NTT R&D as a Driving Force of the ICT Society

Noritaka Uji,
NTT Representative Director and Senior Executive Vice President

Overview

Commercial services for the Next Generation Network (NGN) now under development at NTT Laboratories are scheduled to be launched in March 2008 in Tokyo and Osaka as trial areas. To mark the occasion of this launch, NTT Technical Review will be providing stimulating interviews with top executives in the NTT Group beginning with this January issue. Through these interviews, we hope to inform our readers both inside and outside NTT of exciting developments in NTT R&D and NTT Group activities. We are honored to begin this series of interviews with Noritaka Uji, NTT Representative Director and Senior Executive Vice President in charge of technical strategy.

NGN: Key to NTT Group growth strategy

—To begin with, please tell us about the current state of the NTT Group.

At present, the environment surrounding the NTT Group is undergoing a dramatic change. We can attribute this change to various factors. First, advances in information technology (IT) and information and communications technology (ICT) are driving globalization forward rapidly, and the environment surrounding corporate and economic activities is experiencing great upheavals. This is forcing companies to become highly competitive on a global scale. In Japan, problems like labor shortages due to a declining birthrate and sluggish consumption due to a widening of the generation gap, as well as a sense of uncertainty over financial markets and the government, are all affecting the Japanese economy in a big way.

In the cell phone market, the introduction of number portability and reforms in the charging schemes of cell phone operators have created an extremely competitive situation for NTT DoCoMo. Furthermore, factors like huge up-front investments in optical fiber and other facilities have caused revenues and profits in NTT Group businesses to fall. Needless to say, the present environment looks very severe.

At the same time, the rate of broadband deployment in Japan today is the highest in the world, creating an environment in which users can enjoy high-quality services at the lowest rates on earth. Furthermore, in fields like optical communications, Japan possesses technologies that no other country has yet achieved. Looking to the future, the contribution and impact of ICT in society should only become greater, which is why I think that the current state of the NTT Group will have to change for the better in the not too distant future.

—NGN appears to be a major pillar of growth strategy in the ICT field.

That's right. We plan to focus most of our attention on the NGN as an important pillar of NTT Group's strategy for growth. The NGN is a high-security network having high-quality, high-reliability, and high-capacity properties while also featuring a high degree

of freedom. We must first construct a solid NGN infrastructure and then roll out attractive services that make full use of the features I just mentioned. These two elements are indispensable to the expansion and widespread use of the NGN.

We can expect the role of NTT Laboratories, which is heavily involved in NGN R&D, to become increasingly important in the years to come. And for the NTT Group, the development of the NGN will surely become a key to creating new opportunities for growth. I believe that the NTT Group will be able to contribute significantly to the creation of new services in fields born out of the convergence between broadcasting and communications and between fixed and mobile communications, and, for that matter, between personal computers and mobile devices.

Focusing management resources on NTT Laboratories' strong fields while maintaining a balance between basic research and business

—What kind of expectations are placed on NTT Laboratories as research laboratories for a telecommunications carrier?

When I returned to NTT after 20 years at NTT DATA, I immediately made the rounds of all the laboratories. What I saw reinforced my feeling that these laboratories are an invaluable asset for the NTT Group, and by extension, for the network society. Among research laboratories belonging to a telecommunications carrier, there are no others that can boast of such extensive facilities and advanced technologies not to mention high-caliber personnel. We receive visitors from many companies, and one comment that we often hear after giving them a tour of our facilities is that NTT Laboratories is like a treasure trove. There are consequently great expectations of NTT Laboratories not only within Japan but throughout the world. To live up to those expectations and expand NTT-developed technology throughout Japan and the world, I think that tie-ups with academia, the private sector, and other carriers both inside and outside Japan will become increasingly important.

—Doesn't the pressure to reduce R&D expenses and shorten the research cycle while being asked to produce great results present a difficult challenge to NTT Laboratories?

Yes, that's the way it is. Each research laboratory strives to fulfill its mission with limited management resources. Nevertheless, I think that this problem can be solved to some extent by striking a balance between these two opposing demands.

In R&D, there are two types of activities: in one type, no results appear without a suitable amount of time being spent; in the other, results must be produced in a very short period of time. For the former type of R&D, researchers must have a long-term view while taking risk into account in order to discover new principles that may transform society and develop breakthrough technologies that can drive business expansion. To be specific, NTT Laboratories should pursue basic research in a step-by-step manner in the fields in which it is strongest such as optical-communication technologies, material-crystallization technologies, and search technologies.

On the other hand, for the latter type of R&D, new products and services must be developed in relatively short periods of time to meet the current needs of our customers. It is this kind of technology that I would like to steadily transform into business applications and intensify in the years to come through NTT's Comprehensive Producer Function initiative while shortening the distance between R&D and NTT business companies.

