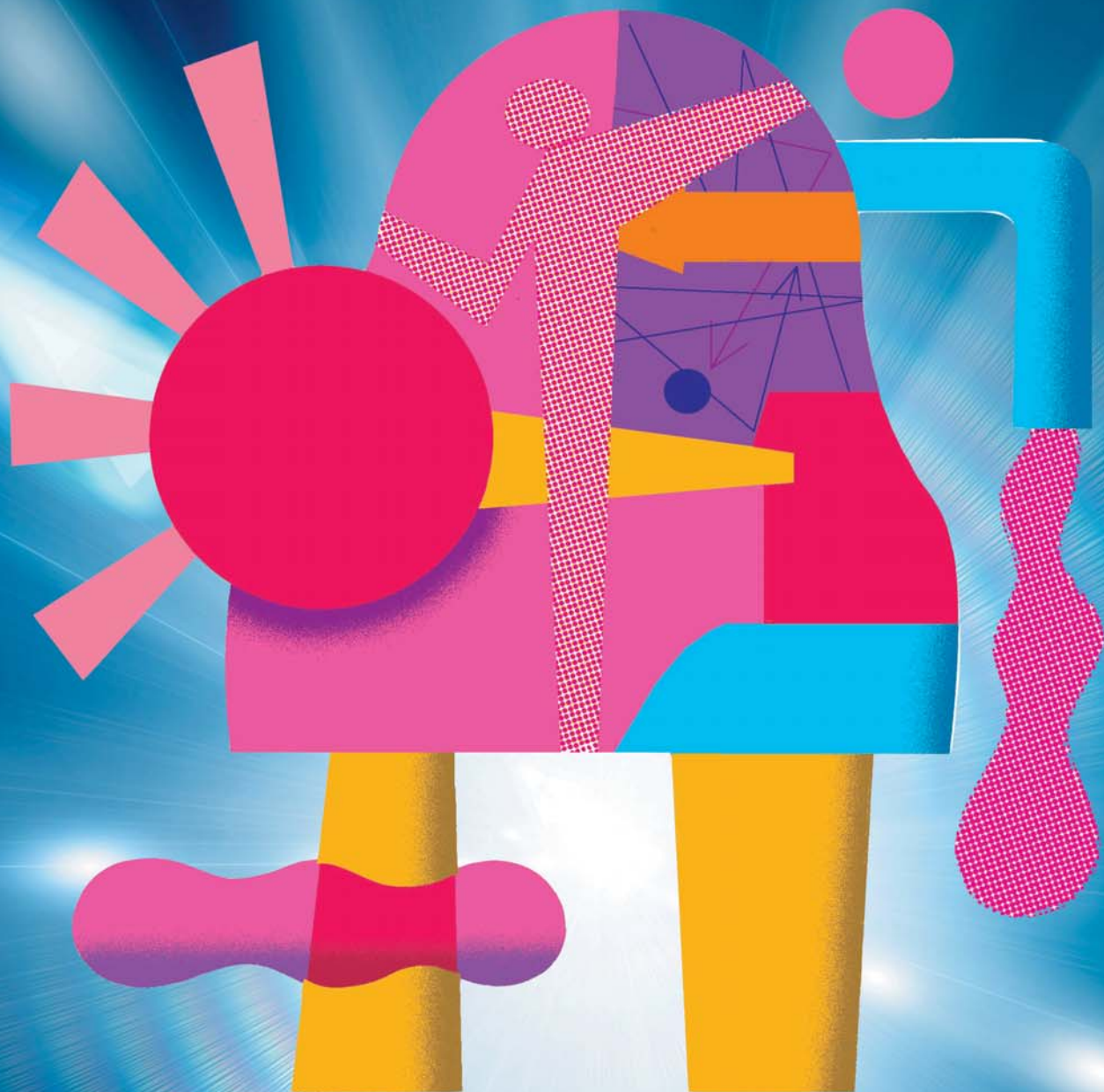


NICT NEWS

National Institute of Information and Communications Technology



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2006 New Year's Greeting

Makoto Nagao, President
National Institute of Information and Communications Technology



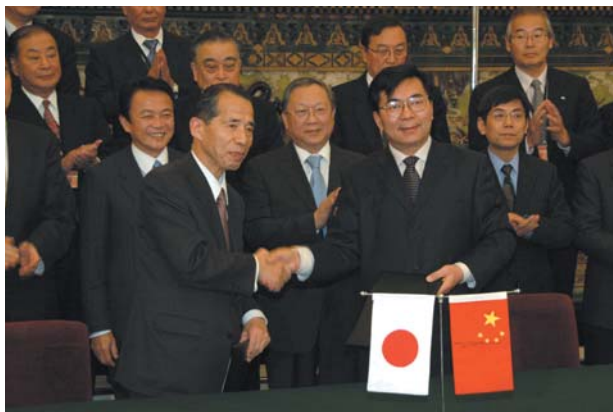
First, I would like to wish everyone a Happy New Year.

