

# **The Long Tail and Lofty Head of Video Content**

**— The Possibilities of “Convergent Broadcasting” —**

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From the perspective of the institutional framework for the convergence and/or collaboration of communications and broadcasting, we are currently not at the stage where we see remarkable changes in Japan. However, when we turn our eyes to actual business activities, we begin to see a variety of changes occurring in network space. These include IP (Internet protocol) multicasting (broadcasting using telecommunications services) such as GyaO and Yahoo! Doga and the start of content distribution via the Internet by commercial broadcasters.

In the US, video content distribution services as represented by YouTube have been launched one after another, making 2006 the beginning of the age of video content distribution. With the appearance of these services, more than 100 million items of video content suddenly became available via the Internet. Such content offers high levels of novelty, diversity and freshness, but poor levels of reliability. Accordingly, we are to see the endless lengthening of the long tail of individual content that has low value.

In contrast to the long tail of video content growing at an irresistible pace on the Net, creation of the “lofty head” in Japanese Net space is proposed, which is video content that is akin to broadcast content offering high levels of reliability and centrality even though the number of types may be limited. This “lofty head” could be brought about by a new business format of “convergent broadcasting” in which self-produced programs are provided for the 24-hour time frame with viewing only by means of software based on a broadcasting license.

The maturation of the ubiquitous network paradigm has brought with it disaggregation into diversified themes. The concept of “convergent broadcasting” developed through the convergence of communications and broadcasting, which is one of the important steps towards ubiquitous networking, will also contribute to the discussions about the next-generation network (NGN).

## I The Long Tail and Lofty Head of Video Content

### 1 Japan Sees Increasing Interest in the Convergence of Communications and Broadcasting

Between January and June of 2006, the “Panel on Frameworks of Communications and Broadcasting”<sup>1</sup> was set up as the private advisory organ for the Minister of Internal Affairs and Communications to hold discussions about a variety of issues related to communications and broadcasting services. Of these issues, suggestions were made regarding NHK (Japan Broadcasting Corporation) that covered items as profound as the matter of governance, the number of channels, program archives (libraries of previously broadcast programs) and international broadcasting. While the decision on the reorganization of NTT (Nippon Telegraph and Telephone Corporation) has been put off until 2010, it was agreed to quickly start an examination of the legal framework for convergence to consolidate as many as nine laws that now govern the communications and broadcasting areas, including the NTT Company Law.

However, upon attending these discussions<sup>2</sup>, I found that the main focus of the discussions concerning commercial broadcasting was aimed at preserving the current system based on the “concept of basic broadcasting” rather than pursuing the “liberalization of broadcasting” that some might have expected. From the perspective of integrating communications and broadcasting, discussions at this panel have simply indicated the general direction of establishing an environment to promote such convergence without addressing specific matters except for the need to amend the Copyright Act to properly deal with IP multicasting (using IP (Internet protocol) to deliver content to multiple recipients).

This general tone was followed by subsequent discussions such as in the “Agreement among the Government and Ruling Parties on the Frameworks of Communications and Broadcasting”<sup>3</sup> and the “Process Program for the Reform of the Communications and Broadcasting Field”<sup>4</sup> created by the Ministry of Internal Affairs and Communications. Although specific moves have emerged to deal with the NHK issues and to establish a legal framework, no noteworthy moves have been seen in the area of commercial broadcasting.

As such, Japan’s approach to institutional reviews is producing relatively few changes. However, when we look at the situation globally, we see that industrial changes have begun to occur principally on the side of the communications sector at the boundary between communications and broadcasting in a most evident manner involving the broadcasting sector.

## 2 Global Business Continues to See Major Changes

One of the most striking examples of these moves is the US “YouTube” site, a video content portal site that has seen rapid growth. Rather than dealing with carefully organized TV programs, every day this site sees the contribution of tens of thousands of individual video clips (including content claimed to be unlawful) from all around the world, with the total already in excess of 100 million clips.

Every day, the “long tail” (a phenomenon where relatively minor niche products and services can develop into a viable business such as through electronic commerce) of this video content is becoming longer and longer with the rapid growth of this site. Supporting this activity is a system whereby the content is rated based on the number of accesses (hits) to such a vast amount of content and the ratings by viewers on a scale of 1 to 5. Among parodies and videos of fleeting occurrences thus selected by viewers, we can find some amazingly interesting or even shocking material.

However, it is not only the entertainment value of the content that assures that it has a “long tail.” Video content will come into its own in the future as the most frequently used content and as a major means of communication over the ubiquitous network. It will become an important and reliable part of our social infrastructure in our future efforts to deal with the issues of a declining birthrate and an aging society, crime prevention and disaster preparedness as well as health and welfare. Accordingly, we must carefully nurture the culture of using such video content.

In the face of a huge amount of content including unlawful content appearing at video content portal sites, which have begun to expand with a sudden, rapid growth of the long tail, I have strong misgivings about the possibility of staining video content with the undesirable image of being completely unregulated by irresponsibly offering disorganized video content.

With such a sudden growth of the long tail involving video content on the one hand, I believe that the rise of a “lofty head” (meaning video content having higher value than the long tail that extends with lower value) is necessary on the other hand to transmit content in an orderly manner by firmly fulfilling editing responsibilities. Accordingly, this paper attempts to form the concept of a virtual business model that realizes this “lofty head.” Specifically, I intend to clarify those matters that are essential in establishing the business concept of “convergent broadcasting.” My attempts principally focus on appropriate methods on the service supply side.

While this paper presents only a personal opinion and/or assumption in the capacity of a user who enjoys the Internet and TV, in order to define the actual feasibility of such concept, it is obvious that careful and detailed analyses are required on the acceptability of the demand

side, in addition to these somewhat hasty analyses regarding the supply side.

## II Convergence of Communications and Broadcasting and Japan's Video Content Distribution Services

### 1 Japan's Video Content Distribution Services Crowd the Market

#### (1) IP multicasting services with a closed nature

In 2001, Japan saw the passing of the Law Concerning Broadcast on Telecommunications Services, which

opened up the use of communications facilities for broadcasting. As a result, we have already seen the start of four IP multicasting services. These are Online TV's "4th MEDIA" and I-Cast's "On Demand TV" that target NTT's broadband users, "Hikari Plus TV" from KDDI and "BBTV" (BB Cable) from SoftBank (Table 1). These services use communications networks to re-transmit material that has already been offered through existing multichannel broadcasting, while at the same time offering "video on demand" services that enable users to watch individual items of video content.

Unlike conventional unicasting, IP multicasting uses a router that is designed specifically for IP multicasting over the network, and which repeatedly converts the digital content into IP packets (fixed-length blocks of data) and then distributes it to multiple, specified users. This is the basic concept of IP multicasting technology.

**Table 1. Growth in Japan's Video Content Distribution Services**

	Name	Provider	Service Start Date	Service Format	Service Overview
Broadcasting using telecommunications services (IP multicasting)	BB TV	BB Cable	March 2003	Targeting subscribers to "Yahoo! BB" (Internet access services using optical fiber cable or ADSL)	Multichannel broadcasting (41 ch) VOD (about 5,000 titles)
	Hikari Plus TV	KDDI	December 2003	Targeting subscribers to "Hikari Plus Net DION" (Internet access service)	Multichannel broadcasting (35 ch) VOD (about 5,000 titles)
	4th MEDIA	Online TV	July 2005	Targeting subscribers to "FLET'S Hikari Premium" and "B FLET'S" (optical cable service)	Multichannel broadcasting (60 ch)
	On Demand TV	I-Cast	June 2005	Targeting subscribers to "FLET'S Hikari Premium" and "B FLET'S" (optical cable service)	Multichannel broadcasting (31 ch)
Broadcasting using telecommunications services (the same system as CATV)	Sky Perfect! Hikari	Opticast	February 2004	Providing multichannel services to subscribers to "Sky Perfect!"	Terrestrial, multichannel broadcasting PPV (Sky Perfect! 270 ch)
	Pikara Hikari TV	STNet	September 2005	Providing broadcasting services to their subscribers	Terrestrial, multichannel broadcasting (more than 50 ch)
Communications services	OCN Theater	NTT Communications	July 2004	Providing a set of Internet access and telephone services for subscribers to "CoDen Hikari"	VOD (100 titles, no restrictions)
	casTY	CASY	July 2003	Providing free video content to "TEPCO Hikari" users (providing free low-resolution video content to Internet users)	VOD
	Yahoo! Doga	TV Bank	December 2005	Providing service free of charge to all Internet users	VOD
	GyaO	USEN	April 2005	Providing service free of charge to all Internet users	VOD
Services provided by broadcasters	Fuji TV On Demand	Fuji Television	July 2005	Providing Fuji TV programs and video content to major ISP users and STB users	VOD
	Dai2 NTV	Nippon Television Network	October 2005	Providing previously broadcast NTV programs to all Internet users	VOD
	TBS BooBo BOX	Tokyo Broadcasting System (TBS)	November 2005	Providing TBS Group TV programs and video content to major ISP users and STB users	VOD

Notes: ADSL = asymmetric digital subscriber line, CATV = cable television, IP = Internet protocol, ISP = Internet service provider, PPV = pay per view, STB = set-top box, VOD = video on demand

Source: Compiled based on "Outline of Communications and Broadcasting" by the Ministry of Internal Affairs and Communications, August 30, 2006, and websites of each company.

