

Should Broadband Networks be ‘Common Property’?
A Comparative Analysis of Broadband Network Policy between the U.S. and Japan

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Introduction

Broadband network infrastructure provides a high-capacity communication medium that is suitable for a wide range of communication applications. In the coming decades, broadband networks will be a critical component of economic infrastructure—they are the electronic equivalent, for the movement of information, of a nation's highways and railways.¹ As is highways and railways, this information infrastructure has several distinct characteristics of an exceptional economic good, and therefore merits special consideration. The U. S. and Japanese governments have been taking different approaches in dealing with the information infrastructure so far. This paper examines the roles of the governments of the two countries, and explores different rationales and consequences.

Vogel (1996) argues that differences in existing institutions, philosophies, and approaches by governments of individual countries have resulted in strikingly different outcomes. The U.S. policy-making process is decentralized and based on checks-and-balances among different entities. The resulting policy of choice tends to be that of laissez-faire market-driven approach, promoting competition and decentralized processes of economic development. The Japanese counterpart has a centralized structure, especially in the telecommunication policy-making process. The resulting policies tend to be in favor of coordinated development, rather than competition-based, and a certain degree of power concentration is allowed in the market.

First, this paper briefly describes characteristics of broadband network and its economic and social significances in the coming decades. Second, it presents the comparison of telecommunications policymaking and policies. The telephone industry, which has been the primary information infrastructure in both countries, exhibits a similar pattern of development in both countries. The infrastructure was once considered as a special good that has a natural monopoly tendency. This legitimized governmental control over the industry. Yet eventually, policies of the two countries changed in favor of increased competition in the industry. Under this seemingly simple process of liberalization of the two markets are, however, rather clear differences in the way two governments introduce and maintain competition in the market. Next, this paper examines current broadband network infrastructure policies of both countries and shows the approaches of the two countries are along the lines of their traditional styles. Finally, this paper explores the advantages and disadvantages of the differing approaches, and the set of values each of them is in favor of. It is suggested that the Japanese approach is based on, and in favor of the idea of *common property* in conceptualizing the information infrastructure. The U.S. approach is the one that deems the infrastructure a commercial good.

¹ Borrus, Michael, Francois Bar, Patrick Cogez, Anne Brit Thoresen, Ibrahim Warde, and Aki Yoshikawa. (May 1985). *Telecommunications Development in Comparative Perspective: The New Telecommunications in Europe, Japan, and the U.S.* Berkeley Roundtable on the International Economy (BRIE) Working Paper No.14.

Chapter 1. A Brief Description of Broadband Networks

The term *bandwidth* is the speed or frequency of a transmission of a communications channel. *Broadband* is used to describe a high-speed transmission signal or channel². While the word seemingly implies the use of some radio wave bandwidth, it actually includes high-speed data transmission via electronic or optic means. The shortage of bandwidth for advanced multimedia services³ is a critical problem. Fast development of the high-capacity infrastructure is often considered an important way to promote the flourishing of such services.⁴ While current demands for broadband network are mainly from corporate users, it is expected to spread rapidly to non-business users. Through the proliferation of such services, it is often argued that the next stage of social development can be achieved and quality of life will be improved dramatically.

It should be noted that the distinction between broadband and narrowband, or advanced multimedia services and simple services cannot be defined out of historical context. Egan (1997) points out that the term broadband is often used loosely and has never been clearly defined.⁵ In this paper, the term is used to imply the capability of handling multimedia applications such as standard TV quality video transmission. Infrastructure for multimedia services was developed and in operation. Narrowband-ISDN (Integrated Services Digital network) already started in the U.S. and Japan. ISDN is an internationally agreed-upon set of standards for transmission and switching of digitized data, such as voice, text, and visual image, in a network. While broadband communication channels can accommodate high quality interactive multimedia services, narrowband channels may not. Both cable and telephone policies merits reflection for the discussion of the broadband policy. However, this paper mostly concerns with telephone infrastructure due to techno-structural similarity between telephone and broadband infrastructure.⁶

There are various technological options for broadband network infrastructure including Digital Subscriber Line (DSL), cable network, wireless, satellite and fiber optics.⁷ In the U.S., the much-publicized mergers between AT&T and TCI, and AOL and Time Warner took place largely driven by the competitive concerns of the broadband infrastructure deployment.

² Egan, Bruce L. (1996). *Information Superhighways Revisited: the Economics of Multimedia*. Boston: Artech House Publishers.

³ These services include interactive entertainment, interactive program guides and navigators, personal communications services, telecommuting, electronic commerce, education, research support, information services, Internet access, and telemedicine.

⁴ Cable Television Laboratories, Inc. (1995). *The role of cable television in the national information infrastructure*. A white paper.[Online]. Available at: <http://cablelabs.com>

⁵ Egan, Bruce L. (1996) *Information Superhighways Revisited : the Economics of Multimedia*. Boston: Artech House. pp. 6-7.

⁶ Both telephone and broadband industries are concerned about the 'conduit' part of the services. The importance of the distinction between local and long distance carriers is also shared by the two industries. Yet because of the highly uncertain nature of the technological and industrial development, it is possible that 'content' part will become inseparable part of the policy debate.

⁷ While all of these are qualified as broadband infrastructure, they have different capacities and cost structures.

Chapter 2. An Analysis of the U.S. Telecommunications Policy

2-1 Historical Background

The telecommunications market has been approximated to that of a natural monopoly industry. The ‘natural monopoly’ requires government regulation of the market.⁸ The intervention is usually designed to stop the monopoly pricing and benefit consumers by preventing the unreasonably high price. But this natural monopoly rationale has gradually lost its justification, because of the rise of new transmission technologies such as wireless or satellite.^{9 10} The change prompted regulators to think seriously about regulatory reforms, including liberalization and deregulation. Before the liberalization of the telecommunications sector, U.S. telecommunications services had been dominantly provided by one monopolistic company, AT&T. This arrangement is the same in many other countries. The only difference is that, in the U.S., private-owned companies have provided telecommunications services from the beginning while state-owned companies started telecommunications services in most of other countries and later be privatized.

The Communication Act of 1934 established the Federal Communications Commission (FCC) and prescribed interstate and international telecommunications issues within federal jurisdiction¹¹. Traditionally, state government’s interest has been in maintaining low rate for local telephone service. The internal cross-subsidization system from long-distance to local phone service was established by requests from state and Congress.¹² The separation of jurisdiction and the tradition of internal cross-subsidization created the conflict regarding the liberalization of telecommunications service. Most significantly, while the FCC was active about the liberalization, the state preferred to keep monopoly carriers and internal cross-subsidization.

