

## Summary of Minutes of the 2nd Meeting of the Study Group on the R&D Human Resources Development in the ICT Sector

1. Date and time: Tuesday, March 6, 2007, 10 a.m. to noon
2. Location: Special Conference Room No. 1, Ministry of Internal Affairs and Communications
3. Attendees:
  - (1) Members (Last names in Japanese alphabetical order, honorifics omitted)

Shigeyuki Akiba (KDDI R&D Laboratories Inc.), Tohru Asami (University of Tokyo), Kenji Ohta (Sharp Corporation, proxy: Norio Okamura), Shingo Ohmori (National Institute of Information and Communications Technology, proxy: Kiyoshi Sekiguchi), Kazuo Kyuma (Mitsubishi Electric Corporation), Takemitsu Kunio (NEC Corporation), Harushige Sugimoto (Oki Electric Industry Co., Ltd.), Shinya Tsuda (Sanyo Electric Co., Ltd., proxy: Tohru Kitamura), Miwako Doi (Toshiba Corporation), Takashi Hanazawa (Nippon Telegraph and Telephone Corporation, proxy: Mamoru Kitamura), Hiroshi Harashima (Chair) (University of Tokyo), Yasushi Fukunaga (Hitachi, Ltd.), Nobuyoshi Fugono (Advanced Communications Research Institute International), Takashi Matsuyama (Kyoto University), Yoshiyuki Miyabe (Matsushita Electric Industrial, proxy: Masahiro Shimizu), Akio Motai (YRP R&D Promotion Committee, proxy: Fumihiko Nakagawa), Tohru Yamashita (Nippon Keidanren, proxy: Ichiro Tanaka), Seiichi Yoshikawa (Fujitsu Laboratories Ltd.)
  - (2) Ministry of Internal Affairs and Communications

Matsumoto (Director-General for Technology Policy Coordination), Kodama (Director of the Technology Policy Division), Monma (Chief of the Research and Development Office, Technology Policy Division), Taira (Senior Officer for Technology Policy Planning and Coordination), Matsukawa (Director of the IT Utilization and Human Resources Development Division), Takada (Assistant Director of the IT Utilization and Human Resources Development Division)
4. Outline of proceedings
  - (1) Opening
  - (2) Agenda
    - 1) Confirmation of the summary of minutes of the last meeting

An explanation based on Document 2-1 was given and the summary of minutes of the last meeting was confirmed.
    - 2) Report on the status of the working group

Based on Document 2-2, the leader, Asami, reported on the status of the working group.

3) 1. Exchange of opinions on the current status of and issues related to the development of R&D human resources in the ICT sector

Opinions were exchanged in accordance with the items in the report. The main points made in the discussion about “1. Current Status of and Issues Related to the Development of R&D Human Resources in the ICT Sector” are as follows.

- While a system for human resources development exists in each company, it does not necessarily function well due to various factors, such as the need to improve the way it is implemented and the lack of follow-up mechanisms.
  
- The United States is strategically promoting human resources development on a conceptual basis in order to create new areas of business. To create new areas, the industries themselves establish schools and cultivate new academic fields in collaboration with universities, which then give rise to innovation.

4) 2. Exchange of opinions on the R&D human resources profile in the ICT sector

The main points made in the discussion about “2. R&D Human Resources Profile in the ICT Sector” are as follows.

- Workers who are capable of integrating technologies can be somehow trained within a company. On the other hand, it is difficult to train people to be able to foresee the outcomes of new ideas and technologies in 10 years' time as well as to be sensitive to new ideas.
  
- Innovation can be classified into two categories: innovation for replacement markets (combining old ideas to bring new products to the market) and innovation for the cultivation of new markets (the creation of completely new products). It is possible to develop human resources for the former purpose within a company; however, for the latter purpose it is very difficult and it is impossible for a single company to do alone.
  
- R&D managers with strong problem-solving skills are in great demand in every field. On the other hand, it will become increasingly important for companies to have R&D managers able to create and develop a vision if they are to survive in the future.
  
- It is necessary to cooperate to determine how to develop and train people to be innovative.

