

Toward the Convergence of Communications and Broadcasting from the Consumer Perspective

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Communications and broadcasting have until now developed separately, but the development of new technologies and system reforms are erasing the lines of demarcation that previously defined the two. As a result, it is now possible to provide various combinations of content, platforms, infrastructures and terminal equipment, which are the elements that comprise communications and broadcasting. In 2006, the discussion of “integration” of communications and broadcasting has at last taken on a practical air of reality.

The number of households subscribing to fixed-line broadband has surpassed 20 million while the number of 3G mobile telephone subscribers has soared to over 50 million. Therefore, the environment for receiving the transmission of terrestrial digital broadcasting is also being prepared in anticipation of the phasing out of analog broadcasting in 2011. At the same time, reforms in legal systems where various issues involving the convergence of communications and broadcasting must be resolved are gradually moving ahead. In this way, an environment to support this change is being established smoothly.

As the environment is in place, One Seg (digital broadcasting service to mobile terminals named for “one segment” of the 13 segments of the spectrum allocated to terrestrial digital television broadcasting) and TV portals (portals that link consumers to various Web sites through their television sets) are beginning to appear as promising convergent services between communications and broadcasting. However, a profitable and viable business model for the relevant service providers has yet to be established, and the existence of barriers preventing the widespread availability of convergent services is also becoming evident.

In the movement toward the convergence of communications and broadcasting, five issues exist: (1) the improvement of broadcasting infrastructures to accommodate One Seg, (2) resolution of regional disparities in communications infrastructures, (3) the prompt revision of legal systems, (4) gaining an accurate understanding of users’ needs and (5) establishment of business models.

It is hoped that the early resolution of these issues will result in the realization of convergence from the consumer perspective.

I Meaning of the Convergence of Communications and Broadcasting

1 The “Convergence” Discussion Takes on an Air of Reality in 2006

A call for the convergence of communications and broadcasting has been the topic of discussion for some time. Communications and broadcasting have developed independently over a period of many years from both a technological and systems perspective. However, the idea that the integration of these two fields could provide innovative next-generation services has been a topic of discussion for persons in related fields for some time.

In Japan, integrated services have, in fact, been provided to some extent through limited infrastructures such as the provision of Internet services via cable television networks (CATV) and television broadcasting via communications satellites (CS). However, as yet, there are few examples of success in integrated services using a fixed-line (wired) broadband communications network or a mobile (wireless) communications network and, consequently, discussion in this area has remained largely conceptual.

However, since the end of 2005 progress in convergence entered a new phase as broadcasters began to transmit image content via broadband communications networks and, today, truly innovative integrated services are beginning to emerge. This is due in large part to advances in broadcasting digitization and the high penetration of broadband (including optical fiber and 3G mobile telephones) in communications. As the environ-

ment is gradually being established in this way, the notion of “convergence” is finally taking on a realistic meaning. The promotion of capital participation in broadcasting enterprises around 2004 by enterprises such as Livedoor and Rakuten, which provide Internet portals, is also still fresh in the memories of people.

The government has also begun to engage in wholehearted discussions of legal system reforms in anticipation of the convergence of communications and broadcasting. From January to June 2006, the then-Minister of Public Management, Home Affairs, Posts and Communications Takenaka initiated an informal working group on communications and broadcasting policy, (hereafter the “Takenaka working group”) to discuss specific policies for promoting comprehensive reforms and the convergence of both communications and broadcasting.

2 Meaning of Convergence

In general, communications and broadcasting can be thought of as consisting of three layers (service layers): content, platform or infrastructure and terminal equipment. As shown in Table 1, they can be defined as the combination of the respective elements of their service layers.

To begin with, communications (hereafter “communications”) can be defined as a service consisting of the mutual transmission on a point-to-point basis or certain multipoint basis of moving images, music, games, community information, etc., via a fixed line or mobile communications network using PCs or mobile terminals (such as mobile telephone terminals or mobile information terminals). (The focus of this paper is on convergence accompanying digitization and, as such, has excluded traditional analog communications including

Table 1. The Three Layers Comprising Communications and Broadcasting (service layer)

Service Layer	Communications	Broadcasting
Content	<ul style="list-style-type: none"> Digital content moving images (movies, videos), music, games, etc. 	<ul style="list-style-type: none"> Broadcasting programs <ul style="list-style-type: none"> Terrestrial BS CS CATV Data broadcasting content
Platform or Infrastructure	<ul style="list-style-type: none"> Websites, portal sites, community sites, sites transmitting moving images, etc. Settlement platforms Communication networks, fixed communication networks, mobile communication networks 	<ul style="list-style-type: none"> Terrestrial analog broadcasting Terrestrial digital broadcasting Satellite broadcasting (BS, CS) CATV
Terminal	<ul style="list-style-type: none"> PCs Mobile telephones, etc. 	<ul style="list-style-type: none"> Television Television with STB PCs with TV tuners

Notes: (1) A settlement platform is a system for settling E-commerce transactions on websites. (2) STB = set top box (a device used to connect a TV to CATV and communication networks). (3) BS = broadcasting satellite, CATV = cable television, CS = communications satellite.

telephone and fax from the scope of the discussion.) In many cases, the number of communicating parties is a small, limited number.

Broadcasting can be defined as a service that transmits at one time broadcast program content via a broadcast infrastructure such as terrestrial waves, satellite or CATV to a large number of terminals such as TV sets (generally a large number of unspecified pieces of equipment).

The convergence of communications and broadcasting means that the component elements of communications and broadcasting that belong to the same service layers may replace each other or may be provided in a new integrated format. In other words, the barriers between communications and broadcasting will disappear because of technical innovations and system changes, and various combinations of the component elements of each respective service layer, as shown in Table 1, will become possible. For example, convergence could mean the transmission to and viewing of content on a television receiver via a fixed communications network. Prior to going into detail about various integrated services of communications and broadcasting, this paper will start by surveying current developments in communications and broadcasting. What, then, is happening in these areas at present? To answer this question, the paper will first examine the latest trends in fixed communications, mobile communications and broadcasting, and will look at how these will result in convergence. Next, the paper will present examples of promising integrated services that are currently being launched and will consider issues that must be resolved to enable the smooth introduction of these services. Finally, the paper will discuss issues in realizing integrated services from the perspective of the consumer.