I believe we must promote R&D that can demonstrate the strength of the NTT Group while trying to maintain a balance between these two demands.

Information exchange beyond the framework of NTT Laboratories and active tie-ups with research institutions and companies here and abroad

—What kind of attitude would you like NTT researchers to adopt in their research?

All of our researchers are specialized in one field or another, but I would like to see them take on a broader outlook to keep them from entering an octopus trap that shelters them from the outside world. To this end, researchers should engage in positive exchanges with outside parties. Exchanges in the form of joint research with overseas researchers have recently become popular, and I believe that opportunities for tie-ups and alliances with other researchers, universities, and companies, among group companies, and with government-affiliated research institutions will increase all the more in the years to come.

To ensure that personnel exchanges go smoothly, researchers must make an effort to have other people

understand their own research. At the same time, they must strive to understand exactly what is going on in the outside world. In short, I would like to see confident and motivated researchers who are excited about their research activities. From the viewpoint of benchmarking, I would like researchers to make an effort to observe the current state of their research and engage in timely and strategic information dissemination.

—How do you go about getting researchers to communicate with each other?

The book "Mechanism of the Evolving Enterprise" [1] includes a case study of NTT DATA's in-house social networking service called Nexti. Inside NTT Laboratories, there is a similar social community called the Sum of Wisdom [2]. This community, launched in January 2004, provides a mechanism for sharing and exchanging information beyond the research laboratory with the aim of creating new ideas. While the scale of the Sum of Wisdom is not as large as that of Nexti, I am very glad to see that there is a real move toward using such a mechanism within NTT Laboratories.

The success of an in-house community depends on whether information can be disseminated and exchanged in a voluntary manner. For this reason, no one is forced to participate in the Sum of Wisdom. The feeling is that a much better effect should be obtained if researchers are able to participate naturally, autonomously, and energetically in discussions. Likewise, from my side, I think that disseminating information on what the NTT Group requires of NTT Laboratories and on overseas expectations should help to establish a lively exchange of ideas and the sharing of information throughout the laboratories, thereby creating a synergetic effect.

I would like to hold discussions, in particular, with research staff members in their 20s, that is, those who will take on the work of NTT Laboratories in the future, and with researchers in their 30s and 40s that are now taking on various levels of responsibility. I therefore intend to seize all available opportunities to expand communication with the research staff in every research laboratory and department. I want to expand interaction not just by means of the Sum of Wisdom but by real communication as well.

—As senior executive vice president in charge of technical strategy, what leadership role do you plan to take for the future?

The assets of NTT Laboratories are its research results accumulated over the years and it research personnel. To make the most effective use of these assets, we must concentrate on raising the potential of our personnel and making them more powerful as researchers. We must get them to learn about real-world needs through various kinds of tie-ups and we must establish whatever policies or mechanisms are needed to improve personal skills. I would like NTT researchers to be always conscious of how NTT research stands up to that of our competitors and to carry out research with a mindset of taking on the world.

One more thing that I must do is to give clear direction as to what we plan to take on and how we plan to do it. Up to now, our research issues have centered on what kind of new architecture should be used to build the NGN, what new ideas should be applied in building it, how security will be achieved, and to what extent we should follow the international flow of NGN development. From here on, however, we must think about what kinds of services must be developed for the NGN. In other words, we must fix our direction on how we are going to do what. It is important that this attitude be shared by NTT Laboratories and NTT business companies and that it become an integral part of NTT Group growth strategy.

To carry out these measures, I would like to create mechanisms for promoting and completing projects that enable us to capitalize on business-company experiences, obtain a global understanding of diverse demands and real-world needs, deepen our discussions within the NTT Group, including NTT Laboratories, on what we are going to do and on what direction we should take R&D, and produce even greater results.

References

[1] T. Suzuki and N. Uji, "Mechanism of the Evolving Enterprise," PHP Business Shinsho, October 2007 (in Japanese).
[2] Special Issue: "Sum of Wisdom—Development and Support Activity of Intra-community Contributing to Enhancement of Business Value," NTT Technical Journal, Vol. 19, No. 1, pp. 38–59, 2007 (in Japanese).

Interviewee profile

■ Career highlights

Noritaka Uji joined Nippon Telegraph and Telephone Public Corporation (now NTT) in 1973. In 1988, he moved to NTT DATA, where he was initially in charge of planning and developing information systems for private enterprises and consulting and business proposal activities. He then served in various managerial roles including senior vice president and director of the Next-Generation Information Services Sector, senior vice president and director of business planning, and senior vice president and director of enterprise-related sectors. Building on these experiences, he took on the management of enterprise-related areas, new-business areas, security strategy, and information-systems strategy from 2005 as executive vice president. He began serving in his present position in 2007.