In the U.S., regulators came to believe that introducing competition in the telecommunications sector promotes improvement of services, creation of diverse services, and price reduction. The changing belief first resulted in the divestiture of AT&T in 1984, and a sweeping deregulation of telephone and other related industries in the Telecommunications Act of 1996.

2-2 AT&T Divestiture

The divestiture of AT&T, one of the most significant incidents of the history of telecommunications regulation in the U.S. is also accompanied by the conflict generated from fragmented jurisdiction. AT&T Divestiture was the product of the anti-trust suit against AT&T by the Department of Justice (DOJ). It sought to separate the local telephone service from all other elements of the industry: terminal equipment, long distance, network equipment, and value-added services. State regulators supported AT&T

⁸ Regulation can be defined as the substitution of rules made by government for the competition of the market. In contrast, deregulation involves the substitution of market competition for the decisions of regulators. Hills (1986). *Deregulating Telecoms: Competition and Control in the United States, Japan, and Britain*. Westport, Conn.: Quorum Books.

⁹ Hills, Jill. (1986). *Ibid*.

¹⁰ Regulatory agency still tends to regard local telephone service as natural monopoly implicitly.

¹¹ All others, such as intrastate, are state or local jurisdiction unless assigned to federal level. Brock (1994)

¹² Temin, P. (1987). *The Fall of the Bell System*. Cambridge University Press.

because they thought federal liberalization like AT&T divestiture threatened the flow of subsidies from long distance to local phone service.

Because AT&T was at a disadvantage in this case, it proposed a settlement, the Modified Final Judgment (MFJ), in 1982. The settlement led to the separation of AT&T into eight companies - seven Regional Bell Operating Companies (RBOC) that provide local-access and local toll service, and AT&T, which continues to provide long distance service and value-added services.¹³ Through the divestiture, the FCC could introduce competition into all markets within its jurisdiction. The state regulators still regulate local access and the shorter toll calls inside Local Access and Transmission Areas (LATAs).¹⁴
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It should be noted that this divestiture was enforced not from the concerns of telecommunications policy, but from the competition policy. The DOJ did not consider the special characteristics of telecommunications industry. Although the FCC supported the suit, it played very little role in the case.

2-3 The Telecommunication Act of 1996

Until 1996, the U.S. telecommunications industry had been regulated based on the Communications Act of 1934. While there were several additions and changes of the Act¹⁶ during the 62 years, full-scale revision did not arrive until the Telecommunication Act of 1996. The change of market structure and media convergence by the digital technology, created a significant need for the revision. Responding to the need, the main aim of the Telecommunication Act of 1996 is designed to introduce competition frameworks to overall communications sectors including telecommunication, cable, and broadcasting. By eliminating or lowering barriers of entry and cross ownership, the Act is trying to facilitate cross-entry between media industries. However, implementation of the Act has been very slow. Because the Act imposes broad obligation of interconnection and unbundling to incumbent local telecommunications carriers and gives broad authority to the FCC, incumbent local carriers and state regulators are resisting the implementation of the Act by the FCC strongly. This fragmentation of jurisdiction between federal and state governments is a critical obstacle implementing the Act smoothly.

Overall, the history of the U.S. telecommunication policy is characterized by constant confrontations among stakeholders. Because there is no single player that dominates the policy-making process or implementation, industry cannot be regulated by any single interest. The price is the cost of confrontation and the lack of coordination. Yet there are checks-and-balances; there is always some room for change, too.

Chapter 3. An Analysis of Japanese Telecommunications Policy

In Japan, telephone service developed under the monopoly of central government, first vested in the Ministry of Communication (MOC), and then in Nippon Telephone and

¹³ Until 1990, AT&T was precluded from most information services.

¹⁴ There are 165 LATA at that time.

¹⁵ Cowhey, Peter F., and Mathew D. McCubbins. (1995). *Structure and Policy in Japan and the United States*. Cambridge: Cambridge University Press. pp. 139-40.

¹⁶ For example, Cable Communications Policy Act of 1984 was among those changes.

Telegraph (NTT), a Public Corporation. Natural monopoly tendency was among the major rationale for this policy, as in the U.S. Yet the trajectory of the deregulation and privatization took a different path in Japan, because of different values emphasized in the policy-making. Under the task of providing the universal service, the government kept the policy of maintaining local telephone rate lower than the actual cost, and imposing access charge to other carriers far higher than the actual cost. This regulation benefited rural, residential, and local customers and damaged urban, business, and long-distance customers.

The major changes in the regulatory scheme took place twice in the post-war history. When the AT&T divestiture took place in the U.S., part of the Japanese telecommunications market was liberalized and NTT was privatized. Shortly after the 1996 Telecommunications Act in the U.S., NTT was divested. On the surface, the U.S. always goes a step ahead, starting from regulated monopoly, moving to divestiture and to a drastic liberalization. However, closer examination of the history suggests that Japanese government is not following the U.S.'s path.

One of good observations was provided by Vogel (1996), which analyzed institutional differences between the U.S. and Japanese policymaking processes. Employing 'reinforcement-disengagement framework', he argues that while the U.S. government has used deregulation and liberalization for reducing governmental intervention and delegating authority to the private sector, Japanese ministries have used them for expanding their jurisdictions over the private sector and getting the benefits from competition¹⁷.

The influence of Japanese ministries are captured well by Chalmers Johnson (1982), in his famous book, *MITI and the Japanese Miracle*:

Although it is influenced by pressure groups and political claimants, the elite bureaucracy of Japan makes most major decisions, drafts virtually all legislation, controls the national budget and is the source of all major policy innovations in the system¹⁸

Through the major changes in the regulatory scheme described below, this tendency of MPT's domination can be observed.

3-1 Historical Background

The telephony in Japan, with posts and telegraph, was controlled by a state bureaucracy, the Ministry of Communication (*Teishinsho*) until 1952¹⁹. After World War II, the American occupation issued a memorandum to the Japanese government that required the reorganization of the telecommunication service in order to accelerate Japan's economic recovery. In 1949, the original Ministry of Communication (MOC) was split into two, one ministry responsible for posts²⁰ and the other for

¹⁷ For example, MPT expanded its supervision through the telecommunications reform. Prior to reform, MPT's supervision of NTT was minimal.

¹⁸ Johnson, Chalmers A. (1982). *MITI and the Japanese Miracle: the Growth of Industrial Policy, 1925-1975*. Stanford: Stanford University Press. pp. 20-21.

