructure operators and FinTech operators. New use cases were developed among business operators operating social infrastructure businesses, as the Hikari Collaboration Model was adopted to promote the conversion to fiber-optics in networks connected to traffic signals. As a result of these initiatives, the number of fiber-optic access service subscriptions using this model was 11.12 million.

2. Continuously Reducing Costs and Raising Efficiency in Capital Investment

   By increasing productivity and streamlining development costs, among other measures, and through the systematization of work processes, NTT Group continuously worked to reduce costs. Furthermore, by simplifying and streamlining networks and further increasing the use of existing facilities, NTT Group worked to make capital investment more efficient.

3. Expanding Wi-Fi Service Coverage Areas

   As companies and local governments are proactively promoting the use of Wi-Fi as a powerful information service tool, in various regions NTT Group continuously worked to improve convenience for the increasing number of visitors to Japan by expanding the coverage areas of Wi-Fi, resulting in the number of Wi-Fi area owners reaching 744.

Number of Subscriptions for Major Services (as of March 31, 2018)

<table>
<thead>
<tr>
<th>Service</th>
<th>2017 Subscriptions</th>
<th>2018 Subscriptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>FLET’S Hikari (FTTH)</td>
<td>18.03 million</td>
<td>20.53 million</td>
</tr>
<tr>
<td>Hikari Denwa</td>
<td>11.12 million</td>
<td>12.29 million</td>
</tr>
</tbody>
</table>

Recent Project

Wi-Fi Services for Customers and Cloud-Based Cameras at Restaurants

Recently, Wi-Fi services at restaurants for customers have become indispensable to improving customer satisfaction. This trend has advanced to the point that Wi-Fi has become such a matter of consideration that the availability of these services is mentioned on restaurant information sites. NTT East has helped restaurant owners address the need for these services through the introduction of its Gigaraku Wi-Fi service for offices and stores, which enables restaurant owners to provide Wi-Fi services for customers. As an added bonus, these services have proven to be a draw for tourists from overseas.

Another recent trend is the increasing number of restaurants installing cloud-based surveillance cameras to monitor customer inflow and protect the premises. The Gigaraku Wi-Fi Camera Option Wi-Fi-compatible, cloud-based camera service makes it possible for restaurant staff to view footage from cameras in real-time via their smartphone during off-hours or at night. Moreover, cameras can be set to automatically record intrusions by reacting when they detect motion or noises.

AI-Powered Road Surface Diagnosis Solution

Efficient, Low-Cost Inspections of Aging Road Surfaces

Many of the roads in Japan used by people in their daily lives were built during the period of high economic growth, and the need of preventive maintenance of these roads is constantly rising. To address this need, NTT FIELDTECHNO CORPORATION has commercialized an ICT solution that makes it possible to perform low-cost inspections and diagnoses over wide stretches of road. Going forward, we will move ahead with the development of this solution to make greater contributions to the efficient maintenance and management of social infrastructure through features that allow for higher efficiency in inspections.

Recent Project

AI-Powered Road Surface Diagnosis Solution

Efficient, Low-Cost Inspections of Aging Road Surfaces

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Operations in Review

Long Distance and International Communications Business

In the Long Distance and International Communications Business, in addition to enhancing its provision of seamless ICT solutions combining network and security and other services, NTT Group worked to enhance its service provision in growth areas such as cloud services and IT outsourcing. Financial Results for the Year Ended March 31, 2018

Details of Major Initiatives

1. Proactively Expanding Cloud Service Platform
To respond to demand for cloud services and data centers in various regions worldwide, NTT Group advanced the expansion of its service provision systems in various countries with continuous market expansion. NTT Group launched Texas Dallas 1 (TX1) Data Center and Virginia Ashburn 3 (VA3) Data Center in the United States, Germany Munich 2 Data Center and Germany Rhein-Ruhr 1 Data Center in Germany, and new data center service in South Africa.

2. Stepping Up Provision of Services in Growth Fields
To strengthen the competitiveness of its cloud services, NTT Group promoted the consolidation and strengthening of the cloud services business, such as through the transfer of cloud service facilities, development, and operational tasks from Dimension Data to NTT Communications.

