

The Coexistence of Humans and ICT

Thank you, Mr. Thomson.

It is my great honor to have the chance to speak at this prestigious STS Forum.

At the 2005 STS Forum, I spoke about the importance of a society where ICT satisfies people's needs and coexists with humans. This is the importance of "symbiotic life."

The roots of ICT go back to 1977, when former NEC Chairman Koji Kobayashi proposed a new concept: the convergence of communication and computer technologies, or "C&C." This was during his keynote speech at INTELCOM '77. C&C is defined as technologies that minimize and eliminate limitations on people's abilities to transmit information. Dr. Kobayashi expressed his belief that those of us in this industry have an obligation to foster C&C in ways that contribute to people and society.

During the 30 years since his speech, the speed of long-distance communications has increased by about 10,000 times, and the performance of supercomputers has grown by 65,000 times. So we have acquired overwhelming transmission-speed and information-processing capabilities.

The results of these capabilities can be seen, for instance, in simulations by supercomputers such as the Earth Simulator in Japan. The simulations are used to make scientific predictions of a wide range of phenomena, which will have a profound effect on humankind. Consider the temperature increases in the earth's surface shown in Appendix 1 of handouts. They were used in the IPCC's Fourth Assessment Report and contributed to persuasive evidence on global-warming phenomena.

Image-recognition is an example of technology used to increase the safety of people in our automobile society. Lane recognition and detection of a driver's line of sight help prevent accidents by sounding an alarm when the car drifts out of its lane, or when the driver's gaze leaves the road for a specified period.

And terrestrial digital-broadcasting service that can be accessed using mobile phones is an example of the integration of telecommunication and broadcasting.

Thus, ICT can be incorporated into products and services used in all facets of life.

This in turn forms the foundations of a ubiquitously networked society.

However, a concern is that cyber crimes, including the spreading of viruses and the launching of cyber attacks, continue unabated. For example, according to an Internet security report by Symantec Corporation, an average of around 62,000 active bot-infected computers per day were observed between July and December last year as you can see in Appendix 2.

There have also been recent incidents of failures in telecommunication systems that form part of the social infrastructure, resulting in network-based damage affecting extensive areas. To prevent these disruptions, we should introduce and apply ICT that has solid dependability, thereby overcoming technical issues such as availability by minimizing interruption time and the scope of affected areas.

At NEC, we consider the essence of dependability to be the ability to immediately understand the situation when a malfunction occurs. Then, to avoid social panic.

As shown in Appendix 3, the New-Generation Network Concept laid out by Japan's Ministry of Internal Affairs and Communications' Research Committee on Network Architecture also states that networks should be easy to use. This concept points out the importance of networks suited to users, defining a goal of creating user-friendly interfaces.

Computing allows us to analyze human intellectual activities and to evaluate tasks. This in turn makes it easier to increase the efficiency of those tasks and improve work-sharing. By using sensing technologies to analyze human behavior, we can even analyze emotions to enable the monitoring of intellectual activities.

Last year, NEC conducted tests at Akita University Hospital to check the effectiveness of measures to ensure safety and security on the front lines of the medical field. Electronic tags equipped with sensors were attached to intravenous drips, hypodermic needles, and patients to gather information in real time on the status of healthcare management. The goals of this system were to prevent errors in administering intravenous drips and injections and to enable the staff to locate patients who had fallen in an unknown location.

Also, advanced voice-recognition technology is required to support people's abilities. In recent years, it has become possible to recognize the voices of people

in ordinary conversations. This technology was adopted by the Aichi Prefectural Assembly to edit the minutes of meetings. And in accordance with the introduction of trials with juries next May in Japan, a supporting function using our voice-recognition technology will be provided to courts nationwide.

The number of senior citizens in Japan is growing. Some estimates say that in 2030, people 65 years old and above will account for 32% of Japan's population. The National Institute of Informatics, an authority on symbiotic information-system research, pointed out that it is impossible to force seniors to operate systems they do not want to use. So, we must have systems that can be utilized by anyone.

We have been developing a sensor robot that monitors seniors' lifestyle conditions and is shown in Appendix 4. For instance, it checks their eating habits, makes sure they have taken their medicine, and confirms they have locked the doors and turned off the lights.

Moreover, we have conducted tests to verify whether robots can understand physical and emotional conditions through dialogs with seniors and then provide appropriate care. The results have been satisfactory. So, based on the knowledge we have obtained through recent trials, we are currently at the stage of putting these technologies to use in a variety of other fields.

As expressed in the term symbiotic life, we believe the direction for C&C is to contribute to a human-centered society in which the environment, energy, and devices are organically connected. In other words, C&C will create new lifestyles based on the coexistence of humans and ICT. And NEC will, of course, contribute to making this dream a reality.

Thank you.