¹⁹ The MOC was established in 1885.

²⁰ The Ministry of the Posts and Telecommunications (MPT)

telecommunications²¹. The new ministry emphasized research and development. After the end of occupation, in 1952, the Ministry of Communication became Nippon Telegraph and Telephone (NTT), which was inaugurated as a public corporation with a monopoly of domestic telecommunications²²²³.

It is also notable that the MPT²⁴ performs a wider range of functions than the FCC. While the Communication Act of 1934 created the FCC, a quasi-independent regulatory agency, and separated the regulatory function from the administrative function in the U.S., the Japanese government decided to change the status of the NTT from state-owned institution to the public corporation in 1952 and integrated both functions into the Ministry of the Posts and Telecommunications (MPT). By this decision, the MPT could solely plan and implement telecommunications policy.

The public corporation, called *Kosha*, provided goods or services under the supervision of the Diet. These public corporations were under governmental administrations and regulations, but the ultimate decisions on key matters were made by the Diet. In particular, all revisions on tariffs required the consent of special committees in the Diet. From 1952 on, telecommunications services were provided by the NTT Public Corporation as a public monopoly. NTT's staff may be called for hearing in the Diet, before the ratification of the company's annual budget. Similarly, investment decisions had to be made on an annual basis, subject to Diet's approval. NTT had no power to manufacture.²⁵ From this state-run service, the Japanese telephone service was privatized, liberalized, and the monopoly company was broken-up. Certainly, market mechanism is much more prevalent now than the initial state-owned monopoly era. Yet at the same time, governmental control remains strong. The exact nature of the changes can be understood better through the examination of two major policy reforms in the post-war Japan, restructuring of the industry and privatization of NTT in the 80's, and deregulation of the market and divestiture of NTT in the 90's.

3-2 Privatization of NTT and Partial Liberalization

The differences and commonalities between the two countries' policies can be clearly seen when the Nakasone Administration's attempts are compared to the history of deregulation in the U.S.²⁶ The administration, around the time of AT&T divestiture, tried to privatize telecommunications and railroads. Influenced by monetarism that proposed to decrease public expenditure share in GDP, this Administration claimed "the small government is the best". The two-oil crises of 1974 and 1979 brought about inflation and

²¹ The Ministry of Communication (MOC)

²² Janisch, N Hudson. (1995). "Development in Japanese Telecommunications" *Keio Communication Review*, No17, pp. 83-107.

²³ NTT was wholly owned by the government and charged with reconstructing Japan's telecommunications infrastructure, and continuing the developmental role of the MOC in telecommunications equipment. (Ratliff 1998)

²⁴ MPT primarily concerns with the postal system and a connected system for postal saving.

²⁵ Ministry of Posts and Telecommunications. (1995). *Telecommunications Overview of Japan*. Tokyo: MPT

²⁶ *Rincho*, the Administrative Reform Commission, was to lead the privatizations of previously public companies under the leadership of Prime Minister Yasuhiro Nakasone.

the expansion of fiscal deficit to the Japanese economy.²⁷ Sales of governmental assets to private sector were proposed by economists as a countermeasure. The sales would result in immediate reduction of fiscal deficit and creation of the source of future investment. At the end of 1970's, the excessive costs of inefficient management in the public corporations was another driving force for reexamining the performance of the public monopoly system. Initially, Japan National Railways was the primary target for privatization, but soon telecommunications services, the tobacco industry, and airline industry also came under scrutiny²⁸. The American deregulation movement provided further impetus for accelerating the privatization of these sectors.²⁹

In 1985, two laws for the restructuring of the Japanese telecommunications industry were enacted by the Diet. One is the Telecommunications Business Law and the other is the Nippon Telegraph and Telephone Corporation Law. The business law required a radical reconstruction of the industrial policies, and the corporation law privatized the old public corporation, giving birth to a new NTT. As discussed in the following, the result of these laws were not necessarily the increasing power of the market in relation to the government. This can be assured when the regulatory reform process is examined. Even though the Nakasone Administration tried to reduce bureaucratic discretionary power in its administrative reform, Japanese bureaucrats remained (and still remains) the most influential actor in policymaking. Telecommunications policy was not an exception.

3-2-1 The Telecommunications Business Law

The Telecommunications Business law was enacted in April 1, 1985, with the objective of instilling private-sector vitality in telecommunications. The major goals of the law were improved efficiency in telecommunications operations, assurance of the best service performance of the public, the promotion of the return of profits and benefits to the public, and the maximization of public welfare.

The law gave the MPT strong power as the enforcement agency of the Law. All telecommunications carriers were now free from the supervision of the Diet, but subject to the enforcement of the MPT. One of the basic regulatory scheme introduced by the Law was the distinction between type-I and type-II businesses (see Table 1 in Appendix A). The former type of business must obtain permission from the MPT to enter the industry, while the latter had to file notice of entry. Exit of type-I business also required approval of the MPT.³⁰ Through this scheme, MPT began to supervise the competitive pressure in various markets. That is, the MPT regulated the number of new entries, and thereby controlled the competitive pressure at a certain level. Additionally, it promoted competition by giving advantages and assistances to the new common carriers (NCCs) by

²⁷ Ito, Youichi (1986). "Telecommunications and Industrial Policies in Japan: Recent Developments." In Marcellus S. Snow, ed., *Marketplace for Telecommunications: Regulation and Deregulation in Industrialized Democracies*. New York: Longman. pp. 201-30.

²⁸ In a period of a few years, Japan National Railroads, Japan Tobacco, Japan Airline (JAL), and NTT were privatized.

²⁹ Nambu, Tsuruhiko., K. Suzuki, and T Honda. (1989). "Deregulation in Japan", in R.W. Crandall and K. Flamm, ed., *Change the Rules: Technological Change, International Competition and Regulation in Communications*, Brookings Institution.

³⁰ Kawamata, Takahiro and Keiko Hatta. (1999). "Perspective of the Japanese Telecommunications Sector after the NTT Reforming". *Keio Communication Review*. No21, pp. 83-113.

the form of asymmetric regulation. However, the practice is far from unregulation of the new entrants.

At times, the MPT indicated that consumers are best served by the appropriate level of competition and unified, equal services that the MPT maintains in the name of 'Universal service' Although some changes in Telecommunications Business Law and other laws created more pro-competition environment, the role of the MPT is still the supervisor of the competition and grand design of the national infrastructure.

