

Public Broadcasting and Digitization of Television: Survey of IPTV Subscribers

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Internet Protocol television (IPTV), a medium whereby subscribers can enjoy multichannel TV, video-on-demand (VOD), and other services using an Internet-connected set-top box (STB), is beginning to spread. In Japan, where four companies currently provide IPTV services, the total number of subscribers is now well over 100,000 and closing in on the 200,000 mark.

Until now, terrestrial broadcasters were not able to give IPTV service providers consent to retransmit terrestrial broadcasts because of problems with copyright. However, on December 15, 2006, in the 165th extraordinary session of the Diet, the copyright law was revised to the effect that terrestrial broadcasts can now be retransmitted on IPTV. In the revised copyright law, retransmission via IPTV is defined as “linear input of information received to a transmission server at the same time as broadcast and retransmitted simultaneously.” It states that it does not include accumulation of broadcast signals received in the transmission server for later broadcast at times determined by the user (non-linear use).

Since IPTV involves TV delivery on closed networks and is expected to be carried out in the same license area as the terrestrial broadcast, in practice transmission is accessed via the optical fiber networks of several companies such as NTT. The new copyright law came into force on January 11, 2007.

As the relevant legal infrastructure is thus strengthened, digital terrestrial broadcasting is expected to become available on IPTV services and greatly accelerate their spread. With that increased prevalence, IPTV will have increased potential as the second major cable-based medium after cable TV.

Over a period extending from the end of 2005 to the beginning of 2006, the NHK Broadcasting Culture Research Institute conducted a field survey of around 1,000 IPTV service subscribers in Japan to find out what kind of services they use.

Current Circumstances Surrounding IPTV

All over the world, a revolution has begun in the telephone industry, namely, the transition from conventional telephone exchange networks to communica-

tions networks using Internet Protocol (IP). While some IP networks, such as Britain's, use existing copper-wire lines, in the United States and Japan the shift to IP is occurring together with the replacement of the physical infrastructure itself with a high-capacity network of fiber optic lines. Moreover, whereas telecommunications previously used a number of different protocols depending on what was transmitted (voice, data, etc.), the creation of the new IP network integrates those different types into a single system. This integration has great significance: it enables telephone, Internet, multichannel TV, VOD, and various other services to be provided in bundled combinations (e.g. "triple play" and "quadruple play"), and this potential is attracting keen attention from service providers as a way to increase profitability. The focus of this trend is the potential for providing digital terrestrial broadcasting services via IPTV. From the government's point of view, this would spur the spread of digital terrestrial broadcasting, while for telecommunications companies it represents an opportunity to use terrestrial broadcasting as a drawing card to attract subscribers to multichannel TV, VOD, and other services that generate high profits.

IPTV in Japan

In Japan, the Yahoo! BB network's BBTB service was registered in accordance with the Law Concerning Broadcast on Telecommunications Services in July 2002, and commenced paid services in 2003. Other IPTV services available in Japan include KDDI Corporation's Hikari One, and the 4th Media and On Demand TV services provided through Nippon Telegraph and Telephone (NTT) networks. So far, however, the spread of IPTV in Japan has been slow; market-leader BBTB now goes out to over 100,000 households, but all the other services have far fewer subscribers. Now that retransmission of terrestrial broadcasting has become possible, its spread is expected to rapidly accelerate.

Moves in the IPTV Market

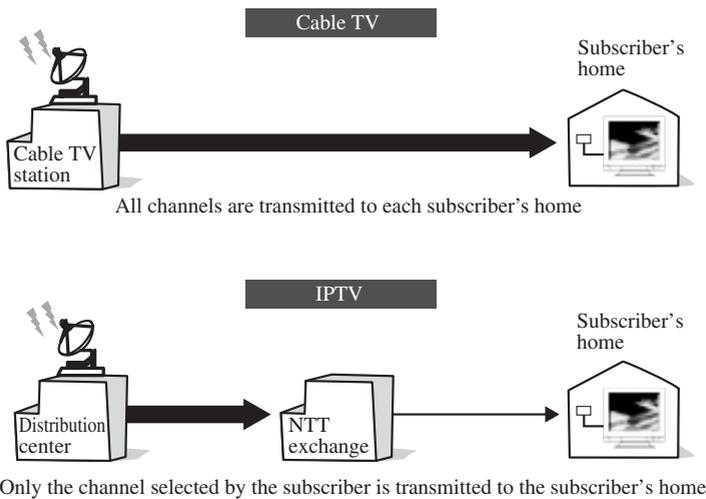
Major moves in Japan's IPTV market are being made in two main camps: electronics manufacturers and telecommunications companies. Regarding set-top boxes, whereas each IPTV provider has so far used its own proprietary specifications, the trend now is toward a unified standard. Electronics manufacturers have established a standardization committee called the DTP-Working Group (DTP-WG), which is currently developing standards for "broadband TV." These standards are for enabling Internet-based interactivity, VOD functions, and HD-quality picture reception. Meanwhile, on the telecommunications side, NTT plans construction of a nationwide IP network

using fiber optic lines, which it calls the Next Generation Network (NGN). On December 20, 2006, NTT began field trials to demonstrate connections with the retransmission networks of other companies. With this network, not only will the multiple protocols used so far be unified into IP, but adoption of Internet Protocol version 6 (IPv6) will also enable terminal-based authentication and billing. In anticipation of this new network, NTT is currently developing its own set-top box using "IPSP" standards.

In October 2006, an "IPTV forum" was launched to consider technology and management rules for distribution of the video contents of broadcast programs over IP networks. While giving due consideration to the benefit for users, market competitiveness and the circumstances of producers and rights holders of the video content, their purpose is to exchange ideas concerning the technical requirements for developing receivers as well as image distribution management rules. The forum consists of major electronics manufacturers, television broadcasters, and telecommunications companies.

