

Changes in Services by Communications-Broadcast Convergence Solutions

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Abstract

Changes brought about by the convergence of communications and broadcasting are not limited to the improvement of diversity and convenience of the services provided for end users (the general audience). It is also expected to contribute to the advancement of public and infrastructure-related services including disaster measures. On the other hand, the communications/broadcasting convergence will also lead to various paradigm shifts in the business domain by enhancing the socioeconomic foundations, and it is also expected to bring economic benefits by promoting various business models. Under these circumstances, NEC is taking the lead in catching the trends of the times and is deploying next-generation video solutions based on a total convergence of digital broadcasting and next generation networking technologies.

Keywords

communications/broadcasting convergence, TV communities, consumer behavior, contents production

1. Introduction

Over the past ten years since people began to speak about the convergence of communications and broadcasting, the network has become more digital, more broadband and more mobile. Broadcasting has also become digitized and bi-directional, and a digital broadcasting service for cellular phone terminals will begin in April 2006. While the past decade is characterized by great progress in technical infrastructures to support the communications/broadcasting convergence, the coming decade is expected to be the period of entry into the NGN (Next Generation Network) age, in which the FMC (Fixed/Mobile Convergence) services will evolve and the communications/broadcast convergence services at the higher level of FMC will cause dramatic changes in both the business and social aspects of our lives. In the year 2000, Prof. Negroponte at MIT proposed the “Negroponte Switch” hypothesis, which was a prediction that the audio applications that have mainly been using fixed networks would switch to wireless networks and the video applications that have mainly been using wireless networks including broadcasting would switch to fixed networks including optical networks. This hypothesis is already beginning to be realized as the result of the advancement of the digitization of communications and broadcasting. Therefore, the “communications/broadcasting convergence” may be regarded essentially as a synonym of the “Negroponte switch” hypothesis. Then what kind of specific qualitative change in the business model does the communications/broad-

casting convergence offer? The wired video distribution service is a typical example of visible change, but how are the business models changing under these trends? We will consider the qualitative changes in these business models in the following.

2. Qualitative Changes in Business Models Brought about by Communications/Broadcasting Convergence

Let us see how the communications/broadcasting convergence is resulting in essential step by step changes in businesses and their systems. First of all, we will begin by considering the applications level by dividing it into three layers.

2.1 Positioning of Communications/Broadcast Convergence Services

As shown in **Fig. 1**, from the viewpoint of communications, the communications/broadcast convergence services are positioned at the higher level of the FMC services provided by the NGN. From the viewpoint of broadcasting, it is positioned at the higher level of the digital broadcasting services. Since the digital broadcasting services for both the fixed and mobile receivers have already begun, the convergence or linkage of “fixed” and “mobile” is already started in the broadcasting services as well as in the communications services. In addition, new services based on the NGN foundations such as IP broadcasting based on the Internet technology are about to start up. The communications/broadcasting convergence has already

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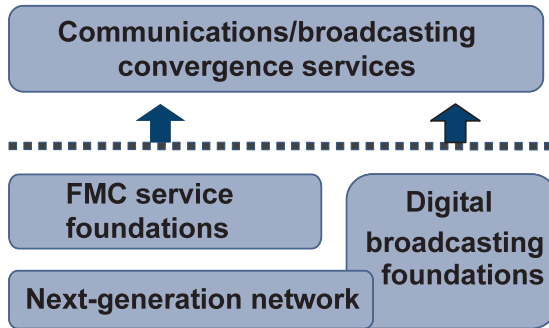


Fig. 1 Positioning of communications/broadcasting convergence services.

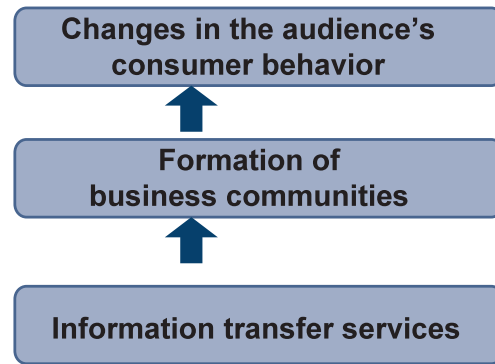


Fig. 2 Layers of communications/broadcasting linked services.

started partially in the domain of the distribution services, which are provided from various aspects such as the video distribution services via optical cables and the ADSL and the Telephone/Internet connection service through CATV.