Operating Results for the Year Ended March 31, 2018

Operating Revenues: ¥2,218.9 billion
Operating Income: ¥93.6 billion

<table>
<thead>
<tr>
<th>Year</th>
<th>Operating Revenues (Billions of yen)</th>
<th>Operating Income (Billions of yen)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>2256.3</td>
<td>113.6</td>
</tr>
<tr>
<td>2016</td>
<td>2329.3</td>
<td>90.7</td>
</tr>
<tr>
<td>2017</td>
<td>2189.9</td>
<td>40.8*</td>
</tr>
<tr>
<td>2018</td>
<td></td>
<td>93.6</td>
</tr>
</tbody>
</table>

* Includes impairment losses accompanying the consolidation of security operations and one-time expenses related to structural reforms at Dimension Data (approximately ¥60.0 billion)

Recent Projects

Reinforcement of Framework for Global Cloud Service Provision

- Launch of Germany Munich 2 Data Center
- Launch of Germany Rhein-Ruhr 1 Data Center
- Launch of Virginia Ashburn 3 (VA3) Data Center and construction of Virginia Ashburn 4 (VA4) Data Center
- Launch of Texas Dallas 1 (TX1) Data Center
- Expansion of data center services in Mumbai and Bangalore
- Expansion of high-quality data center services to the Netherlands, the seventh country in Europe where services are offered
- Expansion of supply capacity of Frankfurt data centers by 1.5x
- Conclusion of agreement to acquire 100% of the shares of leading U.S.-based IT-managed service provider Secure-24 Intermediate Holdings, Inc.
- Launch of construction of JUPITER, a new high-volume, low-latency underwater fiber optic cables that will connect Japan, the U.S., and the Philippines

Project for the Future

Recent Projects

Acquisition of Secure-24, Leading Provider of Managed Services in the U.S.

NTT Communications Corporation, the ICT solutions and international communications business within NTT Group, and Secure-24 Intermediate Holdings, Inc., a major U.S.-based leading provider of comprehensive IT-managed services, announced that NTT Communications has completed its 100% acquisition of Secure-24, effective immediately.

IT-managed services are a key focus of NTT Group’s strategies for global growth. The acquisition of Secure-24 will enable NTT Communications, Dimension Data, and other NTT Group companies to strengthen their global capabilities to help enterprise customers effectively operate and maintain a wide range of enterprise applications, such as SAP and Oracle. Furthermore, NTT Group will combine its existing cloud, network, and data center services with Secure-24’s IT-managed services to respond to increasing global demand from customers looking to manage their hybrid IT environments.

Going forward, NTT Group will continue to strengthen the technical capabilities and global reach of its IT-managed services to help customers optimize their IT environments and digitally transform their businesses.
Mobile Communications Business

In the Mobile Communications Business, NTT Group has worked to promote sales of the billing plan “Kakehodai & Pake-aeru” and of “docomo Hikari,” promoting collaboration with various business partners and providing new value-added services to enhance profitability in the smart life area.

Details of Major Initiatives

1. **Continuously Enhancing Billing Plans**
   In addition to continuing to promote the sales of Kakehodai & Pake-aeru, a billing plan tailored to suit a customer’s stage of life that offers more affordable rates to long-term users, NTT Group began offering its Simple Plan and docomo with, among other initiatives, working to enhance return to its customers. As a result, the number of subscriptions to Kakehodai & Pake-aeru reached 41.96 million.

2. **Promoting Sales of docomo Hikari**
   By utilizing the Hikari Collaboration Model from the Regional Communications Business, NTT Group promoted the sale of the “docomo Hikari Pack,” which bundles fiber-optic access infrastructure services, Internet access services, and mobile services. As a result, the number of subscriptions to docomo Hikari reached 4.76 million.