The current Copyright Law regards this content distribution as automatic public transmission. Accordingly, such content distribution is not subject to copyright processing, although such processing is required for broadcasting. This issue has been discussed at the “Panel on the Frameworks of Communications and Broadcasting” and has also been examined by the Agency for Cultural Affairs. These discussions and examinations have paved the way for the amendment of the Copyright Law so that re-transmission of IP multicasting can be treated as broadcasting.

Such broadcasting services using telecommunications services are also offered in the format of multichannel broadcasting service by using the same system as that for CATV (cable TV), such as “Sky Perfect! Hikari” provided by Opticast.

All of the services described above are designed to provide the existing broadcasting content over IP networks with a closed nature under the Law Concerning Broadcast on Telecommunications Services.

## (2) GyaO and Yahoo! Doga Offer Open Services

In contrast, we have also seen the use of the Internet as the open network to provide “best effort” (applying the best possible efforts, even though this may not always produce the best quality) video and audio services.

These services include those provided by communications carriers striving to expand FTTH (fiber-to-the-home) services, and those offered by conventional broadcasters striving to provide TV broadcasting programs and video content over communications networks. Among the former are “OCN Theater” provided by NTT Communications, and “casTY” provided for “TEPCO Hikari” (optical fiber service by Tokyo Electric Power Company) users. The latter services include “Dai2 NTV” provided by Nippon Television Network and Fuji Television’s “Fuji TV On Demand.”

Many of the services provided by communications carriers give the impression of being only one part of their communications service marketing strategy, and conventional broadcasters are generally at the stage of seeing which way the wind will blow although the degree of importance they place on such services differs. The most notable example of such services in Japan is “GyaO,” a video content distribution service offered by USEN that has been growing rapidly.

GyaO was started in April 2005, and only about one year later, in June 2006, saw the number of registered viewers exceed 10 million. This figure continues to increase even now. The offered content is divided into 18 categories including movies, music, “anime” (animation), comics, dramas, documentaries and video blogs. At any time, we can watch any of more than 300 titles. The business model basically relies on advertising revenues, such that viewers can view streaming content (where the content can be viewed as it is being downloaded) free of charge.

Prior to the launch of GyaO, when USEN was an optical service provider, it started activities to ensure the provision of content. For movie content, USEN has Gaga Communications that holds the distribution rights for movies as one of its group companies. Music content is provided through affiliation with Avex Group Holdings.

While the number of registered viewers of GyaO has already exceeded 10 million, some say that only about one-third of these people are actually watching the offered content. In addition, USEN is allegedly facing the problem that advertising income is not sufficiently growing to cover the company’s setup and content costs, meaning that the company’s deficit is expanding. Nevertheless, it is probably fair to say that these phenomena are not rare at the time of the start of a new type of business.

In the future, we must pay careful attention to when network externality (the value of a service increases along with the increase in the number of users and the service usage frequency, which serves to further increase the number of users) can contribute to going beyond the break-even point. Such timing will depend upon how long the current high growth rate can continue.

Currently, the most serious competitor to GyaO seems to be the SoftBank Group’s TV Bank offering with their “Yahoo! Doga (meaning moving images or video content),” which was launched in December 2005. Yahoo! Doga content distribution service differs from GyaO in that it is not a free service that depends entirely on advertising revenue. Instead, it is offered as a search site developed specifically for video searches and is a part of Yahoo! Japan, which is Japan’s largest web portal.

The content that is found through a video search using Yahoo! Japan consists mostly of material that is provided by Yahoo! Doga. Yahoo! Doga is currently pushing ahead rapidly to increase its library of content by establishing tie-ups with companies having huge libraries of movies, music, “anime” (animation), games and photographs. Because the company appears to have a strong intention to move into international markets, such as Korea and Taiwan, we can expect to see it grow considerably in the future.

The fact that Yahoo! Doga is one part of a very well-known search portal site will contribute to pulling in customers in its early stage of business development. However, the current business model involves both free and for-a-fee content and provides no choices other than combining the company’s own content with other companies’ content. Accordingly, it is too early to say whether the site will be able to establish an identity as a video content distribution service.

## (3) Business model that integrates rental shops with network distribution

While many other providers are offering video content distribution services over the Internet, the provider adopting the most interesting business model is probably Digital

Media Mart (DMM.com). DMM.com aims to integrate video and DVD (digital versatile disk) rental shop business with net-based distribution. In addition to the online sale of regular CDs and DVDs, the company also has a “net rental” system. Under this system, for a monthly fee of 1,980 yen, customers can rent two titles at a time for as many viewings as they like, with no limits on the number of titles they can watch in a month. This service also offers many options. Customers order CDs and DVDs online, and once they have watched and finished with them, return them to the company by postal mail.

DMM.com is also offering a broadband video content distribution service. This has been developed as an extension of the company’s rental video business. With two pricing plans – a fixed monthly amount or a per-rental charge, users can select from drama, “anime” (animation) or “idol” offerings. In this way, the company offers a “video on demand” service that is tailored to specific viewing audiences.

Whichever service we look at, the fact remains that video content distribution services remain very new in Japan; how it will develop in the future is unpredictable.

## 2 Value of Content Offered by Video Content Distribution Services

### (1) Novelty value of the technology

Video content distribution services owe their existence to the technical innovation known as the convergence of communications and broadcasting that is brought about through the digitization of broadcasting and the development of broadband communications. These services make it possible for users to enjoy video content on a PC connected to a communications network. In addition, the “novelty value” of this technology can act as an “enabler” to attract a large number of customers.

However, the ultimate “differentiator” that ensures that attracted customers stay with a given service is the quality of the content that is offered.

### (2) Diversity of content to meet viewers’ demands

Regardless of whether content is provided through broadcasting or online, the quality of the content provided by any video content distribution service is judged based on its diversity, freshness and centricity.

For viewers, the quality of an individual item of content depends on the subjective standards of whether it is interesting, worthwhile or relaxing. From the perspective of service providers that are providing large libraries of content that are selected by viewers based on their extremely diversified demands, we have to ask about the degree of “diversity” that the service should aim to provide in the content in order to survive in a market where customers have such a wide choice. Such diversity will enable services to attract viewers with a wide selection of content that is found interesting, worthwhile and relaxing.

### (3) Freshness of content

Another aspect regarding content is its “freshness.” The tastes of viewers are always changing—they can change the channel, click another site and, in an instant, drop one thing and pick up another. To retain such viewers, it is essential for the provider to keep its content from becoming boring and commonplace, and strive to always provide fresh offerings. Companies can retain customers by providing a steady stream of new content and by responding to expectations for new, surprising, impressive and/or relaxing material.

The importance of such freshness had already become evident in the 1990s. With the spread of the Internet, organizations and individuals have competed with each other in creating more attractive websites. The update frequency is an extremely important factor in the survival of homepages and portal sites. Frequent updates are a basic requirement, with those having an inappropriate update timing strategy disappearing quickly. The same applies to video content distribution services.

### (4) Strategies for shifting content distribution from the periphery into the center

The endless pursuit of diversity and freshness might be justified from the perspective of enhancing such factors. However, such action will inevitably incur costs. Accordingly, the key point is to what extent the site can emphasize the content or content groups that can attract many customers in each category. To express this situation, I have borrowed the concept of “center and periphery” from the fields of sociology and political science, and will use the term “centricity.”

When a new media such as the distribution of video content over an open network emerges, the periphery of the content that is not available from the existing services is important for the first customers. However, such periphery alone is not enough to create new media or new business. If we base the ultimate value of the media on its degree of centricity, we have to ultimately establish new centricity even if focusing on the periphery during the initial stage.

The path to follow to achieve this goal will broadly decide the nature of the strategy for this business. One possible path would be to establish centricity by collecting “major” content as much as possible such as Hollywood movies from their very beginning. Another possible path would be to establish centricity by giving a certain orderliness to independent content having high periphery. Companies can choose any of many strategies, but whichever they choose, they must have the same vector of needing to ultimately attain centricity.

### (5) Weight given to the value of reliability

If we are to evaluate the business feasibility of video content distribution service over the network from the viewpoint of content quality, it appears that the four factors discussed above, i.e., novelty, diversity, freshness

and centricity would be sufficient. However, under the new network environment where communications and broadcasting converge, broadcasting content enters the same arena. Because of this, we must consider one more element, i.e., “reliability.”

Broadcasting, in particular conventional TV broadcasting, for reasons related to the limitations of frequency, is licensed by the government for the use of the controlled bandwidth on a monopoly basis. Because of this, a single source broadcasts to a large number of unspecified people, with the same content being simultaneously provided to the audience with no means of feedback. As a media, therefore, broadcasting has come to have a disproportionately large influence on society.