II Recent Trends in the Areas of Communications and Broadcasting

1 Optical Fiber as the Main Player in Fixed Broadband

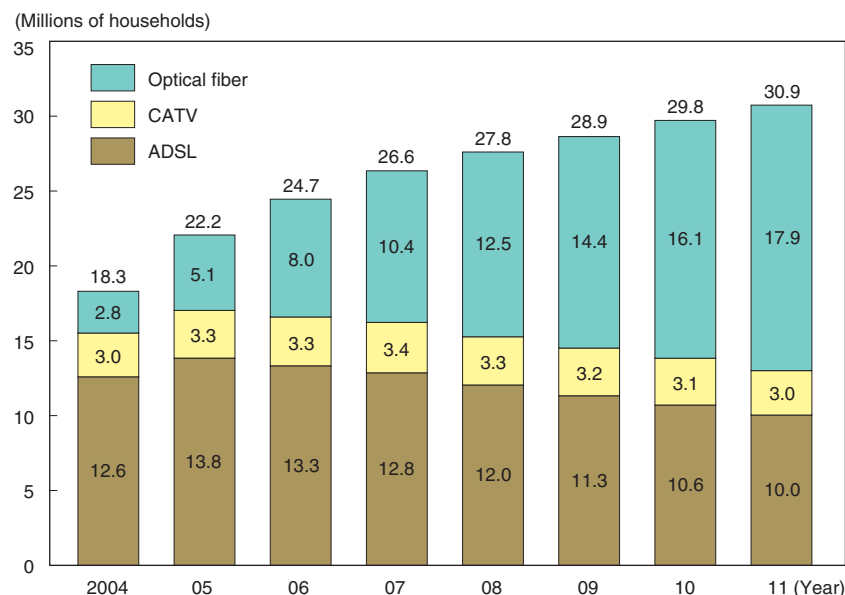
(1) The number of households with broadband will reach 30 million by the end of 2011

The number of households subscribing to broadband through domestic ADSL, optical fiber, and CATV at the end of June 2006 rose to 24.22 million, approaching half of all households in Japan. A look at trends in the past year shows a notable increase in subscribers to optical fiber lines. Subscribers to optical fiber lines, which stood at 3.41 million at the end of June 2005, had surged to 6.31 million one year later.

Until then, the main player featuring continuous Internet connection was ADSL, but from the latter half of 2005, optical fiber lines surpassed ADSL in net growth. In addition, from the beginning of 2006, there were months when net decreases in the number of users of ADSL lines were recorded.

According to an independent questionnaire survey undertaken by Nomura Research Institute (NRI) in September 2006, 56.9 percent of current ADSL line users at the time indicated that they intended to switch to optical fiber lines in the future. Therefore, the increasing trend toward optic fiber can be expected to continue for some time. NRI predicts that the number of households subscribing to broadband will reach 30 million by the end of 2011 and about 18 million or 60 percent of these will be households using optical fiber.

Figure 1. Number of Households Subscribing to Broadband: Results and Forecast



Notes: (1) Figures for 2004 and 2005 are projections made by NRI based on past results. Figures from 2006 onward are forecasts. (2) ADSL = asymmetric digital subscriber line.

(2) A reduction in charges will accelerate the penetration of optical fiber

It was initially believed that the main users of optical fiber would be heavy Internet users. However, as stated above, the user segment at present is expanding to include ordinary users. The main reason for this is due to the price-cutting strategies of the providers.

When a consumer decides to use optical fiber services, there are three main costs: the cost of purchasing a PC, the initial installation costs for introduction of the service and monthly charges for use of the service. As explained below, each of the service providers has launched its own cost-cutting campaign to lower these three costs.

To begin with, there is the cost of purchasing a PC. In this regard, a large number of home electronics retailers engage in promotional campaigns where they offer rebates of 30,000 to 50,000 yen to purchasers of PCs who subscribe to fiber optic lines at the time of their purchase. Next, is the initial charge for subscribing to fiber optic line services. The charge is normally about 20,000 yen, but recently many carriers are waiving this initial charge to capture customers. Finally, is the monthly charge for use of the optical fiber line. Incentives in this area include waiving of monthly charges for a certain number of months after signing up as a subscriber or generous discounts on charges such as, for example, a 1500-yen reduction in monthly charges for a six-month period.

Taking advantage of such offers, apart from the purchase of a PC, consumers at present can access optic fiber line services “for almost nothing” in the initial stages. Furthermore, charges are falling to a level where there is almost no difference in user charges for ADSL on an annual basis, so optical fiber is already ceasing to be a service reserved for advanced or heavy Internet users.

As the convergence of communications and broadcasting progresses, moving image content including television programs and movies will be broadcast via communications networks. The file capacity of high-quality moving image content is large and requires a continuous communications speed of 10 Mbps (megabytes per second), but with the penetration of optical fiber an environmental infrastructure of fixed-line communications networks for providing integrated services is being put in place.

2 Arrival of an Age of 100 Million Mobile Telephones

(1) An age of 100 million wireless broadband communications users

As of the end of August 2006, the number of subscribers to mobile telephone lines in Japan topped 93 million. NRI estimates that by the beginning of 2008 this number will exceed 100 million subscribers and by the end of 2011 will be edging toward 110 million. When the num-

ber reaches this level, those without mobile telephones will be a very limited number of people such as little children. This will herald the arrival of an age where almost everyone has a mobile telephone.

Although mobile telephones are still referred to as “telephones,” they are no longer used simply as equipment for making telephone calls. In addition to e-mail, mobile Internet services such as i-mode provided by NTT DoCoMo and music delivery by KDDI through its *chaku uta and chaku uta-full* services are indicative of the growing range of advanced and diverse functions becoming available each year. A service recently growing in popularity is an electronic settlement function for paying bills called *saifu keitai* (wallet phone), a play on words which can mean “mobile telephone settlement.” Until now, a prepaid credit function, such as Edy, was the mainstream settlement service available, but in April 2006, NTT DoCoMo started providing a charge function called “DCMX.” In this way, financing and sales of goods are among the various integrated services already being provided via mobile telephones.

Along with the development of services, mobile telephone network infrastructures are also increasing in scale. As of August 2006, about 50 million lines, equivalent to more than half of all users, were third-generation (3G) mobile telephones with high-speed communication potential of 384 kbps to 2.4 Mbps (2G: 28.8 kbps). In the case of NTT DoCoMo, the population coverage rate has risen to 99.9 percent and, with the exception of some mountainous and remote areas, poor reception areas where radio waves do not reach are disappearing. As Figure 2 shows, NRI predicts that as of the end of 2010 almost all users will have made the transition to 3G or subsequent mobile telephones.

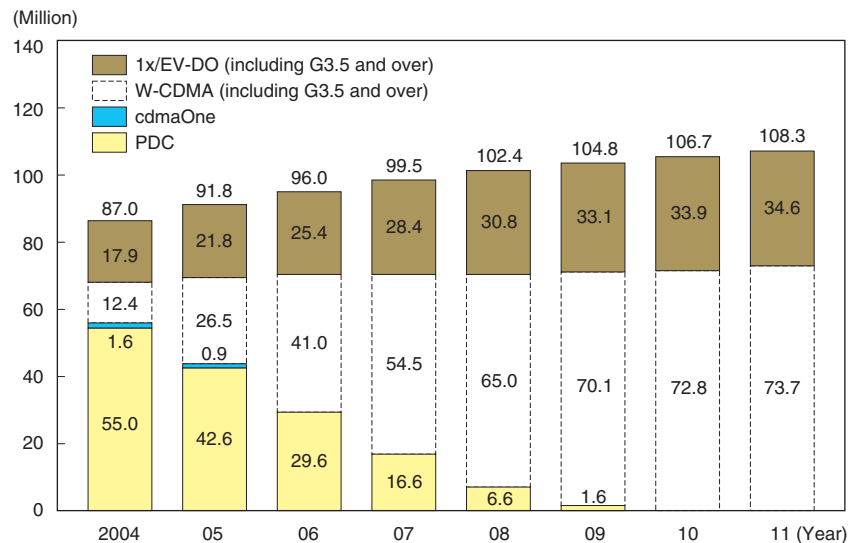
(2) MNP will accelerate user mobility among mobile telephone carriers

Mobile number portability (MNP) is an arrangement whereby a person may retain his or her existing mobile telephone number even after switching to another carrier. This arrangement was introduced in Japan on October 24, 2006. Until then, consumers had to change their mobile telephone numbers when they changed carriers. Consequently, many consumers remained with the same carrier even when they were dissatisfied with their mobile hand units or the mobile telephone carrier. Therefore, MNP was introduced as a means of promoting convenience for users by eliminating the need to change telephone numbers.