3-2-2 The NTT Corporation Law

The objective of this law was the establishment of NTT as a private enterprise by abrogating the Nippon Telegraph and Telephone Public Corporation Law and providing the new, privatized NTT Corporation with a management structure suitable for the competitive environment.³¹

Again, the privatization contributed to the increase in MPT's influence.³² Multiple areas of the NTT's business operations, such as personnel, investing, pricing, and entry to new business operation, were put under supervisions of MPT.³³ For example, based on the Law, it recommended the NTT to upgrade existing infrastructure and to start advanced services such as Integrated Services Digital Network (ISDN).

3-3 The Deregulation Act of 1997 and NTT Divestiture

Around the time of the 1996 Telecommunications Act in the U.S., major deregulation effort was made in Japan. It is called The 1997 Deregulation Act. There are three legislative provisions in The 1997 Deregulation Act. The first one is the revision of the Telecommunications Business Law. It removed entry and exit restriction as well as foreign ownership restrictions. This allows 100% foreign owned facilities-based operators to enter Japanese markets, except NTT Holding Company and NTT Regional companies. The second one is the revision of the NTT Corporation Law. It includes the details of NTT Divestiture. It indicates the restructuring of NTT into long distance and regional companies. The third one is the abolishment of the KDD Corporation Law (see Table 2 in Appendix B).

To a certain degree, the MPT was consciously maintaining its influence. It can be seen in its behavior regarding regulation of the NTT. Unlike the U.S. where AT&T was excluded from data communications, NTT was one of the primary providers both of customized data networks and of a public data communications network that was separate from the voice network. For bureaucratic reasons, the MPT had avoided to segment the market into 'basic' and 'enhanced' services. Had it done so, the Ministry of International Trade and Industry (MITI) would have claimed 'enhanced' services as its territory.³⁴ The ministry regulates, among other things, electronics and computer industries.

³¹ Ministry of Posts and Telecommunications.(1995). *Telecommunications Overview of Japan*. Tokyo. MPT

³² Oniki, Hajime. (1993). Impacts of the 1985 reform of Japan's telecommunications industry on NTT in Jussa, Walla, ed. *Global Telecommunications Policies*, Connecticut, Greenwood Press

³³ Nambu, Tsuruhiko. (1994). "A Comparison of Deregulation Policies", in Eli Noam, ed., *telecommunications in Asia*, Oxford University Press.

³⁴ Vogel, Steven Kent. (1996). *Freer Markets, More Rules: Regulatory Reform in Advanced Industrial Countries*. Ithaca, Cornell University Press.

Following the 1997's Deregulation Act, NTT broke up in July 1999 (see Table 3 in Appendix C). This was a result of a series of discussions that spanned more than a decade. Because of the new organizational and financial configuration, the divestiture does not have a dramatic, immediate effect of promoting competition. Only major change made is that NTT now can enter the international telecommunication services.³⁵ The divestiture of ATT and the liberalization of US telecommunications market also affected the decision of NTT Divestiture (see Appendix D for the MPT's policies regarding this). However, again, the resulting decentralization of the power concentration in the market was not as great as that of U.S. While there is an increase in competition in the market, the major cause is not the NTT's divestiture. Rather, it is a product of large-scale mergers of mid-sized companies that existed prior to the divestiture.

3-4 The Implementation of the Japanese Telecommunications Policy

The concentration of the power to MPT may evoke an image of dictator who exerts its power according to its own interest. To be sure, the U.S. policy-making process is much more transparent and overall system is decentralized; the market takes a significant part. Alternatively, one may imagine a rational entity as described by Weber³⁶ or an inefficient, square organization as discussed by the believers of the market-driven approach. Somewhat contrary to these stereotypical notions of bureaucracy, the role of Japanese bureaucracy is best understood as the active coordinator of the industries.

While the U.S. system involves formal procedures such as open hearings and lawsuits, the closer relations among participants and consensual system characterize the Japanese policy-making and implementation system. The negotiating process is far less formalized than U.S., being approximated to pre-modern community politics. The decision-making process is not open to public participation, nor clear to the outsiders: the rationale for the decisions often come from reports and recommendations by various councils and committee (*Shingikai*), whose members are designated by the MPT or other higher-level bureaucrats. The implementation procedure is less formal: administrative guidance (*Gyousei-shido*) is the primary means of regulation.^{37,38} In addition, the leadership is arguably more flexible: the MPT employs various means to lead industries such as licensing (see Table 4 in Appendix E), financial assistance, research consortium, recommendation, monitoring, and so fourth. Since this paper especially concerns policy-making process, *Shingikai* system and *Gyousei-shido* merits special attention.

3-4-1 *Shingikai* System

There exist approximately total 250 councils, or *Shingikai*, in Japanese national policy making process. Each Ministry has several councils. When important policy decisions or administrative acts are to be made for telecommunications or broadcasting,

³⁵ Kawamata, Takahiro and Keiko Hatta. (1999). "Perspective of the Japanese Telecommunications Sector after the NTT Reforming". *Keio Communication Review*. No21, pp. 83-113.

³⁶ Weber, Max (1968). *Economy and Society: An Outline of Interpretive Sociology*. Guenther Roth and Claus Wittich. Eds., Ephraim Fischhoff et al. Trans., Berkeley: University of California Press.

³⁷ It is not legally binding order, but companies tend to follow in order to keep good relations with their powerful regulators

³⁸ Latzer, Michael. (1995). Japanese information infrastructure initiatives: A political-economic approach, *Telecommunications policy*, Vol. 19. No7. pp. 515-529.

the MPT sends inquires to the relevant council and acts upon the reports from them. Among them is Telecommunication Council, which studies and deliberates on important issues related to telecommunications administrative procedures, and makes the necessary proposals to the Minister.³⁹

The members of the council are usually composed of academics, business people, and journalists. Since each ministry has authority to select members of councils, policies proposed by bureaucrats are usually passed without strong objection from council members. Therefore, the main function of the council is to give justifications to the policy proposed by bureaucrats, rather than to propose new policies.⁴⁰ There are criticisms on the absence of transparency in council system and proposals for the establishment of independent regulatory agency like the FCC or OFTEL. Yet it does not seem a feasible option, at least in short term, because Japanese bureaucrats would strongly resist to any delegation of their authority to outside entities.⁴¹

3-4-2 *Gyousei-shidou*

The Administrative Guidance, or *Gyousei-Sidou*, is a tool for bureaucrats to control the private sector.⁴² While the implementation of the U.S. telecommunications policy mainly depends on the judicial system based on due process, the administrative guidance has been used as the main measure for realizing policy goals in Japanese industrial policy.⁴³ The administrative guidance is not a clearly defined concept, yet created for explaining the actual situation of the Japanese industrial policy.⁴⁴ Generally, companies that receive administrative guidance follow it. It is very rare to resist the guidance and start a lawsuit. The typical example can be seen in the process of liberalization in the telecommunications sector after the privatization of the NTT in 1985. The Japanese MPT adopted the most interventionist approach to managing competition, carefully controlling the dominant carrier's pricing policy and its introduction of new services by the administrative guidance.⁴⁵ The main objective of administrative guidance at that time is to promote new entrants in long-distance and international telephone services. To maintain the authority of the guidance, the MPT has used various measures, such as controlling the licensing or regulating pricing.⁴⁶ Even though there is no explicit legal ground of the administrative guidance, it has been used as a major means to realize policy goals in the Japanese industrial policy.