Fiscal 2005 is the final year of the first medium-term plan, which began in fiscal 2001 (in the era of CRL [the predecessor of NICT]). I am grateful for the efforts of our staff in completing their R&D activities based on this five-year plan. I look forward to their continued efforts in the fulfillment of the goals of the second medium-term plan, which will begin in April of this year. Additionally, last year the government devised a plan to transform NICT into an administrative institution with "non-civil service" status. This transformation will represent a major turning point for NICT.

Major developments in the past year

Numerous events at NICT in the past year involved collaboration with foreign institutions. In January 2005, we signed memorandum of understanding for comprehensive partnerships with the Chinese Academy of Sciences and the China Academy of Telecommunications Research (part of the Ministry of Information Industry). We

signed similar MoUs with l'Institut National de Recherche en Informatique et en Automatique (INRIA) and le Groupe des Écoles de Télécommunications (GET) in France in June, as well as with the Centre for Development of Advanced Computing (C-DAC), the Centre for Development of Telematics (C-DOT), and the Indian Institute of Technology Guwahati (IITG) in India in August. These memoranda outline plans for specific research activities to be carried out in collaboration with these organizations. Additionally, this year NICT extended its ultrahigh-speed JGNII digital network to new Asian territories (the Japan-US line began operations the year before last). We launched operation of these Asian lines (Tokyo-Bangkok and Tokyo-Singapore) and held a commemorative symposium in November. We have already started experiments on distance learning using the JGNII network, and hope to promote joint research activities in other fields such as telemedicine. In May, Prime Minister Junichiro Koizumi visited our Yokosuka Radio Communications Research Center, and in June, their Majesties the Emperor and Empress visited our Kashima Space Research Center. Each of these visits represented a great honor and a historical occasion for NICT.



Signing of MoU with the Chinese Academy of Sciences



Symposium to commemorate the opening of Asian JGNII lines

Everything went smoothly during their visits thanks to the considerable efforts of those involved.

We made steady progress in R&D last year. Major achievements included production of a prototype of the world's first 160-Gbps optical packet switch, development of a method for analyzing Internet events in real time (one of a range of measures against cyber attacks), and an engineering model of the satellite-borne Ka-band radar for GPM satellite, successor to the Tropical Rainfall Measuring Mission (TRMM) satellite. Further, last year, in the basic research, NICT researchers were the recipients of the Young Scientist Award (from the Minister of Education, Culture, Sports, Science and Technology) and the Osaka Science Prize. We also found that our research papers were among the most frequently cited in the world.

We conducted various commissioned research projects, mainly in the fields of photonic networks and quantum cryptographic technologies, through the effective incorporation of various resources made available by industry and academia. Through the activities of our cross-departmental R&D promotion units, participating groups were able to combine their research activities and enjoy the benefits of enhanced collaboration. In addition to the existing "Key Technology Research Promotion Program for the Private Sector," we began a new program to support venture initiatives and small-and medium-sized businesses, with assessment and selection of applicants performed in cooperation with our university partners. Spe-

cifically, with respect to research grants for ICT businesses, we focused on venture businesses and projects intended for the benefit of the elderly and handicapped.

Goals for this year

If we are to help establish a state of "universal communications" in a future ICT society, we must now develop the relevant fundamental technologies. To ensure that our staff feels a strong sense of the urgency of this mission, we established the NICT Charter last autumn. I believe that everyone at NICT should work to embody the spirit of this Charter.

The year 2006 will be a momentous year for NICT in many ways. We must make a concerted effort to generate and publicize exceptional research results in a concrete way, in accordance with the following basic policies: (1) further contributions to implementation of the government's information and communications policy; (2) precise selection and focus on R&D subjects; (3) further reinforcement of NICT's main research fields and active branching out into new fields; and (4) further collaboration with industry and academia. In addition, we will finalize the second medium-term plan and prepare for a smooth transition to the new organizational structure. In these and all of our efforts I appreciate your continued understanding and support.