The content offered through broadcasting predicated on such a business format is offered in the world of communications where the provision of content is basically bidirectional, recipients can be specified and content is sent or received at the time specified by the user. This phenomenon is referred to as a convergence of communications and broadcasting.

Given the business format that broadcasting is, it has been given a privileged position. In return, special regulations are applied to the content. As broadcasting constitutes one form of expression, the Constitution guarantees freedom of expression, and the Broadcast Law stipulates freedom in the editing of programs. On the other hand, however, because of the special characteristics of broadcasting including bandwidth limitations and the major influence that it has on society, broadcasting is subject to structural restrictions such as the principle of excluding multiple ownership of the media and regulations imposed on programming content.

The obligatory regulations applied to both NHK and commercial broadcasters under the Broadcast Law of Japan include: (1) rules for editing programs that guarantee public order and morals, political impartiality, truthful reporting and diversity in the opinions expressed, (2) principles for maintaining a balance among cultural, educational, news and entertainment programs, (3) setting and observing programming standards that govern broadcasting content, (4) establishing an organization for auditing programs, (5) emergency broadcasting in the event of natural disasters, etc. and (6) correcting or retracting any erroneous statements that are made.

Currently, there are practically no regulations governing the content that is provided over a communications network. However, broadcasters must provide content in compliance with the numerous regulations listed above. If any of these regulations are breached, broadcasters are required to issue corrections or take remedial measures. If such requirements are appropriate, corrections or remedial measures are actually made or taken. In the case of a serious breach, the broadcaster is liable to have its license revoked. While this may be a major operational inconvenience to the broadcaster, from the

perspective of the viewers, this system ensures the “reliability” of the content.

On a day-to-day basis, we are not really conscious of the reliability of the content that we are watching. Unconsciously, we have accepted the idea that the content is suitable for children and young people to see, that there is no political bias, and that there is no so-called “manipulation” involved. Of course, there are often arguments about the level of these standards. Nevertheless, at least, viewers are able to voice their concerns about anything they find obscene, politically biased, or manipulative. Accordingly, viewers are able to trust the content that is being broadcast to them and do not have to be constantly on guard.

A convergence of communications and broadcasting means that every day we see the phenomenon where broadcasting content for which reliability is guaranteed based on social systems is delivered together with communications content that is essentially not subject to any regulation over a communications network.

As explained above, with respect to the digital content provided through the convergence of communications and broadcasting, the greater the respective five values, i.e., (1) novelty, (2) diversity, (3) freshness, (4) centricity and (5) reliability, the greater the value to viewers. This means that viewers will stay with that content longer. In other words, they will watch more.

Even if the content offers the novelty of enabling viewers to enjoy the achievements of technological innovation, viewers will only stop watching if the same pattern of content with low diversity is provided. Viewers will soon tire of repetitive content that lacks freshness. Furthermore, if the content continues to be regarded as being merely minor content, it is unlikely to be included in viewers’ regular viewing patterns.

Conversely, if all of these hurdles are cleared, video content distribution service can be a service that can provide high-value content and can have considerable influence on society.

While I will not attempt to present a detailed analysis in this paper, the trend in the competition of video content distribution services at their beginning stages in Japan as described in Chapter I can easily be projected if the framework of this 5-stage model is used. In projecting the likely course of future developments, the application of this conceptual model to each case will prove to be effective to a certain extent.

### III The Long Tail of Digital Video Content in the US

#### 1 The Rapid Development of Video Content Distribution Services in the US

In the US, the legal structure makes no distinction between communications and broadcasting. While there

might seem to be little scope for discussion in the context of the “convergence of communications and broadcasting,” the fact remains that the phenomenon referred to above in Japan is being evolved in a more dynamic manner than it is in Japan. In this chapter, I would like to provide an overview of the recent status from the viewpoint of video content distribution services.

### **(1) Google, Apple and Amazon all enter the market**

In Japan, the largest search portal site, Yahoo! Japan, is the major player in video content distribution services. Similarly, in the US, the most important player in this field is the world’s largest search portal site, Google. In January 2006, at CES (the largest consumer electronics show in the US), Larry Paige, the founder of Google, announced the start of “Google Video.” Soon after his announcement, this video content distribution service was started in the form of a beta version (a test version offered with no guarantees of quality before formal completion).

With this system, a library of contributed content can be searched using the Google Video search system. In addition, fee-based content is also offered. This mechanism allows the contributors of the content to specify whether it can be viewed entirely for free or be available for purchase.

While the amount of content is steadily increasing, Google faces a problem similar to that faced by Yahoo! Doga in Japan, in whether the site can establish an identity as an independent video content distribution service or the site is positioned as part of the overall Google search platform.

Apple Computer achieved great success in the music distribution platform business by combining its iPod, iTunes and iTunes Store (iTS) products. Active business development is already underway to allow this success to spread to video offerings. Apple Computer first set its sights on TV programs as a content source equivalent to that of iTS in the music field, and began to distribute such content in October 2005. Currently, over 220 programs from more than 40 TV stations are offered, and more than a million video titles are sold every week. In addition, in September 2006, Apple Computer began to offer movie content through a tie-up with the Walt Disney Company.

In September 2006, Amazon.com, an electronic commerce site chiefly dedicated to the book business, started “Amazon Unbox,” which is likely to more clearly set out the business characteristics of a video content distribution service even though it is part of a gigantic brand site.

Amazon Unbox offers the content of movies and TV programs from most of the Hollywood studios as well as from more than 30 major TV stations. One episode of a TV program is offered at \$1.99, while movies cost between \$7.99 and \$14.99 to view over the Net. Users download the content to their PC hard disks, and then watch it either on the PC or on a portable video player.

A similar service is already being offered by America Online (AOL) through tie-ups with four companies including Sony Pictures Entertainment. However, Amazon Unbox is notable for having a much larger number of partners. The content being offered ranges from TV programs from the 1960s right up to programs that were broadcast only yesterday. Once these services get on course, Net-based pay-per-view video content distribution service will become an established and generally accepted means of purchasing content for Net users.

### **(2) YouTube attracts an enormous library of content**

Although Google Video and Amazon Unbox are new services known as video content distribution services, their business models are only extensions of those already established by Google and Yahoo in the past. In contrast, YouTube is notable in this field in that it is likely to establish a completely new business model.

YouTube was established in February 2005 in San Mateo, California, by three former employees of the “PayPal” online payment system. YouTube operates by collecting contributed video content and allowing its users to view such content. While only very little time has elapsed since the start of service, YouTube has already become the subject of a major takeover<sup>5</sup>.

In much the same way as GyaO in Japan, anyone can easily browse the content and then view it at no cost. A difference from GyaO, however, is that YouTube merely provides a venue. All video content offered at this site consists of that provided by contributors. Contributors can upload videos up to 10 minutes in length, and 100 M bytes in size. Basic rules are that contributions must be self-made video clips. There is a system that allows “directors” who pass a strict screening to contribute videos of more than 10 minutes in length.

The site began to grow rapidly at around the end of 2005. YouTube announced that as of April 2006, there were around 40 million videos in its library, with more than 35,000 clips being added every day. It was also stated that as of July, the total exceeded 100 million, with more than 65,000 clips being contributed from all over the world.

While its business model basically relies on advertising, and the site uses typical banner advertisements, it appears that these sources of revenue are not aggressively promoted. Rather, YouTube seems to be searching for a new business model that brings about innovation to existing Net-based advertising models. In August 2006, YouTube announced the “Participatory Video Ads (PVA)” scheme as a new type of advertising model, with Warner Brothers named as the first partner.

With PVA, advertisers produce content specifically for YouTube, which they then upload. YouTube members grade the advertising content in the same way as they do for the regular content, assigning up to five stars. They also share the content with other members and offer comments on the content with each other. Through these activities,

YouTube intends to produce a completely new type of advertising effect. If the advertisers can successfully participate in such processes, this site can serve as a media to directly establish communication between advertisers and participants (YouTube community members) in contrast to the passive advertising of TV commercials.

Many people in the advertising industry are watching this trial closely to see what kind of results it produces in the future.

The greatest risk facing YouTube that continues to grow is the issue of content copyright. YouTube's basic policy is to delete unlawful content as quickly as possible, and it has established a dedicated organization for this purpose. Nevertheless, the rate at which unlawful content is uploaded far outstrips the rate at which it is deleted. Accordingly, YouTube faces frequent lawsuits and other problems from the owners of the uploaded content. Whether YouTube continues to thrive as a new media based on its new advertising model, or whether it will face the same situation as the music content P-to-P (peer-to-peer) software companies face will depend entirely on how this software issue is handled.

### (3) YouTube produces ripples in Japan

In Japan as well, YouTube is having a considerable effect on the Net community. According to Nielsen Net Ratings, a company that provides data on the trends of Net users, as of May 2006, the number of Japanese users accessing YouTube exceeded 4 million per month. This constitutes 20 percent of the global total of 20 million people per month. Some say that Japanese users also contribute a considerable amount of unlawful content, and there have already been many requests to delete content originally broadcast on NHK, NTV, etc.