3. **Strengthening Profitability in the Smart Life Area**
   With Komatsu Ltd. and other parties, NTT Group agreed to jointly plan and operate “LANDLOG,” a new platform connecting the entire construction manufacturing process. In addition to starting field testing of “LANDLOG,” NTT Group implemented initiatives utilizing advanced technology, including the launch of “AI Taxi®,” a taxi ride demand forecasting service utilizing AI, as well as “5G Trial Site,” advancing “d+” initiatives to jointly create new added value through collaboration with various business operators.

Number of Subscriptions for Major Services (as of March 31, 2018)

<table>
<thead>
<tr>
<th>Service</th>
<th>Number of Subscriptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>docomo Hikari Pack</td>
<td>4.76 million</td>
</tr>
<tr>
<td>docomo Hikari</td>
<td>41.96 million</td>
</tr>
<tr>
<td>d POINT CLUB</td>
<td>65.60 million</td>
</tr>
<tr>
<td>Formed by Kake-hodai &amp; Pake-aeru subscriptions</td>
<td>76.37 million</td>
</tr>
</tbody>
</table>

Launch of my daiz AI Guide Service

On May 30, 2018, NTT DOCOMO launched my daiz™, an AI guide service that provides users with the information and services they need in their daily lives at the appropriate timing from NTT DOCOMO or its partners.

The my daiz service learns from the behavior of each individual customer to allow “members” (the guide services that can be provided through my daiz) of NTT DOCOMO and its partners to deliver information and services to customers’ smartphones or tablets that are tailored to the individual needs of each customer.

Moreover, my daiz predicts the needs of customers to enable members to supply information via voice chat, in-app information displays, and pop-ups on smartphone lock screens. It is also possible for my daiz to respond to requests from customers issued through voice commands or touch-screen operation in a conversation-like fashion. For example, my daiz can utilize other NTT DOCOMO services to search for products or contents; make reservations for partner company members, restaurants, and taxis; and respond to shopping-related consultations. The top menu of the my daiz app displays personalized information that a user is expected to need at any given time based on a learned understanding of the user’s behavior and tastes.

NTT DOCOMO Achieves World’s First 5G Wireless Data Transmission in Ultrahigh-Mobility Environment Exceeding 300 km/h

NTT DOCOMO announced that, together with NEC Corporation and NTT, it has achieved what is believed to be the world’s first successful 28 GHz wireless data transmission between a 5G base station and a 5G mobile station in 5G field trials using a car moving at 305 km/h. This trial utilized a car to simulate the provision of 5G services on high-speed railroads and in other ultrahigh-mobility environments.

Going forward, NTT DOCOMO will continue conducting 5G research with world-leading vendors and partners to expand 5G capabilities in a wide range of operating environments.
Data Communications Business

In the Data Communications Business, NTT Group responded to the acceleration of its customers’ expansion in the global market and the diversification and increased sophistication of their needs by working to expand its business in the global market and to expand and reliably provide a range of IT services, such as system integration, that are responsive to changes in the market.

Operating Revenues
¥2,043.1 billion
Operating Income
¥127.8 billion

Expanding Business in the Global Market through M&A Activities
Under NTT DATA Services, launched in April 2017, NTT Group steadily achieved the integration of the former Dell Services Division, of which NTT Group completed the acquisition last year, and pursued the integration of its business centered on North America. In particular, NTT Group promoted initiatives to expand its businesses that utilize the Group’s abundant outsourcing results and knowledge in various fields, including healthcare, the public sector, and finance, and to further enhance its local presence.

Utilizing Blockchain Technologies in Initiatives Targeting the Financial Industry
NTT Group pursued initiatives to utilize cutting-edge blockchain technologies, established a consortium as the organizing office to complete a trade information collaborative platform, and promoted activities together with 14 companies representing various industries. Furthermore, NTT Group was selected as a partner vendor in the Japanese Bankers Association’s “Collaborative Blockchain Platform,” contributing to the promotion of practical testing to develop new services.

Promoting Sales of WinActor® RPA Solution
In terms of RPA solutions for the automation and streamlining of desk work, which is rapidly spreading due to the increasing move toward work style reforms in recent years, NTT Group promoted sales of WinActor®, a solution developed by NTT Group. In addition to launching the English-language version, by strengthening the functions for financial accounting operations, which have a particularly strong need for automation, and through other initiatives, NTT Group was able to introduce WinActor® to customers in a range of industries, supporting work style reforms.