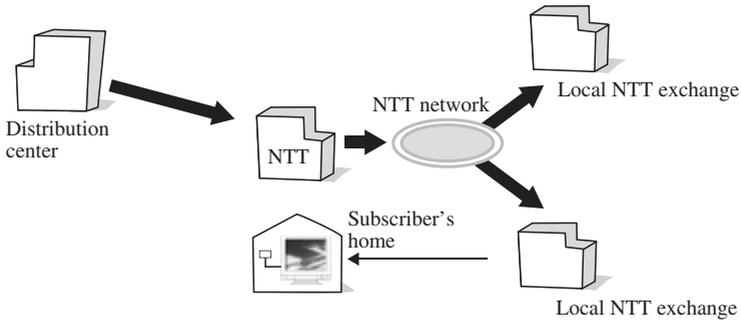
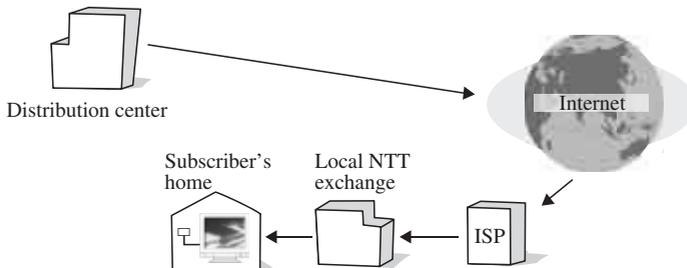
Spread of IPTV in Urban Areas

IPTV is regarded as a viable solution to poor TV signal reception in urban areas (occurring in roughly 10 percent of such areas) due mainly to buildings blocking the signal. In cases of poor reception in mountainous areas, usually the causes are clear and the problem can be resolved by installing relay stations or cable TV services. In urban areas, however, it is often impossible to determine the specific cause, and enhancing communal reception facilities, the conventional solution to poor reception, may not solve the problem completely. This situation points to considerable potential for the spread of IPTV as a solution to urban reception difficulties. Because income levels are thought to be higher in urban than in rural areas, service providers see great revenue potential in offering packaged services that combine telephone, IPTV, VOD, and Internet access. For this reason, cable TV providers and telecommunications companies are beginning to compete for the urban market. Meanwhile, the cable TV industry itself is changing. In the past, the cable TV business was thought to require long-term investment because of the perceived need to construct transmission facilities. Now, however, since it has been clarified that operators registered under the Law Concerning Broadcast on Telecommunications Services will receive the same treatment as existing cable broadcasters, more and more companies are launching new ventures in the cable TV industry. This situation points to the growing potential for competition between existing community-based cable TV providers and the industry newcomers.

Figure 1. Difference between IPTV and Cable TV**What Is IPTV?**

Before proceeding further, it is important to clarify what exactly is meant by the term “Internet Protocol television.” In short, IPTV is a form of video service that uses Internet Protocol for communicating data on a network. It differs significantly from cable TV in its transmission system. Conventional cable TV services transmit dozens of channels all at once via a fixed cable. The content of all channels flows into the subscriber’s home, and the subscriber selects which channel to watch using a set-top box. In the IPTV system, the subscriber uses the STB to request transmission of only the specific channel required at that time, and only that channel is transmitted. This system allows for greater efficiency, eliminating bandwidth congestion even with telecommunications and data transmission services using the same cable. Under the IPTV system, multichannel TV, VOD, and other services can be received via ADSL and other high-capacity telephone lines. With even broader bandwidth, such as afforded by fiber optic lines, even high-definition data can be transmitted without difficulty (see Figure 1).

IPTV is often confused with Internet television. Put simply, the difference between the two is that whereas Internet TV uses the public Internet, IPTV services are provided via service-specific closed networks. Whereas Internet TV content is distributed from streaming servers on the Internet, IPTV content is distributed only within the specific network to which subscribers subscribe, and does not go out on the Internet proper.

Figure 2-1. IPTV Transmission (example)**Figure 2-2. Internet TV Transmission (example)**

Both of the above are examples in which the subscriber uses an NTT fixed telephone line.

Japan's largest IPTV service, BBTv (on the Yahoo! BB network), sends data from streaming servers via its own network to local NTT exchanges. From there, for any subscriber who requests connection to a specific channel, the data of that channel is sent to that subscriber's set-top box. In the case of VOD, the subscriber accesses the distribution center's server from his or her set-top box and views the desired content via the same route as for the TV service.

In the case of platform services such as On Demand TV and 4th Media, the data is sent from the service provider's own server via NTT's IPv6 network to local NTT exchanges and from there to each subscriber's STB (see Figure 2). In platform services, Internet service providers (ISPs) assign an IP address to each subscriber but are not directly involved in the delivery of the service content, which takes place between the platform's distribution center and the subscriber. The functions of ISPs in this system include assigning IP addresses, taking subscriptions, and billing.

Service content

There are two main types of content offered on IPTV services: multichannel TV service, which provides access to numerous channels, and VOD service, which allows subscribers to select the specific videos they want to watch. In most cases, subscribers apply for IPTV in conjunction with Internet and IP telephone services when they sign up with an ISP, and receive it via their Internet connection using a rented (or purchased) set-top box. There are currently four IPTV services operating in Japan: 4th Media, On Demand TV, Hikari One, and BBTv.

4th Media is an image delivery platform service operated since July 2004 by the NTT-affiliated ISP Plala Networks, Inc. It provides a 60-channel TV service and a VOD service offering a selection of over 5,000 titles. Because it is set up as a platform for image delivery, access to 4th Media is not limited to a single ISP. In addition to Plala, it is currently available via three other ISPs as well.

On Demand TV, another platform service, was established in 2002, with Itochu Corporation and NTT West Corporation among its major shareholders. On Demand TV is a service offered to users of NTT East Corporation's IPv6 service. By applying for On Demand TV through affiliated ISPs, IPv6 users can receive multichannel TV, VOD, and karaoke services.

Hikari One and BBTv are both ISP-integrated IPTV services. Operated by KDDI since December 2003, Hikari One includes a 30-channel TV service (including optional channels), a 4,500-title VOD service, and a karaoke service. It is available to customers using KDDI's fiber optic network.

BBTv was Japan's first IPTV service, commencing in December 2002. It is tied to Yahoo! BB, an ISP provider. BBTv sends data via the Yahoo! BB network to local NTT exchanges, and from there it is sent to each subscribing household via ADSL or fiber optic lines. BBTv subscribers can choose from 60 TV channels and some 5,000 video titles.