³⁹ MPT. (1995). *Telecommunications Overview of Japan*. Tokyo: MPT.

⁴⁰ This can be seen in the 'Telecom Wars' in the 1980's between MPT and MITI, as described in the next section.

⁴¹ Vogel, Steven Kent. (1996). *Freer Markets, More Rules: Regulatory Reform in Advanced Industrial Countries*. Ithaca: Cornell University Press.

⁴² Haley, John O. (1986). "Administrative Guidance versus Formal Regulation: Resolving the Paradox of Industrial Policy." in Gary R. Saxonhouse and Kozo Yamamura, eds., *Law and Trade Issues of the Japanese Economy : American and Japanese Perspectives*, pp. 107-28. Seattle, University of Washington Press.

⁴³ As well known, Japanese policymaking system puts importance on the consensus between stakeholders.

⁴⁴ Johnson, Chalmers A. (1982). *MITI and the Japanese Miracle : the Growth of Industrial Policy, 1925-1975*. Stanford: Stanford University Press. pp. 20-21.

⁴⁵ Vogel, Steven Kent.(1996). *Freer Markets, More Rules: Regulatory Reform in Advanced Industrial Countries*. Ithaca: Cornell University Press.

⁴⁶ Janisch, N Hudson. (1995). "Development in Japanese Telecommunications" *Keio Communication Review*, No17, pp.83-107.

3-5 The Inter-ministerial Conflicts Between the MPT and the MITI

While the conceptualization of the MPT as an active coordinator is appropriate in the context of comparative analysis, it is not possible to reduce all aspects of the MPT into the single concept. Most importantly, MPT and the other bureaucracies are not a firmly united entity. There are internal conflicts.

The convergence of computing and telecommunications brought the conflict between the MPT and MITI⁴⁷, especially in value-added network (VAN) services. Each Ministry argued in favor of the expansion of its jurisdiction in the area of convergence. Inter-ministerial competition between the MPT and the MITI grew out of the profoundly different characteristics of the two ministries. The MPT was traditionally conservative, pro-monopoly and bureaucratic; it sought to achieve political rather than economic objectives and was, at heart, domestically oriented. The MITI was innovative and aggressive; it was committed to market-driven efficiency, and was internationally focused.⁴⁸ The MITI advocated the liberalization of the telecommunications sector, and the MPT was forced to counter MITI's increased influence in this area. The two government ministries, eager to increase their influence over the newly developing information industries, pushed for liberalizing the public monopoly.⁴⁹ These elements created a favorable environment for shaping the monopoly structure of the Japanese telecommunications industry.

A typical example of this inter-ministry competition is characterized by the 'telecom wars.'⁵⁰ During the policy debate on liberalization of the Japanese value-added network (VAN) market, the two ministries took different policy positions. As might be expected, the MITI pushed for total liberalization, while the MPT fought for limited facilities based competition with no voice VAN. Simultaneously, the MPT sought total exclusion of foreign investment, whereas the MITI favored limited foreign participation in VAN.⁵¹ New legislation of the VAN deregulation emerged as a result of an economic and political compromise between both ministries.

Overall, the Japanese policy-making process is characterized by its concentration of power by the bureaucracy. Yet the powerful entity, MPT, act as a coordinator rather than a dictator. Correspondingly, there is a concentration of economic power in the market. Competition is carefully controlled and created by MPT. This is contrasting to the U.S. approach, where governments tend to let the competition happen.

⁴⁷ The Ministry of International Trade and Industry (MITI)

⁴⁸ Davidson William. (June, 1987). "Japanese Telecommunications Policy, New Directions and Old Dilemmas." *Telecommunications Policy*, pp.147-60.

⁴⁹ Nambu, Tsuruhiko. (1994). "A Comparison of Deregulation Policies", in Noam, Eli ed, *Telecommunications in Asia*, Oxford University Press

⁵⁰ Johnson, Chamers (1989). "MITI, MPT, and the Telecom Wars: How Japan Makes Policy for High Technology." In Johnson, Chalmers, Laura D'Andrea Tyson, John Zysman, eds., pp177-240

⁵¹ Janisch, N Hudson. (1995). "Development in Japanese Telecommunications" *Keio Communication Review* No17, pp.83-107.

Chapter 4. The U.S. Broadband Network Infrastructure Policy

Throughout the communication industry, the dominant trend is convergence – the blurring of lines between media that once were clear-cut. This convergence of traditionally different industries, which have different public policy traditions, poses a significant challenge for government policymakers and regulators⁵². Consequently, regulators are forced to reconsider and redefine their appropriate role in communications policy⁵³. Although it is difficult to predict the way of broadband service delivery and the exact range of the services, it is not too soon to begin thinking about it and planning for it.

Exploding diffusion of the Internet and advancement in digital technologies has produced diverse interactive and multimedia applications. The integrated digital services require a high-speed transmission conduit, a broadband network. Reacting to this trend, the Clinton Administration, led by Vice President Al Gore, announced its National Information Infrastructure (NII) initiative in September, 1993, “establishing an agenda for public-private partnership to construct an advanced NII to benefit all Americans.”⁵⁴. The Agenda focused on nine goals: (1) promote private sector investment via tax and regulatory policies, (2) extend the “universal service” concept to ensure that information resources are available to all at affordable prices, (3) act as a catalyst to promote technological innovation and new applications, (4) promote seamless and interactive user-driven operation of the NII, (5) ensure information security and network reliability, (6) improve management of the radio frequency spectrum, (7) protect intellectual property rights, (8) coordinate NII operations with other levels of government and with other nations, and (9) provide access to government information and improve government procurement policies for telecommunications and information services and equipment in order to promote important technical developments for the NII and provide attractive incentives for the private sector to contribute to NII development.⁵⁵

Soon after this agenda was announced, a harsh confrontation emerged from private sectors concerning the government’s role in building the NII (National Information Infrastructure). In the first stage, the government asserted that they should build the infrastructure. Yet the strong objection of private companies and economists eventually made the government disengaged from the planning of infrastructure building.

