Use of Information Property in the Broadband Age and Public Internet Data Center (IDC)

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1. The Issue of Intellectual Property Rights and the Development of the Broadband

Many of the advanced industrialized countries, including Japan, are in the process of establishing national strategies for the development of information technology, and that also includes the establishment of the broadband. For the following two reasons, a contradiction is apparent in the process of putting these strategies into reality. The point is that the solution to overcome the dial-up type (narrow-band) Internet age using the telephone circuit had been rather vague. This, it would seem, may impede the diffusion of broadband services.

The first factor concerns the issue of intellectual property protection on the Net. Amidst the current progress towards achieving the smooth transmission of moving images, which will be the type of service offered by the broadband, the problem in transmitting movie videos that are considered the greatest Killer Application will be that the owners of these contents (mainly Hollywood) will find it difficult to transmit them unless they have the assurance that their intellectual property rights will be strictly protected both in the legal and technical sense. If, in this case, it is possible to receive only Killer Contents belonging to the dial-up age such as the Mail and Web it would not make sense for the ordinary user to pay the higher fee required for broadband communication. This would create a hurdle that might thwart the diffusion of the private-sector led broadband.

2. Management Problems for the Telephone Company and Broadband Service Development

Furthermore, the fact that communication on the Internet flows through the telephone line makes the problem much more complex. This applies to many, if not most, advanced industrialized countries.

Until the present, the practice is that access to the Internet is normally made through the telephone line. The telephone company as the owner of the line used to have a monopolistic management structure with a strong element of government involvement or interference, seeing that it has traditionally had a solid footing in the public sector and the social infrastructure domain. Under the impact of globalization extending to the national economy as a whole and in the powerful current of the principle of the market economy the monopolistic management environment has collapsed since the 1990s, and instead we have seen a transition to the emergence of a competitive management environment. In fact, this process has gathered momentum because it has been actively promoted. The spread of the Internet has progressed hand in hand with this trend so that the management problems facing the telephone companies have become a bottleneck that is threatening to impede progress in the diffusion of the broadband. In a competitive business environment, the telephone company is forced to give priority to the pursue of profitability rather than its public service mission. In other words, the market principle must inevitably take precedence. For the diffusion of the broadband service, this means that the telephone company will of course try to avoid it if there is no demand for it.

Fortunately, broadband service charges are moving downward in a satisfactory manner in Japan because a competitive environments is in the making. Japan is in fact one of the few examples of an emerging low-price fee structure on a worldwide scale. There is also evidence that, the exaggerated expectations placed on information infrastructure development during the IT Bubble from the late 1990s to the year 2000 led to infrastructure development well in excess of demand. Now that the bubble has burst the situation is that these investments are difficult or impossible to recover, although this may vary from country to country.

With the advent of digital broadcasting, however, we can also envision a fusion of broadcasting and communications due to broadcasting making us of the Internet. This is complicating matters as the telephone and the broadcasting companies are trying to cast their nets over the broadband issue.

3. The Nature of the Broadband as a Public Service and the Role of Government

The problems we have outlined above also bring to the fore, in a rather acute manner, the contradiction that exists between the Internet as a public service and the Internet as a business operation. The point is that the diffusion of the broadband service by the private sector is now at a standstill. Yet, at the same time, we are also witnessing definite progress toward electronic government, electronic commerce (EC), remote medical care, and remote teaching (including

e-learning). This means that the Internet is constantly gaining in importance to an extent that the nation can no longer function without it. The broadband is therefore gaining momentum as a public service.

In the principle of the market economy is upheld in the diffusion process of the broadband service, the cities in which the private operators can make the service profitable will have a definite advantage. In contrast, the regions will finds it relatively difficult to make headway in developing IT. Due to the low level of demand in the depopulated areas, they have no hope of ever establishing a network infrastructure if the leave things to the market principle.

For the development and providing of broadband services in sparsely populated areas (or in countries with a vast territory), we will therefore need some different program from the one that can be offered on the basis of the market principle founded, as it is at present, on the profit criterion. The important point is that the broadband service providers in such areas with a low population density should be not-profit and public service operators. In the present situation, they would require relatively large operating costs on an ongoing basis to run their broadband services. In this sense, it would indeed be difficult to develop the service by relying on the market principle. In view of this, public support would be required.

For the reasons considered above, governmental policies on the expansion of the broadband service not only in terms of building the service infrastructure but also of the propagation of service use thereafter may comprise essentially the following measures and methods.

