Ask Not What Can Be Done but What Should Be Done—True Achievement Is Not Just Creating New Business but Clarifying One's Role in R&D

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Overview

In the wake of the Great Eastern Japan Earthquake of 2011, the importance of the network has been reaffirmed. What, then, does society expect of the NTT Group as a carrier that includes research laboratories? We asked Hiromichi Shinohara, NTT Senior Vice President and Director of the Research and Development Planning Department, to tell us about the stance that researchers should take against the backdrop of a rapidly advancing mergers-and-acquisitions business environment extending across national borders.

Following an unprecedented earthquake, Japan takes on the urgent task of developing network services that are more robust to disaster

—Mr. Shinohara, please tell us about the environment that currently surrounds R&D at NTT.

The Great Eastern Japan Earthquake has certainly forced us to rethink many things. It had always been our intention to construct a highly reliable, robust network, but upon objectively evaluating the damage caused by this earthquake, we could see that there are areas where our efforts have come up short. In particular, the effects of this disaster have made us keenly aware of how much our network depends on electricity. Our primary goal, therefore, should be to construct a network that is less dependent on commercial power supplies.

At the same time, we should look at the changes that occurred in the makeup of NTT revenues in the 2000 fiscal year. Up until that point, revenues and expenditures for optical services had never been able to move into the black. Moreover, we needed to make up for declining revenues from conventional telephone services by increasing revenues from Internet protocol (IP) services, but that goal has not yet been reached.

However, at NTT EAST, further expansion of optical facilities and aggressive provision of services by NTT business companies have helped to move optical services into the black on a single-year basis, and increases in IP service revenues have finally made up for the decreases in telephone service revenues. This is a result of an increase in the average revenue per user (ARPU), and I believe that we should undertake more research and development (R&D) with an eye

toward further increasing the ARPU.

In addition, there are many customers who are still using metallic circuits. It is therefore important that we create an environment that enables these customers to make a smooth transition to optical services and that we propose attractive ways of using these services. There are also groups of people such as the elderly who appear to have difficulty entering the world of the Internet. I believe that we can contribute to improved revenues across the entire NTT Group by providing optical services that can be used easily by such groups, thereby expanding the customer base.

—NTT has been energetically promoting Green ICT for these last two years. This initiative, which includes power consumption reductions as well as environmental conservation, would appear to be relevant even at the time of a disaster such as the recent earthquake.

Yes, we have been working diligently to lower overall power consumption to reduce CO_2 emissions. Now, however, after the earthquake, we also need to reduce the peak power consumption in addition to the overall power consumption. At the same time, we need to create new mechanisms that can prevent communications from being disrupted even if commercial power supplies are no longer available.

To put this into perspective, let's think back to the era of the analog telephone for a moment. The simple act of picking up the receiver would immediately connect a circuit, meaning that current would begin to flow and that the system would start using electricity. By contrast, optical services are always connected, so current is always flowing. With this being the case, studies have begun on control schemes in which the amount of power consumed is commensurate with the amount of communications performed.

While the recent disruption of communications can, of course, be attributed in part to immediate failures caused by the earthquake and subsequent tsunami, the biggest factor here was the eventual depletion of backup power supplies in radio base stations and NTT office buildings due to the relatively long cessation of commercial power. This is why I would also like to improve current technologies for storing energy as well as to develop and deploy new technologies of this kind so that we can provide customers with stable services over longer periods of time.

—We have heard that NTT's laboratories played a major role in recovery efforts after this earthquake.

NTT faces a variety of problems every day in the process of operating a network, and in order to come up with solutions and reflect them in the field, its business personnel and researchers interface with each other to exchange ideas and opinions. In other words, the ability of business personnel and researchers to collaborate to determine R&D priorities reflects the strength of a carrier that has its own research laboratories. In terms of making contributions to society, I think we should make the most of our strengths, whatever they may be.

Meeting diverse needs by accepting outside technologies in order to enhance service development

—The environment surrounding R&D has really changed since the earthquake. What issues do you think will be important in the future?

