**Study Group on Communications Terminals in IP Era**
**Summary of Minutes (6th Meeting)**

1. Date:

Wednesday, April 25, 2007, 2 p.m. to 4 p.m.

2. Location

Special Conference Room 4, 4th floor, Mita Kaigisho (Conference Hall)

3. Attendees (Last names in Japanese alphabetical order; honorifics omitted)

(1) Members

Hitoshi Aida (Chair); Mutsuya Asano (alt.: Yoshikazu Kobayashi); Ryuichi Inagaki; Hiroshi Ezaki; Mashashi Oshima; Mikio Goto; Hiroshi Kondo; Yoshiyuki Sukemune (alt.: Toshiro Sakurai); Nobuko Takahashi; Yoshiyuki Takeda; Miwako Doi; Takashi Hanazawa; Toshiki Hayashi; Susumu Hirano (Acting Chair); Hiroshi Fujiwara; Akira Maeda (alt.: Takahiro Fujishiro); Yuichi Matsushima; Makoto Miwa (alt.: Hirotada Yaginuma); Toshio Yamada (alt.: Yoshiaki Kobayashi); Tetsuya Yuge (alt.:Toshihiro Hayata); Makoto Yokozawa; Fumio Watanabe

(2) Ministry of Internal Affairs and Communications

Mori, Director-General of the Telecommunications Bureau; Sakurai, Director-General of the Telecommunications Business Department; Takahashi, Director of the IT Security Office; Naito, Deputy Director of the Telecommunications Consumer Policy Division; Watanabe, Director of the Telecommunication Systems Division; Nakamura, Deputy Director of the Telecommunication Systems Division

4. Agenda

(1) Presentations

(2) Others

5. Outline of proceedings

[Presentations]

○ Presentations by members

- Matsushima (member): "Approach by the NICT to Future Communications Terminals"

- Ezaki (member): "What to do? Research and Development Items and Activities"

○ Main comments made by members in the question and answer session are as follows.

- The development of communications terminals in the IP era should be thought about in terms that include the concept of terminals from the viewpoint of factories, facilities and public places, as presented today.

- Future terminals will be required to have functions beyond our imagination due to the emergence of different types of devices. For example, in sensor systems "Plug and Display" and immediate operability after purchase without any special technical knowledge will be required. These functions are different from the characteristics of existing devices.

- While various new terminals are expected to be developed for body area networks, it should be considered whether they are really safe for humans in terms of safety and security.

- Conceptually terminals of the future will be thought of in terms that are significantly different to those used today. Therefore, it would be better to classify them, for example, based on the number of units (single or multiple) or the purpose or location of use (such as for housework, in a hospital or mobile use), rather than by using the current categories.

- The concept of future terminals should not be considered from a single viewpoint. It is necessary to consider the issues from various viewpoints.

- Summarizing the development image of communications terminals will require the consideration of multiple issues, such as connectivity, safety and reliability and convenience for each function of the terminals.

- How should the views of users or other concerned parties be incorporated into research and development? Furthermore, in terms of the relationship between providers and users, which would be preferable: a group of providers engaging with a group of users or individual providers engaging with users?

- Major players involved in research and development include end users, and researcher themselves are also users. Therefore, researchers engaged in R&D are essentially representing users. On the other hand, since researchers are not necessarily using up-to-date devices, it will be important to create up-to-date testbeds for researchers to observe.

- Since developers take into account the limitations of technology when developing their ideas, these ideas would possibly not address the different needs of people who do not know much about

technology. Whether or not new developments succeed in the market will also be based on a separate mechanism.

- It is important for researchers to understand the market. If it were possible to create such a testbed environment where researchers only developed technologies that their own families would use they would have more success.

- The scale required for the testbed will vary depending on individual technologies. It is also subject to the type of Internet available. Furthermore, in the case of sensors and the like, there are differences in the scale required for the verification of overall operation and the verification of interconnectivity and vulnerability. In either case, it is important to create an environment where manufacturers and providers can interact easily with one another and end users can be involved.

- Due to the issue of international rules and the complexities of operation, study and cooperation in each industry allow to the testbed to be operated and the technology to be established. IP is also related to almost all industries.

- While each country has a similar testbed, Japan is in an advantageous position as providers are also cooperating with each other. In addition, Japan is among the countries with the highest number of broadband users and has different ways of using networks to other countries.

- We will continue to strive to create open environments where developers can bring in their devices for study. In addition, we could obtain feedback about the user-friendliness of new terminals, such as sensors, by conducting studies in which the daily life was carried out in an environment made up of nothing but terminals.

- At present, verification tests of interconnectivity continue to be conducted for further combinations even after certain tests are passed. A more efficient method of verifying interconnectivity is required because it will become increasingly difficult to test for all combinations in future.

- As interconnections have become very complex, there may not be an efficient method. Since verification tests using the minimum number of sets cannot cover all combinations, a testbed will become necessary. There are also many problems that may become apparent only during unforeseen operations.

- There are two difficulties for developers using testbeds. (1) Testing for repetition have not been conducted for the wireless environment. It will be more useful for developers if tests including the wireless environment are carried out. (2) Testing of mobile products, such as in-vehicle terminals, cannot be conducted in the field for safety reasons.

- Since it is difficult to determine the wireless environment there will be many problems not identified unless tests for repetition are conducted in the field. An environment where tests can be freely conducted will be necessary as developers face so many restrictions

- The discussion of testbeds centers on the process through which we can obtain knowledge based on empirical evidence. On the other hand, how will this knowledge be used? Take, for instance, the processes developed from the studies of ISO. The setting of standards, they gave rise to businesses concerned with these standards, and the standards themselves are used for controlling society.

- The most significant thing to come out of the testbed was the feedback developers received about what to produce and how to operate. The way the developers use this feedback will not have to be mandated. The testbed is useful as a support network for commercial networks and it has social functions as well. Needless to say, it is useful for determining facts upon on which standardization is promoted.

- It is very important that a series of processes be completed, whereby the testbed is part of a sequence from R&D and standardization to the manufacturing of products, certification of devices and their sales. Then feedback is obtained about the final products for further R&D and standardization.

- Standards, such as technical and other standards that result from testbeds vary. They include government standards, standardization groups' standards and voluntary standards, as well as the standards themselves and reference or operational documents.

- In summarizing the functions requested for communications terminals, if the needs of the party that is requesting can be imagined, the issue can be clarified in discussion. While most of the functions will be requested by users, some will also be requested by producers.

- If the number of terminals, such as sensors, with no human oversight of the network increases—which will probably happen around 2015—it will be impossible to summarize the

characteristics of those making the requests. In addition, the requirements for such terminals will be different from those of the conventional ones.

- While most of the existing terminals are used purposefully by humans, there are also terminals used for surveillance. As for wearable terminals, it will be possible to monitor those who wear them.

- From the socioeconomic perspective, the global use will increase not at the early stages but after the market has been established to a certain degree. Therefore, the issue is how to think strategically. The base of life is usually domestic, which has significantly implications for business.

- Even if safety and security are ensured in one terminal, consumers using multiple terminals are in an insecure position in terms of comprehensive safety and security. It will be good from the perspective of safety and security if the users' data accumulated by the providers is protected, at the same time as the requirements for convenience are satisfied.

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