Although it is virtually impossible to make a straightforward comparison of the various providers' fee structures, it is fair to say their fees are more or less on a par with one another.

Results of Survey

The survey was conducted via the Internet, mainly because all members of the sample obviously had Internet connections, such being a prerequisite for IPTV service, and the results could be tabulated quickly. None of the IPTV providers has released any figures on the number of IPTV subscribers, but given that IPTV services have not been available for very long, and that cable

TV and rental video services offering the same content (albeit by different means) have already secured a certain share of the market, the number of IPTV users is not thought to be very great at present. In that context, the survey was conducted in two stages, as follows.

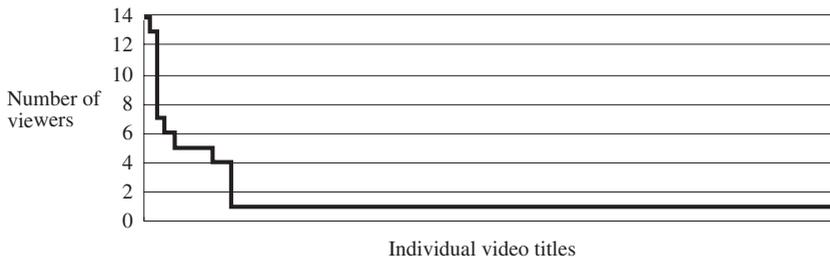
The first stage was a preliminary screening of 41,400 people registered as monitors for an Internet survey company. From that group, a sample of 1,267 IPTV subscribers was drawn for the survey proper. E-mail was sent to members of the sample on January 3, requesting them to fill out a questionnaire. Respondents completed the questionnaire onscreen via the Web by January 11. Valid responses were received from 1,002 of the people surveyed, representing a response rate of 79.1 percent of the total sample (1,267 people).

In this survey, the term "VOD service" is used to denote IPTV services whereby movies or TV programs are transmitted as data rather than rented out as cassette tapes or disks from a store. The term "multichannel TV service" is used for IPTV services that deliver TV programs of various genres through a large number of channels.

VOD Services

In this survey, the term "video" refers to feature movies and other video content produced primarily for media other than TV broadcasting. In fact, however, such video content is quite complex in nature. For example, it includes quite a lot of even non-movie video content produced for pay-TV services in foreign countries. Furthermore, after such programs are released on DVD, terrestrial broadcasters confident of certain programs' popularity may purchase the broadcasting rights and air them; or programs popular on, say, a communications satellite (CS) channel may be taken up and aired on terrestrial or broadcasting satellite (BS) channels. As a result, it is becoming difficult to classify such content in terms of clear-cut categories such as "movies" and "television."

Now let us look at the trends of VOD use as gleaned from the survey. When asked how frequently they use their VOD service at normal, non-holiday times, roughly half (51 percent) of the respondents said they do not use VOD at all, 17 percent said they view about one video per month, 14 percent two videos, and 3 percent ten or more videos. Asked the same question in relation to the year-end/new year holiday period during which the survey was conducted, a quarter (25 percent) of the subscribers said they used their VOD service during that period. A total of 15 percent used their VOD service for only one (9 percent) or two (6 percent) videos during that period, while heavy users viewing 10 or more videos in that period accounted for 2 percent. Analysis of

Figure 3. Number of People Who Viewed Each Video

both heavy and light users by gender and age showed an even distribution across all groups, with no significant differences in frequency of use according to gender or age.

Titles of videos viewed

What about the content of the videos viewed on these services? The responses regarding individual video titles showed that the most frequently viewed videos were: (1) *Howl's Moving Castle* (14 respondents); *War of the Worlds* (13 respondents); *The Phantom of the Opera* (7 respondents); *Densha otoko* (6 respondents); and *The Island*, *The Matrix*, *April Snow (Oechul)*, and *Constantine* (5 respondents each).

The responses regarding VOD as a whole show that, rather than being concentrated on certain kinds of content, demand is extremely diffuse. Of the total of 418 video titles cited by respondents to this survey, 370 were viewed by only one respondent each (see Figure 3). These results indicate that, with the exception of a few especially popular titles, demand is evenly spread across a diverse range of video content. In other words, the great majority of sales consists of a large number of niche products.

Profile of VOD users by video category

The videos viewed were then analyzed by category. The "foreign (non-Japanese) movies" category accounted for the largest share of all videos viewed, at 53 percent, followed by "animation/kids" (19 percent), "Japanese movies" (15 percent), and "TV programs" (5 percent). Further analysis of the videos in the "foreign movie" and "Japanese movie" categories by content showed the most viewed types to be "action" (25 percent), "drama" (14 percent), "science fiction" (14 percent), "suspense" (11 percent), and "love story" (11 percent). Analysis by gender and age of the numerous viewers of "action," "drama," and "science fiction" showed that "action" was popular across a fairly broad spectrum of the sample, including men in the 20s to the 40s age brackets and women in their 20s and 30s; "drama" among both men and

women aged 50 and over; and “science fiction” among men in the 20s, 30s, and 50-and-over age groups. These results suggest that “action” content is viewed by all age groups regardless of gender, “drama” mainly by people in older age brackets, and “science fiction” mainly by men.

