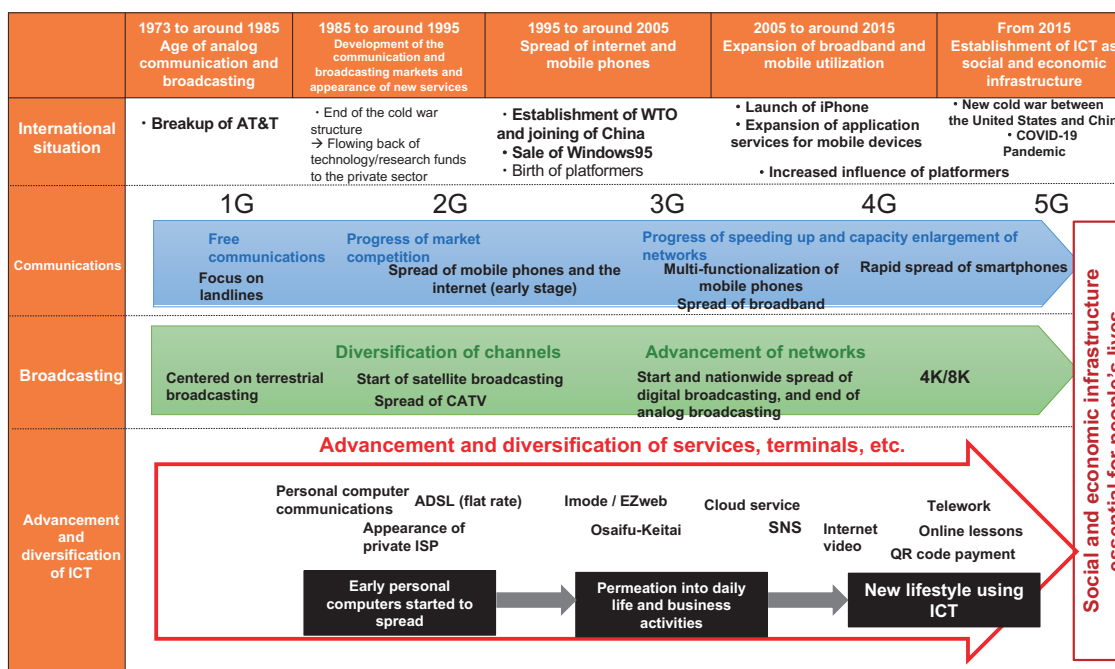


Review of Changes Over the Past 50 Years in Chronological Order

In Chapter 1, we divide the 50 years since the first publication of the White Paper into five periods from the viewpoints of ICT advancement, service diversification, and international changes regarding ICT, summarize changes in systems, services, technologies, etc., in each period while mentioning turning points, and provide an overview of the processes where ICT has come to play an important role in social and economic activities (Figure 1-0-1-1).

Figure 1-0-1-1 Trends in the information and communication field in the past 50 years



(Source) MIC (2022) "Research Study on Economic Security in Digital Society"

Section 1 1973 to 1985: Age of Analog Communications and Broadcasting

From 1973 to 1985, the foundation for the spread of ICT was fostered mainly in developed countries, and nations like the United States and the United Kingdom saw progress in the liberalization of the telecommunication industry. Changes for the basis of today's information society were seen also in Japan, as exemplified by the spread of fixed telephone, television broadcasting and privatization of Nippon Telegraph and Telephone Public Corporation (herein-after "NTT Public Corporation"). We name the period from 1973 to 1985 as the "Age of Analog Communications and Broadcasting" and provide an overview for the status of the ICT sector during this period.

1. International Events and Trends

In 1973, when the first White Paper was published, the 4th Arab-Israeli War triggered the first oil crisis. In 1979 the world experienced a second oil crisis that was triggered by the Iranian Revolution. The experience of the tough economic situation brought about by the oil

crises led to the direction to break away from mass consumption of resources and energy and **shift to a resource-conserving and knowledge-intensive industrial structure**. The **Information and communications industry** was widely expected to become the

core of the movement.¹

The United States is notable for the development of the military use of radio communication and electronic applied equipment. Military use of integrated circuits (IC) components developed during the Vietnam War in the latter half of the 1960s. As a result, the U.S. electronic equipment industry grew rapidly. In addition, advances in the development of memory and microprocessors, through support by the Department of Defense and the National Aeronautics and Space Administration (NASA),² helped the **growth of the information and communications industry** in the country.

