



NTT's Stance on the State of the NTT Act

October 19, 2023

This is a translation of the original Japanese document.

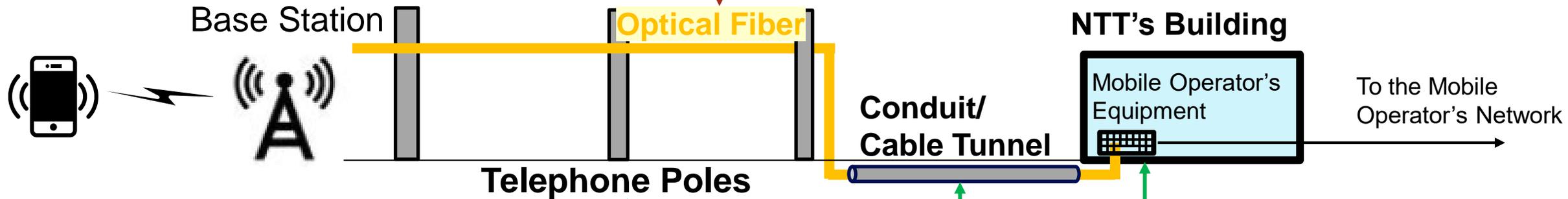
- 1. Fair Competition Conditions are Regulated by the Telecommunications Business Act**
- 2. Ensuring Fair Competition by NTT East and NTT West**
- 3. R&D Promotion and Dissemination Obligation Should Be Eliminated**
- 4. The Future of Universal Service Obligations**
- 5. Regulatory Status in Major Countries**
- 6. Imposing Foreign Investment Restrictions Solely on NTT is Meaningless**
- 7. Purpose of the NTT Act Has Largely Been Accomplished**

1. Fair Competition Conditions are Regulated by the Telecommunications Business Act

Fair competition conditions are regulated by the Telecommunications Business Act, not the NTT Act.

Under the Telecommunications Business Act, optical fiber of NTT East and NTT West is designated as **“Category I Designated Telecommunications Facilities”** and must be rented fairly and equitably.

- Authorization of the general conditions of contracts for interconnection (Article 33, Telecommunications Business Act)
- Annual verification by the Ministry of Internal Affairs and Communications (“MIC”) of compliance with “prohibition on unfair preferential treatment (Article 30 of the Act)”



Under the Telecommunications Business Act, NTT East and NTT West must, on a fair and equitable basis, rent poles, conduits, tunnels, and building space, etc. owned by NTT East and NTT West.

- Authorization of the general conditions of contracts for interconnection (Article 33, Telecommunications Business Act)
- Annual verification by MIC of compliance with “prohibition on unfair preferential treatment” (Article 31 of the Act)

2. Ensuring Fair Competition by NTT East and NTT West

- NTT East and NTT West will continue to comply with the Telecommunications Business Act and other laws, regulations and rules, and provide access to networks and other services to other carriers in a fair manner.
 - It is important for NTT East and NTT West to maintain and expand their businesses not only with NTT DOCOMO, but also with a wide range of other telecommunications carriers.
- ⇒ There is no plan to integrate NTT East/NTT West and NTT DOCOMO.

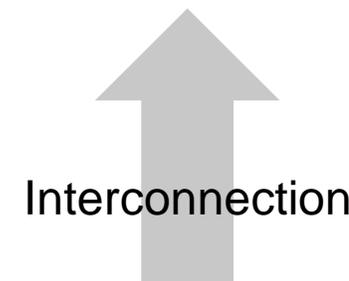
NTT East: approx. 600 carriers
NTT West: approx. 600 carriers (1)

NTT East: approx. 200 carriers (1)
NTT West: approx. 140 carriers (2)

- Notification of wholesale telecommunications service charges and other matters (Article 38-2, Telecommunications Business Act)
- Annual verification by MIC of appropriateness of wholesale rates and compliance with “prohibition on unfair preferential treatment (Article 30 of the Act)”



Fair Provision to All Carriers



- Authorization of the general conditions of contracts for interconnection (Article 33, Telecommunications Business Act)
- Annual verification by MIC of compliance with “prohibition on unfair preferential treatment (Article 30 and 31 of the Act)”

NTT East and NTT West

(1) Number of service users: telecommunications carriers for each of NTT East and NTT West

(2) Sum total of the number of service users: telecommunications carriers for each NTT East and West optical line interconnection menu (single star/shared access) 4

- **The obligation to promote and disseminate (disclose results of) R&D that is stipulated by the NTT Act should be eliminated because the obligation is an obstacle to ensuring economic security and strengthening international competitiveness**, as NTT will continue to collaborate with various partners on IOWN and other R&D to further promote international expansion.
 - Although some are of the view that this could be addressed by reconsidering the operation of the obligation for dissemination of R&D, **the promotion of R&D should not be imposed on a single operator by law**, and this is **an extremely unusual situation even from an international perspective**, so the obligation should be eliminated.
 - **Regardless of whether the obligation exists or not, NTT will continue to promote R&D on its own and will also continue to actively cooperate and contribute to research being conducted by the government and National Research and Development Agency, etc.**