Next let us consider the convergence or linkage of services enabled by the communications/broadcasting convergence services provided upon communications based foundations, which include the NGN and FMC service foundations and the broadcast based digital broadcasting foundations shown in Fig. 1. For this purpose, we first separate the services into the following three levels;

- 1) information transfer services that characterize the mode of information exchange;
- 2) formation of business communities constructed in support of various party interests;
- 3) changes in the consumer behavior of the audience.

After this, we will discuss about the requirements for the management systems that support these services (see Fig. 2).

2.2 Information Transfer Services: The Evolution of New Service Foundations via the Convergence of Synchronous and Asynchronous Communications

We will consider the qualitative changes that have resulted from the communications/broadcasting convergence from a perspective taken at the level of the information transfer services. Table 1 shows the information transfer services covered by the communications/broadcasting convergence service domain by categorizing them into uni-directional and bi-directional properties and time-dependent and time-independent properties, together with typical examples of services in each category. For example, the traditional broadcasting services are defined as the “unidirectional and time-dependent information transfer services because they distribute information to multiple audiences simultaneously. In this context, the com-

munications-broadcast convergence can be interpreted at the information transfer service level as the appearance of new information transfer service foundations composed of four types: “broadcasting services,” “interactive communications,” “bulletin board type information services” and “bi-directional mail services,” as shown in Table 1.

These four types of services have previously been developing independently, but they are now linked around the digital broadcasting contents including the various meta-data information accompanying programs such as the program information and advertising information etc. It is a new characteristic that they form a new combination of the foundations of information distribution services by making full use of the meta-data information. For instance, even after being broadcast, the CM (Commercial Message) information is utilized permanently in various linked business activities, such as mail order sales. This characteristic of information distribution is already utilized in data-interlocked programs, etc. to activate deployment in actual businesses.

In other words, what is characteristic here is that the broadcasting service contents are positioned as portals that are linked to various other information related activities including the development of markets and the enclosure of users. The convergence of time-dependent and time-independent information creates a new information distribution service foundation in which two kinds of information complement each other.

Table 1 Information service linkage provided by communications/broadcasting convergence.

Item	Unidirectional	Bi-directional
Time-dependent	Broadcasting services	Interactive(conversation type) communications
Time-independent	Bulletin board services	Mail services

2.3 Formation of New Business Communities

After the convergence of digital broadcasting services and the NGN services has built the foundations for the information transfer services, based on various combinations as shown in Table 1, the next step is the formation of new communities based on these foundations. In this paper, we will call the communities formed by means of digital broadcasting contents including meta-data the “TV communities,” and explain the concept of TV communities in Fig. 3.

When we position digital broadcasting contents as the core, TV communities are formed by various stakeholders that are linked through the contents such as; the audience, broadcast carriers, enterprises (content producers and advertisement sponsor businesses) and local governments.

The communications/broadcasting convergence forms unprecedented types of new business communities (new business markets) and promotes the deployment of new economic activities both inside and across the boundaries of these communities.

The concept of communities is not applicable to the traditional broadcasting services because they are based on unidirectional information provision from the broadcasting station to the audience. It is the result of linkages between the broadcasting and communications functions that bi-directional services are implemented and station-audience communities are formed in which broadcasting stations and audiences exchange information with each other. In addition, the communities connecting the audiences of digital broadcasting contents with each other are also formed through bi-directional communica-

tions. What is characteristic of the TV communities is that they do not exist independently but are linked to each other via digital broadcasting contents.

2.4 Consumer Behavior Changes

When the audience becomes conscious of the formation of TV communities, their consumer behavior will experience significant changes.

One of the representative models determining the actions of consumers is the AIDMA model, in which the consumer first experiences “Attention” and “Interest” at the recognition stage, then moves to “Desire” and “Memory” that belong to the emotional stage and finally begins the “Action” that belongs to the behavioral stage.

