

NTT Research and Development Efforts Supporting Global Business Expansion

Ryuichi Sumi and Kei Karasawa

Abstract

Global business is one of the pillars of growth of the NTT Group, and it has been expanding a great deal due to factors such as mergers and acquisitions. Research and development (R&D) efforts to support that growth are also expanding in various forms. The Feature Articles in this issue introduce examples of the R&D efforts underway at operating companies of the NTT Group in various regions around the world.

Keywords: digital transformation, strategic innovation, global R&D

1. NTT's global business

Under its medium-term management strategy announced in 2015, the NTT Group has made global business one of the pillars of growth, and in fiscal year 2017, the group's non-domestic sales increased to \$19.5 billion, which includes profits of \$1.0 billion. As a result of proactive mergers and acquisitions by the NTT Group, approximately 116,000 people—about 40% of the group's employees—are currently working outside Japan, and the importance of the group's global business is increasing.

The NTT Group's customer base has been expanding in various regions since the acquisitions of Dimension Data by NTT in 2010 and everis by NTT DATA in 2014. Moreover, in 2013, NTT Innovation Institute, Inc. (NTT i³), which conducts research and development (R&D) in North America in the cloud and security fields, was inaugurated, and it took up the challenge to develop various services from scratch.

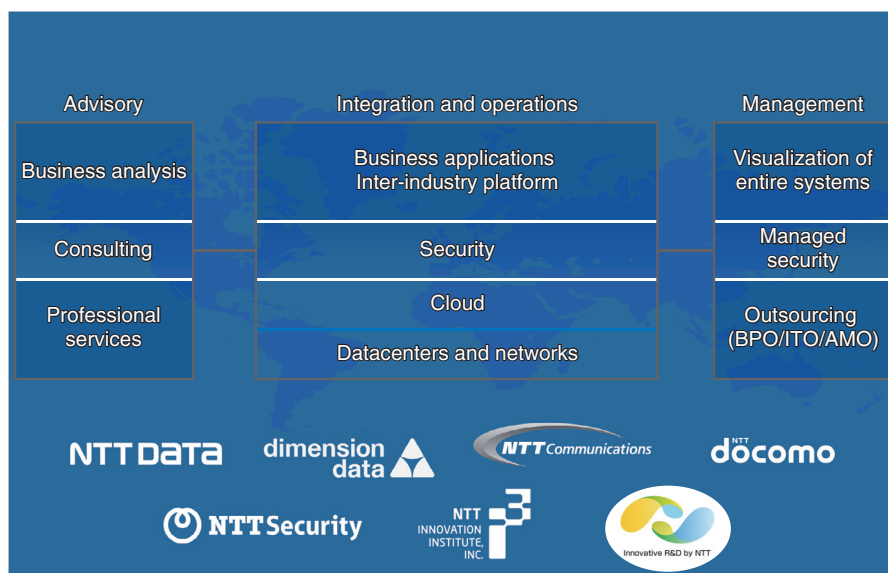
It has become our strength that by fusing these activities, NTT Group companies are cooperating globally and supporting customers by offering full-stack services ranging from information technology (IT) infrastructure such as networks and datacenters to business applications through their full lifecycle

from the advisory phase to the management phase (Fig. 1).

2. System structure to support digital transformation

In the NTT Group, in addition to our existing IT infrastructure business, it is becoming more important to help customers make a digital transformation in a full-stack manner, such as by offering managed services and applications, and to provide new value to them by utilizing innovative digital technologies created through R&D. Accordingly, we are seeking to utilize digital technology to strengthen our advisory and proposal capabilities in order to respond to the business challenges set by our customers. We thus consider it necessary to strengthen our software-defined, flexible cloud services, our security services responding to sophisticated cyber-attacks, and our business applications that perform advanced analysis and prediction from diverse data. We also consider it important to establish strong relationships with customers that lead to provision of new services by operating services and operation processes in an end-to-end manner and by maintaining our customers' security.

Until now, by repeating studies and examinations



AMO: application management outsourcing
 BPO: business process outsourcing
 ITO: information technology outsourcing

Fig. 1. Overview of global business areas.

with various customers such as universities, customers working on digital transformation (in the fields of sports viewing and nature conservation, for example), and customers with complex systems (such as the financial industry), and by creating new value after each study, we have accumulated trust as a partner supporting digital transformation.

In Japan, we are collaborating with partners on the basis of the B2B2X (business-to-business-to-X) model, which is aimed at creating new value utilizing technologies developed through NTT Group's R&D, including that of the NTT laboratories. When providing that value to global customers, it is a challenge to build a local support system. We are therefore fostering human resources within our global operating companies, particularly presales staff (who can explain technologies) and sales engineers (who can perform multiple duties including maintenance) to build a system to support our customers' digital transformation on-site (Fig. 2).