Visit by their Majesties the Emperor and Empress



Prototype of 160-Gbps optical packet switch

Establishment of NICT Charter

— Mission, Vision, and Principles to Be Shared by All Staff —



Mr. Itabe, Distinguished Researcher

We recently established the NICT Charter.

This Charter is intended to present a clear statement of NICT's basic philosophy—simply put, to explain what NICT is and to articulate its roles. At the same time, the Charter represents a general declaration to the public of our overall aims.

The NICT Charter Committee, established within the organization, formulated the Charter. We interviewed Mr. Itabe, Distinguished Researcher and committee leader, to ask him about the significance and objective of the establishment of the Charter as well as the process that led to its formulation.

Q Could you explain the function of the NICT Charter?

A The Charter clearly states what NICT is and what its role is. It also lays out a code of conduct for those working at NICT.

Q Who is it intended for?

A It is basically intended for NICT staff. However, it is also meant to introduce NICT to the public.

Q What was the reason for the establishment of the Charter in the first place?

A We already had the "NICT Law," and we had already issued our mission statement. In addition, when NICT was founded as a result of the merger, we offered a formal expression of the "NICT Vision." However, due to the expansion of the organization and diversification of its activities, it seemed necessary to redefine what NICT is and what we should bear in mind when conducting our respective activities. In other words, we felt the need to share a single sense of mission among all staff members. This led to the decision to formulate a charter.

Q So in other words, the NICT Charter was established because it was felt that something was needed to remind us all of what NICT is?

A That's right. The objective of the establishment of this charter was to present a clear statement of NICT's mission, vision, and principles of conduct to be shared by all staff members.

Q Could you briefly explain the process through which the NICT Charter was formed?

A First, I was appointed leader of the NICT Charter Committee by the Executive Director of General Affairs Department. The individual departments then selected representatives to serve as committee core members. The Executive Directors of the General

Affairs and the Strategic Planning Departments joined as advisors. Mr. Yonago (Managing Director of the Strategic Planning Department) and Mr. Kurihara (Director of the Public Relations Division) were named Deputy Leaders. We thus established a committee of 17 members. At the first meeting, we went into a thorough discussion of the questions, "What is NICT?" and "What is its role?" The members were divided into three working groups (Core R&D, General Affairs, and Shiba HQ), each of which prepared a charter draft on its own. Using these three drafts as a combined starting point, we had further discussions and solicited the comments of the President, the various Vice Presidents, and the general staff.

To be honest, when we set up this committee, I was afraid that the members might not have enough time to work on this project because of their hectic work schedules. However, I was surprised to note the engaged and lively discussions that took place at every meeting. Individual researchers and departments all had their own strong opinions about what NICT ought to be, which inevitably led to occasional heated debate.

Q Could you explain the details of the Charter?

A At first, we were thinking of two parts: a definition of NICT and a Code of Conduct, both of which were to be aimed at employees alone. After a great deal of discussion, however, we agreed that the Charter had to explain what NICT is to the public as well. Eventually we decided to formulate a Charter consisting of three parts: a mission, a vision, and a set of "Principles of Conduct."

Since it is not a technical document, I believe that it should be understandable to any reader. One of its main points consists of a renewed definition of "communication" as consisting of connections among people, the environment, and society throughout the world, without regard to boundaries. This is the vision we are aiming to realize, which we have specifically termed "universal communications."

Q What particulars did you bear in mind when formulating the Charter?

A We bore three points in mind: to use plain language, to make the Charter as universal as possible, and to make the document concise.

We tried to avoid using technical terms, so that the document may be used as a statement to the public as well. I would also add that we designed this charter to be used permanently, not simply for a short period of time. We also tried to make it brief, so that everyone could note it down.

Q Could you tell us how the NICT staff should apply the Charter?

A I hope that you will view the NICT Charter as the basic philosophy of work at NICT, and that it will inform your discussions about NICT with those outside the organization. I also hope that you will immediately think of the Charter whenever you feel the need to recall the basic principles of the NICT organization.

NICT Charter

[Mission]

As the sole national research institute in the information and communications field, NICT will strive to advance the technologies and contribute to national policies in the field, by promoting our own research and development and by cooperating with and supporting outside parties.

[Vision]

We believe that the essential role of communication is the promotion of mutual understanding and the achievement of better relations between people and people, people and society, and between people and nature, by overcoming the various boundaries which may exist between generations, nations etc., thus realizing a world of universal communication.

NICT will make every effort to become a world leader in achieving this dream of universal communication.

[Action Principles]

1. Creating Technologies

We will undertake research and development by pursuing original technologies, world-leading technologies, and technologies that will directly benefit society.