Furthermore, in the 1980s, the principle of competition was introduced into the telecommunications market

of the United States and the United Kingdom. Liberalization of the telecoms sector in the United States progressed around the antitrust suits of the Department of Justice against the monopoly by AT&T (The American Telephone & Telegraph).³ After several suits, AT&T was broken up in 1984. In the United Kingdom, after the inauguration of the Thatcher administration in 1979, a wide range of state enterprises were privatized in order to restore the national finances and the economy of the country. In 1982, a license for telecommunication business, a sector that had been monopolized by British Telecommunications, was given to a competitor, and this was followed by the privatization of British Telecommunications in 1984.

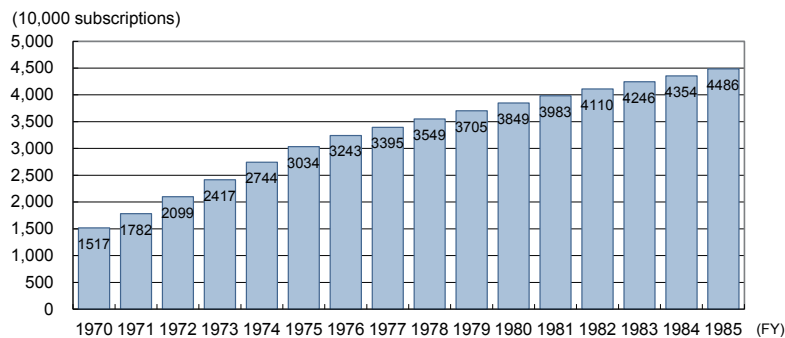
2. Trends in Japan's ICT sector

In Japan, fixed landline telephones rapidly spread from 1952, when the NTT Public Corporation was established with the aim of promoting the development of the telephone network. The number of fixed landline telephone subscribers, which was 1.40 million at the time of the establishment of NTT Public Corporation, reached 24.17 million in fiscal year 1973, when the first White Paper was published. **Voice calls using fixed landline telephones** became the main means of communication (Figure 1-1-2-1).

Around this time there was a problem of the long waiting period from application to telephone subscription and it took several hours to make a long-distance call because telephone operators had to connect the line

manually. As a result of the efforts made by NTT Public Corporation, the waiting list was eliminated in 1978, automated immediate connection was completed nationwide in 1979, and the number of subscribers with telephones exceeded 40 million in 1981.⁴ It is thought that communication services reached a turning point through the elimination of the waiting list and the nationwide immediate connection, which gave rise to discussions on new technologies and media. Much attention was paid to these new technologies, including integrated circuits, optical fiber communication, and space communication, while media such as image communication, data communication and other media also attracted attention.⁵

Figure 1-1-2-1 Transitions in the number of subscribers with subscription telephones



(Source) Prepared from History of the Nippon Telegraph and Telephone Public Corporation

¹ "Upon the Publication of the First Communications White Paper" of the 1973 White Paper states: "the current tough situation brought about by the oil crisis calls for sincere reflection on our economic society based on mass consumption of resources and energy and urges us to shift to a resource-saving or knowledge-intensive industrial structure. Under the circumstances, the role of communications will become more crucial by very effectively contributing to conservation of resources and energy and being at the very core of the knowledge and information industries." <https://www.soumu.go.jp/johotsusintokei/whitepaper/ja/s48/index.html>

² Inoue (1992) "Defense expenditures and the development of US semiconductor industry under the Vietnam War", Keio University, Mita Journal of Economics, Volume 85 No.2

³ Here, AT&T is not the current AT&T (<https://www.att.com/>). The current AT&T was established by a merger of Southwestern Bell Corp, one of the seven RBOC companies established in 1984 as a result of a split with three other RBOC companies (BellSouth, Ameritech and Pacific Telesis), and the AT&T long distance division.