- R&D managers referred to here are those capable of creating something new based on a clear vision. This means “professionals who are the master of one art, but also knowledgeable about a variety of other arts.” It is important to think about what the term “a variety of arts” means: intellectual property, technology marketing, or business models, as well as what field to approach and how.

### 5) 3. Exchange of opinions on the R&D human resources development in the ICT sector

The main points made in the discussion about “3. R&D Human Resources Development in the ICT Sector” are as follows.

- It is important to provide plenty of opportunities for contact with and between leading professionals. Good stimuli encourages professional development. Such opportunities must be provided in a planned manner.
- Some of the people who have been involved in large national projects, such as the one for the development of the fifth generation computer, are now leading various companies. The participation of private companies in national projects has advantages in that networks are formed, exchanges can be made between people in various fields and personal relationships can be established. Collaboration across many different fields is only feasible in national projects.
- The development of the fifth generation computer certainly led to human resources development. Human resources were developed in an otherwise apparently unsuccessful project.
- A good pattern to follow in the development of human resources is the spiral. Being involved in a tough project, which can be likened to a kind of a battle, develops professional skills. Because individual interests may cause problems within a project undertaken by a group of companies, we would like the NICT, for example, to act as a kind of lubricant or mediator.
- One is the NICT project in which industry, academia and government collaborate. Another could be the establishment of a kind of open college within the NICT, which provides training on issues such intellectual property, marketing and so on. These two pillars can be brought together to support the development of human resources.

### 6) Other items

(Subjects of projects and issues related to management, evaluation and so on)

- The joint projects by industry, academia and government that were successful in developing human resources had the following three things in common: (1) the subject of the project was attractive to companies; (2) the project manager was highly skilled; and (3) the companies involved dispatched young, proactive staff.
- A subject theme which has international appeal must be selected. The project must also be attractive to people abroad.
- The fact that broadband wireless and security technologies are also now considered necessary is based on an urgent need for them across all fields. Even these kinds of basic technologies are being weakened.
- Vertical collaboration by a diverse range of people is necessary. New projects cannot just be extensions of existing ones. To ensure this, specific measures should be taken to recruit staff with doctorates and to increase the proportion of foreign participants.
- For those projects aimed at developing human resources, the method of evaluation is an important issue. The main point is the progress the project members have made toward the goal and the kind of “battlefield” experiences they have had.
- The R&D project should be one that confers a kind of prestige upon its participants. In other words, they can say later on that they were involved in the project and their career benefits.
- There needs to be a culture of proper follow-up and flexible management in terms of human resource development. The framework necessary to make good use of skilled workers after their professional development must also be considered in advance.
- Companies must provide people and funding themselves, rather than relying on the government to do so.

(Mobility of human resources)

- How Japan as a nation develops its human resources must be considered, rather than just how individual companies develop the human resources they need for themselves. To raise Japan as a whole to a higher level it may be necessary to increase the mobility of skilled workers.

- It is said that because of Japan's homogenous culture the idea of increased mobility will not be easily accepted.
- We would like to see the problem-solvers come back to the company. Companies don't need exclusive rights over visionary workers, but if the vision is in line with the company's planned direction, it is of course preferable for the company if such workers return to the company.
- Companies are not very eager to see staff in whom they have invested time and money in training moving to their competitors. All companies need a mixture of both people who can solve problems and people who can come up with creative visions for the future. Although the ratio depends on the particular company, 90% problem-solving and 10% creative envisioning might be one standard. We want the different workers skilled in each of these areas to return to the company.
- In my opinion, successful development of human resources will naturally lead to an increase in mobility of a skilled workforce.
- The inverse of the possibility of the outflow of highly skilled workers is that you can also employ highly skilled workers.

(Role of academic societies)

- One of the important roles to be played by academic societies is human resources development. Academic societies must be positioned correctly in terms of government policy.
- Human resources development by academic societies is impossible under the current structure of these societies. It would be wonderful if this opportunity became an impetus for the revision of traditional rules and lead to a full reform of academic societies.
- Academic societies have just started to undertake educational activities and the professional development of young people.

(3) Closing