2. Contributions to Society

We will use every available means to disseminate the results of our research throughout society.

3. Devotion to Self-Improvement

We will devote ourselves to self-improvement with an awareness of the weight of our social responsibilities, a strong sense of ethics, and a spirit of independence, so that we can demonstrate our maximum potential.

Report on 4th Meeting for the Presentation of NICT Research Results

Hiroshi Kuroiwa

Director,
Research Support Division, General Affairs Department

NICT held its 4th meeting for the presentation of research results at Mydome Osaka (in Osaka City) on November 30, 2005. Under the general theme of "ICT for Safety and Security," the meeting consisted of 12 presentations dealing with information security, EMC (electromagnetic compatibility), and disaster prevention technologies, a panel discussion on disasters and information communications, and an exhibition of research results.



Meeting hall

The meeting began with an opening address by Vice President Dr. Tadashi Shiomi, who spoke of NICT's research efforts relating to the "ICT for Safety and Security" theme and the next medium-term plan of NICT. Mr. Hiroyuki Odera, Director General of the Kinki Bureau of Telecommunications, made his guest address in which he hoped the meeting would stimulate further collaboration among NICT, industry, academia, and the government in the Kansai region. We then viewed a videotaped message from Professor Suguru Yamaguchi of the Nara Institute of Science and Technolo-



Panel discussion

gy. Professor Yamaguchi talked about the importance of ICT research in ensuring safety and security, and a number of his expectations with respect to NICT's research in this area.

A session of presentations took place in the morning, with the Information Security Unit delivering six presentations. In the afternoon, there were four presentations by the EMC Unit and two dealing with disaster prevention technologies, which were followed by a panel discussion entitled "Roles of Communications in a Major Disaster." There were five panel members, with non-fiction author Mr. Kazumasa Yamane as the moderator. Citing past disasters such as a flood in Fukui Prefecture and eruptions of Mount Usu, the panelists discussed how information transmission should be in the event of a disaster and the importance of observation as a counter-response. The participants also pointed out the importance of being able to issue information quickly and to isolate accurate information from many sources.

In the exhibition hall at the same site, there were 28 exhibits relating to the research results presented at the meeting. Visitors enthusiastically asked questions about the demonstrations and some medias covered the event. We received many favorable comments, as well as suggestions concerning the arrangements made for this meeting, all of which will be helpful in the organization of similar events in the future.



Exhibition hall

We are very grateful to all of the visitors who participated in this event. We would also like to express our gratitude for the support of the Kinki Bureau of Telecommunications of Ministry of Internal Affairs and Communications and the Hanshin Earthquake 10th Anniversary Commemorative Project.

Kentaro Kayama
 Researcher, Human-Computer Intelligent Interaction Group
 Information and Network Systems Department

Report on Network Robot Field Trial (including On-Road Test Run)

NICT's Keihanna Human Info-Communication Research Center (in Seika Town, Kyoto) served as the main site for the "Network Robot Field Trial (including On-Road Test Run)" held on November 24, 2005 and organized by the Research Promotion Council of the Keihanna Info-Communication Open Laboratory and the Keihanna Center for New Industry Creation and Exchange. This was the first testing of robots performed on an actual street in Kyoto. This site is designated as a special structural-reform zone within Kansai Science City. The government gave its approval to the robot road-test project in July 2005. At this event, NICT's Human-Computer Intelligent Interaction Group undertook a range of outdoor experiments, including road-based test runs.

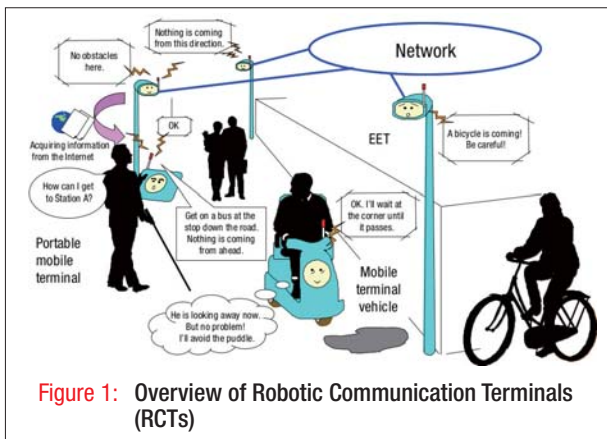


Figure 1: Overview of Robotic Communication Terminals (RCTs)

A network robot is a combination of a ubiquitous network and a robot. As part of the u-Japan Strategy, the Ministry of Internal Affairs and Communications has been promoting the development of network robot technology, with associated R&D activities already underway in many laboratories. At this event, NTT, ATR, Toshiba, and Mitsubishi Heavy Industries performed a joint experiment aimed at using their respective robots in combination to guide visitors to their destinations.