Taking advantage of MNP involves the following four costs (as of this writing):

- (1) A cancellation fee paid to the current mobile telephone carrier for terminating the existing contract: 2,100 yen
- (2) A fee for the use of MNP, payable to the new carrier subscribed to (NTT DoCoMo, KDDI’s au,

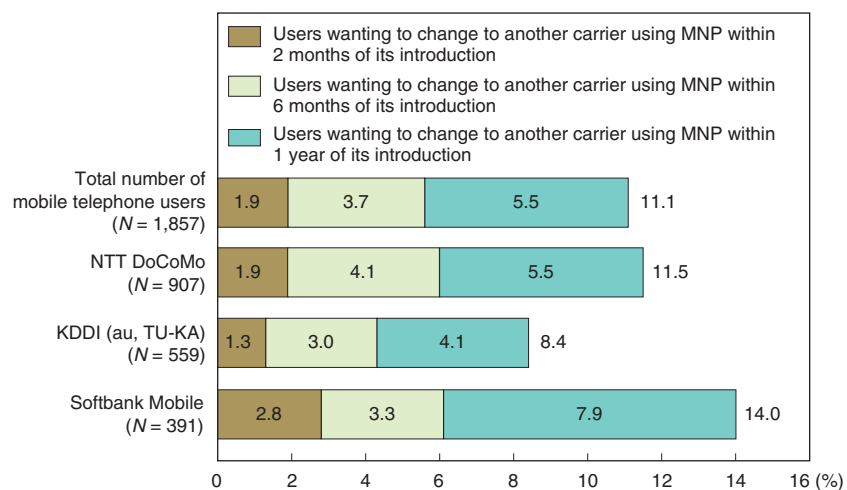
Figure 2. Number of Subscription Lines for Mobile Telephones by Communication Protocol



Notes: 1x/EV-DO = 1x is a CDMA2000 standard that applies a CDMA (code division multiple access) protocol. EV-DO is a standard that accelerates data communication within CDMA2000, cdmaOne = a mobile communication standard that utilizes a CDMA protocol, PDC = Personal Digital Cellular (mobile communication standard peculiar to Japan), W-CDMA = third generation mobile telephone communications standard developed by NTT DoCoMo and others.

Sources: Figures for 2004 and 2005 are from the Telecommunications Carriers Association. Figures for 2006 and thereafter are forecasts by NRI.

Figure 3. Plans to Use MNP (Mobile Number Portability) for Mobile Telephones



Notes: The above are responses to the following question: "A new service known as MNP (mobile number portability) which allows you to change your mobile telephone carrier without changing your mobile telephone number will commence on October 24. Please select the response (only one) that you feel applies to you. In taking advantage of this service, however, the following restrictions and conditions apply: (1) You are required to pay a 5,000-yen charge, (2) You must purchase a new mobile telephone handset, (3) Your e-mail address will change, (4) You will not be able to continue any discount plans such as long-term use discount or family discounts and (5) You will not be able to transfer games and music data currently stored in your handset.

Source: "Trends in Use of Broadcasting and Communication Service Use (online questionnaire)" by NRI, September 2006.

and SoftBank Mobile have announced that they will waive this fee.)

- (3) Administrative fees required at the time of the new contract (about 3,000 yen)
- (4) A charge for the purchase of a new mobile telephone handset

Of the above charges, there is a strong possibility that the charge for (2) will be waived. However, to take advantage of MNP, the payment of charges of about 5,000 yen in addition to the cost of a handset is required. In the past two to three years, MNP has attracted wide attention as an element with the potential to revitalize the

competitive environment of the industry. However, some observers have indicated that perhaps, due to the charges involved, contrary to expectations there will be a smaller number of people who actually change mobile telephone carriers.

To gain an insight into MNP from the consumer perspective, NRI undertook the questionnaire survey mentioned earlier in which it included questions based on the assumption that charges of 5,000 yen were required to take advantage of MNP. According to the results of the survey, 11.1 percent of the respondents indicated their intention to take advantage of MNP and change mobile telephone carriers within one year. (See Figure 3.)

For the past six months, the rate of subscriber cancellation among mobile telephone carriers is running at 0.7 to 1.0 percent on a monthly basis. This 11.1 percent corresponds exactly to the annual subscriber cancellation rate. This means that there is a strong possibility that the number of subscriber cancellations at the beginning of the introduction of MNP will be double the number of ordinary cancellations. When MNP was first introduced in Korea in January 2004, SK Telecom, the leading mobile telephone carrier, recorded an approximate 4 percent (700,000) subscriber migration to other carriers utilizing MNP in the three-month period immediately following its introduction.

(3) 3.5G mobile telephones pave the way for an environment of integrated services

The acceleration of communications speeds in mobile telephones knows no bounds. In August 2006, NTT DoCoMo commenced provision of its 3.5 generation (3.5G) mobile telephone service, known as HSDPA. The maximum communications speed of HSDPA is 3.6 Mbps (which will rise to 14 Mbps in the future), marking the start of a truly wireless broadband service. Following NTT DoCoMo, SoftBank Mobile will launch the same system during 2006 and KDDI (au) will follow suit during the year with the commencement of its EV-DO Rev. A 3.5G mobile telephone service.

Because 3.5G services have begun only recently, a sufficient number of base transceiver stations has not yet been installed, so areas where high-speed communications are possible are limited at present. However, by around 2010 the infrastructure will be in place and mobile communications of a capacity in excess of 10 Mbps will most likely be possible in every corner of Japan. NRI predicts that by the end of fiscal 2011, about 20 million mobile telephone subscribers, equivalent to 20 percent of subscribers, will own 3.5G mobile telephones.

Irrespective of whether communications are fixed or mobile, broadband will be pervasive in the Japanese market. The infrastructure for the integration of communications and broadcasting is currently being put in place on the communications side.

3 The First Step to an Era of Fully Digital Broadcasting

(1) Issues in the receiving environment in the phasing out of analog broadcasting

In the broadcasting market, further discussion of the integration of communications and broadcasting has been underway in the past year in terms of both services and systems and, to some extent, specific integrated services have become evident. However, this is just the first step in ending analog broadcasting and toward the age of full digital broadcasting in 2011.