Of particular importance is improving our service development capabilities. For example, media processing technologies such as speech processing, image processing, and Japanese-language processing are essential to providing new services. In this regard, the NTT R&D Laboratory Group (NTT R&D) is fortunate in being highly competent in such technologies. But that is not to say that simply developing new technologies will enable us to create attractive and commercially viable services. For new services to be successful, convenience and market timing are also important. That is, new services must also provide the customer with convenient functions and they must be released to the market at just the right time. Up to now, however, NTT R&D, in addition to developing

key technologies for the creation of new services, has also been involved in the development of services themselves and the making of proposals to NTT's business companies. As a result, researchers, who do not necessarily specialize in such areas as customer convenience and market timing, have taken it upon themselves to do so. What researchers do best is technology development, and in this field, they tend to be perfectionists, which can cause them to take more time than perhaps necessary to release new technology.

Looking forward, I would like to promote the development of basic technologies, which is a strong point of NTT R&D, while also rapidly bringing those technologies to the attention of NTT business companies. In this way, we can receive feedback from them on aspects in which they specialize, such as how to make functions even more convenient, and quickly incorporate that feedback into the development process. In short, I would like to pursue unified development of new services together with the business companies so that NTT can release highly competitive services to the market in a timely manner.

As services become increasingly diversified, technologies behind those services are likewise becoming quite varied. Since we cannot develop all of those technologies, we must closely consider what technologies we should tackle on our own from among those needed to configure services. I believe that, instead of adhering to just our own technologies, we should be ready to accept technologies based on ideas from the outside and the expertise of others. In other words, I think that we should face the challenge of creating new services with a spirit of open innovation. This same kind of attitude is also needed in the expansion of NTT's global business. In addition to proposing and providing our products overseas as we have been doing up to now, it is becoming increasingly important that we pursue open innovation with NTT overseas consolidated subsidiaries and overseas companies.

True achievement is not just creating new business: It's clarifying one's role in R&D

—*It appears that the effects of the earthquake and the acceleration of globalization are forcing researchers to change their way of thinking radically.*

Looking back at the way I was trained, I can say that my mindset has been to aim for perfection and deliver results. I think that many researchers have naturally adopted a similar attitude. However, the world is changing quickly and the services that people desire are becoming increasingly diverse. For these reasons, I am asking researchers to rethink what it means to make a contribution to NTT's business. In particular, I am telling them that making a contribution does not simply mean introducing researched and developed technology to the business companies so as to turn a profit and reduce expenses. Making a genuine contribution comes in a variety of forms. In fact, I have defined six ways of making business contributions.

(1) Short-term R&D to introduce R&D projects to business companies, turn a profit, and reduce expenses
(2) Development of a competitive R&D engine while promoting open innovation
(3) Medium-term R&D with the aim of making drastic improvements in business operations
(4) Cutting-edge R&D that can have a major impact on society
(5) Support for business companies through optimal use of technology and contributions to business operations through advice based on accumulated knowledge
(6) Promotion and support of efficient R&D operations

It is also important that we assign targets to each of these research roles. I tell our researchers to think not

I believe that by working to create new services by setting high goals, demonstrating our strong points without being ashamed of our weak points, and accepting the expertise of others through open innovation, we can achieve great breakthroughs.

only about what can be done but also about what should be done while pursuing their work. This is because if we compare the accumulated results of *what can be done each year* after ten years with the results of *setting targets that should be achieved in ten years time*, we will see a big difference in the level of achievement and the results obtained, even for the same area of research. Researchers need to set high goals and devote their efforts toward achieving them.

In this way, by clarifying the role that each and every researcher needs to take on and by pursuing R&D with high goals set for each role, I believe that we as researchers can make more extensive and meaningful business contributions.

Interviewee profile

■ Career highlights

Hiromichi Shinohara received the master's degree from the Graduate School of Waseda University in 1978 and entered Nippon Telegraph and Telephone Public Corporation (now NTT) in the same year. He became a project manager in the NTT Access Network Systems Laboratories in 1998. In 2003, he became an executive research engineer and subsequently the general manager of the Access Network Service Systems Laboratories of the Information Sharing Laboratory Group. In 2007, he became the Director of the Information Sharing Laboratory Group. In 2009, he was elected Senior Vice President and Director of the Research and Development Planning Department of NTT. Since June 2011, he has doubled as the Director of the Information Sharing Laboratory Group.