The convergence or linkage of communications and broadcasting will bring changes to the traditional AIDMA model. We will call the new model replacing the AIDMA model the AISAS model. It will consist of “Attention,” “Interest,” “Search,” “Action” and “Sharing” as shown in Fig. 4. Let us take the scenario anticipated from the One-Seg broadcasting (TV broadcasting for cellular phone terminals) as an actual example. First, the information transferred by broadcasting arouses the “Attention” and “Interest” of the consumer. Then, the primary and secondary linkage functions induced by the data broadcasting content enable the audience to easily perform a “Search”. Conventionally they had to manually input the URL announced in a broadcast but the bi-directional transmission system allows them to perform a search simply by clicking on the URL contained in the data broadcasting content. The audience can also visit the opinion posting sites where opinions on specific products are exchanged or a mail community for the audience to share product information or improve their knowledge levels and finally take the Action that is the actual purchase.

This behavioral series can be regarded as the result of creating a new mode of consumer behavior based on a seamless integration of the information transfer levels and the formation of TV communities as described above. This process is enabled by simple operations on the cellular phone terminal.

In addition to the case taking consumer behavior as an example, public services may also be developed by using the same mechanism. For example, a local government can enhance its PR services by broadcasting portal content through its public services outlets and the residents may use such content to perform searches or share information via grapevine communications within their communities.

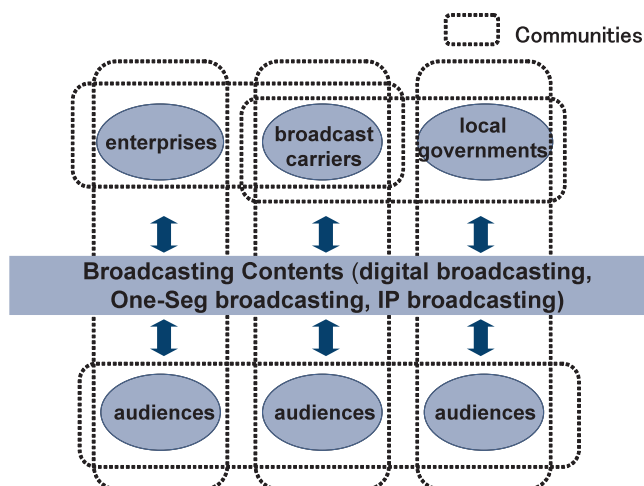


Fig. 3 Formation of TV communities.

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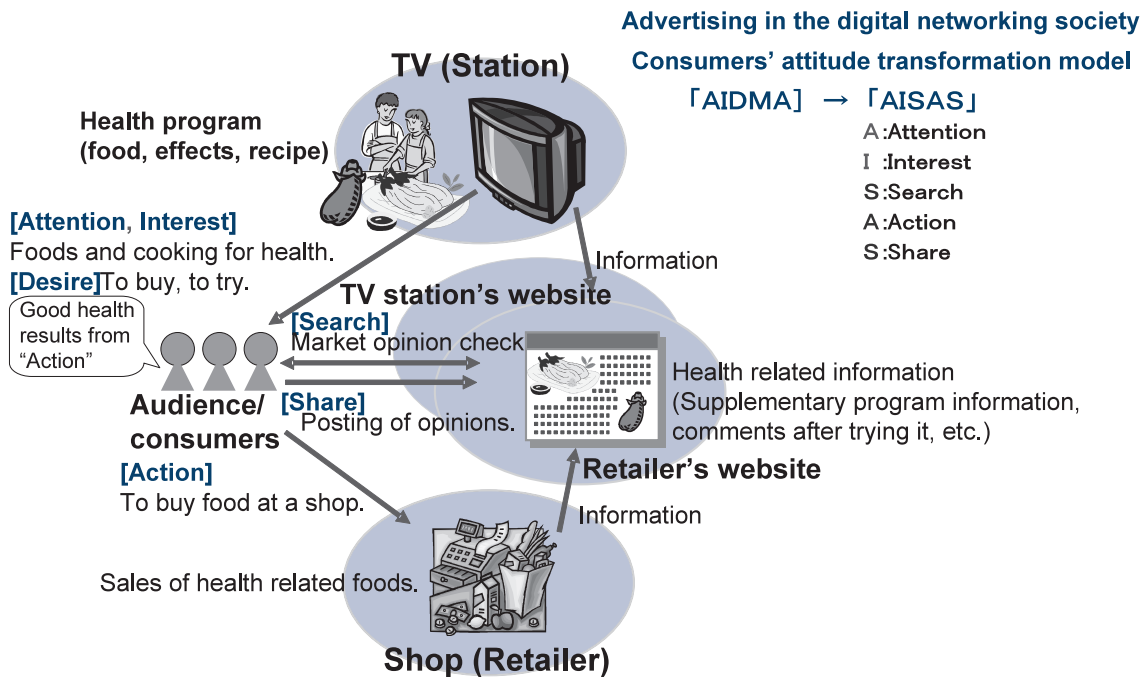


Fig. 4 Changes in consumer behavior resulting from communications/broadcasting convergence (AISAS).