TV programs

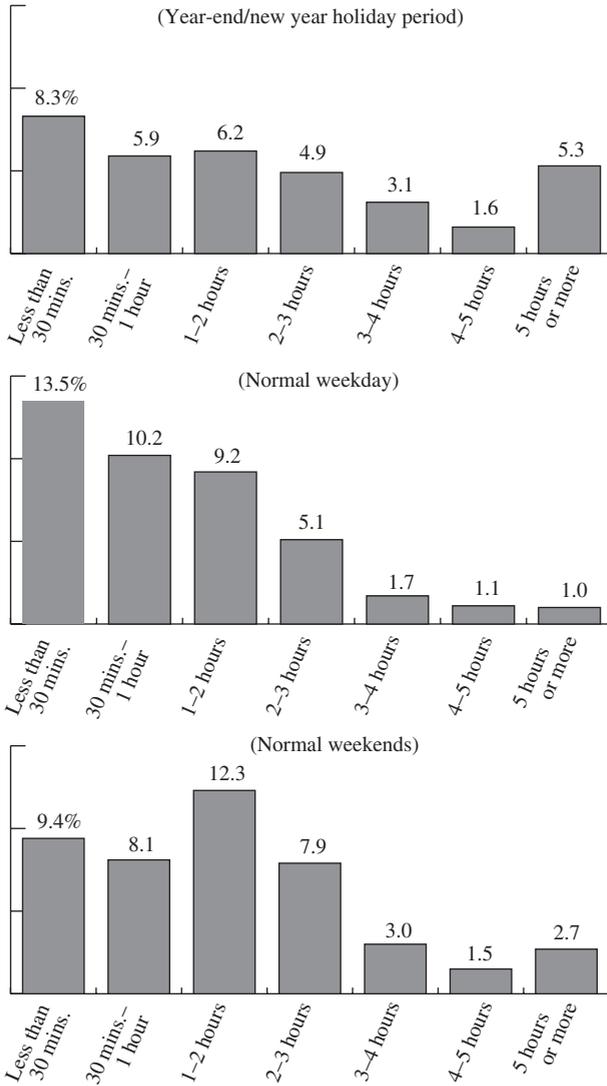
As explained at the beginning of this section, the “videos” enjoyed by subscribers to VOD services include not only movies but also many TV programs. The strength of TV programs is their serial nature. Although a TV series does not rank highly when tabulated as individual titles, the number of viewers of the series as a whole would be tremendous. The most watched TV programs cited in the present survey included *24*, *Gundam* (Gundam), *Mirai! Kyonshiizu*, *Pari no koibito* (Lovers in Paris), *Sex and the City*, *Sosei no Akuerion* (Genesis of Aquarion), *Keroro gunso* (Sgt. Frog), *Tengoku no kaidan* (Stairway to Heaven), *Taiyo ni mukatte* (Into the Sun), and *Rupan sansei* (Lupin III). This shows that, among TV programs, popularity is focused on Korean productions (e.g., *Lovers in Paris*), animation series (e.g., *Lupin III*), and foreign TV series (e.g., FOX’s *24*).

Multichannel TV Services

As mentioned earlier, each of the four IPTV providers in Japan supplies around 30 channels as its basic TV service. Each provider also offers additional, extra-charge channels as options labeled “premium,” “a la carte,” and so on, depending on the provider. Channels provided in the basic service are divided into around nine or ten genres, including movies, music, sport, drama, and animation, and usually also include at least one shopping channel. Due to their different aims and approaches, the providers differ slightly in the lineup of specific channels they provide. Nonetheless, there are 15 channels common to all four providers: Cinefil Imagica (movies), Sports-i ESPN (sport), Space Shower TV, Music Video Senmon/VMC, MTV (music), FOX, AXN (drama), Disney Channel, Mondo21 (multi-entertainment), Discovery Channel, National Geographic Channel (documentary), Cartoon Network (animation), Tabi Channel, Gurume Tabi FoodiesTV (leisure and culture), and Bloomberg Television (news).

Now let us look at the extent to which subscribers availed themselves of these TV services over the new year holiday period. Asked whether or not they had watched any single channel on their multichannel TV service during that period—with five minutes of viewing time being the cutoff line between having watched and not having watched—27 percent of respondents said they had watched the service for at least that long. In response to the question of

Figure 4. Daily Average Time Spent Watching TV Service



how much time per day, on average, they spent watching their multichannel TV service during the same holiday period, those who answered “less than 30 minutes” comprised the largest single group, at 8 percent. Except for respondents indicating viewing times of five hours or more, the longer the average daily viewing time the fewer the viewers. As can be seen in Figure 4, this dis-

tribution differs from that regarding daily viewing time on normal weekends, where the largest share was that of the “1-2 hours” group (12 percent). The holiday-period results do not show an across-the-board increase of viewer numbers in all viewing times, as might be expected during a holiday period; in fact, viewers who watched for less than three hours per day were fewer in the holiday period than at normal times, and the overall number of viewers was also lower in the holiday period. However, because the holiday-period results included a sizable group of viewers who watched for five hours or more, the “year-end/new year” period shows the longest overall average daily viewing time (2.1 hours), followed by “normal weekends” (1.8 hours), and “normal weekdays” (1.4 hours). These average daily viewing times were calculated by multiplying the mean values of the time periods (1.5 hours for the “1-2 hours” period, 30 minutes for the “less than 30 minutes” period, and 5 hours for the 5-hours-or-more group) by the number of viewers in each time period, then dividing the total by the total number of viewers. It can be surmised from these results that the overall number of IPTV multichannel TV service viewers declined during the year-end/new year period because both terrestrial and satellite TV programming was more appealing than usual (with more specials, live sportscasts, etc.) during that period; while viewers particularly disposed to watching their IPTV TV service did so for longer periods than usual because they had more free time during the holidays.

The respondents were also asked to write the names of the four IPTV channels they watched the most, in order of most to least watched. The results showed Disney Channel (multi-entertainment) to have by far the largest share of viewers at 6.3 percent, followed by FOX (drama) at 2.9 percent, Discovery Channel (documentary) and Cartoon Network (animation) both at 2.7 percent, AXN (foreign drama and movies) at 2.6 percent, and Toon Disney (animation) at 2.4 percent. The content of these channels is outlined in Figure 5.

