Minutes of Meeting (6th), Study Group on Next-Generation Broadcasting Technology

June 20 (Wed.), 2007

[Harashima (Chairman)]

Please allow me to open the sixth meeting of the Study Group on Next-Generation Broadcasting Technology as scheduled.

Thank you for your time and attendance.

The first meeting of this study group was held last October, so all of you have passionately discussed important issues on next-generation broadcasting technology. Today, we would like to have a final meeting to compile the last report.

Today's attendees include some people from the work group as well as original members. I would like to ask the secretariat to introduce those attendees to you.

[Kondo (Deputy Director of the Broadcasting Technology Division)]

The meeting room temperature is slightly high. Please take off your jacket if you wish to.

Mr. Ezaki is absent today for certain reasons. Mr. Kishigami is a little late. As in the past meetings, some of the people in charge of compiling each theme of the working group attend the meeting as presenters. In addition, some people from the Mitsubishi Research Institute who cooperated on the creation of images and a questionnaire survey are in attendance.

[Harashima]

I would like you to talk about our future in a relaxed atmosphere, with your jackets off as Mr. Kondo pointed out above.

OK, let us start the proceedings.

Before that, I would like to ask the Secretariat to confirm the materials.

[Kondo]

Please open the first page of the agenda. Material 6-1 is the draft minutes of the fifth meeting. Material 6-2 is a draft summary of the minutes. Material 6-3 is the received public comment and the study group's ways of thinking. Material 6-4 is the members' opinions.

Material 6-5 is the reports from the study group: 6-5-1 is an outline (1) of the report on A3 paper. 6-5-2 is the outline (2) of the report. Finally, 6-5-3 is the draft report.

[Harashima]

Are you ready?

I would like to start the day's proceedings.

Materials 6-1 and 6-2 are, respectively, the minutes of the fifth meeting, which was held on April 17, and its summary. As referred to each of the members from the Secretariat in advance, these

materials will be posted on the MIC homepage in near future. If you have any questions about the materials, please ask the Secretariat later.

I would like to move through agenda (2) toward the compilation of the study group's report as today's theme.

After the end of the previous meeting, MIC invited public comment on the draft report from May 11 to June 11. I would like the Secretariat to report on the result of the public comment thereon.

[Kondo]

Based on material 6-3, I am going to give you a brief explanation, with reference to material 6-5-3.

As for material 6-3, you see the opinion outline in the left column and the study group's way of thinking regarding each opinion in the right column.

Numbers are placed in the leftmost part. Each of them indicates a conducted correction, corresponding to the label placed on each page of the report, the thick material at hand.

The number beside the label, such as 1 or 14, corresponds to the number of the opinion outline.

For your reference, we have also displayed the corresponding report page on the previous monitor.

Now, opinion 1 comes from Sharp Corporation concerning the point to be incorporated in discussing next-generation broadcasting systems, which is provided in Section 2, Chapter1.

Sharp's opinion is, "This is an important part mentioning the basic standpoint or concept of the next-generation broadcasting system of this study group. We agree on this idea. In terms of reinforcing this idea, it is desirable to consider both the users' viewpoint and the viewpoint of international standardization."

The first half of Sharp's opinion reflects basic agreement with the idea, but the second half gives some other indications. There are additional descriptions mentioning the importance of paying attention to the user viewpoint and how important standardization is in technological development.

The phrasing of the user viewpoint is provided on page 15 of the report. In addition, standardization is provided on page 158 of the report and on the monitor at hand. A new section for standardization is provided as well.

No. 2 is also a Sharp opinion, one mentioning that the expected next-generation broadcasting system (Chapter 2) is the important core portion of the report.

This opinion shows basic agreement. On the other hand, they say it is preferable to consider business issues in terms of commercialization in order to clarify what is problematical. We think they basically agree with us. The description on the business issue is placed as a consideration for putting future specific systems into practical use.

As for No. 3, they say, "We agree on the highly realistic sensation service being an important theme as a next-generation broadcasting service. However, it is desirable to consider various viewpoints of standardization for this service as well as how the service is significant." I think this

opinion is also in agreement. Based on Sharp's indication, we have added some expressions concerning the standardization of broadcasting by highly realistic sensation on page 158 of the report, which is the shaded portion.

