Innovation and Collaboration: Ride a Big Wave, Create a Big Wave —Towards the Next Stage in 2014

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Overview

Technical innovation in the world of information and communications technology has certainly been amazing, especially in cloud computing, big data, and security. Today, the telecommunications industry is looking for even more technological leaps, and the NTT Group is playing a hub-like role in this endeavor. We asked Yasuyoshi Katayama, NTT Senior Executive Vice President, about the company's objectives for 2014 "towards the next stage."

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Towards the next stage: a revolutionary era for all of society

—Mr. Katayama, what was last year like for the telecommunications industry?

It's been no more than a year or so since the NTT Group announced its Medium-Term Management Strategy "Towards the Next Stage" in the fall of 2012, but I can already see that a variety of technical and social trends have taken root, which makes me feel that the move "towards the next stage" has truly begun.

Beginning with advances in individual technical fields such as the cloud and big data, information and communications technology (ICT) has grown to a point where it is now beginning to generate new value overall.

In the field of smart grids, for example, electric power companies have begun to introduce smart meters in earnest, and in the field of cloud computing, orders from our customers to have their internal systems moved to our cloud have been accelerating. Furthermore, in the field of big data, the Internet and ICT are coming to generate new value by applying big data in a common-sense manner to the analysis of Twitter posts, to data analysis in elections, etc.

The use of ICT in a wide variety of fields is coming under the spotlight even as a matter of national policy—I believe that society on the whole is looking for change in this direction.

—Amid these changes, what has the NTT Group achieved and how does it plan to face the challenges of 2014?

Since last year, we have been focusing our attention on the global cloud business, and one achievement here is that NTT Group companies that have been expanding overseas through M&A (merger and acquisition) activities have begun to generate a synergetic effect with each other and enter new markets.

Furthermore, the great potential of the NTT Innovation Institute, Inc. (NTT I^3) established in May 2013 in Silicon Valley is materializing, and concrete results even in business terms are beginning to take

shape. The feeling is that NTT I^3 has already established a strong foundation and that the seeds of new business are beginning to sprout in many areas.

Cloud, big data, and security: today's growth fields

We can expect the field of cloud computing to continue growing into the future. At present, we are providing individual companies with means of entrusting their systems to us and making full use of the advantages of cloud computing through cost controls and flexible mechanisms tailored to the scale of their businesses. But looking to the future, we see our cloud as playing the role of an intermediary that connects information between company A and company B that have so far had no point of contact. In this way, we think that we can create new services and industries as a new movement in cloud computing.

Our aim is to provide a place where such business activities can blossom and to support the businesses of individual customers and the businesses born out of customer tie-ups. Of course, we are just one player among many in the field of cloud computing, but we believe we can help our customers in various industries and fields to manifest their full abilities by providing them with an extensive ICT infrastructure. For example, we created a group called "Japan Connected-free Wi-Fi" that interconnects operators that provide open Wi-Fi at airports, train stations, and other locations. Up to now, the word "connect" in our business implied the provision of communications such as by connecting two telephones. As we go forward, I would like the NTT Group to expand upon this role by helping companies, businesses, and services to connect with each other, that is, to collaborate.

Meanwhile, big data technology is making it possible to deal with data that up until recently was not very manageable. For example, smartphones are equipped with a variety of sensors such as those for handling GPS data, and the network connection provided by smartphones has made it easy to collect and store data at low cost. In addition, the detailed analysis of information has become possible thanks to greater computer processing power and advanced software techniques. As a result, information that had previously been treated as obscure and out of reach is now being targeted for creating real value.

This capability is being applied in the field of marketing too. While the answer to the question "What do I need right now?" can be inferred from that person's purchase history, we might be entering an era in which big data analysis techniques will be able to determine what those needs are more accurately than the person in question (smiles).

As for network security, this is a major issue of concern. In addition to requesting individual customers to change their passwords frequently to prevent malicious behavior such as spoofing (impersonation), we still must provide a solid guarantee of safety on the network above and beyond such safe practices.

From the beginning, it has been difficult to predict security threats, and while threats have traditionally been of the mischievous type, they have recently been morphing into those associated with crime, terrorism, and other heinous activities. We must therefore construct systems that can stand up to attackers, but given that new technologies are constantly being developed and promptly incorporated into attacking schemes, it would be hard to say that any set of security measures could cover all threats completely. It is said that we have entered an era in which attacks on users must be prevented through the collaboration of multiple players since no single operator can deal with all threats to its users.

With this in mind, my plan is to promote research and development efforts in security while listening to our customers' comments and opinions, and in addition to developing world-leading security technologies, I would like to see a higher level of interaction among our global operations in regards to security.

Furthermore, when talking about security, attention must be paid to the value of the information in question. For example, a terrorist attack on a country's smart grid can halt the supply of power and simply paralyze the social functions of that country, and an attack on a hospital's computer system can corrupt information related to medical care and put patients' lives at risk. Research and development (R&D) must

proceed taking into account the abilities of attackers, the vulnerabilities of systems, and the value of target information.

Creating an ICT environment for stress-free sharing by customers

—Can you give us some uplifting words as 2014 begins?

We expect 2014 to mark a full-scale recovery of the Japanese economy while being a year of much activity including the launch of preparations for the *big event* in 2020.