When progress in terrestrial digital broadcasting services is being discussed, the two aspects of reception

and transmission in the environmental infrastructure must be considered. To begin with, the sales of flat screen plasma and LCD display televisions are buoyant and the penetration of terrestrial digital broadcasting receivers is proceeding satisfactorily.

According to NHK, as of July 2006 the diffusion of televisions capable of receiving surface digital broadcasting was 7.64 million and the number of televisions with STB (set-top boxes) 2.93 million. In addition, including digital recorders and other digital devices, diffusion in terms of the number of digital devices in households had risen to 12.57 million units. Therefore, the reception environment in households for terrestrial digital broadcasting is steadily being established.

However, while permeation of flat screen televisions is rapidly increasing, about 20 percent of all units sold are still CRT televisions. Almost all of these are without a terrestrial digital broadcast tuner and therefore are capable of accommodating only analog broadcasting. The phasing out of analog broadcasting in 2011 is only five years away. If sales trends of analog televisions continue as they are, there is a possibility that an environment for receiving digital broadcasting will be lacking in about 20 percent of households. Therefore, putting in place an environment for receiving digital broadcasting after the phasing out of analog broadcasting is a major issue.

(2) There is progress in the transmission environment in anticipation of the changeover to digital broadcasting

The establishment of a transmission environment in anticipation of terrestrial digital broadcasting is making steady progress. Measures to modify the analog frequency (to establish the frequency for surface digital broadcasting) had already been completed as of August 2006 for 97.3 percent of targeted households. In September 2006 terrestrial digital broadcasting from new stations in 31 out of 47 prefectures (including partially digitized prefectures) commenced transmission. Areas not yet covered by transmission from the parent stations include the remaining 16 prefectures. Digital broadcasting in these areas is scheduled to commence by December 2006 and, for the most part, the transmission environment seems to have been prepared.

However, there are still some outstanding issues. In December 2005, the National Council for the Promotion of Digital Terrestrial Broadcasting released its road map for establishing a relay station infrastructure by 2010 in the Sixth Action Plan for the Promotion of Digital Broadcasting. In this plan, it clearly stated that disadvantaged areas such as remote islands and mountainous areas will have difficulty in constructing relay stations on their own.

As methods to assist these disadvantaged areas, IP multicasting (a method whereby the same data are transmitted simultaneously to a number of parties via

the Internet) and retransmission of content via CS may be considered as possibilities. However, at this stage various issues relating to the handling of the necessary copyrights in implementing such systems are currently being discussed; even on the technical side, initiatives are only at the stage of carrying out empirical experiments.

4 Progress in Legislative Reforms Accompanying the Convergence of Communications and Broadcasting

(1) A total of 10 laws relating to integration

Legislation pertaining to communications and broadcasting encompasses nine legal systems according to service sectors and include: the Radio Law, Telecommunication Business Law, Wire Telecommunication Law, Rules for Wire Broadcasting Telephone Business, Law Concerning Nippon Telegraph and Telephone Corporation, etc., Cable Television Broadcast Law, Broadcast Law, Law Concerning Wire Broadcasting Telephone Business and Law Concerning Broadcast on Telecommunication Services. In addition to these laws is the Copyright Law, bringing the number to 10, which will have an extremely significant impact on convergence.

Included in the review of the legal systems relating to communications and broadcasting are details cited by the Takenaka working group mentioned earlier with respect to matters that “should be examined immediately and reviewed by 2010.” In accordance with this aim, the Ministry of Public Management, Home Affairs, Posts and Telecommunications held the 1st Study Group Meeting on the Comprehensive Law System for Communication and Broadcasting on August 30 and intends to review the framework for accommodating the service layer sections of integration, which include the content, platform and transmission services.

The study group plans to discuss matters for a year and a half and is expected to draw conclusions during the 2007 fiscal year. The permeation of terminals and development of services are progressing favorably, so it is hoped that system reforms promoting the development of the market will be implemented without delay.

(2) Inconsistencies in the legal systems relating to the convergence of communications and broadcasting

The convergence of communications and broadcasting has brought to light the existence of inconsistencies in related legislation. These inconsistencies arise from differences in views of the law between the Ministry of Public Management, Home Affairs, Posts and Telecommunications and the Cultural Affairs Agency.

For example, a look at the way in which IP multicast is handled makes the issue easy to understand. Views are divided as to whether it should be discussed as a Broadcasting Law issue (Ministry of Public Manage-

ment, Home Affairs, Posts and Telecommunications) or a Copyright Law issue (Cultural Affairs Agency).

While IP multicast is deemed to come under “broadcasting using communication services,” under the Copyright Law, it is positioned as “communications (public automatic transmission).” In other words, despite IP multicast being a “broadcasting” service under the Broadcasting Law, it must be treated as “communications” under the Copyright Law. Consequently, in cases where a program is being simultaneously retransmitted via airwaves, etc., existing binding conditions for communications, such as the need to obtain the prior consent of actors, singers, and record companies, remain in force.

In addition to discussion of this issue in the Takenaka working group, it was also taken up by the Liberal Democratic Party (LDP) in the Sub-Commission for the Sophisticated Telecommunication and Broadcasting Industries (hereafter “Katayama Sub-Commission”). In a report on June 6, 2006, the Takenaka working group spelled out principles that advocated a prompt response to enable all broadcasting of electric communications services to be treated as broadcasting from a copyright perspective, and that fundamentally regional limitations on retransmission should not be established.

At the same time, a report by the Katayama Sub-Commission on June 20 of the same year advised that the necessary measures should be put in place immediately to enable retransmission of terrestrial digital broadcasting via IP multicast to be treated in the same way as cable television under the Copyright Law. At the same time, however, the Katayama Sub-Commission formulated policy principles on the issue of broadcasting in outlying areas in which it acknowledged issues relating to copyrights, broadcasting rights, and regional licensing systems, and that it would be difficult to implement measures unless these issues were resolved.

While the two parties expressed different views with respect to retransmission in outlying areas, the fact that both cited the issue of dealing with proprietary rights can be seen as positive outcomes of the talks.

This issue was also discussed in the Subcommittee on Legal System Issues by the Ministry of Cultural Affairs and was summarized in a report in August 2006. The report included a policy advocating that simultaneous retransmission of terrestrial broadcasting be promptly treated the same as “wire broadcasting.”

However, there is a need to consider private broadcasting where proprietary content is purchased, such as dedicated channels that are broadcast by CS and other means. The report stated that a decision on the handling of private broadcasting in IP multicast had been put on hold and that discussion on the matter would continue in the future. In other words, multi-channel broadcasting such as that provided by Plala Network’s 4th MEDIA and SoftBank Group’s cable BBTB will continue, as before, to require the prior consent of holders of related rights.

Although there is progress in the reform of legislative systems in the lead up to convergence, there are still a number of outstanding issues that need to be addressed.

III The Meeting Point of Communications and Broadcasting

1 Convergence Starting from Shared Broadcast Content

As stated above, the infrastructure and market environment are being prepared in anticipation of the convergence of communications and broadcasting in fixed-line communications, mobile communications and various broadcasting services. In addition, steps are being taken to review legislative systems appropriate for a convergent market. In anticipation of changes in the environment, the start of a number of examples of convergence are evident.