In the breakdown of viewing preferences by genre (“movies,” “music,” “drama,” etc.), the most watched genre was “animation,” followed by “music” then “drama” (see Figure 6). Although the IPTV services covered in this survey categorize Disney Channel as “kids’ and family entertainment,” among viewers it is generally seen as belonging to the “animation” genre. The breakdown by age of respondents who said they watched “animation” included a high number of women in the 20s-40s age bracket. The majority of this group is presumed to consist of mothers who watch animation with their children rather than of women who watch such channels on their own. The “music” genre was found to be particularly popular among women in their 20s and 40s, while “movies” was popular among men in the 50-and-over age group. Responses for channels “usually” watched (i.e., not during the year-end/new

Figure 5. Content of Specific Channels

Disney Channel	Disney's multi-entertainment channel, offering movies, animation, programs for preschoolers, drama, comedy, and information/variety programs.
FOX	Drama-centered channel provided by American national network FOX and showing foreign drama series, animation, reality drama, and so on.
Discovery Channel	World-leading documentary channel offering programs under five genres: nature, science and technology, history, world culture, and human adventure.
Cartoon Network	Animation channel showing mainly foreign animation programs such as Tom and Jerry and Powerpuff Girls.
AXN	Multi-entertainment channel provided by Sony Pictures and offering mainly foreign drama series and movies. Includes some reality TV, sports, and other kinds of programs, but focuses on drama series.
Toon Disney	Disney's 24-hour animation channel. Recently includes some comedy and action/adventure programs as well.

Figure 6. Viewed Channels by Genre

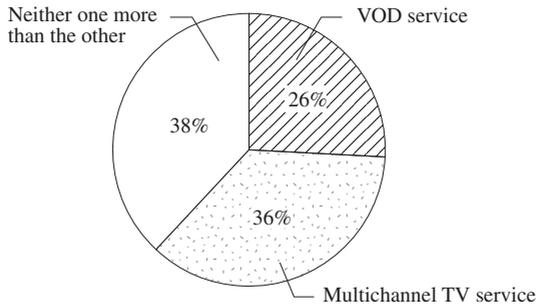
Animation	21.8%
Music	15.1
Drama	13.8
Movies	11.0
Documentary	10.4

year period) also showed Disney Channel as the most viewed channel (6.1 percent), with little change (compared with holiday-period viewing) in the composition of the top five most viewed channels.

Reasons for and Objectives of Subscription

IPTV services are relatively new in Japan, having been operating for only two or three years, including trial periods. Respondents who said they subscribed to their service "4 to 6 months ago" comprised the largest group for that question, at 22 percent. The total share accounted for by this group plus those who answered "about 1 month ago" and "2 to 3 months ago" was 57 percent, indicating that almost six out of ten IPTV subscribers subscribed within the six months prior to the survey.

Regarding their reasons for subscribing, respondents were allowed to give

Figure 7. Main Attraction at Time of Subscription

multiple answers. The most common reasons cited were “terrestrial TV broadcasting is not enough” (29 percent), “going to the store to rent/return videos is troublesome” (24 percent), “no danger of missing out on videos already rented out” (10 percent), and “the service is better value for money than cable TV” (10 percent). The respondents’ main motivations for subscribing to IPTV services were that they “seem to offer interesting programs” and that they provided an “alternative to store-rented videos.” That the reasons relating to store-rented videos showed no significant variation of response from one region of residence to another can perhaps be attributed partly to the fact that rental video stores can now be found in virtually every community throughout the country, and partly to the recent appearance of services whereby users can rent DVDs online and have them delivered to their homes.

When asked which aspect of IPTV services—that is, either VOD or multichannel TV—attracted to them more at the time they subscribed, 26 percent of respondents said VOD, 36 percent said multichannel TV, and 38 percent chose the response “neither one more than the other.” These results indicate that, although multichannel TV has a slight edge over VOD as a drawing card to IPTV services, the difference can hardly be called a clear-cut prevalence (see Figure 7). In the analysis by age and gender, the group that chose “multichannel TV” was seen to include a high proportion of women in their 30s or 40s, and in the breakdown by occupation the same group showed a high ratio of full-time homemakers. These results can be attributed to the tendency among such respondents to watch TV with their children, as mentioned earlier in regard to viewing of Disney Channel.

Cathode-ray tube TV sets still the norm

IPTV services were developed for the purpose of watching television, but do subscribers watch such services on TV sets or on computers equipped with

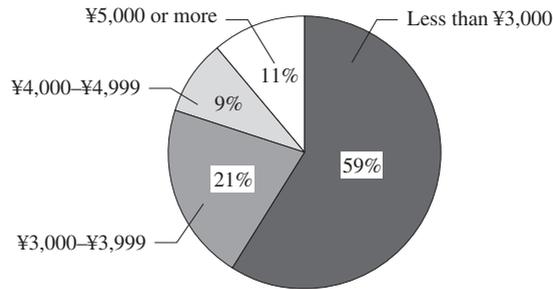
TV tuners? Respondents were given a list comprising four types of TV set—the variables being screen size (either less than 32 inches or at least 32 inches) and screen type (slim [e.g., liquid-crystal and plasma] or cathode-ray tube)—and three types of computer (desktop, laptop, and notebook-size), and were asked to indicate from this list the kind of equipment they mainly used to watch their IPTV service. The most common response was “less-than-32-inch cathode-ray tube TV” at 39 percent, followed by “desktop computer” (22 percent), “notebook-size computer” (12 percent), and “32-inch or larger cathode-ray tube TV” (11 percent). Roughly half of the respondents used cathode-ray tube sets to watch their IPTV service, while those who used computers also accounted for an unexpectedly high proportion, at around one third.

Looking at the correlation between type of device used for viewing IPTV and type of main TV set in the home, we find that as many as around 60 percent of respondents indicated the same type of set for both categories (differences in the type and size of the main TV set notwithstanding). However, of those who used desktop computers to watch IPTV, whereas 20-25 percent had a main TV set in one of the other categories, only 12 percent said it was a “32-inch or larger slim TV.” This points to a natural preference for watching a set with a large, clear screen if one is available.

In regard to satisfaction with picture quality when watching IPTV services, 48 percent of respondents were “somewhat satisfied,” 32 percent “somewhat dissatisfied,” 6 percent “very satisfied,” and 15 percent “very dissatisfied,” the total share on the satisfied side (54 percent) thus exceeding that on the dissatisfied side (46 percent). “Satisfied” viewers accounted for more than 50 percent of respondents in every category of TV set used but less than 50 percent in every category of computer used. Furthermore, isolating the responses of subscribers using “slim” TV sets reveals that, although the overall trends remain unchanged, the share of those who were “very satisfied” with their picture quality is significantly larger than for viewers using other types of equipment. Picture quality on IPTV services leaves something to be desired in comparison with high-definition broadcasts. When viewed on a high-performance slim-type TV set, there is a noticeable roughness to the image, so much so that some people claim it is better to watch IPTV on a computer. Judging from the above results, however, actual IPTV viewers tend not to share that perception.