4. The Future of Universal Service Obligations

- Universal service obligations should be undertaken by the most appropriate business entity in the most appropriate manner for each region, using fixed, wireless, satellite or other methods for voice and data communications.
- To make this possible, the fixed-line telephone services obligation under the NTT Act should be incorporated into the universal service obligations for broadband services stipulated in the Telecommunications Business Act, in the same manner as in other major countries.
- If this were the case, then if the following conditions were met, NTT East and NTT West would be prepared to assume last resort obligation in areas where no other carrier agrees to do so.

Necessary conditions:

- ✓ Achieving a subsidy system that is sufficient but not excessive
- ✓ Adopting flexible and cost-minimizing delivery methods, including mobile, satellite or other methods Etc.

5. Regulatory Status in Major Countries

In major countries, special corporation laws have been repealed. Universal services obligations are regulated by business laws. Foreign investment restrictions are also provided for in the foreign exchange laws of most countries.

		Japan (NTT)	US (AT&T)	UK (BT)	France (FT)	Germany (DT)	
Special Corporation Law		Yes	No	Yes→No* 〔 Only provisions related to property succession remain 〕	Yes→No* 〔 Only provisions related to pensions associated with having been a government employee remain 〕	Yes→No* 〔 Only provisions related to property succession and pensions associated with having been a government employee remain 〕	
Government Must Own Shares (Ownership Ratio:FY23)		Yes (1/3 or more) (34.3%)	No (0%)	Yes→No (0%)	Yes→No (13.4%)	No (30.5%)	
Approval for Appointment of Board Members/ Regulation of Foreign Directors		Yes	No	Yes→No 〔 Approval for appointment of board members 〕	Yes→No 〔 Approval for appointment of board members 〕	Yes→No 〔 Approval for appointment of board members / Regulation of foreign directors 〕	
R&D Promotion and Dissemination Obligation		Yes	No	No	Yes→No 〔 Responsibility for contributing to the promotion of research 〕	No	
Universal Services Obligation	Laws and regulations	〔Fixed-Line Telephone〕 NTT Act and Telecommunications Business Act 〔Broadband〕 Telecommunications Business Act	business law	special corporation law ↓ business law	special corporation law ↓ business law	special corporation law ↓ business law	
	Business Carriers of Last Resort	〔Fixed-Line Telephone〕 NTT Act (NTT is assigned) 〔Broadband〕 No	business law 〔 In the event of an unsuccessful public offer, the state government assign an appropriate carrier 〕	business law 〔 Government assigns an appropriate carrier after publicly soliciting alternative proposals 〕	business law 〔 In the event of an unsuccessful public offer, the government assign an appropriate carrier 〕	business law 〔 In the event of an unsuccessful public offer, the government assign an appropriate carrier 〕	
Restrictions on Foreign Investment	Review for Each Investment 〔 Percentage of investment that may be subject to review:FY22 〕	Foreign Exchange & Trade Act (10→1% or more)	foreign exchange & trade law (No Lower Limit)	business law	foreign exchange & trade law (No Lower Limit)	foreign exchange & trade law (33→25→more than 10%)	foreign exchange & trade law (25→10% or more)
	Regulations for Total Volume of Investment	NTT Act	〔 Exempt from total volume control if not detrimental to the public benefit, and individual assessment 〕 * Softbank's acquisition of Sprint also allowed it to acquire 100% of the shares		No	No	No