Highly Convenient, Cutting-Edge Mobile Register® Public Fee Credit Payment Service for the Impending Era of FinTech
The recent advancement of FinTech has led to the proliferation of various payment services through smartphone apps along with a rise in demand for credit card payment services that can be used in such settings as shopping at brick-and-mortar stores or online. Meanwhile, the introduction of credit card payment systems for public fees has faced an obstacle in the form of the large initial installation cost of systems at local government agencies.

To address this situation, NTT DATA introduced a credit card payment function into its Mobile Register® QR code payment service for smartphones to commence the Mobile Register® Public Fee Credit Payment Service for local government agencies in April 2018. Mobile Register® is a service that allows for payments to be made via internet banking by scanning QR codes printed on bills using a dedicated smartphone app. Initially launched in May 2009, Mobile Register® was Japan’s first service for paying public fees via mobile phones, and the QR code payment system has since been introduced by several local governments in Japan. The introduction of credit card payment services will make Mobile Register® the only smartphone app in Japan to offer three payment options: payment from a bank account, account-to-account transfer, and payment using a credit card. With its low introduction costs, we anticipate that Mobile Register® will contribute to increased rates of payments for public fees as citizens enjoy the additional convenience of being able to choose from various payment options through their smartphones.

Overview of Mobile Register® Public Fee Credit Payment Service

Results of Joint-Research Project with Local Government Using WinActor®

There is a strong need for work style reforms and work efficiency improvements at local government agencies. Raising to meet this need, NTT DATA partnered with the city of Tsukuba in Ibaraki Prefecture to conduct joint RPA research as part of an initiative based on the government task of using RPA to automate processes for performing the ever-increasing load of routine work tasks. NTT Group’s WinActor® and WinDirector® RPA solutions were adopted for this project. RPA refers to technologies that allow software-based robots to perform routine work tasks via computers.

Upon verifying the benefits of using WinActor® to automate principal tasks performed by Tsukuba City, it was found that this solution could massively lower workloads, including a 79.2% reduction in the workload of city government employees pertaining to processing tasks involving individual and corporate municipal taxes. These results indicate the potential for RPA to perform tasks that local government agencies would have previously addressed through increased labor, either via overtime work or the hiring of temporary employees.

Armed with the insight gained through this joint-research project, NTT Group will support local governments as an IT partner to assist them in promoting work efficiency improvements and work-style reforms.
Other Businesses

In other businesses, NTT Group mainly provided services related to the real estate business, the finance business, the construction and electric power business, and the system development business.

Details of Major Initiatives

Real Estate Business

**NTT UD**

NTT Urban Development, which is the Group’s only comprehensive real estate company, developed its office building and commercial facility operations, as well as residential operations, which are implemented principally through the Wellith brand. This company also used the expertise cultivated through these businesses to advance global operations and conduct the development and operation of hotel resort facilities.

Finance Business

**NTT FINANCE**

As the core finance company of NTT Group, NTT FINANCE provided leasing, installment payment, financing, and other financial services that are compatible with diversifying needs, changes in the economic climate, and the progress of globalization. NTT FINANCE also provided billing and collection services for telecommunications service bills as well as credit card transaction settlement services.

Operations in Review

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**NTT FACILITIES**

NTT FACILITIES provided one-stop solutions for buildings and energy facilities, ranging from planning and design services to construction, maintenance, operation, and upkeep services. NTT FACILITIES also utilized its technologies in the fields of ICT, energy, and construction to the fullest extent and integrated these technologies to develop smart cities that employ natural energy and use limited energy resources in an efficient and waste-free manner and realize safe cities that are resilient to natural disasters and other risks.