No. 4 is concerning the evolution of multimedia broadcast (Section 3, Chapter 2). Sharp's opinion is, "We agree on this matter, which is related to effective use of free radio wave bandwidth in 2011 or later and is an important theme as a next-generation broadcasting service. We think a new broadcasting service will be implemented by further providing better pictures in mobile broadcasting." I think this is an affirmative opinion.

As for opinion No.5, they say, "From an important point of view, we agree on the description, 'terrestrial analog broadcasting ends in 2011 and a new broadcasting service is expected. For next-generation broadcasting systems, it is necessary to pay attention to environmental concerns, such as there is no need for viewing audience to buy a new TV set even if a broadcasting system is changed, or minimization of wastes from previous-generation TV sets.'

On the other hand, we think that environmental concerns will be resolved by taking a sufficiently long period for concurrent analog and digital broadcasting and selling of analog TV sets well before the time at which previous-generation broadcasting is terminated (in consideration of the mean service life of TV sets), even if they are incompatible with each other in this regard." As for this, I think Sharp agrees with us. For the indication, our description is that we will focus on a specific concern, such as taking a sufficient period for system installation.

No. 6 is Sharp's last opinion, stating, "We think it is preferable to consider the viewpoint of international standardization or cooperation as a whole. Especially, it is important to establish collaboration with Asian countries or developing ones." This description can be seen on page 158 of the report. The descriptions of enhancement of international competitiveness and viewpoint of international collaboration have been added to page 157 of the report as a strategic approach toward standardization for research and development, and they were sent to all the members last week.

Then, let us go on to opinion No. 7, which is IP Mobile's opinion consisting of two parts: the first one is "In advancing the study of next-generation broadcasting technology, we think it is necessary to fully consider the increase of broadband-based communication technology. As broadband technology develops, it has been able to handle large-capacity content. Therefore, it has become possible to provide not only bidirectional services but also one-way broadcasting services. The increase of broadband-based communication technology has the potential of greatly changing aspects of the broadcasting services. We think this is an important point of considering next-generation broadcasting technology."

The latter part is "we would like you to add, to the third section, Chapter 2 of the report (draft), the fact that the communication technology of 3rd-generation mobile communication systems can

provide broadcasting services. We believe that writing this fact can provide an extremely important viewpoint for considering the direction of future multimedia audience."
The indication of the first part is important. The possibility that the increase of broadband-based communication technology will change the aspects of broadcasting services is described in Section 2 (Development of Collaboration in Broadcasting/Communication), Chapter 2.
As for the latter part, that the communication technology of mobile communication systems can provide broadcasting services, no individual specific technologies are enumerated herein, but the first clause of the third section, Chapter 2 mentions that this is an important direction. It is specifically mentioned in the shaded part of your monitor on page 68 of the report. We indicated that the communication technology will expand a world where people can view high quality, high-definition content anytime and anywhere easily.
Let us go on to the next page. Opinion No. 8 comes from 3D Consortium, which states, "We think 3D is the media that is most expected as next-generation broadcasting. In the current situation, Japan's approach seems to fall behind the curve. We are sorry that we stay at the so-called 'outlet' even if we have the world's leading technology. To conquer this, we think we should determine Japanese 3D broadcasting standards as soon as possible. We would greatly appreciate it if you could incorporate suggestions, such as compression of 3D images, use of a meta data format, data compression method, multiplexing system and modulation method, into the report so as to promote 3D broadcasting standardization activities."
As to this, in response to the above indication, we added the description of how important the standardization for high realistic sensation broadcasting including 3D broadcasting is. This is the page referred to in your report. The description can be seen on page 158.
Opinion No. 9 comes from an individual mentioning, "There are many opinions that 3D-related business requires 3D displays. It appears that the transition from monochrome TV to color TV was not an inevitable result. The same is true for HD TV. I think 3D broadcasting cannot be promoted so easily because it is accompanied by a change in infrastructure. At least, as with color TV or HD TV, there is no going back once people cross the bridge. I believe this from my long experience in 3D display development. I greatly expect that our government will deal with this as a national project toward implementation of 3D broadcasting." This person agrees with us.
Opinions No. 10 to No. 15 are personal opinions.
In opinion No. 10, page 125 is described. This is a page number in the public comment. Actually, page 127 of the present material corresponds to this page mentioning safety and security. With respect to the fact that broadcast content is to be produced by journalists having a sense of morality that have been trained at a certain level under the Broadcast Law, this opinion says, "The slogan is correct but the principle has already been destroyed by commercialism or authoritarianism in the present situation. Web content differs only in fundamental value. If you

understand the principle, the current broadcast content does not lose a sense of morality in that field. Please change the expression."