Among these, the example of convergence where broadcast content is transmitted via a communications network gives a hint of what is to come. Accompanying the spread of broadband lines, transmission services for moving pictures over the Internet is becoming increasingly popular. As a site transmitting moving pictures, perhaps GyaO has acquired the largest number of users. GyaO is managed by the carrier USEN and uses a video-on-demand (VOD) system that enables users to view content they want to see when they want to see it. GyaO has adopted an advertising income model, and the viewing content itself is free to users.

Since commencement of the service in April 2005, GyaO's registered users have increased dramatically, reaching 11.18 million as of the end of August 2006. A number of communications carriers have provided the transmission of movies as a free-of-charge model to date but, unable to raise the number of users to anticipated levels, have found themselves fighting an uphill battle.

GyaO, on the other hand, has adhered to a model of advertising income and free-of-charge movies and in this way has succeeded in creating a platform of over 10 million registered users. This achievement is proof that GyaO has become a presence worthy of attention as one of advertising media.

However, it must be remembered that the 10 million subscribers are simply people registered at GyaO and that this number does not reflect the number of actual users. Users who view movies at least once a month still only number about 40 percent. In terms of value as media, GyaO is still in the growing stages and profitability is difficult to achieve. To establish its advertising model, increasing the number of actual users and the level of viewing are issues.

In addition to GyaO, Yahoo! Doga and US YouTube are recently attracting attention as services for transmitting moving pictures (broadcast programs).

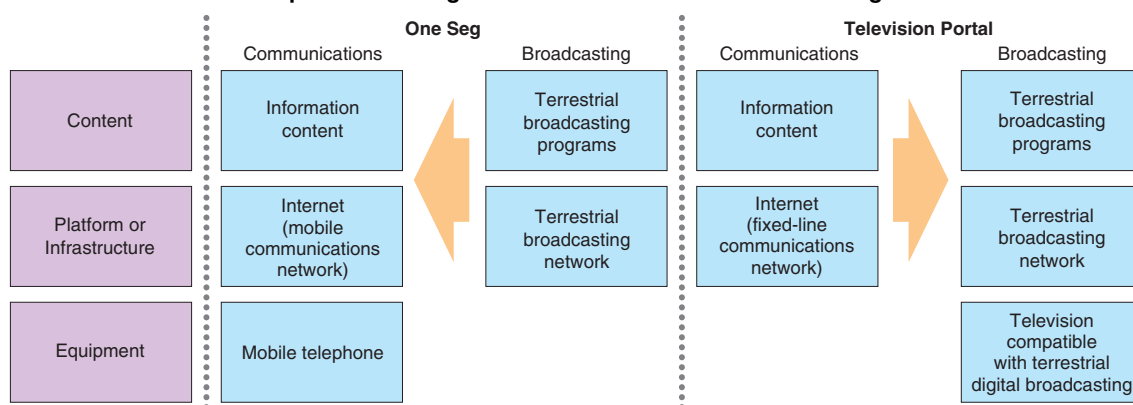
In addition to these, various other integrated services are being provided. A characteristic of integrated services is the adoption of one of two possible patterns: the addition of broadcast services to a communications terminal or the addition of communications services to a broadcast receiver terminal. A promising service of the former is One Seg and of the latter TV portal services. (See Figure 4.) Further details about these two will be taken up on another occasion. The integration of communications and broadcasting can be described as a service where either communications or broadcasting forms the base of the service and a compromise is made to incorporate the other service.

2 One Seg Moving from Communications to Broadcasting

(1) One Seg as a means of integrating communications and broadcasting

One example of a service that integrates broadcasting from a communications base is "one segment broadcasting," a terrestrial digital broadcasting service for mobile terminals, which commenced services on April 1, 2006. One of the 13 segments of the terrestrial digital broadcast

Figure 4. Characteristics of Examples of Convergent Communications and Broadcasting



band assigned to each broadcast station is used, thus the name "One Seg."

As of September 2006, five types of mobile handsets for this purpose were being sold by mobile telephone carriers. According to a report by the Japan Electronics and Information Technology Industries Association (JEITA), deliveries of handsets as of the end of July 2006 totaled 1.497 million.

There are two expectations of One Seg. The first is the complete outfitting of communications and display functions in the mobile telephone. In other words, from the outset, the mobile telephone has an environment where both communications and broadcasting are convergent.

The second feature is the extremely brief life cycle of the handset in comparison with general electronics products. At present, the changeover period for mobile telephone handsets is about two years. In comparison with the cycle for televisions, which is about nine years, it is extremely short. In other words, the telephone handsets capable of One Seg reception hold the potential for a sudden rise in permeation.

NRI predicts that permeation of One Seg-compatible terminals will be about 31 million in 2011 and that the number of units in circulation will set the stage for the provision of integrated services.

(2) Launching One Seg without a business model

While there are expectations for the future of One Seg, a business model in which earnings can be expected has yet to be established. Consequently, at the moment, mobile telephone carriers and broadcasters alike fail to see the merits of devoting their energies to One Seg.

For mobile telephone carriers, this is because even if users take advantage of One Seg viewing, it will not lead to a direct increase in earnings for them. The reason is that carriers are not in a position to collect user-pays charges that reflect the level of listening and viewing of users of One Seg. In fact, the use of One Seg is likely to lead to a fall in the number of calls and communications use by users, and may even result in a fall in earnings for carriers. Furthermore, because handsets that support One

Seg are heavily subsidized by carriers, the more handsets sold, the greater the cost burden for the carriers.

At the same time, unless One Seg-compatible handsets become pervasive, the service will fail to become a new source of earnings for broadcasters. At present, although commercials are broadcast via One Seg just as in airwave broadcasting, broadcasters are not able to collect additional advertising fees for this extra service. Therefore, it is difficult for broadcasters to allocate production costs for One Seg content. In addition, even if One Seg-compatible handsets become pervasive, unless the viewing rate can be measured, there is little way for broadcasters to launch a case for seeking additional costs from advertisers.

For carriers and broadcasters to establish a business model where earnings can be expected in One Seg, they must join forces. In one attempt in that direction, NTT DoCoMo announced in July 2005 that it had secured a 2.6 percent equity stake in Fuji Television and that both companies would be discussing the development of a new service in One Seg. KDDI and TV Asahi are also currently engaged in joint empirical trials aimed at the launch of three new collaborative services using One Seg: television content, e-commerce (electronic trading) and advertising and sales promotion. (See Table 2.)

(3) The year 2008 will mark the point of divergence in market expansion of proprietary broadcasting content

At present, One Seg is obliged to broadcast simultaneously the same content broadcast as surface broadcasting on general television. Because of this restriction, the scope for developing services using One Seg is limited.

The lifting of this simultaneous broadcasting restriction at the time of renewal of One Seg's license for terrestrial digital TV in 2008 is being considered. At present, One Seg broadcasts the same program content for home viewing as television. If the current restriction is lifted, One Seg will be able to air proprietary programs suited to small-screen, short-period viewing. For example, sports digest programs might be one option for consideration.