Monthly fee around 3,000 yen

Although the fee structures of the four IPTV providers differ slightly from one another, a basic monthly fee of around 3,000 yen, including STB rental fee, is the norm. As mentioned earlier, this fee entitles the subscriber to a multichan-

Figure 8. Monthly Expenditure on IPTV Service

nel TV service of around 30 channels and a VOD service of two or three videos per month. Each video viewed in excess of the monthly limit incurs a fee of around 150 to 420 yen, depending on such factors as its popularity and how recently it was released. Each of the providers offers a choice of around 4,000 to 5,000 videos. For an additional fee of around 1,000 to 3,000 yen, subscribers can also watch specific paid channels specializing in movies, erotica, or programs on special interests such as fishing.

In the breakdown by amount of monthly fees paid, 80 percent of respondents were in the under 4,000 yen group, with 59 percent paying less than 3,000 yen and 21 percent paying between 3,000 and 3,999 yen per month (see Figure 8). Given that the under-3,000-yen group alone accounts for 6 out of 10 subscribers, we can surmise that subscribers seldom add additional paid channels to their service or exceed their monthly VOD limits. This is consistent with the trends of VOD use noted earlier in this article.

Another question of particular interest that the survey addressed was whether ADSL or fiber optics connections were the more common among IPTV subscribers. The results show that these two types are about equally prevalent, with ADSL being used by 51 percent and fiber optics by 48 percent of respondents. The three providers other than Yahoo! BB offer fiber optic connections only, and of the respondents who subscribed to Yahoo! BB, around one quarter had fiber optic connections and three quarters had ADSL connections. Although there is no guarantee that the Yahoo! BB subscribers included in this survey were representative of Yahoo! BB subscribers as a whole, it is fair to say that, overall, IPTV subscribers using ADSL connections still outnumber those using optic fiber connections.

By average time spent per day on the Internet, respondents who answered “1-2 hours” comprised the largest group (26 percent), followed by “2-3 hours” (22 percent), “30 mins.-1 hour” (14 percent), and “5 hours or more” (13 per-

cent). Regarding time spent using computers, including for accessing the Internet, "5 hours or more" was the largest group, at 26 percent, with the distribution over the other time frames following the same trend as for Internet use. When the results for time spent on the Internet are correlated to those for each time frame of computer use, we find that the responses for Internet time and computer time are both concentrated in the same time frames. Regarding computer time, this concentration decreases the longer the time frame, but given that 45 percent of respondents who answered "5 hours or more" for computer time also answered "5 hours or more" for Internet time, it is clear that Internet time accounts for a large share of time spent using computers.

When asked to indicate which mobile phone functions they used (giving multiple answers if appropriate), 90 percent of respondents chose "e-mail/SMS messages," 88 percent "voice calls," 57 percent "taking photos," and 51 percent "Internet," with just 3 percent saying they did not use a mobile phone at all. A recent survey on communications network usage and the lifestyles of the Japanese people (*Nettowaku to kokumin seikatsu ni kansuru chosa*) conducted by the Ministry of Internal Affairs and Communications found that only 65 percent of respondents used mobile communications devices for e-mail/SMS messages. The difference between that survey and the present one in this respect can be attributed to the fact that the respondents to the latter have a high degree of media literacy, which partly explains why they decided to subscribe to IPTV services.

Conclusions

At every stage of new media adoption until now—from radio to black-and-white television to today's digital terrestrial broadcasting—the few early users of each new media have mostly been people in the upper socioeconomic strata, who could afford the time and the expense (particularly the expense) required to enjoy those media. In the case of IPTV, however, the financial burden is not especially heavy; rather, the main disincentive seems to be the delivery medium used, that is, the Internet. The key to IPTV's spread lies in not only identifying the needs of people dissatisfied with conventional broadcasting, cinema, and rental video services, but also lowering the hurdle that the Internet represents so as to create a market environment whereby even people with limited media literacy can easily access IPTV services.

(Translated by Dean Robson)

Simple Tabulation of Results of the Field Survey on IPTV Use

1. Survey period
Tuesday, 3 January–Wednesday, 11 January 2006
2. Survey method
Questionnaire survey via Internet
3. Sample
1,267 IPTV subscribers aged 20 and over
4. No. of valid respondents (Valid response rate)
1,002 (79.1%)

—Year-end/new year video viewing—

Question 1. How many videos did you view on your VOD service over this year-end/new year holiday period? (One answer only.)

1	8.6	%
2	6.0	
3	3.6	
4	1.7	
5	1.4	
6 to 9	1.7	
10 or more	2.3	
None	74.8	

—Video titles, year-end/new year period—

Question 2. Please list the titles of the videos you viewed on your VOD service over this year-end/new year holiday period. If you viewed 4 or less videos, give all the titles. If you viewed 5 or more, give the titles of the 4 that you thought were the most entertaining/interesting.

<i>Howl's Moving Castle</i>	14	persons
<i>War of the Worlds</i>	13	
<i>The Phantom of the Opera</i>	7	
<i>Densha otoko</i>	6	
<i>The Island</i>	5	
<i>The Matrix</i>	5	
<i>Constantine</i>	5	
<i>April Snow (Oechul)</i>	5	

<i>Kung Fu Hustle</i>	4
<i>Anacondas: The Hunt for the Blood Orchid</i>	4

(Top 10 titles)

—Video categories, year-end/new year period—

Question 2-SQ1. What categories of video did you view? Answer for all the videos you viewed.

Foreign (non-Japanese) movies	52.6	%
Japanese movies	15.2	
TV programs	5.2	
Sport	0.8	
Music	1.2	
Animation/Kids'	18.8	
Idol	0.2	
Erotica	3.2	
Other	2.8	

N = 597

—Movie content—

Regarding the “foreign movie” and “Japanese movie” videos you viewed:

Question 2-SQ2. How would you describe the content of those movies?