6. Imposing Foreign Investment Restrictions Solely on NTT is Meaningless

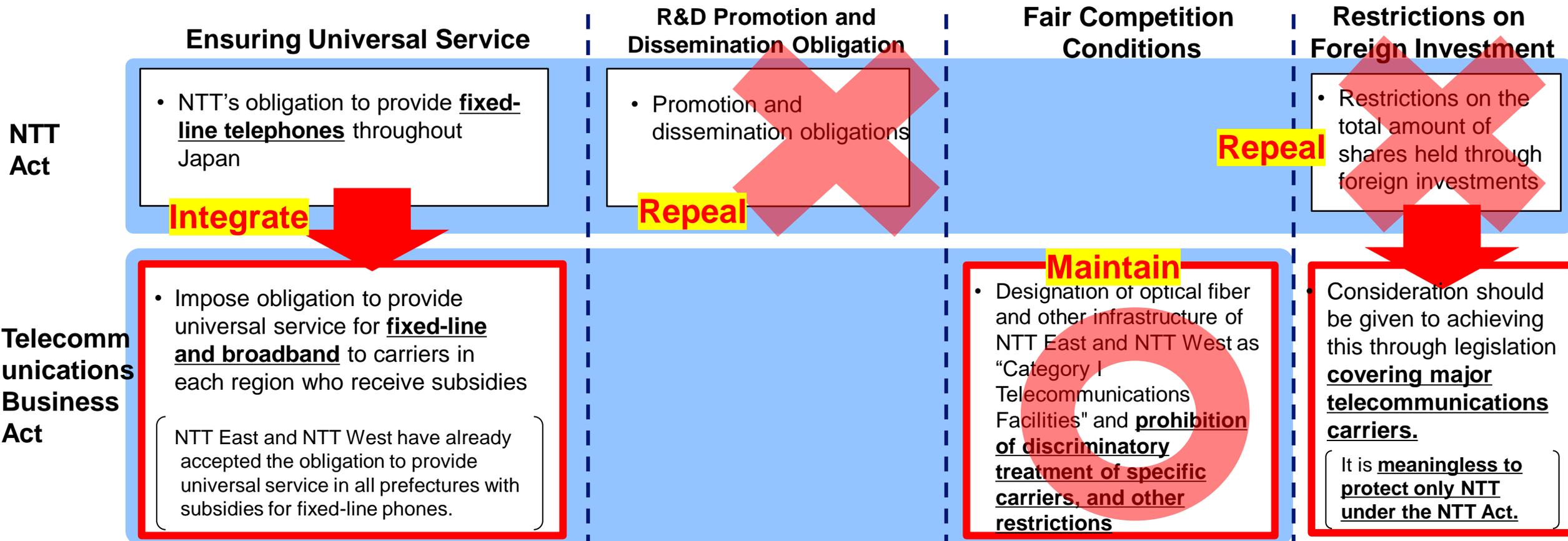
- When the NTT Act was enacted, NTT had a monopoly on fixed-line telephones
⇒ Current Situation: Fixed-line telephone services of NTT East and NTT West have about 13.5 million users. Mobile communication services have about 210 million users.
- Within mobile communications, the market share of each company is as follows:
DOCOMO: 35.5%; KDDI: 27.0%; Softbank: 20.7%; Rakuten: 2.3%; and MVNOs:14.5%.
- Although there are cases of mobile operators using NTT East/NTT West's infrastructure facilities (such as telephone poles) and optical fiber, **since the management system of mobile customer information and the core network are generally owned and managed by each mobile operator itself, if mobile operators' information and infrastructure are not protected, then the stable provision of communications to approximately 210 million mobile users cannot be ensured.**
- In fact, there has been a case in which Russian industrial spies stole Softbank mobile infrastructure information and took it out of the country.
- **From the viewpoint of economic security, it is meaningless for only our company to be protected by the NTT Act, and consideration should be given to having major telecommunications carriers covered by the Foreign Exchange and Foreign Trade Act or other laws and regulations.**

Source: MIC “Quarterly data on the number of subscriptions and market share of telecommunications services (as of the end of June 2023)”

7. Purpose of the NTT Act Has Largely Been Accomplished

Differences between when the NTT Act was Enacted (40 Years Ago) and Today

- **Market:** Fixed/Voice (NTT monopoly) → Mobile/Data Communications (NTT DOCOMO's market share: 35.5%)
- **Technology:** Analog fixed networks and switching systems (monopolized by Japanese manufacturers)
→ Internet networks and routers (mainly produced by global manufacturers such as Cisco)
- **Legal Systems:** Enhancement of the Telecommunications Business Act (addition of universal service provisions for fixed-line and broadband, strengthening of measures to ensure fair competition for optical fiber, etc.), strengthening of foreign investment restrictions on telecommunications carriers, etc. under the Foreign Exchange and Foreign Trade Act
- **Major countries** have repealed their special corporation laws and integrated them into business laws. Japan is 20 years behind.



* Upon the obligations under the NTT Act being repealed, regulations to ensure the government's shareholding obligations, authorization of business plans and appointment of directors, and other responsibilities should also be repealed.

References

■ Company Name

- Because the name of the law is "Nippon Telegraph and Telephone Corporation Act", NTT cannot change its own company name even though telegraph services were terminated 20 years ago.

■ Obligation to Disclose R&D Results

- Partnering with global vendors requires detailed discussions on which party holds the IP rights. However, the obligation to fairly disclose R&D results under the NTT Act has been a stumbling block to international expansion, as there have been cases where partnerships with NTT have been refused because NTT's disclosure obligation involves a technology-wide issue.
- In addition, we have no choice but to disclose our R&D results when requested to do so by government agencies or companies in countries of concern or their subsidiaries in Japan, which is also problematic from the perspective of economic security.