**NTT COMWARE**

NTT COMWARE developed its systems integration business, which targets NTT Group as well as other customers. In this business, NTT COMWARE leveraged the strengths of the superior technological prowess and expertise that it has used to support Japan’s largest telecommunications carrier business as one of NTT Group’s IT companies. With regard to customers outside of NTT Group, NTT COMWARE expanded the range of industries it serves to include the financial and distribution industries, among others, and also developed solutions utilizing AI, deep learning, and other cutting-edge technologies.

Details of Major Initiatives

Real Estate Business

**NTT UD**

Completion of Otemachi PLACE Large-Scale Business Center

On August 1, 2018, the construction of Otemachi PLACE was completed. This building was constructed as part of the Otemachi 2-Chome Urban Area Redevelopment Project Type 1 advanced jointly by Urban Renaissance Agency and NTT Urban Development. Otemachi PLACE contains an office space equipped with state-of-the-art infrastructure, business continuity plans, and ICT equipment as well as one of Japan’s highest-capacity Internet data centers. Furthermore, with power source redundancy, looped district heating and cooling systems, space for accommodating individuals who cannot return home, and emergency supply stockpiles, Otemachi PLACE helps ensure business continuity within the building as well as throughout the entire Otemachi area. This building also boasts an international conference center with the Otemachi area’s largest hall in its lower levels. Meanwhile, its Sunken Garden area is an open space under the building featuring numerous unique shops and restaurants. Other distinctive characteristics of the building include the Central Promenade that divides the city block and the Ryukan Sakura Footbridge constructed over the Nihonbashi River. True to its name, Otemachi PLACE has been created as a place for exchanges, breathing new life into the Otemachi area.

Going forward, NTT Urban Development will continue to take part in real estate and urban development projects that lend additional appeal to the surrounding communities and areas.

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NTT Group contributes to the creation of a safer, more secure, and more innovative future with its world-leading technologies.

Role of NTT Group’s Research and Development
As a world-leading ICT conglomerate, NTT Group views research and development as a wellspring of new value to be created in diverse fields through the realization of new technologies. We also recognize that research and development is crucial to our efforts to support customers’ digital transformations as well as to transform individual lifestyles together with NTT Group operating companies. Furthermore, research and development helps us improve productivity; address safety, disaster preparedness, and other issues; and thereby strengthens the competitiveness of industries and resolves social issues. ICT is used in countless fields. We therefore look to overcome challenges through research and development that extends beyond NTT Group to include partnerships with entities from various other industries.

Goals of NTT Group’s Research and Development and Five Key Technologies
The technologies of the future will have to be made to feel more natural to people. There are three perspectives that will need to be adopted to accomplish this objective: “enhance,” the perspective of ensuring that our intent is correctly understood and communicated; “unconscious,” the perspective of allowing people to benefit from sophisticated technologies even if they are not consciously aware of them; and “barrier-free,” the perspective of personalizing technologies to accommodate the differences between individuals.

From the standpoint of companies, there are even more perspectives we must account for in future technologies. The perspective of “awareness” looks to maintain up-to-the-moment understanding of changes in customer behavior or operating environment conditions. The perspective of “data-centric” entails making decisions for reforming corporate work processes and creating new value through data processing techniques. The perspective of “servitization” is focused on providing experiences as opposed to goods. Based on all of these perspectives, NTT Group is tasked with creating technologies that help forge stronger bonds between companies and their customers.

With this vision in mind, NTT Group has identified five key technologies that will be crucial for the future: artificial intelligence (AI), media, Internet of Things (IoT), security, and network technologies.

Five Key Technologies

- **corevo® AI Technologies**
  - **Agent-AI** supports human-like intelligence in everyday situations, enabling intuitive and efficient solutions.
  - **Ambient-AI** interprets human emotions in real-time, leveraging AI to interpret and respond to the physical and emotional context.
  - **Heart-Touching-AI** enables AI to connect different types of AI to collaborate in a synergistic manner, enhancing the overall AI system.
  - **Network-AI** provides value to customers irrespective of the protocol and network operator, ensuring seamless integration.

Under the NTT Group’s corevo® AI technology brand, we are advancing research and development on four types of AI technology with the goal of enriching people’s lives by complementing and drawing out their capabilities. The first is Agent-AI, which supports people’s everyday lives by developing an understanding of people’s intents and emotions based on voice, language, and images to engage in high-level communication with people.