Under these circumstances, it is worth noting how Tokyo Metropolitan Television (Tokyo MX TV) is acting – it is uploading its “Blog TV” program content to YouTube. As described above, as part of their efforts to identify the relationships between broadcasting and the Internet, NTV and Fuji TV have established video content distribution sites. However, the approach of Tokyo MX TV, which is using an open video content distribution platform provided by YouTube that is similar to the Web 2.0 concept (a web site relying on user-driven development) on a timely basis, can be considered as an attempt to clarify how their broadcasting business can best be developed using an open network.

As described above, in the US, between the second half of 2005 and 2006, Google, Amazon, Apple and YouTube all launched large-scale video content distribution services one after another, making 2006 the “beginning of the age of video content distribution” in the US.

## 2 The Long Tail of Digital Video Content

When we look at the intense activity that led up to 2006 becoming the “beginning of the age of video content dis-

tribution” in the US, what meanings do these trends have in the context of the convergence of communications and broadcasting?

### (1) Content far outstrips viewer capacity

Among those providers contributing to the start of video content distribution that offers by far the largest amount of content is YouTube. As mentioned in Section 1, every day 65,000 video clips are uploaded to YouTube.

In Japan, viewers watch TV no more than an average of 4 hours per day. Even if we add to this the amount of time spent on the Internet (which is increasing from year to year), the amount of time that the average Japanese spends in front of a screen does not exceed 6 hours per day. YouTube limits its content contributions to a maximum of 10 minutes. Using this figure, a single viewer would be limited to watching fewer than 40 clips in any one day. During the same time, 65,000 clips will have been uploaded.

Looking at this in another way, if a TV station were broadcasting 24 hours a day, and if each of its programs lasted 10 minutes, the station could broadcast 144 programs a day. If we assume that there are 10 conventional TV stations in any one area, this would mean 1,440 programs would be broadcast in that area. If we add BS (broadcast satellite) and CS (communications satellite) broadcasts, we have 100 stations broadcasting 24 hours per day, which would be able to provide 15,000 10-minute programs. This figure falls far short of the 65,000 clips being uploaded to YouTube.

Of course, among the YouTube content, there are cases where different users upload the same program many times. Therefore, the number of purely original contributions would be substantially less. Nevertheless, the number of such contributions continues to pile up, now amounting to a total of more than 100 million programs. Consequently, the fact is that because the amount of uploaded material far exceeds an individual's viewing capacity, the vast majority of such material remains unviewed but still stored on the Net.

These 100 million items of content are accessed by more than 20 million viewers. When the launch of Apple's video content distribution service was announced on September 13 (Japan time), the most popular item of content on YouTube was viewed by about 150,000 viewers, while the second most popular had 89,000 viewers. If we compare this with 20 million people in Japan's metropolitan area all watching TV at the same time, a viewing rate of 10 percent would be 2 million viewers. Accordingly, YouTube viewing rates are really rather low.

### (2) Net distribution features low viewing man-hours

Positioned between Net content and TV/movie content are packaged media such as videos and DVDs, and time-shifted content captured with hard disk recorders. The number of items of such content is far greater than the

amount of TV or movie content that can be watched in any one day. However, the viewing man-hours (number of viewers x viewing hours) are lower than those for TVs or movies due to the limited number of content items, but are greater than those for Net content.

In Figure 1, the differences between the characteristics of these three types of digital content are shown in two-dimensional space, with the vertical axis indicating the value (viewing man-hours) and the horizontal axis indicating the number of content items.

Overall, digital content is assumed to create a power law distribution (generally referring to a distribution based on a  $y = a^x$  exponential function; here "a" is less than 1, and the larger the "x," the smaller the "y") or that close to a power law distribution in such a space. Broadcasting and movies are positioned at the head where the value is high, followed by packaged and time-shifted content.

The format adopted under movie and live syndications (where content is distributed through syndicators to different media with certain intervals) is either fixed package media such as VCR and CD/DVDs or that on a time-shifted basis, i.e., using time differences from the so-called "first window" (media that gives us the first opportunity to view content) such as first through conventional TV and then through CATV networks. Recently, we have seen the appearance of many types of time-shifted content (recorded content that can be viewed at any time). We can use iPod devices to view time-shifted content. In the UK, the BBC is promoting the use of "iPlayer" to enable the viewing of seven days of TV content over the Internet or cable connections.

The subsequent tail part that consists of content that users can view on demand contains several hundreds of millions of items of Net content, none of which has any great value as a single item of content. This is the long tail in the context of Web 2.0.

America's entry into the age of video content distribution, that is, 2006, has seen the almost instantaneous appearance of more than 100 million items of digital content. The current implication of such a phenomenon is that the long tail portion, which almost did not exist in the past, is added to the video content space, as indicated in Figure 1. To the extent that the current trends continue, the long tail will become longer and longer, which appears to be the development format of Net-based video content distribution service.

Here, let us look at these characteristics by using the framework of the five-stage model for the value of digital content, as described in Section 2, Chapter II.

Video content distribution services that are now appearing one after another generally appeal to viewers on the assumption of "novelty." Even if we discount the repeated contribution of content, especially unlawful content, from any aspects such as genre, type, nationality, language, artistic value or cultural value, there is no

room for doubt with respect to the excellent degree of "diversity" of Net content in comparison with broadcasting, movies or packaged content. Furthermore, broadcasting where programs are created 24 hours a day and content is replaced daily is no match for Net content offering (volume-based) "freshness" with 65,000 new items of content being added every day.

However, for the fourth factor, "centricity," we find that the situation changes considerably. Given the rather large amount of unlawful content and the fact that many contributors are relatively unskilled, even if we use an excellent search engine to select the best content based on detailed categories, we can only find content that is far short of the major content (that with a high level of centricity) or imitations of major content.

As the world of video content distribution service matures and as the skill of the contributors improves, we may usher in an era where the content that thrives rejects such analyses with a contemptuous smile. However, to the extent that we base our judgment on the current situation, it seems that such an era will take place far ahead in the future.

Finally, let us consider the fifth factor, "reliability." In comparison to broadcasting content, which is strictly

Figure 1. The Long Tail of Video Content

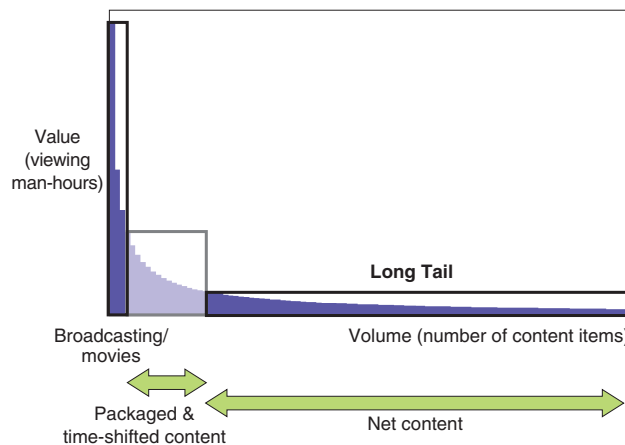
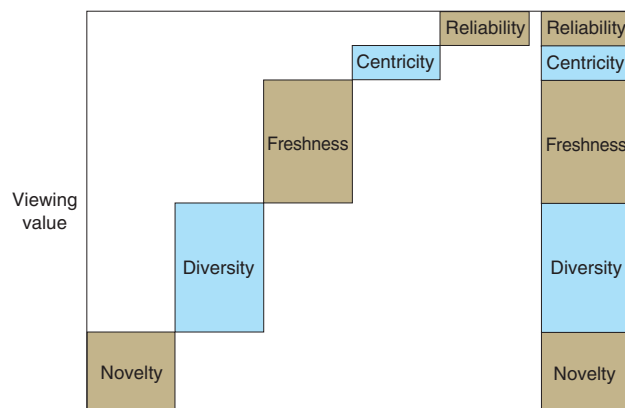


Figure 2. Factors Contributing to the Viewing Value of Contributed Video Content



Note: The area of each square represents the viewing value of each element.

regulated by the legal framework, and packaged content, which is selected wholly based on inescapable market mechanisms and is systematically ranked by market value, the reality of the world of Net content that is contributed without being governed by any special disciplines and often includes unlawful content and which is rated chiefly on the number of accesses, falls far short of providing us with reliability.

These analyses suggest that groups of content constituting the increasingly longer tail excel in novelty, diversity and freshness. However, the moment the criteria of centricity and reliability are applied, their rating drops a great deal (Figure 2).

## IV The Lofty Head of Digital Video Content: “Convergent Broadcasting”

### 1 The Lofty Head of Digital Video Content

In the future Net space, the long tail of digital video content will become longer and longer at an extremely fast pace. During this process, we can easily imagine that content portal sites that collect such content and content search sites will compete for market dominance. We can also easily imagine that such competition will chiefly evolve among American global Net companies such as Yahoo!, Google and Amazon that achieved success as part of Web 1.0 and are now enhancing their value by means of Web 2.0, and America’s newly emerging video content portal sites such as YouTube.