In the future, to further accelerate the global roll-out of technologies developed through the NTT Group's R&D, we believe that cycles that create new differentiated technologies based on customer needs and obtained from companies operating globally will become even more important.

3. Steps toward driving innovation

The NTT Group's R&D needs to achieve innovation, and in terms of future changes, it is important to substantiate value in cooperation with customers. Given that importance, it is necessary to predict future changes by investigating technology trends, to create ideas to convert those changes into value tailored to the customer, to create services that substantiate ideas by experts, and to construct an ecosystem in which services continue to be provided globally (Fig. 3).

These Feature Articles introduce efforts to promote innovation through R&D by our core global businesses, namely, the NTT Communications Group, NTT DATA Group, Dimension Data Group, and NTT i³.

In particular, we introduce digital transformation efforts by the NTT Communications Group that utilize NTT's artificial intelligence (AI) technology called corevo[®] cultivated in Japan for customers in Asia [1]. We also explain the work being done in the Dimension Data Group involving technologies such as AI, Internet of Things (IoT), and blockchain. Then, endeavors towards new digital transformation such as those concerning North American professional sports and animal protection in Africa, as well as new efforts

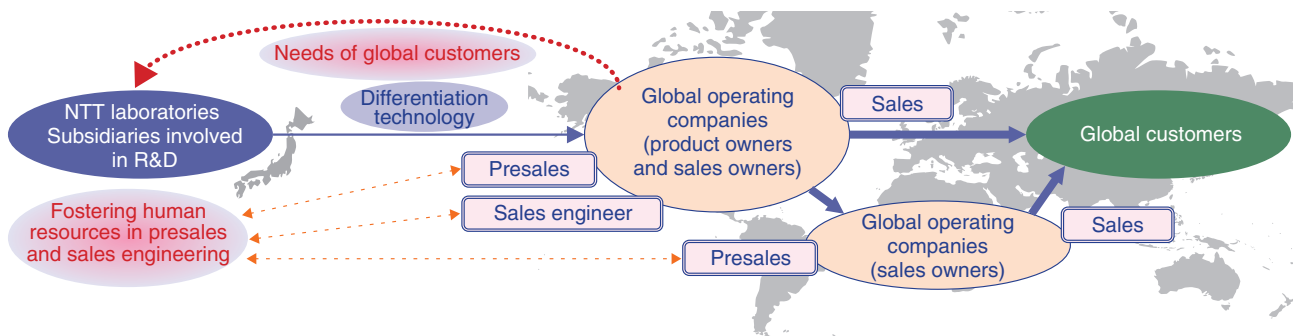


Fig. 2. System for global roll-out of NTT R&D technologies.