In response to this indication, we have corrected the expression objectively as "broadcast content for which the Broadcast Law stipulates public order and morality, political fairness or release of broadcast program standards." The corresponding part is at the beginning of page 127 of the report.

Opinion No. 11 says, "Part of some expressions implicitly provides the usefulness of B-CAS. However, I think this is a complete mistake and an alternate technique for copyright protection should be developed promptly."

In response, we should extensively discuss what the future technique for copyright protection should be. Our description shown in Section 5, Chapter 2 of the report is that we will study wide-ranging techniques without having a bias toward a specific technique, and provide the necessary development in respect to assuring safety and security.

In response to opinion No.12 saying, "The concept of immediacy remains unchanged. I think the technical interpretation of immediacy may differ depending upon the status of people positioned near a terminal as well as automatic startup of the terminal or cutoff of a channel." We agree that the meaning of immediacy differs depending on the position or status of a user. We have therefore described the necessity of providing information according to the status of a receiver with respect to (4) Viewing environment-adaptive mobile terminals, Section 1.2 (Sophistication of user interfaces), Chapter 2 of the report which takes safety and security into account. The description can be found on pages 32 to 34 of the report.

Opinion No.13 states, "I think the same is true for the concept of content identity, and there is a case where a sender does not have all the rights to make a decision, just as broadcasting code has slightly different regionality, such as locality or dialect, in all of the small Japanese islands."

In response to this, we recognize that the indication is significant, and we have described our approach to individual needs on the receiver side in Section 1 (Development of Ubiquitous Receiver System), Chapter 2 of the report.

Opinion No. 14 states, "There is no description regarding technical resolution for the negative effects of convenience. I think various social problems arising from recent mobile communication terminals can be sufficiently avoided through technical solutions and that you should take a certain level of prediction and approach in advance."

Based on the suggestions, we have described the negative effects of convenience as an important point in discussing next-generation broadcasting systems.

We have provided the following new "free-choice" item in (3) on your monitor and on page 15 of the report. I am going to read it out a little bit: "As technology develops, user's convenience has been growing remarkably. On the other hand, it is necessary to accept the negative effects caused

by technological development heightening users' anxiety on behalf of convenience. In materializing next-generation broadcasting systems, it is indispensible to implement a mechanism that allows each user to choose convenience that is provided through technology, not to force all technological potentials on users.

Finally, opinion No.15 states, "I think it is not sufficient to incorporate issues arising from implementation of high quality, and you should get to work on the issues that people understand at present, such as mental burdens or false reactions arising from high realistic sensation." With regard to this, we have added some descriptions as a subject concerning a basic study for clarifying human vision, mentality and physiology in Section 4.1 (Ultrahigh Resolution/Wide-field Image (engineering) Technological Issues), Chapter 2, on page 102 of the report.

That is all.

[Harashima]

Thank you very much.

As for the public comment, we have the impression that each opinion was very forward-looking and aggressive.

Do you have any comment on the above opinions? Is that OK?

The Secretariat is now going to explain the added or amended information based on the above public comment.

[Okubo (Director of the Broadcasting Technology Division)]

Allow me to explain the additions or amendments.

As for the details, we have already explained how they are actually revised in the text, so I would like to explain major changes.

The relevant materials are documents 6-5-2 & 6-5-3, and PowerPoint document. 6-5-3 is the draft report, which is used for the above-mentioned explanation.

First of all, the direction of development of next-generation broadcasting systems has been added to Sections 1 and 6, Chapter 1, which corresponds to pages 30 and 31 of document 6-5-2, and pages 154 to 156 of document 6-5-3.