■ Restrictions on Scope of NTT Holdco's Business

- ① The scope of NTT Holdco's business is limited by the NTT Act to "shareholding, advice, mediation, and other assistance to regional companies, and R&D." Therefore, although international business is a core business for the future, it cannot be mentioned in the articles of incorporation and is positioned as "other assistance."
- ② Although R&D institutes belong to NTT Holdco, Holdco is not allowed to conduct business under the NTT Act. Therefore, when Hddco seeks to commercialize the results of its research, it cannot take the risk of starting up and promoting its own business and therefore cannot overcome the so-called "valley of death."

■ Prohibition on the Appointment of Non-Japanese Executives

- Although 150,000 of the 340,000 employees of the NTT Group are non-Japanese, the NTT Act's prohibition on appointing non-Japanese executives prevents NTT from being able to have management with a global and diverse perspective, and no matter how well such employees perform, they cannot be appointed to the Holdco's executive management, leading to a loss of motivation.

- **Authorization of Appointment and Dismissal of Executives and Other Matters** (appointment and dismissal of executives, business plan, new share issuances, amendments to the articles of incorporation, appropriations of surplus, etc.)
 - The election and dismissal of executives (as well as the issuance of new shares, amendment of the articles of incorporation, and appropriation of surplus) are only effective upon authorization by the Minister of Internal Affairs and Communications, even if they have been approved at the general shareholders' meeting.

- **Various Matters Requiring Notification** (amendment or repeal of organizational and financial regulations)
 - Notification, including **for minor matters**, is required whenever regulations are revised or repealed (Article 14 of NTT Act Enforcement Regulations), and **prior explanation** (de facto approval) **is required in each case**.
 - (Ex.) Establishment of an internal audit division (Internal Control Office under the General Affairs Division is promoted to an important organization under the Companies Act to strengthen internal control); establishment of a Legal Office (within the General Affairs Division), etc.

- **Restrictions on the Scope of Business of NTT East and NTT West**
 - Because the scope of NTT East's and NTT West's businesses is **limited to regional communications business** under the NTT Act, NTT East and West **cannot offer commercial products or services that are not related to the regional communications business**.
 - (Ex.) In the case of regional development of the fishing industry, NTT East and NTT West can provide communications systems related to the fishing industry (such as remote water temperature sensors), but cannot make comprehensive contributions that include non-communications fields (such as building aquaculture facilities or providing aquaculture guidance)

- **Self-Installation Obligation**
 - While other carriers are working to improve efficiency through infrastructure sharing, NTT East and NTT West **are unable to improve efficiency through infrastructure sharing** because they are obligated to operate their businesses "using telecommunications infrastructure they have installed themselves" (Article 2, Paragraph 5 of the NTT Act).
 - (Reference) KDDI and SoftBank are already working on sharing 5G base station equipment and lines.

Excerpts from the Second Report of the Special Subcommittee of the Information and Communications Council, Ministry of Internal Affairs and Communications (February 13, 2002)

(Special Subcommittee on Competition Policy in the Telecommunications Business to Promote the IT Revolution)

R&D and Dissemination Responsibilities:

2.(3)(b)⑧ However, as competition in the telecommunications business intensifies in the future, it cannot be denied that the continuation of this responsibility may become a major burden on NTT's management in the future. The **imposition of a legal obligation on a telecommunications carrier to promote research and disseminate the results of such research is not only unique from an international perspective, but also could result in a distortion of competition by restricting the freedom of the carrier's management.** Therefore, we believe that NTT's responsibility to promote research and disseminate research results should be repealed at the point when, after determining the status of strengthening Japan's R&D structure under the basic R&D strategy described in (2) above, **it is judged that the repeal of this responsibility will not significantly impede ensuring the R&D capabilities of Japan as a whole.**

2.(3)(b) ⑨ As a concrete measure to ensure that the repeal of such responsibility does not significantly impede ensuring the R&D capabilities of Japan as a whole, it is necessary to consider, for example, a **mechanism whereby the government can commission NTT holdings or other companies to conduct R&D on specific important matters when it is essential for the future development of telecommunications technology, and the results of such R&D can be shared by the entire nation.**

Restrictions on Foreign Investment:

1.(2)(a)⑧ Thus, **the international community as a whole is shifting from the traditional approach of uniformly regulating the total amount of foreign capital, regardless of its content, to a differentiated case-by-case approach of checking foreign investment that may hinder the security of the nation. Japan should, as a fundamental matter, aim in the same direction.**

This is a translation of the original Japanese text.

(Continued from the previous page)

Obligation of the Government to Own Shares:

1.(4)(a)② As stated in the First Report at the end of 2000, **when viewed from the perspective of ensuring the flexibility of NTT's financing, the transparency of its management, and its independence from the government, consideration should be given to fundamentally repealing the obligation of the government to hold NTT shares.** In addition, **the need for the government to continue to hold NTT shares to ensure the adequacy and stability of NTT's management is expected to decline,** given that the government is considering new support measures by reviewing the existing method of requiring NTT to provide universal services, promote research and disseminate research results under the NTT Law.

