

information and communications field, and concluded that it is appropriate to consider development of a legal system that can punish acts of leaking personal information in a cross-sectoral manner in their reports released in December 2004 and February 2005 respectively.

### 3 Overcoming the digital divide

In the process of examination conducted by the Study Group on Putting in Place Balanced Nationwide Broadband Platforms since June, it was recognized anew that local governments that are making progressive efforts are playing a certain role in developing local broadband infrastructures in an increasing number of cases. In light of this, the “Plan for Eliminating Zero Broadband Areas”—an interim report mainly consisting of the Plan for Accelerating the Installation of a Regional Broadband Infrastructure, which summarize the challenges and measures in developing broadband infrastructure for reference by local governments—was compiled in February 2005.

### 4 Improving the environment for radio spectrum use

Along with the rapid spread and upgrading of radio spectrum use including mobile phones, concerns have

been raised that the radio waves might cause adverse effects on the human body or cause malfunctions to medical equipment, such as the heart pacer. To ease such concerns and to develop an environment that allows people to use radio spectrum safely and confidently, the MIC has formulated adequate criteria and implemented researches.

Moreover, to protect radio equipment from electromagnetic interference from other equipment, the MIC has contributed to the establishment of international standards at CISPR and introduced domestic standards in compliance with the international standards.

In addition, in order to increase the volume of information that can be transmitted on the power line communication system, there have been demands in recent years to expand the frequency range that can be used (2-30MHz to be added). The MIC has set up the “Study Group on High-Speed Power Line Communications” and has been investigating possibilities and conditions for the coexistence of high-speed power line communications with radio uses since January 2005.

## Section 8

### Promoting R&D

#### 1 Developing R&D policies in the information and communications field

##### (1) Future R&D promoting strategy

In order for Japan to achieve sustainable economic development and for the Japanese people to lead safe lives with peace of mind, it is necessary to make active and strategic investments in selective areas of science and technology and to maintain and develop the competitiveness of industry through the promotion of research and development. From this perspective, the Second-Term Science and Technology Basic Plan (approved by the Cabinet in March 2001) placed special priority on four fields of science and technology, including the information and communications field, and stipulated that R&D resources should be allocated to these fields in a preferential manner.

With the aim of actively promoting R&D in the information and communications field toward achievement of a future ubiquitous network society, the MIC set up the R&D Strategic Committee within the Telecommunications Council and examines strategies on

the priority R&D fields, the roles of the national government and public organizations, and methods of strengthening the international competitiveness and internationally expanding Japan’s information and communications technology.

##### (2) Developing R&D environment

An open test-bed network environment would be required to realize next-generation advanced networks at an early stage under collaboration of Japanese and overseas industries, universities, governments, and communities, revitalize the Japanese economy and society, as well as to strengthen Japan’s international competitiveness.

The cutting-edge R&D test-bed network (JGN II) operated by the National Institute of Information and Communications Technology governed by the MIC supports R&D at the light wavelength level by introducing state-of-the-art optical switching, and provides access points in all prefectures nationwide. It is used as the infrastructure for industry-university-government collaboration and regional collaboration around the nation by universities, research institutes, private companies, and local governments. The pioneering efforts concerning

various technology through R&D and demonstration tests on JGN II are generating extensive spillover effects, such as improvement in Japan's technical capabilities, strengthening of industry-university-government collaborations, creation of new businesses and industries, revitalization of local activities, and effects of developing human resources.

## 2 Implementing selective R&D

### (1) R&D on basic technology for ubiquitous networks

Placing emphasis on technologies that have the nature of basic technology, involve high risks, and have high spillover effects, the MIC has been implementing R&D on three technologies—microchip networking technology, ubiquitous network authentication/agent technology, and ubiquitous network control/management technology—since fiscal 2003 under an industry-university-government collaboration framework, and aims to establish elemental technologies.

### (2) R&D toward development of next-generation, high-function network infrastructure

The MIC implements R&D on very high-function network technologies that use quantum information and communications technology and nanotechnology. While quantum information and communications technology realizes extremely safe encryption communications and ultrahigh-capacity information transmission by putting information on each photon, nanotechnology realizes higher-performance, smaller, and more power-saving network components such as relay transmission and switching by making use of the nano-scope physicality.

### (3) Advanced use of RFID tags

Since fiscal 2004 the MIC has been implementing R&D on technology for swapping the attributive information in RFID tags between different platforms in response to dynamic environmental changes, technology to link RFID tags with networks, and technology to control access rights to RFID tag information. Also, as an effort to promptly commercialize the R&D results, it conducts user-participation-type demonstration tests across Japan.

In addition, recognizing the need to have RFID tags smoothly accepted by society by taking appropriate measures from a consumer privacy protection standpoint, the MIC summed up the basic concept and formulated/published joint guidelines with the Ministry of Economy, Trade and Industry in June 2004 under the cooperation of the parties concerned, such as consumer groups.

Currently, the MIC is examining the effectiveness of the guidelines through demonstration tests in the respective fields, and plans to create detailed rules by field and modify the guidelines as required.

### (4) Connecting robots with ubiquitous networks

By connecting ubiquitous networks with personal robots and industrial robots that are expected to be used in homes and offices in the future (networked robots), it is anticipated that new lifestyles will be created and responses will be possible to such social problems as aging, medical treatment, and nursing care. The major key to realizing networked robots would be the network technology connecting ubiquitous networks with robots, and in order for Japan to lead the world in the field of networked robots, the necessary core technology must be promptly established. Since fiscal 2004, the MIC has been implementing R&D on such issues as “networked robot linkage technology” and “people-friendly communication technology.”

### (5) Advances in space communications

Because of their many features such as the capacity to provide wide-area and simultaneous communications and to be disaster-proof, space communications are used in a wide range of fields, including communications, broadcasting, and positioning technology. In consideration of the role that space communications should play in the information and communications infrastructure that will be rapidly developed and advanced in the future, the MIC is promoting the development of demonstration satellites and satellite experiments in order to realize the space communications that will be required.