These measures will of course be used in different combinations that take into account the differences among the various regions and according to the background and situation that are different for the individual countries.

(1) Central government and/or local governments may own the infrastructure themselves or have exclusive rights to use the infrastructure on a long-term lease. In this method, central/local governments would lease the infrastructure to providers/end-users on a long-term basis.
(2) Another methods would give the providers/users financial assistance and/or preferential tax measures.
(3) The liberalization brought about by deregulation would ensure that the market mechanism would function properly and the resulting changes in the system would bring about a lowering of the service charges which in turn would result in an expansion of use.

(4) Central/local governments should produce interesting contents (public information property) that could be offered to the nation. Central/local governments should also promote a contents industry.

The approach given in (1) above implies a government-led development of the broadband service (central/local governments). This approach might be applied in areas in which the market principle cannot be relied upon to build the capacity for broadband service development and operation.

The approaches described in (2), (3), and (4) above constitute a mechanism of broadband development driven primarily by the market principle.

In Japan, it is felt, efforts should concentrate especially on approach (4).

4. Public Information Property and Development of a Secure Environment

Japan is now in the process of a rapid expansion of broadband technology. This spread is largely due to a reduction in the fixed-amount fee as a result of the intense, if not excessive, competition prevailing at present. The user's main aim is to have a comfortable network environment but the contents presented in this environment are still far from being "killer contents." For private information property, especially movie videos and television programs, there is still no cast-iron assurance that the intellectual property of their contents will be technically and legally protected. It will therefore be difficult to establish a business model in this field until this issue has been resolved. In the public domain, however, the problems relating to security are to be solved by the year 2005 under " e-Japan Priority Policy Program", with plans for the extensive use of broadband communication at schools. The vast range of information property that has accumulated until the present will thus be utilized in an effective manner in the school education area.

The penetration of broadband communication will create a new environment for digitized Public Information Property (cultural property, educational contents, Geographical Information System (GIS), etc.) which has so far remained inaccessible through the networks, to be available for use not only at schools but also in the home. This may be the kickoff to a dramatic expansion in broadband use in the educational establishments, the schools as well as in remote education and e-learning.

Under these conditions, it is essential to have a secure environment for both public and private information property and for the networks that go with it.

A secure environment implies a legal system that protects the intellectual property rights on the digital information property offered through the network. It involves a coding technology for the contents and a physical or operational system ensuring the security of the network itself.

The core elements of this physical or operational system for ensuring the security of the network itself is the Internet Data Center (IDC).

5. Public Information Property Secured through Public Internet Data Center (IDC)

The Internet Data Center (IDC) is a solid building or facility offering a high level of security and with the capability of accommodating and remotely using a vast number of thousands and tens of thousands of servers with a high reliability and a service capable of making connections at high speed. The essential features of the IDC are that it must be a "solid facility providing confidentiality and security," that it has to be an "environment capable of making network connections at a high degree of reliability," and that it must offer a "permanently available and monitored service."

The public IDC as one of the IT programs given priority by the government, may play a leading role in the regional networks. As the facilities that are crucial for the Internet Data Center (IDC) and the related information infrastructure are in the process of being developed, the Center will be able to function as a regional information network consisting of several tens of thousands of network terminals in well over ten thousand locations up and down Japan as well as a regional high-speed LAN base for local communities.

Intrusion from outside and unauthorized use within the organization through the rapidly globalizing Internet is posing a growing threat to our information systems. For this reason alone, security measures will be of critical importance also in the sense of ensuring privacy for the public. Local communities (governments) will therefore emulate central government in its efforts to establish e-government. Moreover, the IDC as the regional information technology base with a watertight package of security measures will play a major role in the expansion of the local administration network.

In terms of the regional networks at the prefectural level, the public IDC provides the contact point between government and the public. In this, it differs substantially from the Basic Administration Data System whose core elements are closed networks exclusive to government bodies and not open to the public.

The public IDC controls and operates the service applications and public information property provided by government organizations for companies and to the general public through the Internet, and can be accessed by anyone around the clock and throughout the year.

The most effective approach for building and operating the Center would be either PFI or outsourcing. The role of this public IDC must be seen as a part of the general idea of regional information technology. In this context, the public IDCs may be built and operated either by the individual prefectures or by a number of prefectures joining forces as a wide-area grouping to function as regional network bases.