⁵² Pepper, Robert M. (1988). *Through the looking glass: Integrated broadband networks, regulatory policies, and institutional change*. OPP working paper 24. Washington DC: Federal Communications Commission.

⁵³ Mcknight, Lee, Russell Neumann, and Richard J. Solomon. (1997). *The Gordian Knot*. London: The MIT Press.

⁵⁴ The NII Agenda for Action, U.S. Department of Commerce (NTIA), September 15, 1993; Remarks of Vice President Gore at UCLA, Los Angeles, January 11, 1993

⁵⁵ Drake, William J. (1995). *The New Information Infrastructure* New York: The Twentieth Century Fund Press.

Chapter 5. The Japanese Broadband Network Infrastructure Policy

In 1981, NTT proposed Information Network System (INS) plan.⁵⁶ The goal of INS was to provide an integrated information system of data transmission, storage, conversion, and processing with improved efficiency. This public network, incorporating telephone, facsimile, data and video, was to be completed by the year 2000. The network depended on the development of four technologies: digital switching, fiber optic, satellite communications and the fifth generation of the high-speed, intelligent computer. Government also provided additional tax preferences and interest-free loans for telecommunications infrastructure development and research projects.

The Japanese cabinet established *Koudo Jouhoutuusin Syakai Suisin Honbu* (the headquarters for advanced information society) comprised of cabinet members, and the Minister of Post and Telecommunications was one of the two vice presidents of that quarter⁵⁷. One of headquarters' purposes is to promote the smooth development and diffusion of broadband network. Besides, the MPT is operating a wide range of programs to promote the deployment of the broadband network infrastructure. One such program is special financial loans allocated to those who deploy fiber-optic cable infrastructure. The research consortium on the advanced networking technologies and standards, that involves researchers and business people alike, is another⁵⁸. Various technological, economic, and social issues are addressed through those programs. Both headquarters and the MPT state that the leading role should be played by the private sector. Yet in the Japanese political context, it does not mean the "hands-off unregulation".

It is also notable that the MPT has its own vision of the future of the broadband network called "Total Digital Network (TDN)." IN NOVEMBER 1997, A MINISTERIAL MEETING ON ECONOMIC ISSUES REACHED THE CONCLUSION THAT "FURTHER EFFORTS SHOULD BE MADE TO COMPLETE THE NATIONWIDE FIBER-OPTIC NETWORKS AS EARLY AS POSSIBLE CAPITALIZING ON PRIVATE-SECTOR PARTICIPATION TO COMPLETE THE NETWORKS AS EARLY AS THE year 2005."⁵⁹ In that vision, MPT specifies that the future broadband network infrastructure should be the combination of fiber optic cable, ultra high-speed wireless, and cable networks. If the role of the government is just a supervisor of the market competition, it does not have to, and should not, express their vision about the desirable network infrastructure. Yet in reality, the MPT is actively promoting to activate private sectors, fair competition among companies, and high-quality infrastructure network development, etc.

⁵⁶ In 1984, the Ministry of International Trade and Industry (MITI) announced a complementary plan, *Computopia* plan.

⁵⁷ Koudo Jouhoutuusin Syakai Suisin Honbu (the headquarters for advanced information society)
<http://www.kantei.go.jp/jp/it/981110kihon.html>

⁵⁸ See, Ministry of Posts and Telecommunications' *White Paper for Telecommunication*.
<http://www.mpt.go.jp/policyreports/japanese/papers/99wp/99wp-3-index.html>
<http://www.mpt.go.jp/policyreports/japanese/papers/99wp/html/B3311000.html>

⁵⁹ MPT. (1999). *Info-communications policies*, chapter 3 network infrastructure development. Online.

Available at:
<HTTP://WWW.MPT.GO.JP/POLICYREPORTS/ENGLISH/PAPERS/COMMUNICATIONSINJAPAN1999/21III-3.PDF>

Clearly, all of these actions are along the line of an active coordinator approach; concentrating power both with regulators and in the market is making that approach a workable option.

Conclusion

The contrast between the U.S. and Japanese broadband network policies is best summarized as decentralized laissez-faire versus centralized coordination. Obviously, the contrast cannot be reduced to the gap of the two countries in their developmental stage. If Japan is simply following the U.S. developmental path, it should have grown some competitors to NTT by now, and it should have become able to take the laissez-faire approach. There must be certain reasons why this difference persists.

One may think of cultural factors. The contrast between laissez-faire and coordination is well known to the general public as a cultural difference of the two countries, or even Western and Eastern cultures. Modernized Western countries emphasize individualism. Where collective decision-making is necessary, it is done through transparent, formal process. In contrast, Eastern countries retain pre-modern social customs; cohesiveness of members is valued more than in Western countries. Informal negotiations and implicit rules shape collective decision-making significantly. From this notion, it is easy to speculate that the different conceptualization of the telecommunication infrastructure may be a part of this contrast. In the U.S., the infrastructure tends to be treated simply as an economic good, whereas it is considered more of a common property in Japan. The production and distribution of the infrastructure are determined by demand and supply factors in the U.S., and they are determined more by socially desirable level of production and consumption in Japan. This cultural explanation is attractive, except for the fact that there is unclarity about how the cultural difference works and produces the contrast in governance.

Another possible factor concerns a difference in industrial structure. It has been the case that there are more competitors in the telecommunications market in the U.S. At times, this decentralized market structure calls for laissez-faire approach. On the other hand, Japanese counterpart is characterized by high concentration, which is both a product of, and a legitimate rationale for, the strong intervention by the government. To be sure, one can still argue that mere industrial structure does not explain the persistent contrast between the two countries throughout decades. There has to be some factors that make both countries maintain their different approaches.

Other than the cultural differences, there is perhaps a difference in the positions of the two countries in the international economy. The U.S. has been the innovator and the earliest adopter of telegraph, telephony, and computer technologies, among other things. Naturally, benefit of free trade (which results in export) and competition (which results in greater innovations) approach is greater for the U.S. than other countries such as Japan. As a late starter of the economic development, Japan has been in a position to benefit from coordination approach; creation of internationally competitive player, well-planned adaptations of existing advanced technologies, fast and systematic deployment of the infrastructure, and securing of the infrastructure of the national strategic importance are the major benefits of such approach.