Table 2. New One Seg Service Provided Through the KDDI-TV Asahi Tie-up

New Collaborative Services	Overview
Program-linked content	<ul style="list-style-type: none"> • A service linking television programs such as TV dramas with related mobile sites • A service aimed at attracting viewers to sites by providing links to mobile sites within the data broadcast that are linked to television programs • Provision of user-pays content including music, images, etc. that are related to the programs in the mobile sites • Division of content charge income between the content provider and the broadcasting station
Program-linked e-commerce (electronic commerce)	<ul style="list-style-type: none"> • A service to induce sales of merchandise by attracting users to mobile e-commerce sites using television programs as the first point of contact • Sales of merchandise linked to programs by attracting viewers to mobile sites from TV shopping programs or regular TV programs • Potential for broadcasters to develop merchandise sales business without additional investment in accounting systems, etc., by utilizing an e-commerce platform prepared by the mobile telephone carriers • Potential for mobile telephone carriers to earn settlement commission charges as the agent in collecting charges
Advertising and sales promotions	<ul style="list-style-type: none"> • Use of new advertising methods different from conventional advertising used in TV broadcasting • Measurement of advertising effectiveness by tracking performance-based advertising and viewers' actions, etc.

In addition, the opportunity to air proprietary content would open the field to switching from the current service, which is free of charge, to a user-pays broadcasting system. To promote user-pays in One Seg, a framework to manage viewers and to protect content will be required. However, One Seg, which was established on the standard of offering free advertising broadcasting, does not have such a function at present. However, the technology for protecting content available for use in broadcasting services for mobile terminals has already been developed by KDDI and NHK. If One Seg acquires this technology, it can be transformed into a user-pays service.

In Korea, similar broadcasting services are provided for mobile telephones, and user-pays services are also offered. In Japan as well, making One Seg a user-pays service should perhaps be considered as a possible business model.

3 TV Portals Going from Broadcasting to Communications

(1) Five issues in promoting the permeation of TV Portals

Obviously, the most widely used terminal for receiving broadcasts is the television. The number of televisions in Japan is over 100 million and around nine million new units are sold annually. In the past several years, LCD and plasma flat screen televisions have been growing in popularity. Trends in integration of communications and broadcasting are also moving in the direction of flat screen TVs. Services that make Internet access possible using the TV screen and remote control are already coming into use. In this case, a communications cable is connected to the television, which is fitted with an Ethernet

port (socket for a communications cable). Such services are called “TV portal” services.

The first example of a TV portal was Tnavi, which Matsushita Electric Industrial launched in May 2005. At the time, it attracted attention as an innovative technology integrating television and the Internet. Unfortunately, it cannot be said at this stage that the service has been a success. The number of users of the service appears to exceed 100,000. However, the five factors shown in Table 3, below, can be considered reasons why Tnavi has failed to gain widespread popularity. Of these, the factor that became a particular barrier in the way of market permeation was “an increase in the number of subscribers.”

If One Seg becomes the preferred service in the integration of communications and broadcasting in mobile situations, television can become the preferred terminal for integrated services in the home. This can be seen as the reason why Matsushita Electric Industrial and other home electronics manufacturers are paying close attention to the addition of Internet functions in televisions.

On July 7, 2006, six home electronics manufacturers, including Matsushita Electric Industrial and Sony, established TV Portal Service Corporation as a joint venture in their efforts to advance TV portal services. Capital contributions in the new company consist of a 35 percent contribution by Matsushita Electric Industrial, 25 percent by So-net Entertainment Corporation, and 10 percent each by Sony, Toshiba, Hitachi and Sharp. In October 2006, the new company announced that it would launch acTVila, a new TV portal service, in February 2007.

The combined share of domestic television sales of these companies exceeds 80 percent. According to a press release issued by the new company, all of the investing

Table 3. Five Factors Preventing the Permeation of Teleportal Tnavi

	Barriers	Reasons Barriers Could Not Be Overcome
Content	Procurement of attractive contents	<ul style="list-style-type: none"> • Tnavi initially collected monthly fees of 50,000 yen from content providers for use of rights • Due to the impact of this charge, it is believed that Tnavi was unable to procure attractive contents
Platform, infrastructure	Development of communication connection environment	<ul style="list-style-type: none"> • Many living rooms where television sets are located do not have a socket for plugging in an Ethernet cable • At present, Ethernet cable sockets are installed in every room of new condominiums and there are other improvements
Equipment	Increase in distribution	<ul style="list-style-type: none"> • Failure to be widely used since it was only provided in certain models produced only by Matsushita Electric • Current number of units in use is thought to be about 3.5 million units (ownership rate of about 3%)
	Improve the user-friendliness of the device so anyone can use it with ease	<ul style="list-style-type: none"> • The television remote control was lacking in user-friendliness during use of the Internet function • Processing of image information was slow and the screen display function was not smooth • There were problems in the ease of operation of both software and hardware
Business models	An increase in the number of subscribers	<ul style="list-style-type: none"> • Purchase of the television set and subscription to the Internet service provider were separate from each other • Separate membership procedures apart from purchase were required to become a member of the TV portal

companies plan to incorporate functions for accommodating new TV portal services in stages in their new luxury television models that will go on sale in the future. It is hoped that the new company will adopt service strategies that will overcome the five obstacles listed in Table 3.

(2) TV portals will be effective in expanding services linked with mobile telephones

As indicated earlier in the case of One Seg, a business model that will promote “an increase in the number of subscribers” is also lacking in TV portal services.

Plans for the TV portal services are for some of the formal content to be user-pays, with charges on behalf of sponsors collected for the rest. This arrangement will require service users to become subscribers. Over the past 50 years, selling televisions was a straightforward business of simply producing to sell. However, there is a need to change this.

There are two methods that can be considered for getting viewers to become subscribers. The first is to induce viewers to subscribe at the time they connect to free-of-charge content. The second is to request that customers complete membership procedures at the time they purchase televisions.

In the case of the first method, it is hard to expect viewers to become members even if registering as a member is free of charge. Further complications arise if information such as name and address must be entered via a TV screen that does not have a keyboard. Therefore the latter method, of having customers sign up as members at the time of their television purchase, is preferable. It is clear that this business is not unlike mobile telephone Internet services such as i-mode.

As one method for greatly expanding this service, the authors suggest a tie-up with mobile telephone carriers.

As noted previously, mobile telephone carriers already have in excess of 90 million customer contacts through their subscribers. If TV portal services can cooperate with mobile telephone companies in sharing subscriber information, the barrier to getting customers to sign up at the time of their TV purchase would be considerably lowered. While the aim of TV portals is to integrate fixed-line communications and broadcasting, if mobile telephones were also included, the three services of fixed communications, mobile communications and broadcasting could be linked.

(3) Development of precise methods for measuring advertising results are needed for further expansion of services

The new TV portal service acTVila has already made clear its plans to engage in moving picture transmission services (broadcast programs) during 2007. In other words, this will either mean payment of charges at the time of viewing (individual charges) or the adoption of an advertising model by acTVila.