Excerpts from the Second Report of the Special Subcommittee of the Information and Communications Council, Ministry of Internal Affairs and Communications (August 7, 2002)

(Special Subcommittee on Competition Policy in the Telecommunications Business to Promote the IT Revolution)

Responsibility for Providing Universal Services:

4.(4)④ Under the current system, **NTT East and NTT West are ultimately required to ensure the provision of universal services based on the obligation provision in Article 3 of the NTT Act.** However, in the event that the obligation provision is abolished in the future, it is necessary to consider establishing an exit regulation, as adopted in the U.S. (federal law), in which the exit of the relevant carrier is not permitted and the continued provision of universal services is ensured.

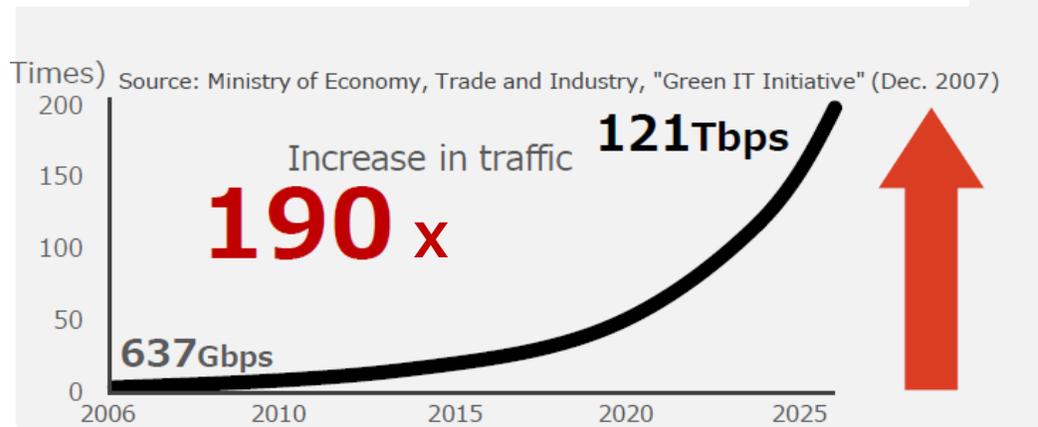
This is a translation of the original Japanese text.

Roadmap for IOWN Development

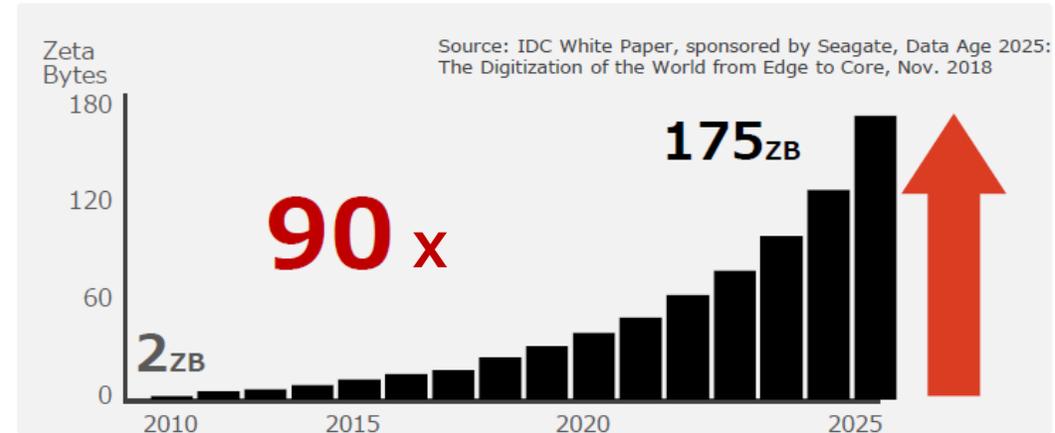
① Challenges Associated with the Advent of a Data-Driven Society

Data volume and power consumption will increase significantly in the future with the advent of a data-driven society