As discussed in the previous chapter, there is the same contrast between broadband network deployment policies of the two countries. And one may think that it is now a time to change for Japanese government, because some rationales are losing their legitimacy in broadband era. Coordinated approach is generally good for adaptation of technologies developed by the forerunners. Yet for the broadband development, there is

no existing set of technologies to adopt. The Japanese economy is now among the forerunners. Also, rapidly changing market environment require flexible and quickly responding industrial organization and governance. The decentralized structure found in the U.S. would serve such purpose the best. Additionally, the blurring boundaries of the media and inherently unclear boundaries of software products would produce an opportunity for dominant players to abuse its monopolistic power.

At the same time, however, it may be still a lucrative option to keep a well-controlled, integrated market and standard for the infrastructure, because various services can reach critical mass in such an environment. Once a broadband network is widely deployed, dynamic interaction between users and providers accelerates innovation.⁶⁰ The position of broadband infrastructure is central to the nation's development.⁶¹ Occasional rise of monopoly, as well as fragmentation of the market and standards may be worse results than coordinated effort.

⁶⁰ Bar, Francois and Annemarie Munk Riis. (March 1998). *From Welfare to Innovation: Toward a New Rationale for Universal Service*. Presented at the 26th Telecommunications Policy Research Conference.

⁶¹ Neuman, W. Russel, Lee McKnight, Richard Jay Solomon. (1997). *The Gordian Knot: political gridlock on the information highway*. Cambridge, MIT Press. pp. 18.

Appendices

Appendix A: Table 1: Classification of Japanese Telecommunications Business

Table 1: Classification of Japanese Telecommunications Business

<i>Type of Business</i>	Type 1 Telecommunications Business	Type 2 Telecommunications Business	
		Special Type 2 Telecommunications Business	General Type 2 Telecommunications Business
<i>Definition</i>	Business that provides telecommunications services by establishing its own telecommunications circuits and facilities	Telecommunications Business other than that described as Type 1 telecommunications business	
		1) Type2 telecommunications business that provides telecommunications facilities for an unspecified number of general subscribers, and has a scale of facilities that exceeds the minimum standard prescribed by Ministerial Ordinance (500 circuits for 1200 bps conversion) 2) Type 2 Telecommunications business that provides telecommunications facilities for communications with locations outside Japan using other companies' communications facilities.	Type 2 telecommunications business other than described for Special Type 2 telecommunications business.
<i>Condition for Entry</i>	Permission	Registration	Notification

Source: The Japanese Ministry of the Posts and Telecommunications. (1995). *Telecommunications Overview of Japan*. Tokyo: MPT.

Appendix B: Table 2. Late 1997's Deregulations and Law Amendments

Table 2. Late 1997's Deregulations and Law Amendments

Foreign Ownership	June 1997 Late 1998 Late 1998	Restriction removed except for NTT and KDD Restriction removed except for KDD (KCL abolished) Restriction removed except for NTT Long-distance
Rate Regulation	June 1996 December 1996 August 1998	First extensive bulk discount for resale permitted Deregulation for mobile communications Deregulation for long-distance, international telephony, ISDN, leased lines (Price Cap for local telephony)
Supply and demand coordination Service category	June 1997 January 1996 June 1997	Clause removed from TBL Restriction removed except for NTT and KDD Restriction removed for NTT and KDD
Simple Resale	May 1995 October 1996 December 1997	PSTN-leased line interconnection at one end permitted Both ends permitted for domestic service Simple resale in international service permitted

Source: Kawamata, Takahiro and Keiko Hatta. (1999). "Perspective of the Japanese Telecommunications Sector after the NTT Reforming". *Keio Communication Review*. No21, pp. 83-113.

-TBL: Telecommunications Business Law

-NCL: NTT Corporation Law

-KCL: KDD Corporation Law

Appendix C: Table 3. 1997 NTT Corporation Law

Table 3. 1997 NTT Corporation Law

	Ownership	Other
NTT Holding Company	Government > 33% Foreign < 20%	Basic R&D obligation
NTT Regional (East & West)	100% should be owned by the NTT Holding Company	Universal service
NTT Long-distance	No restriction	

Source: Kawamata, Takahiro and Keiko Hatta. (1999). "Perspective of the Japanese Telecommunications Sector after the NTT Reforming". *Keio Communication Review*. No21, pp. 83-113.

Appendix D: NTT Restructuring Policies

The MPT's policies to restructure NTT are as follows.⁶²

1. *NTT will be restructured into one long-distance communications company and two regional communications companies, under a purely holding company which is not involved in communications business operations.*
 2. *The long-distance company will be a private company to provide basically inter-prefectural communications services. This company will also be able to go into the business of international communications services.*
 3. *The regional communications companies will be special corporations to provide basically intra-prefectural communications services, and will be obliged to provide universal service of telephony in each business area.*
- The business areas of the two regional communications companies will be within East*

⁶² MPT. (1996). *The Policy On The Restructuring Of NTT*. Tokyo. MPT.

Japan (Hokkaido, Tohoku, Kanto, Tokyo and Shinetsu) and West Japan (Tokai, Hokuriku, Kansai, Chugoku, Shikoku, Kyushu and Okinawa).

4. The holding company will hold all the shares of the regional companies and will be a special corporation to promote fundamental research and development (R&D). This holding company will also hold all the shares of the long-distance communications company.

5. Regarding R&D, the holding company will conduct whole fundamental R&D, while the long-distance company and the two regional companies will each conduct applied R&D closely relevant to their business.

6. NTT will actively tackle with the issues, with a view to entering the markets abroad, such as entry and investment in communications business abroad and respond to the demand for global information interchange.

7. Necessary conditions between the long-distance company and the regional companies will be assured in order to ensure fair and effective competition.

8. MPT will make necessary arrangements within the Government regarding the issues on related laws such as the anti-monopoly law ("the act concerning prohibition of private monopolization and maintenance of fair trade") and the commercial law, and on special tax considerations such as concessions for capital gain tax and consolidated tax payment system.

9. MPT will make necessary coordination, seeking the opinions of interested parties, on the restructuring-related issues not mentioned above, and will prepare the necessary draft Bill for submission to the next ordinary session of the Diet.