Without being confined to the US, the long tail of video content will spread all over the world including Japan. However, those who will collect such content and attain global “centricity” will be major players in the English-speaking countries because English is used for tags (an identifier assigned to a data group) and metadata (describing data-related information such as formats and item names).

Then, how do countries that construct Net space by using languages other than English, such as Japan, Germany, France, China and Korea, secure qualitative enrichment of video content in their own countries?

Video content that is positioned in the long tail will remain in such a population interminably. While it has high “diversity” and “freshness,” it is difficult for such content to attain “centricity” and “reliability.” “Centricity” is achieved by portal sites or search sites, and not by individual items of video content.

Then, what is the “centricity” of content that is selected and ranked daily at a remarkable pace in search sites or portal sites? The center that changes daily according to the number of hits and the number of accesses is probably “enjoyable” content, but is not necessarily “correct” content. Of course, there will be

many arguments about what constitutes “correct” content. Nevertheless, the search mechanisms themselves are not designed to incorporate intent to observe any systematically established order or sense of value.

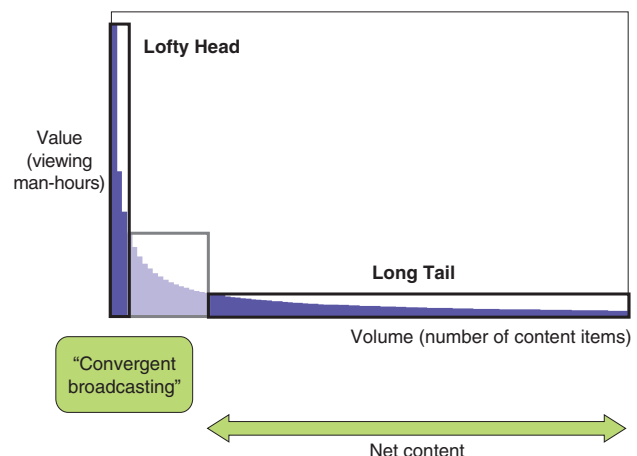
We now face a situation in which the sense of value has already gone beyond the stage of diversification, and a phenomenon that can be described as the scattering of the sense of value has been occurring. What is necessary in such a society that gives the highest priority to safety and security is the effort to identify and maintain the “correct,” centric value from some perspective other than popularity.

It had become possible quite a while ago to view TV content through a PC monitor. Now, we can view PC content on a TV screen without any special setup. I watch both GyaO and Yahoo! Doga video content on a large-screen display in the living room by connecting a PC to a TV. I think that it will not be too long before we see the appearance of a TV with a built-in PC that enables us to view video content in the same way as for terrestrial digital TV content by a remote controller. Actually, manufacturers seem to be moving in this direction. This suggests that the convergence of communications with broadcasting will also occur in the field of terminals.

When such a viewing environment is achieved, where each person has his/her own video display, i.e., a TV to view content, what is the appropriate status of “centricity” in such a video content space? In addition, what is the source of “reliability?”

As such, an exceptionally amazing growth of the long tail of video content casts concerns over what “centricity” and “reliability” should be. The answer to such questions is “convergent broadcasting.” “Convergent broadcasting” intends to create the lofty head, as opposed to the long tail, in Net space (Figure 3). The number of content items included in the lofty head population is fewer as compared to that of the largely lengthened long tail, but the content value is incomparably high.

Figure 3. The Long Tail and Lofty Head of Video Content



## 2 Concept of “Convergent Broadcasting”

### (1) Broadcasting’s four functions and communications’ four layers

Except for sales activities in which commercial broadcasters solicit advertising fees and public broadcasters collect reception fees, broadcasters generally perform the following four functions: (1) production to edit and create broadcast programs, (2) programming based on the established policy and in accordance with viewers’ tastes, (3) sending such programs converted to broadcast radio waves to the transmission network and (4) physically transmitting broadcast radio waves.

In the case of communications, these processes are equivalent to four layers, i.e., the content layer, platform layer, network layer and physical network layer (Figure 4).

Moves towards convergence and/or collaboration between communications and broadcasting have started to give rise to new types of services that can be referred to as “convergent services,” most of which are on the side of communications in these two fields. These services are video content distribution services using broadband communications networks.

Specifically, as mentioned in Section 1, Chapter II, these include On Demand TV and Hikari Plus TV, which are broadcast using telecommunications services; rapidly growing GyaO and Yahoo! Doga; Dai2 NTV operated by a broadcaster and handling both the production of content and transmission; and Fuji TV On Demand in which the production of content and transmission are separate and transmission is handled by ISPs, etc.

As shown in Figure 4, these services use broadcasting content or video content created for each channel just as

in broadcasting on the content layer. However, on the network and physical network layers, they evidently use communications infrastructure (IP networks). If I dare to make a distinction between communications and broadcasting on the platform layer, content created for each channel in a broadcasting-like manner is distributed by using the communications-like content distribution platform.

### (2) “Convergent broadcasting” as the lofty head

As these convergent services are now in the beginning stages and are exposed to the Sturm und Drang of start-ups, we do not yet have a definite picture of the resulting industry structure. Nevertheless, I have attempted to classify these services so as to clarify the concept of “convergent broadcasting” as a means of creating the lofty head of digital video content, which was suggested in Section 1.

Table 2 shows the results of such attempts and classifies the convergent services into four groups: (1) posting-type video content distribution, (2) self-programming type video content distribution, (3) re-transmission type broadcasting using telecommunications services and (4) “convergent broadcasting.” While services falling under the first three groups are already available, (4) “convergent broadcasting” provides only a conceptual overview. Even among the first three groups, there are, for example, service formats that mix (1) posting-type video content distribution and (2) self-programming type video content distribution. Accordingly, I would like to use this classification as a conceptual model for clarifying the concept of “convergent broadcasting.”

A typical example of (1) posting-type video content distribution is YouTube, that of (2) self-programming

Figure 4. Positioning of Communications/Broadcasting Converged Services

Domain Layer	Communications	Converged services	Broadcasting												
Service layer	<table border="1"> <tr> <td rowspan="3">Services</td> <td>Customer service</td> </tr> <tr> <td>ISP service</td> </tr> <tr> <td>Marketing</td> </tr> </table>	Services	Customer service	ISP service	Marketing	<table border="1"> <tr> <td>Customer service</td> <td rowspan="3">Services</td> </tr> <tr> <td>Advertising</td> </tr> <tr> <td>Marketing</td> </tr> </table>	Customer service	Services	Advertising	Marketing	<table border="1"> <tr> <td>Customer service</td> <td rowspan="3">Sales activities</td> </tr> <tr> <td>Advertising</td> </tr> <tr> <td>Billing/payment</td> </tr> </table>	Customer service	Sales activities	Advertising	Billing/payment
Services	Customer service														
	ISP service														
	Marketing														
Customer service	Services														
Advertising															
Marketing															
Customer service	Sales activities														
Advertising															
Billing/payment															
Content layer	<table border="1"> <tr> <td rowspan="2">Content</td> <td>Outside content</td> </tr> <tr> <td>Self-produced content</td> </tr> </table>	Content	Outside content	Self-produced content	<table border="1"> <tr> <td>Outside production</td> <td rowspan="2">Production</td> </tr> <tr> <td>Self-production</td> </tr> </table>	Outside production	Production	Self-production	<table border="1"> <tr> <td>Outside production</td> <td rowspan="2">Production</td> </tr> <tr> <td>Self-production</td> </tr> </table>	Outside production	Production	Self-production			
Content	Outside content														
	Self-produced content														
Outside production	Production														
Self-production															
Outside production	Production														
Self-production															
Platform layer	<table border="1"> <tr> <td rowspan="3">Platform</td> <td>Security management</td> </tr> <tr> <td>Content management</td> </tr> <tr> <td>Billing/payment</td> </tr> </table>	Platform	Security management	Content management	Billing/payment	<table border="1"> <tr> <td>Self/mixed programming</td> <td>Programming</td> </tr> <tr> <td>Content distribution</td> <td>Distribution</td> </tr> </table>	Self/mixed programming	Programming	Content distribution	Distribution	<table border="1"> <tr> <td>Mixed programming</td> <td rowspan="2">Programming</td> </tr> <tr> <td>Self-programming</td> </tr> </table>	Mixed programming	Programming	Self-programming	
Platform	Security management														
	Content management														
	Billing/payment														
Self/mixed programming	Programming														
Content distribution	Distribution														
Mixed programming	Programming														
Self-programming															
Network layer	<table border="1"> <tr> <td rowspan="2">Network</td> <td>Access network</td> </tr> <tr> <td>Backbone network</td> </tr> </table>	Network	Access network	Backbone network	<table border="1"> <tr> <td rowspan="2">Network</td> <td>Access network</td> </tr> <tr> <td>Backbone network</td> </tr> </table>	Network	Access network	Backbone network	<table border="1"> <tr> <td>Transmission</td> </tr> </table>	Transmission					
Network	Access network														
	Backbone network														
Network	Access network														
	Backbone network														
Transmission															
Physical network layer	<table border="1"> <tr> <td>Physical network</td> </tr> </table>	Physical network	<table border="1"> <tr> <td>Physical network</td> </tr> </table>	Physical network	<table border="1"> <tr> <td>Transmission network</td> </tr> </table>	Transmission network									
Physical network															
Physical network															
Transmission network															