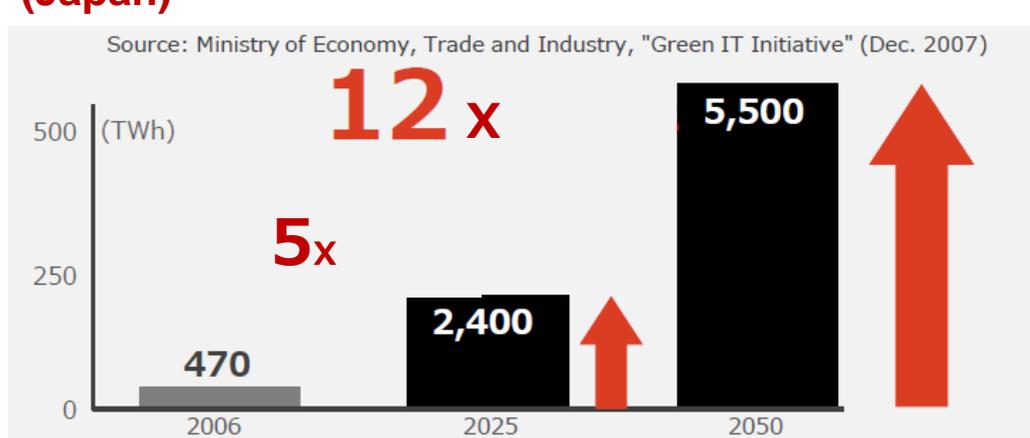
Estimated Internet Traffic Volume



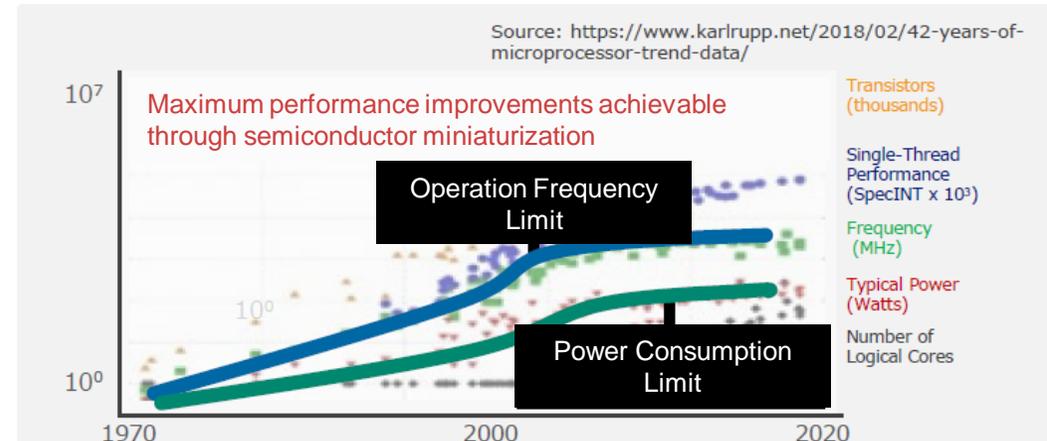
Increase in Volume of Data



Estimated Power Consumption of IT Devices (Japan)



Limits of Technological Evolution

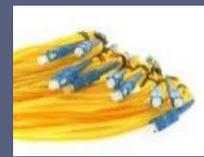


② Problem Solving through IOWN

To meet the challenges of increasing data volume and power consumption, NTT will achieve 100 times the power efficiency, 125 times the transmission capacity, and 1/200th of the latency through the IOWN Initiative

Low Power Consumption

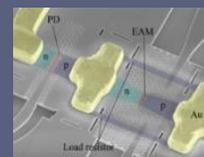
Power Efficiency
100x⁽¹⁾



Transmission Medium
Optical fiber cable



Transmission Systems
Optic (wavelength) throughput

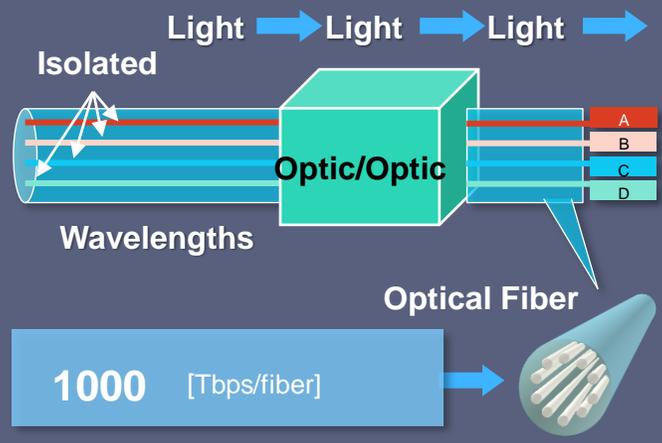


Information Processing Platform
Photonics-electronics convergence elements

High-Capacity/ High-Quality

Transmission Capacity
125x⁽²⁾

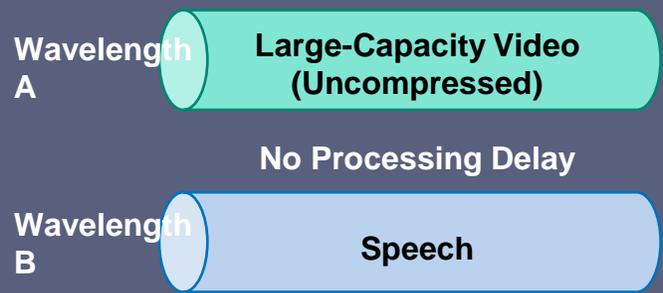
Wavelengths (Optical signal)



Low Latency

End-to-End Latency
1/200⁽³⁾

- Transmissions per wavelength
- No processing delays required
- No data compression required