In that respect, as a further necessary element for promoting widespread use of the service, the authors would like to suggest the development of a sound method for measuring advertising results. At first glance, this aspect seems to have nothing to do with the promotion of TV portal services. However, it is the opinion of the authors that such monitoring is an essential element in the development of content.

As Table 4 shows, TV portals will usurp some of the time spent viewing television, so it will become a rival service for broadcasters. In that regard, what viewers are likely to want more than anything else is to view past TV programs that broadcasters own as VOD content through TV portal sites. If TV portal providers can team

Table 4. Ways of Measuring Commercial Results When TV Portals Come Into General Use

	Television Viewing Time (3 hrs 27 min)		
	Real time viewing (2 hrs 53 min)	Recorded viewing (34 min)	TV portal viewing (User time will increase in the future)
Method for calculating advertising charges	<ul style="list-style-type: none"> Charges according to rate of viewing The minimum unit for calculating viewing rates is one minute 		<ul style="list-style-type: none"> Number of viewings, number of clicks, number of purchases, charges in direct response to advertising effects
Types of advertising	<ul style="list-style-type: none"> Program commercials (generally 30 or 60 seconds) Spot commercials (generally in units of 15 seconds) 		<ul style="list-style-type: none"> Banner advertising Streaming advertising Listing advertising (none of these has time restrictions)



Ideal method of measurement of advertising effects at the time of the integration of communication and broadcasting	<ul style="list-style-type: none"> Unified advertising effect measurement method which can be applied to all of the above three utilization patterns in addition to the advertising models in the past Advertising charge model based on the volume of actual commercial viewing
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Notes: (1) () indicates the average viewing time on a week day. The total television viewing time is based on “Japanese Time Use In 2005” published by NHK Broadcasting Culture Research Institute in February 2006. Viewing times for “real time” and “recorded viewing” are estimates based on “Trends in Use of Broadcasting and Communications Services (online questionnaire)” by NRI published in September 2006. (2) The methods of calculating advertising charges and types of advertising are based on the Investigative Report on Business Conditions in the Advertising Industry by the Japan Fair Trade Commission in November 2005. (3) Banner advertising is advertising featuring text and images displayed on websites. Streaming advertising is advertising featuring moving images on websites. Listing advertising is advertising linked to keywords and is displayed on search pages.

up with broadcasters in a cooperative relationship, it should be possible to procure such content in the future. For this reason, it is believed that the development of a sound means of measuring advertising results would be valid.

Today, televisions come equipped with various types of recording devices such as video and DVD recorders (with digital multipurpose discs). With the growing popularity of recorders with hard disc drives, it has been indicated that the number of users who skip the commercials when they replay content is increasing.

According to a survey undertaken by NRI, about 40 percent of all viewers, as shown in Figure 5, skip 80 percent of the commercials by fast forwarding when they are viewing recorded TV content (yet about 40 percent of viewers do not skip commercials). On the other hand, according to results of a questionnaire survey targeting PR and advertising managers in the January 2006 No. 1 issue of *Nikkei Advertising Note*, 67.3 percent of the companies indicated in their responses (multiple responses) that what they want most from their advertising activities is “advertising results.”

If moving pictures (broadcast programs) are transmitted via TV portal, there are two indicators by which advertising results can be measured: viewing rate in one-minute units and results links (number of page viewings, clicks, etc.). As the use of TV portal services becomes more widespread, the gaps in both areas are likely to come to light and will have a particularly significant impact on broadcasters. This is why, in addition to the conventional advertising model, it is necessary to develop a new means of measuring advertising results.

However, as TV portal services and the use of DVD recorders grow in popularity, it is likely that the number of people who view TV in real time will decline. If

broadcasters develop an advertising model that can be used even for TV portals, they may be able to expand their revenue sources to viewing via TV portals.

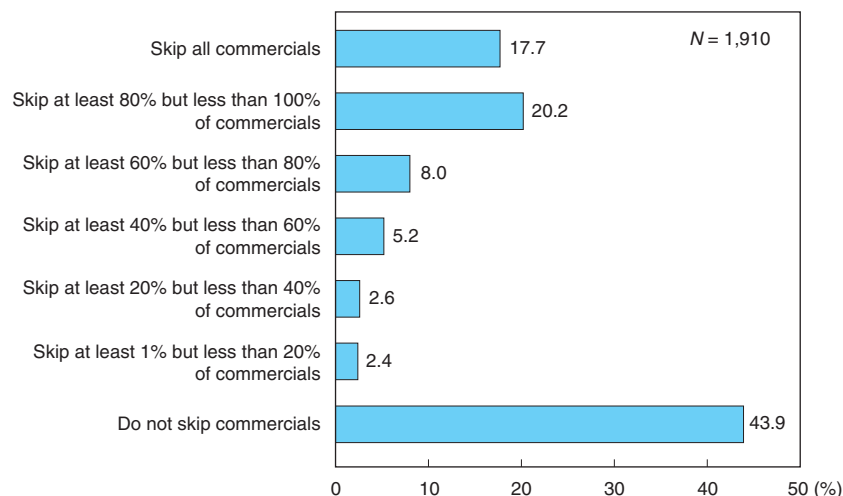
The Japan Fair Trade Commission in its Investigative Report on Business Conditions in the Advertising Industry indicated that advertisers keep a watchful eye on advertising results and costs and when advertising outcomes commensurate with costs are not achieved, they switch to other advertising companies. There is likely to be a trend in the business world to more precisely measure the effects of advertising in the future.

As one suggestion in this regard, the use of mobile telephones offers possibilities for measuring advertising results. For example, a mobile telephone may be used as the remote control of a television. If during the TV viewing, wireless data were communicated between the TV and the mobile telephone and that information is processed during real time, an accurate grasp of the viewing situation could be obtained. In other words, information could be obtained regarding the attributes of the viewer (gender, age), details of TV programs and commercials viewed (viewed in real time, recorded, via TV portal, etc.), access records among TV portals, and place and time viewed, etc.

It will be necessary to obtain the user’s consent to use such information. Since this is one source of market data needed most by TV portal providers and broadcasters, there will be a need to consider providing some form of incentive to users who provide this information.

In an age of integration, the effectiveness of TV commercials should be measured objectively and in real time on an individual basis. Therefore, there is a need to develop a new method of measuring advertising results that will be acceptable to broadcasters, advertisers, Internet service providers, TV unit manufacturers and consumers alike.

Figure 5. Skipping Commercials When Owners of Video and DVD Recorders (including those with HDD) View Recorded Programs



Notes: DVD = Digital Versatile Disc, HDD = Hard Disk Drive.

Source: “Trends in Use of Broadcasting and Communications Services (online questionnaire)” by NRI, September 2006.

IV The Convergence of Communications and Broadcasting from the Consumer Perspective

Thus far, this paper has considered events and developments taking place in the areas of communications and broadcasting and has introduced examples of new convergent services currently being launched. The paper will now look at these developments from the consumer perspective. In this regard there are five issues which need to be considered: (1) the establishment of a broadcast infrastructure for One Seg, (2) the resolution of regional disparities in communications infrastructures, (3) the rapid reform of statutory legislation, (4) a detailed understanding of user needs and (5) the establishment of a business model.