Appendix E: Table 4: Licensing Categories Used by the Japanese State Bureaucracy, 1985 and 1995

Table 4: Licensing Categories Used by the Japanese State Bureaucracy, 1985 and 1995

Term	Rough English translation	Number in 1985	Number in 1995	Change in number
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Group A: Lifting a general prohibition under specified conditions; establishing specific rights

<i>Kyoka</i>	Permit	1,345	1,149	-196
<i>Ninka</i>	Authorization	1,441	1,624	183
<i>Menkyo</i>	License	102	100	-2
<i>Shonin</i>	Approval	988	1,113	124
<i>Shitei</i>	Designation	197	254	57
<i>Shodaku</i>	Consent & Others	19	25	6
and others				
Subtotal		4,092	4,265	173

Group B: Determining ahead of time whether a particular fact or action meets preestablished criteria and then making this information public

<i>Nintei</i>	Recognition	297	474	177
<i>Kakunin</i>	Confirmation	94	125	31
<i>Shomei</i>	Verification	59	126	67
<i>Ninsho</i>	Validation	18	17	-1
<i>Shiken</i>	Examination	102	113	11
<i>Kensa</i>	Inspection	254	247	-7
<i>Toroku</i>	Registration	162	181	19
<i>Shinsa</i>	Investigation	18	20	2
and others				
Subtotal		1,043	1,336	293

Group C: Informing a ministry or an agency of a specified fact; in principle the state agency will merely accept an application upon confirming all items of information have been provided

<i>Todokede</i>	Notification	3,326	3,435	-109
<i>Teishutsu</i>	Filing	390	555	165
<i>Hokoku</i>	Report	613	572	-41
<i>Kofu</i>	Submission	98	89	-9
<i>Shinkoku</i>	Statement and others	75	79	4
And others				
Subtotal		4,502	4,730	228
Other terms		417	429	12
Total		10,054	10,760	706

Source: Somucho (Management and coordination Agency), *Kisei kanwa shuishin no genkyo* (The current state of progress in regulatory reform) (Tokyo, 1996), pp 40-41. Translations are from Vogel, Steven Kent. (1996). *Freer Markets, More Rules: Regulatory Reform in Advanced Industrial Countries*. Ithaca: Cornell University Press. p. 205.
 Carlile, Lonny E and Mark C. Tilton, ed. (1998). *Is Japan Really Changing Its Ways? Regulatory Reform and the Japanese Economy*. Washington, D.C., Brookings Institute Press.

Appendix F: Chronology of Liberalization of Japanese Telecommunications Market

Chronology of Liberalization of Japanese Telecommunications Market

Time	Event
1981-83	The Provisional Commission for Administrative Reform 2 under the Prime Minister's Office deliberated on liberalization of telecommunication market, including privatization and reforming of NTT pc.

1984/06	Daini-Denden Kikaku Kabushiki-kaisha (DDI Planning Corporation) established and mainly owned by KYOCERA Corp.
1984/10	Japan Telecom, Co., Ltd. (JT) established and mainly owned by Japan Railway companies.
1985/04	First Telecommunications Reform: Telecommunications Business Law and Nippon Denshin Denwa Kabushiki Kaisha (NTT) Law and related laws were enforced – Privatization of NTT Public Corporation and Liberalization of Telecom Market.
1985/04	DDI Planning Corp. changed to DDI Corporation
1985/06	DDI, Japan Telecom and Teleway got a license as Type 1 Carrier.
1986/06	Tokyo Telecommunication Network Co., Inc. (TTNET) established and mainly owned by the Tokyo Electric Power Co., Inc.
1986/08-11	JT, DDI, and Teleway commenced leased line service and entered in domestic long-distance market.
1986/11	International Digital Communications, Inc. (IDC) established, shareholders of which includes foreign companies, C&W and AirTouch International.
1986/11	TTNet commenced leased circuit service.
1987/03	IDO Corporation established, and in which Teleway participated.
1987/04	Teleway commenced long-distance telephony service.
1987/06	Kansai Cellular Telephone established as a DDI's subsidiary: DDI entered into mobile communications market.
1987/09	DDI commenced long-distance telephony service.
1988/05	NTT Data Communications Systems Corporation (NTT Data) established: Separation of Data Communications Business Unit from NTT.
1988/05	TTNet commenced direct local telephony service.
1989/	International Telecom Japan, Inc. (ITJ) and International Digital Communications (IDC) entered into the international telecommunications market as a Type 1 carrier.
1990	The issue on NTT's reforming carried over to next 5 years.
1992/07	NTT Mobile Communications Network Inc. (NTT DOCOMO) established: Separation of Mobile Communication Business Unite from NTT
1993/09	DDI was listed on the Tokyo Stock Exchange
1994	Liberalization of sales of mobile communications terminals
1995/10	Personal Handy-Phone System (PHS) service started: NTT Personal Communications Network Inc., DDI Pocket Telephone Inc. and ASTEL Corp. established.
1996/12	Decision on NTT's Reforming: NTT divided into 3 companies under the holding company.
1997/03	JT and ITJ announced their merger
1997/06	The Second Telecommunications Reform: Revision of Telecommunications Business Law and Nippon Denshin Denwa Kabushiki Kaisha (NTT) Law and Kokusai Denshin Denwa Kabushiki Kaisha (KDD) Law - Removal of the restriction on new entry and foreign ownership, and approval of NTT's entry into international market and KDD's entry into domestic market
1997/09	NTT-WN commenced international services as an International Type 2 Carrier
1997/10	JT merged with ITJ in new JT as a long-distance and international carrier
1997/10	NTT Worldwide Network Corporation (NTT-WN) established as an International Type 1 Carrier
1997/12	NTT-WN got a license as Type 1 Carrier
1997/12	IRIDIUM Japan got a license as Type 1 Carrier
1998/01	TTNet entered into local telephony service with "TOKYO DENWA(Tokyo Telephone)" by connecting with NTT's network at GC-POI
1998/02	DDI announced an alliance with Teleglobe Japan. Inc.
1998/02	WorldCom entered into the Japanese market as a Type 1 Carrier
1998/04	NTT-WN commenced international service as a Type 1 Carrier
1998/04	NTT Satellite Systems established as a joint venture between NTT and JSAT.
1998/05	BT Communication Service, Inc. established as a joint venture with Marubeni and got a license of Type 1 Carrier in July 1998
1998/07	BT and AT&T announced new joint venture in their global businesses

1998/09	MCIWorld Com established: WorldCom acquired MCI.
1998/09	Global One got a license of Type 1 Carrier.
1998/12	KDD merged with Teleway in new KDD as an international and long-distance telecommunications carrier

Source: Kawamata, Takahiro and Keiko Hatta. (1999). "Perspective of the Japanese Telecommunications Sector after the NTT Reforming". *Keio Communication Review*. No21, pp. 83-113.

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