NTT Group is also developing other technologies that make conversations with AI seem more natural. For example, our listening technologies can identify voices, languages, and even emotions. At another point, NTT Group is developing technologies that enable AI to contribute to the development of new value in the areas of individual lifestyles.

The second type is Ambient-AI, which refers to AI that functions as the brain of IoT equipment. These AI interpret data from sensors in real-time to perform spatiotemporal analysis and deduce cause-and-effect relationships. This makes it possible to detect predictive signs of incidents well in advance, to explore optimal scenarios, and to design and perform smart guidance and control at events and on other occasions.

The third type of AI technology is Heart-Touching-AI. This type of AI understands, caters to, and builds upon essential, prismatic, and unconscious elements of people, such as their intellect, instinct, and body. In this area, we took part in the Sports Brain Science Project. Researching the differences in brain functioning between leading athletes and amateurs during exercise, this project has been developing an understanding of not only conscious differences but also unconscious and subconscious differences.

The fourth corevo® brand AI technology is Network-AI. In this category, we develop systems in which various types of AIs connected through a network, coordinate their various responses to make the network itself function as a single AI performing both globally optimized control and area-dependent control. Network-AI provides value to customers irrespective of the protocol and the network operator used.

NTT Group’s ultra-high immersion media technologies are largely based on these approaches: technologies for creating and transmitting spaces, which are exemplified by our Kirari® immersive telepresence technology; technologies that allow viewers to place themselves in a space, such as by watching a professional baseball player pitch from the viewpoint of the batter and space direction technologies that take advantage of optical illusions to realize the simultaneous viewing of 2D and 3D images.

Looking specifically at one of these technologies, the concept for our Kirarin® Immersive Telepresence Technology was announced in February 2015, and research and development for this technology has since advanced through verification tests in the sports and entertainment fields. This technology is able to incorporate depth to enhance immersion by portraying more natural movement in all directions. Kirarin® can therefore create new viewing experiences, such as displays in which numerous people view sporting events from multiple angles. Going forward, NTT Group will accelerate the development of services that revolutionize live viewing of sports and entertainment and corporate broadcasts.

**New Dimension of Immersion in Sports Viewing**

- **New Viewing Experience of Surrounding a Display**
- **Arenas viewing experiences delivered around the world**

NTT Group has defined basic IoT architecture and is using this architecture as a foundation for the development of IoT systems for various industrial fields.

For example, NTT Group carried out a successful verification test for a next-generation shipping IoT platform for improving shipping safety and efficiency together with Nippon Yusen Kabushiki Kaisha and NTT Co., Ltd. The requirements for this platform offered from different IoT platforms in that the distance between ships at sea and on land operation centers forced us to rely on satellite transmissions, which suffer from incredibly low bit rates. The platform verified in this test used a framework in which data from the various sensors in a ship’s engine and navigation systems first underwent preliminary processing onboard the vessel. The processed data was then sent to operation centers, which used this data to oversee ship operations and transmit software updates. NTT Group plans to continue taking part in such verification tests going forward as it creates innovations with its partners in a bid to improve the safety and economic viability of shipping, address environmental issues, and boost the competitiveness of Japan’s maritime industry on the global stage.

### Five Key Technologies

#### IoT

In a world first, NTT Group has realized 100 Gbps wireless transmission using a new principle—orbital angular momentum (OAM) multiplexing—with the aim of achieving terabit-class wireless transmission to support demand for wireless communications in the 2030s.

In a laboratory environment, NTT Group made remarkable progress in transmission capacity thanks to its system that mounts data signals on the electromagnetic waves generated by this new principle in combination with widely used multiple-input and multiple-output (MIMO) technology.

The results of this experiment revealed the possibility of applying this principle to large-capacity wireless transmissions at a level about 100 times that of LTE and Wi-Fi and about five times that of fifth-generation (5G), which is scheduled for launch. This transmission technology is expected to contribute to the development of innovative wireless communications technologies for such next-generation 5G systems as connected cars, virtual reality and augmented reality, high-definition video transmission, and remote medicine.