1 One Seg Infrastructure Must Be Discussed from the Perspective of the Coverage Rate of “People”

One Seg infrastructure is far from being established nationwide. Although there were plans for broadcasting to commence in all prefectures by December 2006, these plans were simply to “start” One Seg services and in no way signify full area coverage. As with terrestrial digital broadcasting for homes, relay stations and gap fillers (devices installed in areas and places difficult for radio waves to reach to improve reception) will be installed from this point on. Furthermore, measures providing for reception in underground areas and in subways have yet to be addressed.

An interim summary by the Ministry of Public Management, Home Affairs, Posts and Telecommunications’ Survey Study Group on the Status of the Permeation of Terrestrial Broadcasting in Underground and Other Areas Where Radio Waves are Weak was released in August 2005, and partial trials were undertaken in sections of Tokyo’s metropolitan subways (Toei Mita Line) and underground areas (Yaesu underground shopping area). However, the actual investment required for the installation of transmission facilities in underground and subway areas is currently being discussed from the perspective of whether carriers should bear the costs or whether they should be provided from the public purse. It is hoped that a conclusion will be reached at an early stage.

One area where there has been little progress in discussions is measures for regional coverage such as mountains and coastal areas where no “households” exist. Until now in airwave broadcasting, there has been a history of establishing transmission environments aimed solely at household coverage. However, with One Seg there is a need to provide coverage for areas where people and cars move about rather than for households.

Empirical trials are being carried out to test transmission of emergency broadcasts in the event of earthquakes and tsunami, for example, using One Seg. It can be assumed that there is a possibility such information would not reach the viewers who need it most in mountain areas or along the coastlines.

To resolve these problems, gap fillers will have to be installed in regions without “households,” and there will probably be a need to prepare the transmission environment. Discussion to address these issues has not yet begun.

2 Regional Disparities in Fixed-Line Communications

On the other hand, a look at infrastructure in metropolitan areas from the perspective of fixed-line communications shows that the environment has been fully established because of the investment of a number of carriers in a competitive environment. According to the Ministry of Public Management, Home Affairs, Posts and Telecommunications, broadband via optical fiber, ADSL, or CATV is now available to 94 percent (47.33 million) of all households (households where broadband had already been introduced as of the end of June 2006: 24.22 million). However, a look at optical fiber alone shows that the ratio remains at 80 percent (40.15 million households).

However, in disadvantaged areas with low profitability, there has been almost no private-sector investment. Consequently, in about 6 percent of these areas (3.06 million households) broadband cannot be accessed at all irrespective of the type of line.

In its Next-Generation Broadband Strategy 2010, the Ministry of Internal Affairs and Communications has formulated a plan to resolve what it terms the “digital divide” in such communications. Its goal is to achieve full coverage of a broadband user environment (90 percent of which will be covered by optic fiber). To enable this, the Ministry of Public Management, Home Affairs, Posts and Telecommunications has indicated that about 2.5 trillion yen in optical fiber-related capital investment and a maximum of 64.8 billion yen in ADSL-related capital investment will be required.

This strategy, it can be said, has brought the concept of a communication infrastructure aimed at the ubiquitous network that should exist closer to reality. Next, it will be necessary to hammer out a plan to decide who will invest in what and in what form to realize the proposed strategy.

3 Although It Is Taking Time, There Is Progress in Legislative Reforms

As mentioned earlier in Chapter II, Section 4, legislative reforms aimed at convergence of communications and broadcasting are being discussed in various committees and study groups. However, in comparison with progress in other countries, the reforms cannot be seen to be moving at a rapid pace.

For example, in Korea and the United States, where convergence is already underway, legislative reforms that are only now being discussed in Japan are already being implemented.

One difference between Japan and Korea is the licensing related to secondary use. In Korea, there are so-called exceptional provisions that broadcasters have. As a result, dealing with proprietary rights relating to reuse of these programs is easier than in Japan.

In addition, in the United States, one reason why convergence has progressed to its current state is largely due to the structure of the broadcasting industry. The business of television broadcasting is divided into three separate segments: production, editing and transmission. In contrast, broadcasting in Japan has developed in a vertically integrated form. In the United States, the industry has assumed horizontal divisions. As a result, television program production companies strive to increase their business by having the content that has been produced by their company reused. When they do so, there are no divisions of communications and broadcasting in the infrastructure.

As stated earlier, in Japan, discussions are underway to reform the copyright system so that transmission of television programs via optical fiber (IP multicast) will be possible. In the future, if reform of the Copyright Law is approved by the Diet, the day when terrestrial broadcasting via IP multicast is possible will not be far away. The series of adjustments in legislation will likely take a period of four years. Although the process is slow, it is clear that discussions in committees and study groups of the Diet are steadily making progress and efforts to promote convergence are definitely evident.

Even the review of the Copyright Law alone will require this amount of time and effort. As mentioned earlier, there are 10 legal systems that have an impact on the integration of communications and broadcasting. Even though laws assist in the development of a sound market, they must not have an inhibiting effect in other areas. The grace period for making changes in legislative systems that are appropriate for the market environment is extremely limited.

4 Finally, a Deep Understanding of Consumer Needs Is Essential

The same can be said of conventional communications and broadcasting services, but the question arises as to whether all consumers really want convergent services. In this regard, it is useful to confirm, for example, the current status of video-on-demand (VOD) services typical of those provided by GyaO, introduced earlier.

In the previously mentioned questionnaire survey undertaken by NRI, it was determined that among so-called heavy Internet users who had at last five years of experience using the Internet, the rate of service use for VOD was 72.8 percent. In other words, there is a possi-

bility that close to 30 percent of these users do not feel that transmission of movies is an attractive service, or they do not feel that it is necessary.

By contrast, television usage is close to 100 percent. A characteristic of services using communications is that it is possible for each user to adjust and choose the content to suit his or her personal tastes and needs. On the other hand, searching for a program that the user wants to view can be troublesome. In order to be able to encompass as wide a spectrum of people as possible, it is necessary to pursue "convergence" that takes into consideration the various needs of consumers by region and by age.

5 Establishing a Business Model Required in an Age of Convergence

As discussions about upgrading infrastructure and reforming legislation proceed, the area that may be lagging more than any other is the convergent services that the carriers and providers intend to provide. Providers are unable to accurately determine the needs of consumers, so they are unable to draw up an appropriate business model.

Just as with communications and broadcasting services to date, three sources of income can be considered with convergent services: (1) charges for use (monthly charges for communications and broadcasting services, etc.), (2) communications charges (data transmission charges on mobile telephones, etc.) and (3) advertising charges (conventional private broadcasting charges, etc.). The discussion of convergent services may also be seen as a discussion about the ways in which various convergent services can be combined in an income model. At that time, as stated in Chapter III, adeptly linking the three areas of fixed communications, mobile communications and broadcasting can offer some clues to resolving certain outstanding issues.

In addition to the providers that have been involved in communications and broadcasting to date, there are also the new portal site providers. It is hoped that as all these players engage in friendly competition, they will arrive at a business model appropriate for an age of integrated services.

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