As for the image of implementation of next-generation broadcasting systems, we described the final form as shown on page 30 of the previous material. It is hard to express the final form fully by words or image, but we put an imaginary picture as well as a direction on page 31 to ease your understanding of specifically how the systems are implemented. This is not a complete time-series picture.

The sentences can be seen on page 31. We are going to give a brief explanation. You see the light-blue portions of things on the left of the picture, showing the current TV broadcasting

viewing images at home and outdoors, respectively. The upper one shows that you are enjoying the same content with your family or alone.

Compared with this, let us move up. You see something written in the picture in spots, but the picture is too small to see. We have document 6-5-1 of A3 size. Let us use this. Would you look at the second picture of this document? In this picture, the AI that plays a concierge role to support viewers is working around. Please look at the leftmost picture, for instance. Harmful information could be filtered when a child is enjoying a TV program, and the letter size could be changed freely according to the viewers' characteristics or personality for aged, handicapped or foreign people, for example.

Slow pronunciation could be provided. In other words, next-generation broadcasting would provide natural tenderness as mentioned above, with user-friendly interfaces.

Addressing individual needs is described at a higher level. The upper picture shows that the concierge could provide TV programs in the form of heart-to-heart communication, not by eagerly searching for a desirable TV program, including a view's personality, use condition and time zone. The lower picture shows a custom-made service in which TV plays together with the child by understanding his or her personality in a bidirectional manner, for example.

Moreover, we show a somewhat ultimate image, providing full performance of high realistic sensation elements as if you were in another world. Space itself could be receiving space. This type of broadcasting provides the experience of a world including not only images but also audio and olfactory sensibility.

In the outdoor situation, people usually use one-segment broadcasting on their cell phones or on boats. From this means, information that is more detailed could be obtained by characterizing regionality or personality in order to provide optimum broadcasting. You can see the catch phrase herein. In addition to "anybody, anytime and anywhere," a service of "just now, just here and only for you" could come out.

In addition, users or receivers would be broadcast senders to provide the services that groups or people with the same preference enjoy. Such services would evolve more and more. This could be referred to as a long-tail service. Please image that broadcasting will merge with Internet.

Look at the right side. This is the shape of a compact, convenient, high-performance terminal, which will develop broadcasting. The upper image shows a compact, foldable terminal. You can customize your terminal by adding another function to it or changing one when you select a service. For example, you can choose terrestrial or satellite broadcasting services according to the service environment. There is another image where you can use your terminal overseas regardless of the broadcasting method. Your terminal could be a customizable terminal or multi-purpose terminal.

The picture at the lower-right corner is another ultimate type. This catchphrase is “anytime and anywhere with high quality.” I do not know whether it is appropriate or not. You can use your terminal or enjoy broadcasting outdoors in a 3D manner as if “it were right by you.” In other words, the broadcasting allows users to enjoy virtual experiences.

Please look at “in case of emergency” in the middle of the picture. I am going to give a brief explanation of this picture.

In this picture, 3D information can be provided with which the firefighter can recognize a disaster in the operations room or people can know the status at an actual site. In addition, detailed information can be indicated on the helmet display in various situations so that people in the disaster area or those actually evacuated can know it. If this type of terminal could be developed to offer detailed information, ultimate broadcasting aspects would be typified by “Quick, Secure and Clear,” so you can see the implementation image in Section 1, Chapter 3.

Let us go on to Section 2, Chapter 2. You can see page 32 of material 6-5-2 and pages 157 to159 of the text. As for this, we have compiled a policy specifically for approaching research and development issues. This time, we have widely discussed study issues in the broadcasting technology field. This field is extremely extensive, including relevant fields such as human interfaces or human engineering. In this section, we have described the necessity of a strategic approach for advancing research and development or standardization.

No. 1 is the viewpoint of “international competitiveness enhancement,” which has been discussed in the MIC Panel on ICT International Competitiveness Enhancement. This panel suggested a very important point of research and development as well as standardization of ICT technology. This point has been incorporated into our description.

As for international competitiveness enhancement, it is necessary to acquire actual users, create a new domestic market and offer a model case for practical popularization. To present a model case, not just offer a concept, means expanding the opportunities for overseas deployment under international competition.