#### Network Technologies

With an eye to more than a decade down the line, NTT Group is advancing cutting-edge R&D projects to create new principles and concepts that eclipse current technologies in terms of speed, capacity, size, energy, and other aspects. We are committed to making strides in basic research to drive the ongoing growth of NTT Group and the evolution of its R&D activities.

### Basic Research Initiatives

#### Completely New Type of Computer

There are combinatorial optimization problems that are difficult to solve with conventional computers. Recognizing this issue, NTT Group is advancing research and development of completely new type of computer—LASOLV, a portmanteau of the words “laser” and “solve.” This computer takes advantage of physical phenomena by using optical parametric oscillators to swiftly solve such problems.

Using model computers, which use superconductive elements and are also capable of solving such problems, require cooling systems as they can only be operated at temperatures of around -270°C. LASOLV, however, can function at room temperature, which means that additional research and development is required to solve with conventional computers. Recognizing this issue, NTT Group is advancing research and development of completely new type of computer—LASOLV, a portmanteau of the words “laser” and “solve.” This computer takes advantage of physical phenomena by using optical parametric oscillators to swiftly solve such problems.

#### Never-Before-Seen Battery

It can be expected that the evolution of IoT technologies will lead to various sensors being installed throughout society. These sensors will require batteries. It will be impossible to recover batteries under certain circumstances, and it will therefore be important to ensure that these batteries do not adversely impact the environment. NTT’s solution to this predicament is its “Tsukihanaum Battery,” a never-before-seen, eco-friendly battery that is non-toxic, does not use rare metals, and employs fertilizer material in its battery cells to prevent damage to soil and living organisms.

Currently, this battery is able to power lights or buzzers, but its capacity is only a tenth that of batteries currently on the market. NTT Group believes that additional research and development is needed to extend this short life span. We see potential for this battery to create new businesses where harmony with nature is required, such as soil moisture sensors, ecosystem, soil, and other environmental monitoring; and detection of indicators related to floods, pollution, and climate events.

#### Security

Ensuring safety and security in society and industry requires that we take steps to protect against cyberattacks. This protection cannot be limited to transmission networks; it must extend to IT systems comprising services and computers as well as the IoT systems of factories, buildings, and automobiles, which have been increasingly being connected to services in recent years. NTT Group aids in this protection through research and development on encryption technologies that ensure data confidentiality and privacy and cybersecurity technologies that safeguard IT systems and IoT against cyberattacks.

In the IoT security field, NTT Group has discovered a new privacy threat—Silhouette—in social web services (SWSs). We have since developed risk assessment methodologies and verified the effectiveness of countermeasures through collaboration with several SWSs at risk of being impacted by Silhouette, thereby helping a user a safer Internet for users around the world.

One of NTT Group’s security initiatives in the IoT field is research and development on technologies for detecting and addressing cyberattacks targeting connected cars. It is crucial to be able to swiftly detect attacks against connected cars, accurately pinpoint their causes and damages, and implement appropriate response measures. As its first step toward realizing these capabilities, NTT has developed a technology that analyzes transmissions within connected cars to immediately detect any abnormality. The next step will be to coordinate this technology with cloud servers to realize precise detection and accurate responses and thereby contribute to safety and security in the automobile society of the future.

### Basic Research Initiative

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NTT Group practices environmental, social, and governance (ESG) management to address environmental and social issues. We have defined the reduction of our environmental impact, security, and the encouragement of participation by diverse human resources as material issues for NTT Group. Based on these issues, we are working to minimize business risks while capturing business opportunities to drive ongoing improvements in corporate value.