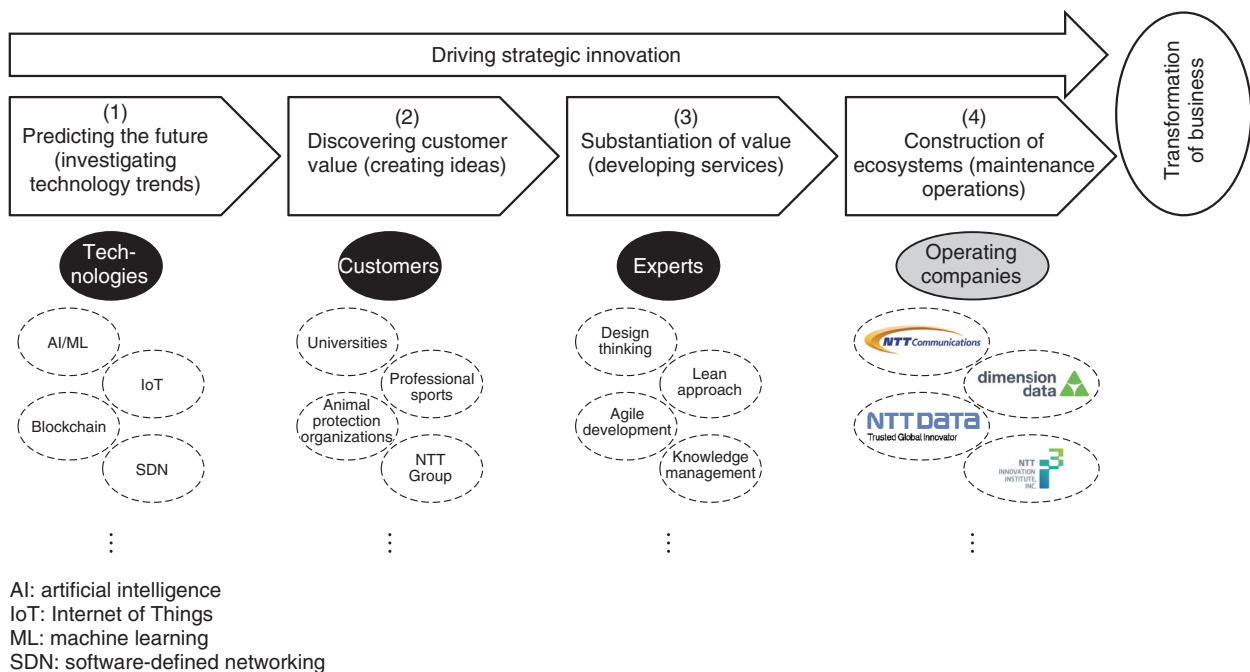


Fig. 3. Steps toward driving innovation.

in collaboration with NTT Group companies are introduced [2]. Efforts of the NTT DATA Group include work being done to develop mechanisms for strategic innovation, efforts concerning design-thinking development for customers such as European universities, and an example of ecosystem construction are introduced [3, 4]. NTT i³'s efforts concerning the new CLOUDWAN service launched in 2017—which integrates software-defined networking and network functions virtualization—and its development in the IoT field are also introduced [5].

Through the above-described efforts, the NTT

Group is pursuing further growth through global business development centered on digital technology cultivated both in Japan and the rest of the world.

References

- [1] Y. Kishimoto, A. Taji, and J. Maruyama, "Initiative Concerning Global Service Development by NTT Communications," *NTT Technical Review*, Vol. 16, No. 10, pp. 10–13, 2018. <https://www.ntt-review.jp/archive/ntttechnical.php?contents=ntr201810fa2.html>
- [2] N. Ahmad, "Dimension Data: Enabling Our Clients' Digital Transformation Journey," *NTT Technical Review*, Vol. 16, No. 10, pp. 14–22, 2018.

<https://www.ntt-review.jp/archive/ntttechnical.php?contents=ntr201810fa3.html>

- [3] C. Galve, "SuSI (Supported Smart Innovation) Leads Strategic Innovation by everis," NTT Technical Review, Vol. 16, No. 10, pp. 23–28, 2018.
<https://www.ntt-review.jp/archive/ntttechnical.php?contents=ntr201810fa4.html>
- [4] G. Scarpelli, "Open Innovation Strategy Pursued by NTT DATA

Italy," NTT Technical Review, Vol. 16, No. 10, pp. 29–33, 2018.

- <https://www.ntt-review.jp/archive/ntttechnical.php?contents=ntr201810fa5.html>
- [5] T. Motohashi, "CLOUDWAN: NTT i³ Software-defined Wide Area Network Solution for Edge Computing," NTT Technical Review, Vol. 16, No. 10, pp. 34–38, 2018.
<https://www.ntt-review.jp/archive/ntttechnical.php?contents=ntr201810fa6.html>



Ryuichi Sumi

Vice President, General Manager, Research and Development Planning Department, NTT.

He received a B.E. in administration engineering from Keio University, Kanagawa, in 1988 and joined NTT Software Laboratories the same year. He studied software development support environment for CHILL (CCITT High Level Language for telephone switching systems) using a UNIX workstation and the Internet during 1988–1994. He moved to NTT Multimedia Business Department, where he developed a video-on-demand system over an optical fiber network with Microsoft. He also worked at NTT WEST and was actively involved in developing a local area information-sharing portal and a video conference system over Internet protocol (IP) networks. After that, he was with NTT Resonant, where he established a live entertainment ticket information service company with ticket sellers. When he returned to NTT, he led open source projects and joined the InfoQ, Java and JBoss communities and fostered committers. He also managed the development of network technology at the Information Network Laboratory Group. He has been in his current position since 2016, where he oversees the promotion of the Laboratory Group's technical achievements.



Kei Karasawa

Senior Manager, Research and Development Planning Department, NTT.

He received a B.E., M.E., and Ph.D. from the Department of Information Systems Engineering, Faculty of Engineering, Osaka University in 1994, 1996, and 1999. Since joining NTT in 1999, he has been engaged in research on IPv6 networking, network security, and cloud computing. From 2005 to 2006, he was a visiting scholar in the Applied Cryptography Group at Stanford University, California, USA. He is a member of the Institute of Electronics, Information and Communication Engineers and the Information Processing Society of Japan.