In Item 1), we indicate the points for expanding Japan’s advantageous fields and overcoming its disadvantageous ones.

As for the advantageous fields, Japan is particularly excellent in a variety of device technologies. On the other hand, some people point out very weak MPU-related technology or OA software-related technology, suggesting how such a field should be overcome. Of course, enhancement of reach and development is required as well as enhancement of international collaboration. Item 1) focuses on the necessity to establish standardization earlier and implement a real service as a first model case.

Item 2), though overlapping Item 1), describes the viewpoint of international collaboration. In particular, the EU’s DVB-T system is mentioned as a successful example in terms of

popularization of a broadcasting method. This worldwide trend is extremely notable. This paragraph emphasizes that we should promote an approach to research and development standardization with reference to this. The collaboration among industry, academia and government as well as promotion of international cooperation from an initial stage is introduced as a good example herein. Based on the reflection on the past, we need to promote research and development standardization in discussing next-generation broadcasting systems. Specifically, international joint research and exchange among content-rich countries should be promoted for development and practical use. In addition, collaborative exchange among neighboring countries should be promoted, particularly in terms of technology exchange or fellowship establishment.

No. 2 is “standardization.” Standardization especially will play a great role in setting up a structure for all the people to enjoy broadcasting services. In this regard, as I mentioned above, it is important to address standardization from the early stage of research and development, such as making of a basic concept, not after the completion of research and development.

No. 3 talks about “role sharing.” As I mentioned above, technology development toward next-generation broadcasting systems requires extremely extensive, long-term research and development. The government, broadcasters and manufacturers should recognize their roles and cooperate with each other for promotion.

This report clarifies that the government should promote presentation of a research & development grand design and milestones, basic studies that take a long time, a large amount of investment, and research and development that requires a technical breakthrough.

Broadcasters should take the responsibility for establishment of a new broadcasting method and technology development including basic and applied ones concerning the sophistication of the current system. Manufacturers should take the responsibility for technology development from a global point of view and research and development of application fields by the combination of elemental technologies.

In addition, it also mentions that development is expected under a competitive environment because the long-tail services described in the collaboration of communication and broadcasting require private-sector-driven freethinking.

As I mentioned in No. 1, all competitors are not private corporations in the broadcasting field in overseas deployment from the viewpoint of international competitiveness. That is why overseas deployment and international standardization activities should be conducted under public-private partnership. This is described in Section 2, Chapter 3.

As for Chapter 3 of the text, that is all. In this report, we have some comments from each member on technology development or future implementation points of concern, which are described in material 6-4.

In the interest of time, please allow me to briefly introduce the outline. Prof. Sato, Rikkyo University, has promoted technology development focusing on the improvement of content with the outer scheme maintained as a broadcasting frame for general viewers in the conventional broadcasting field. In the new era following digitization, however, what transforms a broadcasting system model is presented, which could change not only broadcasting, but also the entire image culture. In this sense, some opinions point out that technology will play an increasingly creative role, including systems and policies, with awareness of the responsibility.

Mr. Yokoi from Fuji Television comments that the social functionality or social significance owned by the conventional communication and broadcasting should develop through mutual complementation in the viewpoint of fusion between communication and broadcasting in 2025. To achieve that goal, it is necessary to set up a structure for ensuring the social mission of broadcasting that correctly identifies, selects and offers information to the whole of society fairly toward realization of future technology.

In addition, in terms of creation of content value, an incentive-driven scheme should be considered.

One of our members, deputy chairman Ito, points out how awareness and efforts are significant in the process where various media are born and merged in terms of broadcasting expectations as well as development and improvement of the broadcasting technology supporting it whenever providing high-quality, reliable TV programs using broadcasting technology. He feels it unthinkable that only broadcasting is left, in the situation where the social environment or living people's sensitivity makes great progress, and that it is indispensible to continue constant research and development of broadcasting technology for broadcasting to be actually accepted by society. Finally, he thinks that it is essential to reserve the research & development budget of NHK Science & Technical Research Institute, which has driven the research and development of Japanese broadcasting technology.