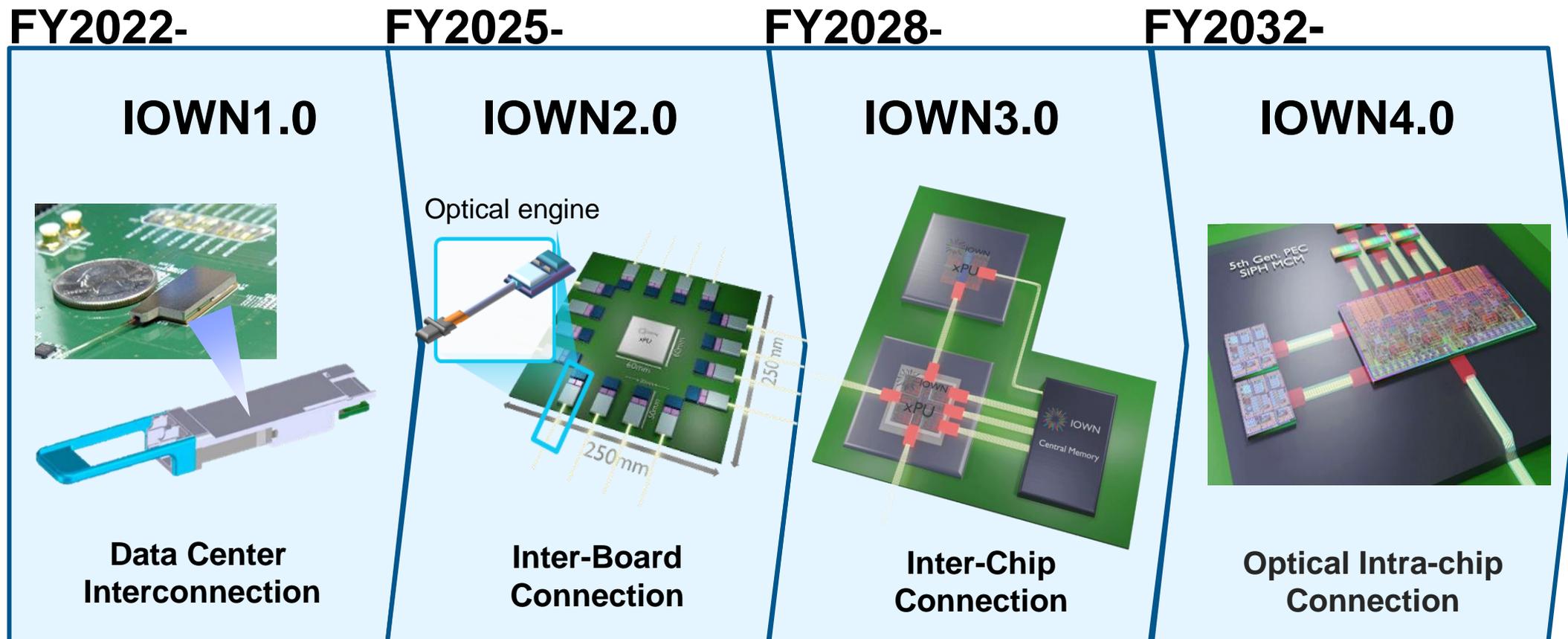
(1) Target power efficiency of the parts to which photonics technology is applied

(2) Target communication capacity per optical fiber cable

(3) Target latency for uncompressed video traffic within the same prefecture in Japan