At NTT too, we see 2014 as being an auspicious year. We aim to provide new technologies and to create an environment in which customers can access the information they need in a stress-free manner and jointly experience a deeper level of feelings and emotion through ICT.

Let me give an example in relation to high-definition television (TV), which is a technology familiar to all of us. At the current level of resolution, the true worth of high-definition TV comes out in scenes involving movement, as in a program broadcasting a sports event. But at 4K or 8K levels of ultrahigh definition, such scenes invoke feelings or emotions completely new to us. In fact, even in a program having little movement, as in the broadcast of a Japanese chess match (shogi), ultrahigh-definition images can convey even the tension felt by the players. Similarly, in videoconferencing, it has not been possible up to now to observe fine points in the other party's facial expressions such as detailed eye movements, but ultrahigh-definition technology makes that possible.

When the era of ultrahigh-definition video truly arrives, telecommunication operators will be obliged to support the transmission of such video over the network. According to forecasts made by IDC, the market research company, the global amount of information will increase by more than 30 times the present level by 2020. How will we deal with this explosive growth in traffic? This is not simply a matter of increasing and enhancing our telecommunication facilities.

Up to now, we have been able to handle increases in the amount of network traffic as content expanded from email to images and video by developing technology from a hardware perspective. Our problem here was how to increase the capacity of a single optical fiber to carry more information. Going forward, however, we must work to enhance network capabilities from both hardware and software points of view. We must implement without delay such mechanisms as efficient data transmission using the HEVC (High Efficiency Video Coding) format and proactive, predictive type of network control using SDN (Software Defined Networking), which enables flexible control by converting network processes to software. This is what I believe is our mission in 2014.

It has been said that locations such as Singapore and Hong Kong have served as Asian hubs, but I can envision Japan becoming a world hub using advanced ICT such as the 4K/8K ultrahigh-definition technology that I just mentioned. It has also been said that Japan is a country at the frontier of emerging social issues, and in this sense, I would like to see Japan solve its agricultural and medical-care problems through ICT originating in Japan and thereby fulfill its role as a member of the global community. I truly believe that ICT has the power to solve such key social problems that affect many developed nations.

Taking the lead with a sense of balance and an acceptance of collaboration

—What are your hopes for R&D?

The network control and security measures that I just talked about are the conditions that must be met

for ICT to be an *enabler*, to perform its functions correctly. Though we take great pride in being one of the top companies in the telecommunications industry even on a global basis, getting these technologies to a level where they can actually be used to provide services to our customers will require that we first implement the results of R&D in our business operations and create a rock-solid network.

In this regard, we are not yet at the point where we are confident enough to introduce, for example, this advanced network control technology on a global level, so I don't think that we have to be alone at the head of the pack as long as we maintain our standing as a top-level player.

NTT personnel involved in R&D have never worked with a catch-up frame of mind. They have always set their goals high with the aim of developing world-leading technologies. For this reason, I would like to see our researchers feel their way forward and undertake their work with a firm sense of direction. I want them to make NTT a global driver of technology.

Even if we were to be "running in the lead," we could never do everything on our own. For example, when requesting a vendor to manufacture certain equipment, costs could escalate and create havoc if we did not procure that equipment under the condition that many other parties must be able to use it and not just ourselves. To prevent such havoc, I think that it's very important that we disseminate our R&D results widely and provide equipment and technologies that everyone can use while collaborating with other operators in the world. On the other hand, I would like NTT to be number one in the advanced research of translation technology. However, it won't work to adopt a self-centered attitude here. In the end, it all comes down to having a sense of balance in our R&D endeavors.

The Japanese economy is now regaining its health and spirit. With the big event in 2020 as a target, I feel that a big wave is coming, in which Japan's presence in the world will reach new heights through the power of ICT.

Accordingly, to help invigorate society even more, I ask our researchers to work with the aim of riding this wave, and if possible, to even create a wave of their own.

By all means, let's use ICT to create a movement in a positive direction. Let's bring about change—we can't just stay still.

"My best work is my next movie!"
—Charlie Chaplin

—Mr. Katayama, can you say a few things to everyone in the NTT Group?

Of course. It's not just a matter of providing services on our own. There are a variety of players in the industry, and we must find out what they are doing and what they are thinking, and we must pursue tie-ups with them.

Charlie Chaplin famously said "My best work is my next movie!" It's important that we think about what we will do next. Let's take up the challenge of doing something new. Instead of going deeper into things that we already know about, let's undertake new things going forward.

To grow as a group that is recognized by society for its innovation, collaboration is essential. For example, NTT and Dwango formed a business alliance in July 2013. I would also like to promote collaboration with people in genres new to the NTT Group to stimulate ideas and create new value.

Customer needs play a big role here, and there are many things that can be created to satisfy those needs. Since we don't know in advance what value can be found where, we should attach great importance to interacting with people in fields that are new to us.

Interviewee profile

■ Career highlights

Yasuyoshi Katayama joined Nippon Telegraph and Telephone Public Corporation (now NTT) in 1976. He became Senior Vice President and Executive Manager of the Fundamental Services Department and Executive Manager of the Plant Planning Department of NTT WEST in 2004, Senior Vice President and General Manager of Networks of NTT WEST in 2006, and NTT Senior Vice President and Director of the Technology Planning Department in 2008. After serving as NTT Director and Executive Vice President and as Director of NTT's Technology Planning Department from 2009, he took up his present position in June 2012.