Moreover, digital broadcasting is positioned as an important area in the ICT field, which is one of the key Japanese industries. In terms of assurance of international competitiveness, he points out the necessity to review technology that meets social demands thanks to constant efforts. In addition, he expects that the people concerned will make efforts to resolve the remaining issues of implementation.

His opinion is extremely valuable, thus it is incorporated as the conclusion of the report.

That is all I explained.

[Harashima]

Thank you very much.

Thanks to all of you, we have a well-made report. Its material 6-5-3 has about 200 pages, including appendixes. Because it is too large to read over the report, we made a PowerPoint

document called the draft report outline (2) with a huge amount of information on 32 pages. Consequently, we thought we should do another outline for the outline (2). That is why the outline (1) on a single A3 sheet was born as material 6-5-1. In my opinion, another outline should be made as well. I think the report covered a lot.

In particular, the explanation focused on the additions and modifications of the report. Do you have any questions or opinions about the report?

[Mitani]

As for role sharing, many college teachers have attended this study group. I think people do not clearly understand what role universities play. I feel that most of the universities do not take aggressive action. I certainly think it is important to ask the universities what roles they share and to cultivate standardization personnel in collaboration with corporations and the government, including universities. I feel that the academic part should be more public than the government, broadcasters, and manufacturers.

[Harashima]

I agree with you. The government, broadcasters, manufacturers, etc. are described in the sentences. I think universities are included in “etc.” However, the name of a university or research institute should be clarified, not included as “etc.”

If there is sufficient room for description, I think various private sector opinions should be adopted in respect to the direction of technology development, including the government, broadcasters, manufacturers, etc. Such a viewpoint seems to be significant. Since there are so many technological expressions, I guess these expressions were adopted. As the case may be, I think some modifications should be required to clarify such a direction.

Any question?

[Okubo]

I would like to add one thing I forgot to tell you previously. In making a final report, please allow me to ask Mr. Harashima to put a prefatory note as an “introduction” prior to the beginning of the text, and allow me to put a glossary at the end of the report because of the huge volume of information contained.

I think I will also put an inverted index at the end of the report to heighten the convenience for use, although I cannot offer it today.

[Harashima]

Thank you very much.

In addition, as the Secretariat introduced previously, we invited some comment on other than the common view of the study group, and we received comments from three individuals.

We wondered how to use those comments in the report. I commented on “Introduction” as a little help. In discussing how a “conclusion” is made, all of us decided to put the comments from the

three individuals in the “conclusion” together with members’ comments in order to make an open report, not a closed one. We used your written comments. Is that OK? Is there anybody who wants to supplement the report or who wants to change some of the content a little bit if described herein? Is it OK for Mr. Ito to have the last comment on the report?

I found only one error while explaining the details. I think it is a typographic error in the comment received from Mr. Yokoi of Fuji Television, I found it in the sentence, “…with the progress of Internet, 1:others in the communication world.” I think this might be “many”, not “other.”

[Yokoi]

I think you are right. People often say broadcasting : unspecified majority, or communication 1:N, for instance. The letter N means unspecified majority. N is defined as a finite number, and it is sometimes used as majority in a similar meaning.

[Harashima]

It means majority, does it not? If we try to check for errors, another one may be discovered, but I think we will be responsible for that in the final review stage. Thank you very much.

Mr. Sato, Mr. Yokoi and Mr. Ito, do you have any questions? Is that OK?

[Sato]

I think there is little room for my technological expressions because all of you are technical experts. Therefore, I gave some comments on the historical meaning and future of so much accumulated technology from a self-lauding point of view because I think it should be better to verify, again, the possibility that the technology at such a level could suggest something.

[Harashima]

Thank you very much.

Is there anything else? Is that OK?

Do you have any questions or comments about the whole report? Mr. Ito, do you have any questions?

[Ito]

No, I do not.

[Harashima]

Are there any objections?

If you have noticed anything about making a final report at today’s meeting, please tell the details to the Secretariat at a relatively early stage, such as a wrong number. I think it will be corrected as required and then announced.

Please allow me to be entrusted with corrections because there is no need to hold another meeting just for those changes.

The Secretariat will explain the future schedule.