**Material Issues**

<table>
<thead>
<tr>
<th>NTT Group CSR Charter</th>
<th>Sustainable Development Goals</th>
<th>Initiatives</th>
<th>Targets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protect the Global Environment</td>
<td>Reduction of Environmental Impact (E)</td>
<td>• Contribution to reducing society’s CO2 emissions</td>
<td>• Energy efficiency of telecommunications business: Double (by FY2025)*1</td>
</tr>
<tr>
<td>Ensure Reliable Communications</td>
<td>Security (S)</td>
<td>• Reduction of the Group’s CO2 emissions</td>
<td>• Reduction in energy consumption of telecommunications business: 10% (by FY2025)*2</td>
</tr>
<tr>
<td>Unite the Energies of Team NTT</td>
<td>Encouragement of Participation by Diverse Human Resources (S)</td>
<td>• Improvement of electricity efficiency</td>
<td>• Ratio of fleet of general company-use vehicles being electric vehicles: 50% (by FY2025)*3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Promotion of e-mobility</td>
<td>• Reduction in vehicle costs of 15% (by FY2025)*4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Number of incidents of personal information leaks: 0</td>
<td>• Final disposal ratio of waste: Zero emissions (under 1%) (by FY2030)*5</td>
</tr>
</tbody>
</table>

**Targets**

<table>
<thead>
<tr>
<th>Targets</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Number of incidents of personal information leaks: 0</td>
</tr>
<tr>
<td>• Stable service provision rate: 99.99%</td>
</tr>
<tr>
<td>• Number of major accidents: 0</td>
</tr>
<tr>
<td>• Ratio of female managers: 6.0% (by FY2020)*5</td>
</tr>
<tr>
<td>• Ratio of persons with disabilities: 2.2%</td>
</tr>
<tr>
<td>• Employee satisfaction: Better than in the previous fiscal year</td>
</tr>
</tbody>
</table>

**Expansion of economic value**

<table>
<thead>
<tr>
<th>Expansion of economic value</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Expansion of upside potential</td>
</tr>
<tr>
<td>• Reduction of downside risks</td>
</tr>
</tbody>
</table>

**Ongoing Improvements of Corporate Value**

1. The SASB Sustainability Accounting Standards are metrics for quantitative representation of non-financial information put forth by the Sustainability Accounting Standards Board of the United States.
2. vs. fiscal year ended March 31, 2018
3. Performance in the fiscal year ended March 31, 2018: 0.1%
4. Performance in the fiscal year ended March 31, 2018: 1.0%
5. Performance in the fiscal year ended March 31, 2018: 5.1%
Corporate Data

Name: NIPPON TELEGRAPH AND TELEPHONE CORPORATION

Head Office: Otemachi First Square, East Tower, 5-1, Otemachi 1-Chome, Chiyoda-ku, Tokyo 100-8116, Japan

Date of Establishment: April 1, 1985

Paid-In Capital: ¥938 billion (As of March 31, 2018)

Paid-In Capital in accordance with the Nippon Telegraph and Telephone Corporation Law (Bill No. 85, December 25, 1984)

Total Number of Shares Issued: 2,096,334,410 (As of March 31, 2018)

Number of Employees: 2,660 (As of March 31, 2018), 282,650 employees (As of March 31, 2018, on a consolidated basis)

Members of the Board

Chairman of the Board: Hiromichi Shinohara

President & CEO: Jun Sawada

Executive Vice Presidents: Akira Shimada, Motoyuki Ii

Senior Executive Vice Presidents: Tsunehisa Okuno

Senior Vice Presidents: Hiroki Kuriyama, Takashi Hiroi, Eiichi Sakamoto, Katsuhiko Kawazoe, Ryura Katamura, Katsunori Shirai, Sadayuki Sakakibara

Audit & Supervisory Board Members: Akiko Ido, Takao Maszawa, Mohiko Tomonaga, Seiich Ohsai, Takashi Iida

Organization Chart

Board of Directors
- Chairman
- President

Audit & Supervisory Board Members

Access

Otemachi First Square
Tokyo Metro: Chiyoda Line / Tozai Line / Harumon Line / Marunouchi Line
Toei Subway: Mita Line
Otemachi Station, direct connection from exits C8, C11, and C12
JR lines
Tokyo Station, Marunouchi North Exit, 5 minute walk from exit

NIPPON TELEGRAPH AND TELEPHONE CORPORATION
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