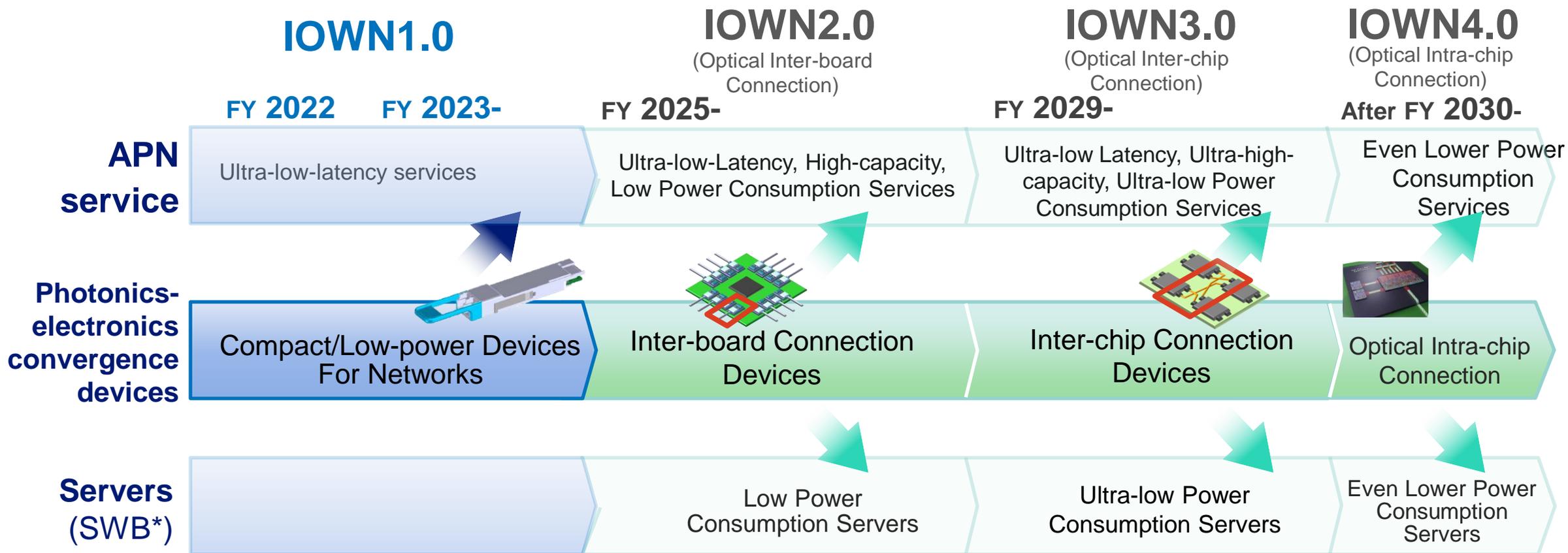
③ Evolution of Photonics-Electronics Convergence Devices

Advancing the miniaturization of photonics-electronics convergence devices and other technologies to expand their fields of application from communications to computing



④ Deployment of Photonics-Electronics Convergence Devices

Improving IOWN by applying photonics-electronics convergence devices to All-Photonics Network (APN) services and servers



*Super White Box

Present and Future of NTT Group's Global Business



Upgrade and expand world-class solutions and data centers with IOWN and other technologies

Overseas Sales approx. ¥2.5 trillion / **Operating Profit** approx. ¥180 billion⁽¹⁾

Serves a broad customer base (more than 75 of the Fortune Global 100, and a total of approx. 5,000 companies)

Approx. 150,000 international employees (Americas: 42,000, EMEA: 57,000, APAC: 55,000)

World-Class Solutions

Solutions (e.g., transportation systems)

MaaS Platform of Renfe, a Spanish Railways Company



M2M Connectivity Solution

(Providing IoT solutions to global automotive companies in 190 countries and regions worldwide, etc.)



Assessing Congestion within Chicago's Leisure Facilities

(Real-time analysis of human flow data to understand congestion and optimize admission systems and visitor timing)



Network Services

- The only operator in Japan to provide a Tier1 IP backbone
- Provides high quality and reliable services in approximately 190 countries
- Ranked as one of the leaders in network services for nine consecutive years in a report by a U.S. research firm⁽²⁾

World's 3rd Largest Data Center Business

- 148 buildings in 98 locations, 16 countries. Hyperscaler ratio of 45%
- Plan to double the current total of 1,100MW in 5 years
- Ranked as one of the leaders in the field of data center colocation, etc. in a report by a U.S. research firm⁽³⁾

Americas
300MW⁽⁴⁾

EMEA
400MW⁽⁴⁾

India
150MW⁽⁴⁾

APAC
250MW⁽⁴⁾

Global Expansion of IOWN

IOWN APN
Photonics-electronics convergence devices



Fellowship for global expansion



Founding Members

- Intel
- Sony
- NTT

Sponsor/General Members

- Dell
- CISCO
- ERICSSON
- NetApp
- NVIDIA
- Microsoft
- ORACLE
- orange
- Qualcomm
- Red Hat
- SAMSUNG
- Telefónica

(131 organizations and associations as of Sep 2023)

Enhancement and Expansion through IOWN and other Technologies

Expanding the Deployment of Photonics-Electronics Convergence Devices

- Established NTT Innovative Devices Corporation in June 2023
- Aiming for sales of over ¥200 billion in 2029

Achieving IOWN Data Centers Using APN and Other Technologies

- In order to make distributed data centers a reality, we plan to conduct APN connection PoC tests in Japan, the U.S. and U.K.



IOWN Global Promotion Office

- Established offices in North America and EMEAL to create business use cases for IOWN and to train 600 IOWN technology experts by the end of FY2025.

OPEN RAN OREX

- Launched OREX as a brand for DOCOMO to promote ORAN, expanded the solutions menu and promoted global expansion

(1) FY2022 results

(2) <https://group.ntt.jp/newsrelease/2022/04/27/220427b.html>

(3) <https://group.ntt.jp/newsrelease/2021/09/01/210901c.html>

(4) Electricity capacity of buildings dedicated to data centers owned by NTT Communications Group and NTT Ltd. Group (including JVs with third parties) as of March 31, 2023