NICT has been developing a set of Robotic Communication Terminals (RCTs) intended to help the elderly and handicapped move safely through the street (Figure 1). On this occasion, we tested the following terminals, which are used in combination to help users (riders) proceed to their destinations safely:

- A mobile terminal vehicle referred to as the "Intelligent City Walker (ICW)"—an electric scooter equipped with various sensors; and
- An environment-embedded terminal (EET) that uses a camera located a few meters above the roadside to recognize objects

moving on the street.

Back at NICT, we had used an ICW alone to recognize and avoid obstacles. On the street, we combined the ICW with EETs, as follows: the EET recognizes a car approaching from a blind spot of the ICW and uses a network to notify the ICW; upon receipt

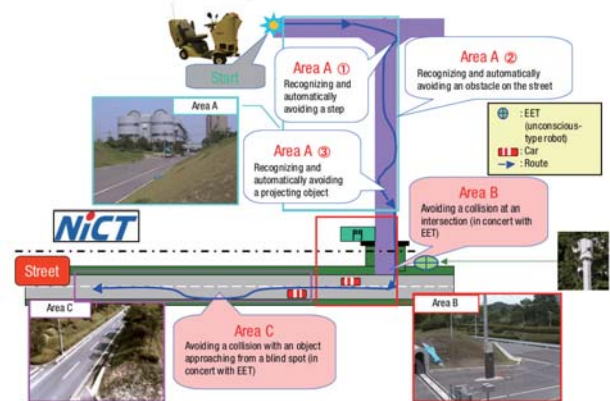


Figure 2: Outdoor test-run route

of this notification, the ICW steers itself to avoid the car (Figure 2). These experiments were open to the public. Some 150 visitors participated in the robot-guiding experiment, and ten people rode on the ICW to experience firsthand how it avoids obstacles (Figure 3).



Figure 3: On-road test run

Six TV stations and six newspapers reported on this field trial.

In the afternoon of the same day, we held a symposium on future developments in open field trials and R&D of network robots at the Keihanna Plaza. The symposium included a lively discussion among panel members and representatives of local residents, including a lawyer familiar with environmental monitoring.

Through continuous R&D and field trials, we will work toward the realization of an environment in which robots can provide a range of services that will enhance the safety and security of everyday life.

Report on China-Japan Information and Communications Technology Forum 2005

Hiroshi Kumagai

Executive Director,
Applied Research and Standards Department

The "China-Japan Information and Communications Technology Forum 2005" took place at the Library of the Chinese Academy of Sciences in Beijing on November 21 and 22. We established this forum based on a comprehensive research partnership agreement concluded this January between NICT and the Chinese Academy of Sciences (CAS). The objective of the agreement is to promote mutual understanding and exchanges of ICT research between the two countries. Guests in the Forum from Japan included Mr. Matsumoto (Director-General for Technology Policy Coordination, MIC), Dr. Nagao (President of the NICT) and Mr. Kawauchi (Vice President of the NICT). Guests from China included Prof. Guo (Deputy Secretary General of the CAS) and Dr. Tan (President of the Institute of Automation, Chinese Academy of Sciences (CASIA)).

Three topics were discussed in the Forum: ubiquitous communications and networks, natural language processing, and remote sensing in Asia. On each topic, one leading researcher from both countries gave a keynote speech, followed by various general speakers. We transmitted live images of this meeting to NICT with the cooperation of the Computer Network In-

formation Center, CAS. CASIA also organized a tour of its facilities, where visitors were shown various products of advanced research into RF tags and biometrics.

There were a total of about 250 participants, many of whom were from the CAS and its subsidiary institutes. Since these institutes have programs for graduate students, many of these students attended this meeting and joined stimulating discussion. There were also many participants from laboratories belonging to Japanese industries based in Beijing. This meeting thus represented a significant step in fostering interaction between researchers from both countries.

This first forum meeting was a resounding success: the two organizations (NICT and CAS) were able to establish the basis of a reliable relationship and began the process of enhancing research exchanges between the two countries. In this context we intend to continue to address the issues raised at the meeting as we work to nurture these new collaborative activities.



Greetings from CASIA President Tan



Greetings from NICT President Nagao