**Table 2. Convergent Services in the Communications Sector and “Convergent Broadcasting”**

	Posting-type video content distribution	Self-programming type video content distribution	Re-transmission type broadcast using telecommunications services	“Convergent broadcasting”
License	Not required	Not required	Broadcast license	Broadcast license
Production/compilation	Contribution type; outside production only	Self-programming; chiefly outside production	Re-transmission	Self-production; self-programming
Programming	Nonlinear	Nonlinear	Linear	Linear
Broadcast regulations	None	None	Broadcast regulations principally for programming	Broadcast regulations for editing and programming
Transmission	Software only	Software only	Set-top box (STB)	Software only
DRM	—	DRM	DRM essential	DRM essential
Network	The Internet	The Internet	IP network	Open network community
Major revenue	Promotion	Advertising	Usage fees	Advertising
Secondary revenue	Advertising, etc.	Usage fees, etc.	Advertising	Usage fees, etc.

Notes: (1) Separate studies are necessary for public broadcasting. (2) DRM = digital rights management

type video content distribution is GyaO and that of (3) re-transmission type broadcasting using telecommunications services is BBTB. However, such an actual example is not available for (4) “convergent broadcasting.” I have made such a classification simply to explain the requirements of the mechanisms giving birth to the lofty head of digital video content.

### (3) Broadcasting license as a source of reliability and centrality

The first requirement for “convergent broadcasting” to become the lofty head of video content, which will constitute the most difficult restraint, is to acquire a broadcasting license. This may sound contradictory in light of the Japanese legal framework that makes a sharp distinction between communications and broadcasting. Nevertheless, I believe the requirement is worth examining with a view toward applying a scheme equivalent to the current broadcasting license system to communications services in order to launch the lofty head equipped with both reliability and centrality in the face of rapidly increasing video content in the long tail population.

We already have the Law Concerning Broadcast on Telecommunications Services. Based on this law, licensed providers are distributing broadcast content other than terrestrial broadcast content in the format of re-transmission by using communications networks. This kind of scheme could also be applied to “convergent broadcasting.” In return, “convergent broadcasting” will submit to the strict broadcast regulations described in Section 2, Chapter II, which are not applied to communications services such as GyaO and YouTube. However, being licensed by the government does not imply any threats to basic rights such as editorial freedom and/or independence. Rather, we should think in such a way that the government license will guarantee editorial freedom and independence.

### (4) Self-produced content

Second, the content handled in “convergent broadcasting” must be self-produced. In the case of posting-type video content distribution such as YouTube, the site operator simply provides the platform, and the content is produced by contributors. While GyaO partly handles self-produced content such as “News GyaO,” its mainstream business is to edit the content produced by content partners according to channels designed by GyaO and separated by genre such as dramas and animation. Similarly, while viewers may consider Yahoo! Doga as a video search site platform, its major business activities also include the self-editing of the content contributed by a great number of partners.

Broadcasting using telecommunications services principally consists of the re-transmission of broadcast content other than terrestrial content.

In contrast, “convergent broadcasting” that should be in the lofty head should naturally consist of the content equivalent to broadcast content based on self-production and self-programming. Accordingly, broadcast regulations are applicable not only to self-edited content but also to all content produced, as well as to all aspects of activities.

Broadcasters that are most likely to create the self-produced content of “convergent broadcasting” from the perspective of management resources are terrestrial broadcasters. While Japanese terrestrial broadcasters are blessed with a favorable environment in terms of the industrial structure, at the same time they are always exposed to rapid technological innovation and potential risks of system change. In Japan, the problem of skipping commercials has appeared with the spread of DVD recorders/players with large HDD (hard disk drive) memory capacities. In the US, moves have also emerged to issue a warning against the impact that the integration of broadband, wireless, search engine and network technologies may have on TV commercials<sup>6</sup>.

In view of these moves, it would be possible to adopt the option of staying within the framework of terrestrial broadcasting by strictly preserving the current terrestrial broadcasting system. However, it is also worth exploring the strategy of participating in “convergent broadcasting” by taking advantage of overwhelming predominance that terrestrial broadcasters now have in terms of the ability to manage the production of video content (broadcast programs). Similarly, “convergent broadcasting,” if this business format is feasible, will serve as a major turning point for groups/companies producing broadcast content in terms of business strategies.

In any case, because “convergent broadcasting” chiefly uses self-produced content, this new format of broadcasting will bring about new business opportunities (or risks) to companies engaged in the creation of content.

Players in the “convergent broadcasting” field are not necessarily limited to existing broadcasters. Rather, as major participants engaged in the production of content used in “convergent broadcasting,” expectations are given to the appearance of creators who are willing to compete in terms of quality of content without being bound by the existing framework. In the past, the policy to promote the production of content adopted in Japan repeatedly aimed at providing support from the supply side for the development of content creators who could compete in the world market. However, the emergence of “convergent broadcasting” will provide the demand-pull support to talented creators by offering a wide variety of venues to display their abilities.

In the world of networks, “convergent broadcasting” appears as the first window for viewing content; the content used there can generate added value as packaged or time-shifted content, and such content may eventually constitute the long tail. A desirable environment to make full use of this industrial structure is that in which talented creators can globally compete using their creativity as a weapon. My secret desire is to see that this area can also provide opportunities for the latent abilities of freeters (freelance part-time workers) and NEETs.

### **(5) Linear services**

The third requirement is that “convergent broadcasting” should provide linear services for which the program schedule is created. The EU (European Union) plans to revise its current “TV without Frontiers” Directive to the Audiovisual Media Services Directive. This proposed revision distinguishes between linear services and non-linear services in establishing the level of regulations.

Audiovisual media services refer to those providing video content through telecommunications networks for the general public for purposes such as news reporting, education and entertainment. There are two types of media service providers that are responsible for selecting and editing the content for these services and decide the program schedule: linear and non-linear media service providers.

For linear audiovisual media services, media service providers decide when a specific program is to be transmitted and create a program schedule accordingly. In contrast, for non-linear audiovisual media services, users decide when a specific program is to be transmitted based on the content selected by media service providers. Various regulations imposed under the TV without Frontiers Directive such as regulations on program composition, advertising regulations and regulations on pornographic and violent programs are applied to linear audiovisual media services. However, non-linear audiovisual media services are subject to a lower degree of such regulations.

In sum, services such as those provided by YouTube and GyaO, in which users decide when to access the content and streaming video starts when a user accesses it, are non-linear services. Traditional TV broadcast services in which the program schedule is pre-determined are linear services.

If “convergent broadcasting” is to attain both reliability and centrality, services that are transmitted depending on the intention of individual users are not desirable. “Convergent broadcasting” should provide linear service where the program schedule is pre-determined for 24 hours, and such schedule is provided by newspapers in radio and TV program listings and electronic program guides (EPGs). Even if it is difficult to include the program schedule in newspapers and if such schedules are only released on the Net, the service format must be that of linear services.

### **(6) “Software only” services via open community networks**

The fourth point is that “convergent broadcasting” should provide “software only” (no need to install special devices) services offered through open networks such as the Internet. IP multicasting provided in accordance with the Law Concerning Broadcast on Telecommunications Services uses IP (Internet Protocol). However, rather than using the completely open Internet, it partially uses a closed IP network. Accordingly, viewing such broadcasts requires a set-top box (STB) although special antennas or tuners are not necessary.

In contrast, the content provided by video content distribution services such as YouTube and GyaO can only be viewed with software through the open Internet. Currently, although IP multicasting provides superior services, the number of viewers is not increasing. Nevertheless, GyaO and YouTube could acquire as many as 10 to 20 million viewers within one to two years. Low barriers and the ease of viewing content are considered substantial contributors to such popularity.

Accordingly, in order for “convergent broadcasting” to attain centrality in terms of the number of viewers while maintaining reliability, focus should be placed on ease of use by enabling viewing only with software, rather than using a viewing format involving a closed network and requiring STB installation.

“Software only” services are possible even with the currently available technologies although the video quality is compromised. However, because this is broadcasting, a quality equivalent to that of TV broadcasting is at least required, and eventually high definition (HD) quality will be solicited. To provide programs in the linear service format (not on demand) via an open network with high video quality and security, we will face high technological hurdles. In order to achieve “convergent broadcasting,” these hurdles must be overcome by rapid research and development activities.

Because an adequately large-sized open community architecture is required to overcome these hurdles, expectations are placed on technologies employed for the development of the full IP next generation networks (NGNs), which is currently planned. This is the reason why I used the expression “open community network” instead of open network or the Internet as the fourth requirement.