3. Digital Broadcasting Content in the Future

In the above, we have considered the paradigm shifts that will result from the linkage of broadcasting and communications from the viewpoints of information transfer, communities and consumer behavior. Finally, we will consider how these changes will affect the purpose of the production of digital broadcasting contents in the future, focusing in particular on the changes that are expected in the production of TV commercials content.

In the past, TV commercials (advertising) content broadcast through the medium of video have been produced targeting the "Attention" of the audience using the AIDMA model, and the subsequent consumer behavior has been separated systematically from the broadcasting system. As a result, all that the commercials content producers had to be concerned about was to attract "Attention" and their production was supported exclusively by the advertising budgets of the sponsoring enterprises.

When the communications/broadcasting convergence age arrives in the future, it is expected that commercials will be concerned more with the modes of behavior after the "Attention" of the AISAS model and show more support for the guid-

ance of the audience toward consumer behavior. In other words, when the linkage of broadcasting and communications really creates TV communities as is expected, the production of multifunctional commercials content, which will systematically support the flow of consumer behavior until the actual purchase, will increase in importance. Here, "multifunctional" means a mechanism for providing various kinds of information supporting AISAS behavior. Conventionally, it has been the marketing promotion budgets of the sponsoring enterprises that supported the sale of products advertised by commercials, and it is expected that multifunctional commercials will be produced by utilizing the marketing promotion budgets in addition to the advertising budgets.

Media used by the multifunctional commercials will no longer be limited to video. Assuming the formation of communities such as the bi-directional communities of broadcast stations and audiences and the communities of sponsoring enterprises and audiences, the BML contents, HTML contents and mail contents will be used more actively than ever in order to guide the audience toward these communities.

As described above, the restructuring of broadcasting contents in the future based on the new standpoint of supporting the AISAS model in the communications/broadcasting conver-

gence age is expected to offer new viewpoints that are not found in traditional video commercial productions.

At the same time, when TV communities are formed in the future, the management systems of enterprises and broadcasting stations will require to be restructured into systems with a higher consciousness of the audience than before. This will be achieved by preparing infrastructures that can accommodate the bursts of traffic that may result from the creation of content that consciously guides the audience to the associated sites.

4. Solutions Provided by NEC

At NEC, we have been promoting a wide range of technical developments supporting social infrastructures both in the fields of communications and of broadcasting, for which we have already built a large number of systems of this kind.

The systems that we have built for broadcasting stations include: digital video material management systems, copyright management systems, content production facilities, planning/sales systems, One-Seg broadcasting facilities, data broadcasting systems, bi-directional program websites, E-commerce systems and Internet broadcasting facilities as well as digital broadcasting facilities. We have also built many systems for communication carriers: including the inter-station video transmission systems, VOD (Video On Demand) systems, user management/billing systems and mobile video transmission systems. We have also constructed foundations for networking commercials and community based service configurations and we have accumulated expertise by deploying web utilization services via BIGLOBE.

By anticipating market needs in advance we intend to advance the systems that we have built as described above even further in the communications/broadcast convergence service domain, and also to build solutions based on the linkage of the above systems onto the NGN foundations. We have already developed IP technology based broadcasting systems, web linkage and content production. In the future, we will build the FMBC (Fixed-Mobile Broadcast Convergence) service foundations by linking the FMC service foundations and broadcasting solutions, aiming thus at supporting the implementation of new business models based on accommodating customers comfortably in the domains of communications and broadcasting.

5. Conclusion

We have been contributing to society as a technical leader in

the fields of both broadcasting and communications by building a large number of high quality digital broadcasting facilities and key network infrastructures. Believing as we do, that communications/broadcasting convergence services based on NGN foundations as described above, can lead to the social infrastructures of the next generation, we will continue our contribution to the future platforms by providing more solutions for integrating communications and broadcasting.

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