[Kondo]

As the chairman just mentioned, if you have any further questions or comments after today's meeting, please send e-mail to the Secretariat during this week. I am sorry there is not sufficient time left.

The Secretariat thinks the result of public comment invited on material 6-3 and a final version of this report will be released to the press in about 1 week.

That is all.

[Harashima]

The press release will be done on the 22nd (Fri.), one week later. Are there any objections?

Today's meeting is the final round. Mr. Suzuki, would you please give us any comments from MIC?

[Suzuki (Director-General of the Information and Communications Policy Bureau)]

We thank you so much for the continued discussions since last autumn when Mr. Harashima first talked to us.

We think a wonderful thing has been achieved through these discussions by more than 40 people, including all the members and others who attended the study group.

I attended the first meeting of the Study Group on Next-Generation Broadcasting Technology together with Mr. Ito six years ago, when it was first launched.

In those days when people began to run toward digital broadcasting, I did not know what could be created once digital broadcasting was started and what was beyond the horizon. I thought the start was made with this unclear.

From such a viewpoint, I can unfailingly feel what the level of elemental technology has been, or what will be feasible at present or in future.

As Mr. Sato said previously, a variety of technologies have been established in the 50 years since the end of World War II, and at the same time, many systems have been changed. I agree that all of new technologies have been surely put into the framework of establishing who is responsible for broadcasting or communication business. I think I should review the entirety of broadcasting and communication businesses, as recently pointed out in the newspapers and the like. Mr. Nakata, sitting next to me, is mainly responsible for this review, and I think something different from the current structure would be clearly created in a couple of years. In this sense, I think the direction indicated herein would be useful to establish new information communication integrated with broadcasting.

Moreover, especially Mr. Harashima has told me, that anybody can use television and that you should further consider safety and security. His suggestions have been clearly reflected in the report. I think that new broadcasting technology will be established in the real sense of the term, such as anybody being able to use any technology anytime, not just like technology development.

I really appreciate your attendance.

I know the people herein, including professors or institute staff, cannot keep silent for one hour or more. I think having no comments from such people could prove how much discussion has been accomplished so far. As Mr. Ito mentioned, we will reserve research and development expense and others to work hard to implement this.

I would like to ask for your continuous support.

[Harashima]

This is the last meeting. Allow me to say something from my seat.

I started the Study Group on Next-Generation Broadcasting Technology without a clear outlook for the future.

To tell you the truth, I think this study group has been very difficult.

It is very important to see how the technical seeds of broadcasting technology are going. However, the broadcasting does not always depend on the seeds of broadcasting technology. In other words, it also depends on the surrounding information technologies, such as Internet. In this sense, I have the impression that it is very difficult to discuss what action should be taken for future broadcasting, focusing on the viewpoint of seeds. On the other hand, it is also very difficult to conduct discussions from the viewpoint of needs. In a sense, needs are opposite to seeds. I think there are many aspects of needs used for something, for making money or whatever. What you want to do depends considerably on where someone is.

I also have the impression that it is very hard to watch only needs, because new needs come out while you are looking for and finding what kind of technology is available.

Needs and seeds—though generally referred to in that manner, I always think that nothing about the future can be seen when watching only seeds. On the other hand, though needs are very important, it is not good to be at their mercy.

I think that in this era, it is sometimes particularly significant to finally express yourself in the first person instead of in the third person. In order to have a strong will to determine what kind of future society you want to realize, including the government and myself or ourselves as well as to seeds and needs, I express it in cold words.

In such a sense, I think the will is becoming more and more important in some cases, not needs or seeds. With regard to what future you want to express, I personally think next-generation broadcasting would come out in the above context.

My expressions were very abstract. Thanks to your cooperation, I could proceed with the study group very easily. At the last meeting, the members did not have many comments.

I think this is probably due to your thoughtful consideration at the last meeting, because today’s many comments would bother me. In some cases, someone might think he or she has or wants to develop a different opinion about the conclusions of this study group without depending only on

its results. I think that is OK. I hope that this study group may become a good trigger for the future in various respects.

Thank you very much.

Is there anyone who wants to say something at the last? Is that OK?

I greatly appreciate your patience. It is time to wrap up the study group or bring it to an end.

Thank you so much.