Action	24.9	%
Suspense	10.9	
Love story	10.6	
Comedy	7.4	
Drama	14.1	
Mystery	2.2	
Fantasy	4.4	
Science fiction	13.8	
Horror	4.2	
Musical	1.0	
Ninkyō (“chivalrous gangster”)/samurai	1.0	
Classic cinema	0.2	
R-rated cinema	0.0	
Other	5.2	

N = 405

—TV programs you'd like to watch on your VOD service—

Question 3. Regardless of whether or not you viewed them over this holiday period, indicate 4 TV programs that you'd like to watch on your VOD service (including any that are not currently available).

24	19	persons
<i>Densha otoko</i>	8	
<i>Furuhata Ninzaburo</i>	6	
<i>Ooku shirizu</i>	6	
<i>NHK supesharu</i>	5	
<i>Sekai isan</i>	5	
<i>Ainori</i>	5	
<i>Kohaku utagassen</i>	4	
<i>Uchimura purodyusu</i>	4	
<i>Doragon-zakura</i>	4	
<i>Gokusen</i>	4	

(Top 10 programs)

—Channels that broadcast the programs you want to watch—

Question 3-SQ. Which TV channels broadcast those programs? For each program, indicate the appropriate channel category from the following.

NHK General	8.6	%
NHK Educational	3.1	
Nippon TV network	8.6	
TBS network	12.3	
Fuji TV network	22.7	
TV Asahi network	8.5	
TV Tokyo network	4.0	
Other	20.6	
Not broadcast	11.8	

N=851

—Usual frequency of use of VOD service—

Question 4. How many videos do you usually view per month, on average, using your VOD service? (One answer only.)

1	17.0	%
2	13.7	
3	7.2	
4	3.3	
5	3.5	
6 to 9	2.4	

10 or more	2.5
Do not use a VOD service	50.5

—Viewing of specific multichannel TV channels, year-end/new year period—

Question 5. Did you watch any single channel on your multichannel TV service for 5 minutes or longer over this year-end/new year holiday period? (One answer only.)

Watched for 5 minutes or longer	27.0	%
No channel watched for 5 minutes or longer/Did not watch	73.0	

—Most viewed multichannel TV channels, year-end/new year period—

Question 6. Indicate the channels that you watched for 5 minutes or longer on your multichannel TV service over this year-end/new year holiday period, in order from most to least watched.

Disney Channel	6.3	%
FOX	2.9	
Discovery Channel	2.7	
Cartoon Network	2.7	
AXN	2.6	
Toon Disney	2.4	
MTV	2.2	
National Geographic Channel	1.9	
Animax	1.8	
Animal Planet	1.5	

(Top 10 channels)

—Genres of multichannel TV channels, year-end/new year period—

Question 6-SQ. What genres do those channels belong to? Choose one genre for each channel you indicated in your response to Question 6.

Movie	11.0	%
Music	15.1	
Drama	13.8	
Shopping	0.9	
Animation	21.8	
Multi-entertainment	8.8	
Documentary	10.4	
Sport	7.3	
News/weather	4.9	
Foreign-language study	0.1	

Travel/food	1.9
Erotica	0.6
Other	3.4

N=674

—Time spent viewing multichannel TV, year-end/new year period—

Question 7. During this year-end/new year holiday period, how much time per day, on average, did you spend watching your multichannel TV service? Choose one response from the following list as your total daily viewing time for all such services. (One answer only.)

Less than 30 mins.	8.3	%
30 mins.–1 hour	5.9	
1–2 hours	6.2	
2–3 hours	4.9	
3–4 hours	3.1	
4–5 hours	1.6	
5–6 hours	1.1	
6–7 hours	1.2	
7–8 hours	0.5	
8–9 hours	0.5	
9–10 hours	0.2	
10 hours or more	1.8	
Did not watch multichannel TV service	64.8	

—Time spent viewing multichannel TV, weekends—

Question 8. How much time per day, on average, do you spend watching your multichannel TV service on normal weekends (or on normal days off if you work on weekends)? Choose one response from the following list. (One answer only.)

Less than 30 mins.	9.4	%
30 mins.–1 hour	8.1	
1–2 hours	12.3	
2–3 hours	7.9	
3–4 hours	3.0	
4–5 hours	1.5	
5 hours or more	2.7	
Do not watch multichannel TV service	55.2	

—Time spent viewing multichannel TV, weekdays—

Question 9. How much time per day, on average, do you spend watching your multichannel TV service on normal weekdays (or days when you go to work or school)? Choose one response from the following list. (One answer only.)

Less than 30 mins.	13.5	%
30 mins.–1 hour	10.2	
1–2 hours	9.2	
2–3 hours	5.1	
3–4 hours	1.7	
4–5 hours	1.1	
5 hours or more	1.0	
Do not watch multichannel TV service	58.3	

—Channels of multichannel TV service usually viewed most—

Question 10. Which channels of your multichannel TV service do you usually watch the most? Indicate the most and second most watched channels.

Disney Channel	6.1	%
AXN	3.7	
Discovery Channel	3.1	
FOX	2.9	
MTV	2.4	
Animax	2.3	
Cartoon Network	2.1	
Super Channel	1.5	
National Geographic Channel	1.5	
Music On! TV	1.3	

(Top 10 channels)

—Time of subscription—

Question 11. When did you commence your subscription to your Internet-based VOD service and/or multichannel TV service? Choose the appropriate period from the following list. (One answer only.)

About 1 month ago	18.7	%
2 to 3 months ago	16.4	
4 to 6 months ago	22.1	
About 1 year ago	18.4	
About 1.5 years ago	7.6	
About 2 years ago	10.6	
More than 2 years ago	6.4	

—Reasons for subscribing—

Question 12. From the following list choose the item or items that best describe your reasons for subscribing to your IPTV service. (Multiple answers possible.)