### **(7) DRM (digital rights management) functions**

To compensate for such open network architecture, “convergent broadcasting” must be equipped with digital rights management (DRM) functions that strictly control copyrights as the fifth requirement. In the case of YouTube (posting-type content distribution), contributors assume responsibility to deal with copyrights. The basic rules are that contributed content is fully owned or the issue of copyrights has been cleared. However, the current situation of YouTube seems different from what these basic rules anticipate.

About 65,000 content items are uploaded to YouTube daily, and a number of content items taken from Japanese TV programs are also posted. For example, NHK requested removal of its programs designed for children that were uploaded without its permission in May 2006, and such programs were removed.

Nevertheless, the actual situation is that more than 1,000 video clips created by NHK can always be viewed on YouTube, sometimes as a single clip and sometimes in parts. While I can hardly believe that these clips were posted with NHK’s permission, there are no signs of a decline in such unlawful postings.

As described in Section 1, Chapter III, YouTube established a dedicated team for the removal of unlawful content as soon as it was detected. However, their efforts appear to lag way behind the appearance of such content. Because the aim of “convergent broadcasting” is to attain reliability, this situation must be avoided. To achieve this purpose, strict DRM mechanisms are essential.

Technically and institutionally, many years may be required to overcome such demanding requirements – providing strict DRM mechanisms for video content viewed only with dedicated software via open community networks. There is no doubt that whether we can meet these requirements constitutes essential conditions

for “convergent broadcasting” to truly become the “convergent broadcasting” that has been proposed.

### **(8) Anonymity vs. registered aliases of viewers**

The sixth point is that “convergent broadcasting” should not be based on anonymity. Because posting-type video content distribution services are predicated on anonymity, much of the uploaded content could be unlawful. In addition, innovations that can maximize the value added by interactive services that fully utilize the features of broadcasting services provided on the Net are expected to support “convergent broadcasting.”

Because “convergent broadcasting” aims to establish the lofty head on the Net space based on reliability, all of its content must be reliable according to the concept of maintaining public order and morals, and political impartiality. In other words, for viewers, this is a service in which reliable content is supplied by reliable providers.

As reliability is the essential precondition of this service, is it possible to expect viewers who want to participate in this reliable network to pay compensation, i.e., guarantee their own reliability? This means that viewers must partially waive their anonymity. However, this does not mean the requirement of disclosing one’s real name. An approach of the use of registered aliases vs. real names, rather than total anonymity vs. total onymity, should be taken in establishing the identity of viewers on the Net.

Specifically, viewers of “convergent broadcasting” must register their real names when they receive viewing software. At the time of registration, they will be asked for their tastes and preferences to some extent in addition to essential information, i.e., address, name, date of birth and gender. While it is left up to viewers to what extent they answer such questions, the more plentiful the information on tastes and preferences, the greater the value that can be obtained through interactive services. This value will grow through an accumulation of interactive information exchanged.

However, these exchanges will always be separated from four essential items of personal information and will be connected only with attribute information that is anonymous. In other words, neither anonymity nor one’s real name is involved, and viewers are treated by aliases.

In this case, the database that is connected with the four items of personal information should be managed by a trusted third party (TTP). However, if a viewer is suspected of committing a crime or violating the public order and moral standards of this “reliable” community, the TTP database is searched to reveal the viewer’s real name according to the procedures pre-determined by the community.

If the culture of the use of aliases is penetrated, it is easily imaginable that broadcasting advertising would enter a completely new stage to produce unprecedented effects.

### (9) Business model based on advertising revenue

As the seventh point, it is desirable for “convergent broadcasting” to adopt a business model relying on advertising revenue in the same way as in traditional broadcasting. However, separate studies of a business model will be needed if NHK (a non-commercial, public broadcaster) is to adopt this “convergent broadcasting” format.

Broadcasting using telecommunications services requires viewers to pay for the use of telecommunications services. As this could impose a burden on viewers, “convergent broadcasting” should avoid this type of fee scheme. Instead, it should adopt a business model that uses the time value of advertising that varies according to time frames as the source of revenue.

In the case of non-linear broadcasting, because when content is viewed depends upon the viewers, the value of content is mostly determined based on its absolute value. However, if the format of linear broadcasting can also be adopted on the Net, time will begin to take on value.

A program that is broadcast at 10 a.m. on Tuesday will have a lower value than one that is broadcast at 8 p.m. on Sunday. What is important is that if the linear service format is adopted, time frames that were insignificant in the past suddenly take on advertising value. The same effect could be generated based on the content on the Net. In addition to the value of the content itself, time value would begin to become part of advertising value.

“Convergent broadcasting” must satisfy the seven requirements mentioned above in order to form the lofty head of video content. While these requirements are necessary conditions to realize the business format of “convergent broadcasting,” just these hurdles alone are high enough to invite criticism as being absurd. To establish fully adequate conditions, studies on further diverse aspects are required.

Among these, the most essential question would be: “Is ‘convergent broadcasting’ enjoyable?” In other words, the important point is whether “convergent broadcasting” that is provided based on these requirements can actually attract a sufficient number of viewers.

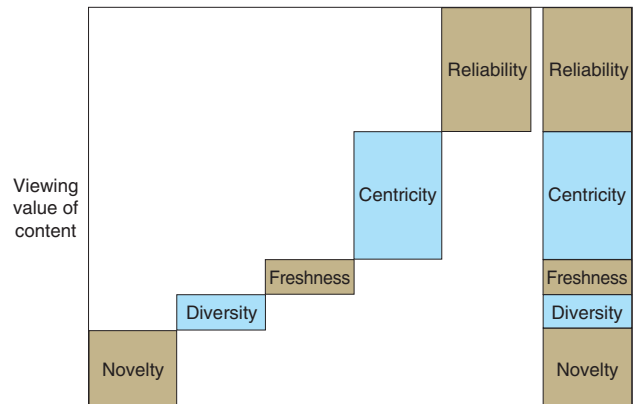
So far, I have examined “convergent broadcasting” from the perspective that the lofty head can be formed in the face of the explosive growth of the long tail of video content. The major concept in this examination is reliability and centricity supported by reliability (Figure 5).

However, whether video content based on reliability can be fully enjoyable depends on the talents of participating content creators and producers.

## V The Ubiquitous Network and “Convergent Broadcasting”

The author has published several papers concerning the ICT (information and communications technology)

Figure 5. Factors Contributing to the Viewing Value of “Convergent Broadcasting”



paradigm of the ubiquitous network over more than five years since first writing “Ubiquitous Networking: Towards a New Paradigm,” NRI Papers, No. 2, April 2000, under joint authorship with Akihisa Fujinuma<sup>7</sup>. Currently, the ubiquitous network paradigm has been adopted as the government policy for information and communications in Japan in the form of the u-Japan policy. This paradigm is also being shared globally as a new paradigm of the information and communications policy principally among Asian countries such as Korea.

### 1 An Important Constituent in the Ubiquitous Network Concept

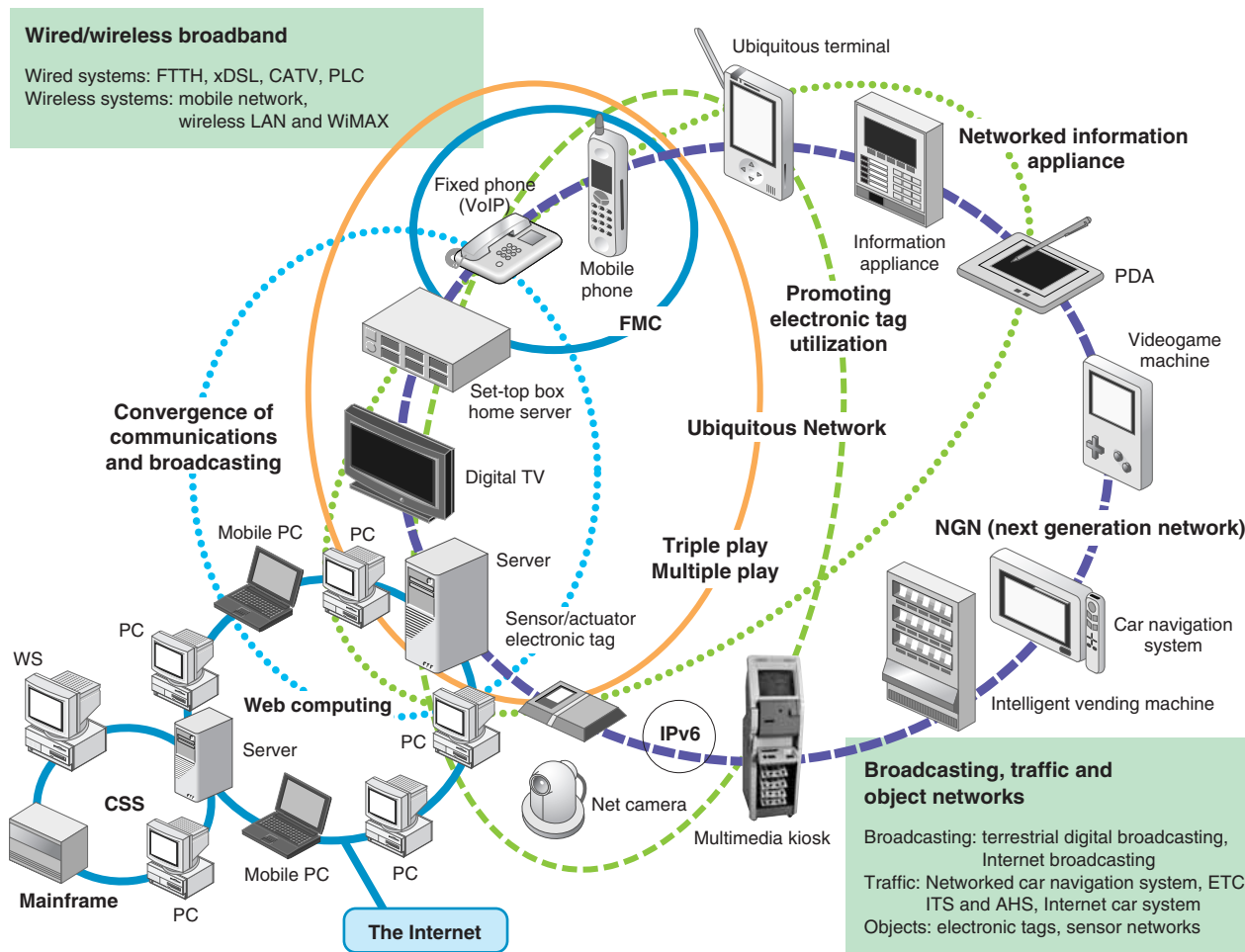
Currently, the field of information and communications policy in Japan has seen new themes appearing one after another. These include FMC (fixed mobile convergence), triple play (service providing voice, video and data communications via a single line), multiple play, networked information appliances, the promotion of electronic tag utilization and the development of full-IP NGN. These themes can be considered as steps in each phase towards establishing an environment of using the ubiquitous network.