⁴ The number of subscribers with subscription telephones exceeded 60 million in fiscal 1995.

⁵ See the 1978 Communications White Paper, Part 1, Chapter 2, Section 1 https://www.soumu.go.jp/johotsusintokei/whitepaper/ja/s55/pdf/S55_05_C2E81C9F4C2E82BECF.pdf

In the field of mobile communications, NTT Public Corporation launched the first-generation mobile telephone service using a cellular system in 1979 as the first commercial service of this kind in the world. A shoulder-type device that enabled calls outside of cars appeared in 1985. However, this had limited users and did not spread widely due to its high cost: the price of the device itself required a security deposit of about 200,000 yen, the monthly basic charge was over 20,000 yen and the communication fee was as high as 100 yen per minute.

Telecommunication services during this period were operated as a **monopoly by NTT Public Corporation** under the supervision of the Ministry of Post and Communications. Monopoly by a public corporation was adopted because a monopoly was favored in light of the public nature,⁶ natural monopoly and technical consistency⁷ of telecommunication services, and also because a public corporation with a certain degree of independence in management, rather than one under government management, was thought to be desirable in order to achieve network expansion through efficient management.

Around this time, the government discussed administration and public finance reform for the purpose of “fiscal reconstruction without tax increases.” Besides NTT Public Corporation, problems were also pointed out with the Japan National Railway and the Japan Tobacco & Salt Public corporation, such as inefficient management of such huge organizations and insufficient response to technological innovation. In 1985, **competition was in-**

troduced to the telecommunications market through the privatization of NTT Public Corporation and the establishment of the Nippon Telegraph and Telephone Corporation (hereinafter “NTT”).⁸ This marked a turning point for Japan’s telecommunications policy.

At the end of the 1972 fiscal year there were 105 private broadcasters in addition to Japan Broadcasting Corporation (NHK) and the number of NHK subscriptions had reached 24.43 million. **Television broadcasting continued to spread further thereafter.** According to a national audience survey conducted by NHK in November 1985, the ratio of people who watched television broadcasting (NHK and private), even a small amount, was 90% on weekdays. This means that almost all members of the public watched television every day in some way.⁹ Television became an indispensable part of people’s daily lives and the influence of television broadcasting on public opinion increased. For example, it is suggested that the broadcasting of war zones as news amplified the spread of anti-war movements, later civil movements and counterculture.¹⁰

While terrestrial broadcasting spread, the Cable Television Broadcast Act (Act No.114 of 1972) was enforced in 1973. Cable television that had spread as joint community reception facilities, mainly in mountainous regions and other areas where radio waves do not reach, became widely used to eliminate reception difficulties for television broadcasting caused by tall structures, etc.¹¹

⁶ Communications as a public service were thought to be indispensable for people’s lives and economic activities. For this reason, it was believed that service providers were obliged to provide their services universally at reasonable prices. Because communication services were used between users, a monopoly was thought desirable in order to prevent regional differences in service quality, charges, etc.

⁷ In the case of communication services that are possible by connecting a large number of users through a communication network, connection of equipment of different technical specifications would involve costs to maintain service quality across the network. A monopoly was thought desirable to prevent this.

⁸ The Act on Nippon Telegraph and Telephone Corporation, etc. (Act No.85 of 1984) and the Telecommunications Business Act (Act No.86 of 1984) were enacted in 1984, and were followed by the establishment of the NTT Corporation and enforcement of the Telecommunications Business Act on April 1, 1985.

⁹ See 1986 Communications White Paper, “Part 4 Broadcasting” <https://www.soumu.go.jp/johotsusintokei/whitepaper/ja/s61/html/s61b0401.html>

¹⁰ <https://www6.nhk.or.jp/special/detail/index.html?aid=20160221>

¹¹ See 1975 Communications White Paper, Part 2 Chapter 5 Section 1 https://www.soumu.go.jp/johotsusintokei/whitepaper/ja/s50/pdf/S50_09_C2E82C9F4B3C6CFC0C2E85BECFC2-5.pdf