Terrestrial TV broadcasting is not enough	28.5	%
Terrestrial TV and satellite broadcasting are not enough	9.0	
Terrain/buildings prevent reception of satellite broadcasting	3.4	
The service is better value for money than satellite services	7.8	
Want cable TV but there's none available in my area	5.7	
The service is better value for money than cable TV	10.2	
There are no rental video stores nearby	4.2	
Going to the store to rent/return videos is troublesome	23.8	
The video viewing fees are cheap	9.8	
No danger of missing out on videos already rented out	10.3	
Other reasons	26.0	

—Main objective of subscription—

Question 13. In subscribing to this service, was your main objective to use the VOD service or the multichannel TV service? Choose one response, depending on your primary objective. (One answer only.)

VOD service	25.6	%
Multichannel TV service	36.4	
Neither one more than the other	37.9	

—Equipment used—

Question 14. What equipment do you mainly use to view this service? Choose one response from the following list. (One answer only.)

32-inch or larger slim TV (liquid-crystal, plasma, etc.)	8.1	%
Less-than-32-inch slim TV	5.3	
32-inch or larger cathode-ray tube TV	10.9	
Less-than-32-inch cathode-ray tube TV	39.0	
Desktop computer	21.5	
Laptop computer	1.1	
Notebook-size computer	12.0	
Other	2.2	

—Satisfaction with picture quality—

Question 15. How satisfied are you with the picture quality on your VOD and/or multi-channel TV service? Choose one response from the following list. (One answer only.)

Very satisfied	5.5	%
Somewhat satisfied	48.1	
Somewhat dissatisfied	31.9	
Very dissatisfied	14.5	

—Monthly expenditure—

Question 16. Approximately how much do you spend on this service per month, as a total including both basic service fees and fees for optional services. Exclude fees for such activities as e-mailing and online searches. (One answer only.)

Less than ¥3,000	58.5	%
¥3,000–¥3,999	21.3	
¥4,000–¥4,999	8.8	
¥5,000–¥6,999	6.5	
¥7,000–¥9,999	4.2	
¥10,000 or more	0.8	

—Time spent using the Internet—

Question 17. On average, how much time do you spend on a normal weekday using the Internet for purposes other than this service, such as e-mailing and web surfing? Choose one response from the following list as a daily total that includes both at-home and away-from-home (at-work or at-school) use. (One answer only.)

Less than 30 mins.	6.5	%
30 mins.–1 hour	14.0	
1–2 hours	26.1	
2–3 hours	22.2	
3–4 hours	11.0	
4–5 hours	5.2	
5 hours or more	13.1	
Rarely/never use the Internet	2.0	

—Time spent using computers—

Question 18. On average, how much time do you spend on a normal weekday using computers, including for accessing the Internet. Again, choose one response from the following list as a daily total that includes both at-home and away-from-home (at-work or at-school) use. (One answer only.)

Less than 30 mins.	3.9	%
30 mins.–1 hour	10.6	
1–2 hours	21.6	
2–3 hours	19.4	
3–4 hours	9.7	
4–5 hours	6.8	
5 hours or more	26.4	
Rarely/never use computers	1.7	

—Mobile telephone use—

Question 19 What do you use your mobile telephone for? From the following list, indicate all the purposes for which you use your mobile phone. (Multiple answers possible.)

Voice calls	88.3	%
E-mail/SMS messages	89.8	
Internet (searching/viewing the web)	51.1	
Taking photos	57.3	
Playing games	27.0	
Playing music	14.2	
Video calls	8.2	
Electronic money	7.1	
Radio reception	3.8	
TV reception	4.3	
Do not use a mobile phone	2.9	

—Main TV set—

Question 20. What kind of TV set is the main TV set in your home. Choose one response from the following list. (One answer only.)

32-inch or larger slim TV (liquid-crystal, plasma, etc.)	12.0	%
Less-than-32-inch slim TV	8.3	
32-inch or larger cathode-ray tube TV	17.3	
Less-than-32-inch cathode-ray tube TV	60.4	
Other	1.4	
Do not have a TV set	0.7	

—Time spent watching TV—

Question 21. On average, how much time do you spend watching TV on a normal work-day or school day (exclude holidays and days off). Choose one response from the following list. (One answer only.)

About 1 hour	15.8	%
About 2 hours	26.9	
About 3 hours	23.8	
About 4 hours	11.8	
About 5 hours	7.7	
About 6 hours	3.8	
About 7 hours	1.3	
About 8 hours	1.8	
About 9 hours	1.9	
Rarely/never watch TV	5.3	

—NHK or commercial TV—

Question 22. Which do you watch more often, NHK programs or commercial TV programs? Choose one response from the following list. (One answer only.)

Usually commercial TV, rarely/never NHK	32.7	%
Usually commercial TV but sometimes NHK if something interesting is on	36.3	
Watch both commercial TV and NHK about equally	21.7	
Usually NHK but sometimes commercial TV if something interesting is on	3.1	
Usually NHK, rarely/never commercial TV	1.0	
Rarely/never watch either	5.2	

Composition of Sample

Total	Gender		Males by age bracket				Females by age bracket			
	Males	Females	20s	30s	40s	50 and over	20s	30s	40s	50 and over
1,002	545	457	109	215	149	72	101	204	115	37
100%	54.4	45.6	10.9	21.5	14.9	7.2	10.1	20.4	11.5	3.7

Occupation						
Homemaker (including part-time workers)	Office worker	Self-employed	Farming/fishing	Student	Unemployed	Other
243	566	103	3	36	35	16
24.3	56.5	10.3	0.3	3.6	3.5	1.6

Population of city						Region						
Over 1 million	Over 300,000	Over 100,000	Over 50,000	Under 50,000	Unknown	Hokkaido/Tohoku	Kanto/Koshin'etsu	Keihin	Chubu/Hokuriku	Kinki	Chugoku/Shikoku	Kyushu
397	183	198	122	98	4	126	120	364	98	161	63	70
39.6	18.3	19.8	12.2	9.8	0.4	12.6	12.0	36.3	9.8	16.1	6.3	7.0

Type of Internet connection		
ADSL	Fiber optics	Unknown
512	478	12
51.1	47.7	1.2