With more and more specific goals being identified and achieved for each theme in the individual phases, the themes are becoming more important than the ubiquitous network ICT paradigm itself. This situation suggests that we are in the process toward maturity where the ICT paradigm will become a part of reality.

The author believes that, as shown in Figure 6, the theme of convergence of communications and broadcasting is also an important step towards the progress of ubiquitous networking. In this sense, although the term “ubiquitous network” was not used in the title, this paper also makes up a part of the series of the ubiquitous network concept I have so far advanced.

While this paper proposes a new business format of video content distribution, i.e., “convergent broadcasting,” this proposal will also no doubt contribute to the discussions about the NGN included in Figure 6.

Figure 6. Ubiquitous Networking and Convergence of Communications and Broadcasting



Notes: AHS = advanced cruise-assist highway system, CSS = client/server system, ETC = electronic toll collection system, FMC = fixed-mobile convergence, FTTH = fiber-to-the-home, IPv6 = Internet Protocol Version 6, ITS = intelligent transport system, LAN = local area network, PC = personal computer, PDA = personal digital assistant, PLC = power line communications, VoIP = Voice over Internet Protocol, WiMAX = worldwide interoperability for microwave access, WS = workstation, xDSL = various digital subscriber lines

NGN discussions are evolving from a variety of aspects. For example, NTT has its assumptions for the next-generation network infrastructure development; KDDI and SoftBank (NTT’s competitors) have their concepts of the full-IP infrastructure development; ITU (International Telecommunication Union) is developing next-generation network standards; and NSF (the National Science Foundation) in the US is developing next-generation IP standards under the GENI (Global Environment for Network Innovations) project. How these discussions will develop and how specific approaches will be taken is still unpredictable.

In any event, whatever methods are adopted to develop the NGN, nothing begins if users do not use such infrastructure. I hope this “convergent broadcasting” concept can also offer some suggestions in future NGN discussions.

## 2 Improvement of Quality of Society

With the history of more than ten years after its commercialization, the Internet has fully penetrated into global

society as a social system infrastructure. We can never return to a society without the Internet.

While the Internet has firmly secured its position as global network infrastructure, is it functioning appropriately as infrastructure for social systems? Even though the most advanced global network is in place, most rules, regulations and practices that govern social systems remain unchanged without any necessary modifications.

“u-Japan” (ubiquitous network Japan) in the u-Japan policy established in 2004 not only simply envisions the ICT environment based on the ubiquitous network, but also depicts a society where the ubiquitous network provides ICT solutions to a number of issues that Japanese society and economy must face as they approach the 2010s. These problems include a falling birthrate and aging, medical and welfare issues, safety and security issues and global environmental issues.

In the Japanese society of the past, a greater focus of economic activities was placed on improving the quality of life (QOL) of individuals. In the 1970s, Japanese economy achieved high growth and, consequently in the 1980s, the income level increased substantially

even in light of international standards. However, in reality, we still have small living spaces, long commute times, long work hours and difficulty in obtaining leisure time.

To improve this situation, all those concerned including companies, the government and consumers considered what truly affluent life is and what should be done to improve the QOL of individuals, and devoted considerable efforts for this purpose. So far, ICT has played extremely significant roles to this end.

However, as we enter the 21st century, Japan is heading towards a society with a declining and aging population at the world's fastest pace and, during this process, is facing unforeseen problems such as the need for maintaining safety and security and the issue of jobless young people. What becomes important under these circumstances is the sense of value that stresses the improvement of the quality of society (QOS) over the QOL. Without efforts to thoroughly change not only individual lives but also the architecture (basic design) of social systems and to improve the overall quality of society, the QOL of individuals will never improve.

As the ubiquitous network, ICT is expected to play an important role to improve QOS and it should be used in such a way that each person having ICT literacy promotes the improvement of QOS in addition to improving their own QOL. Furthermore, all of the processes used in achieving this goal will provide new business opportunities for companies.

For social systems to move in this direction, a complete shift is necessary for an institutional design paradigm.

The concept of "convergent broadcasting" is based on the idea that because the explosive growth of the long tail of video content alone does not contribute to the improvement of the QOS while it can improve the QOL, the lofty head equipped with reliability and centrality is necessary also in the network space so that social order and an appropriate sense of value can be maintained.

The first requirement in achieving "convergent broadcasting" is the establishment of a new licensing system for services in which self-produced content in a linear format is distributed only with viewing software equipped with DRM functions. This requirement means a major paradigm shift in the broadcast licensing system that grants monopolistic licenses based on the limited number of available frequencies. Licenses granted under the situation without frequency limitations must depend on the nation's sovereign rights, and will be extremely difficult to manage. In an environment where there are no frequency limitations and any number of broadcasting licenses can be issued, is there an appropriate number of licensed broadcasters? If so, the next question is who and how such a number is determined.

If any attempt to systematically secure reliability through a reform of the legal framework for granting broadcast licenses presents hurdles too high to overcome, is it possible, for example, to secure reliability from "convergent broadcasting" providers in the network space by having them voluntarily establish broadcast rules and guidelines?

Now that the Internet and the ubiquitous network are becoming social infrastructure, any efforts to develop a new architecture that brings about responsibility equivalent to that in real society in the network space where unique freedom prevails mean answering these essential questions. I cannot help feeling that we do not have sufficient time to deliberate to make such decisions and certainly not to postpone such decisions.

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#### Notes

- (1) "Report of the Panel on Frameworks of Communications and Broadcasting," Ministry of Internal Affairs and Communications, June 6, 2006.
- (2) Teruyasu Murakami, "'Tsushin hoso kon' ni sanko shite: 2010-nen kaika he 'tane ha maita' (Participated in the 'Panel on the Frameworks of Communications and Broadcasting;' 'Seeds sown for blooming in 2010'), Nikkei Net, June 30, 2006 (<http://it.nikkei.co.jp/business/news/index.aspx?n=MMIT04000013062006>). Nikkei Digital Core, "Tsushin hoso kon' menba ga benkyokai; jiminto repooto ha 'kibishii naiyo' (A study meeting by members of the Panel on the Frameworks of Communications and Broadcasting;' 'firm stance' seen in the LDP report), Nikkei Net, June 23, 2006 (<http://it.nikkei.co.jp/business/special/ronten.aspx?n=MMITba001023062006>).
- (3) Liberal Democratic Party of Japan, New Komeito, Chief Cabinet Secretary and Minister for Internal Affairs and Communications, "Agreement among the Government and Ruling Parties on the Frameworks of Communications and Broadcasting," June 20, 2006.
- (4) Ministry of Internal Affairs and Communications, "Process Program for the Reform of the Communications and Broadcasting Field," September 1, 2006.
- (5) The acquisition of YouTube by Google was reported after the completion of this paper. However, because this acquisition does not basically affect the nature of the issues presented in this paper, no special mention was made about this event.
- (6) *Life After the 30-Second Spot*, Joseph Jaffe
- (7) Director of NRI's Advanced Information Technology Division as of February 2000; currently NRI's President, CEO & COO.

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