

NTT Activities Toward Expanded Telework

Yukie Tachi[†] and Yoshiaki Noda

Abstract

NTT has implemented teleworking for its own employees and aims to expand the use of telework in Japan. It has investigated why, despite the availability of various products for making effective use of telecommunications, telework has still not made sufficient inroads into society.

1. Introduction

Teleworking is a theme that has long been pursued by telecommunications companies, but so far it has been unable to produce spectacular results in society. Even in the NTT Group, which has already established a telework system, employees that are actually working from home (telecommuting) on a daily basis are in the minority. One reason for the small scale of telework is poor data security: there have been several high-profile information leaks in recent years.

The R&D Produce Group in the NTT Research and Development Planning Department has been promoting *incubation produce* activities since April 2010 with the aim of identifying technology trends and social changes early and discovering and cultivating new service and business seeds. Telework is one of the themes targeted by these activities. Of course, the use of telework is still a work in progress, but looking back at 2011, when many people actually did telework after the Great East Japan Earthquake of March 2011, which led to the implementation of power-saving measures, NTT is aiming to further expand telework in 2012 on the basis of valuable experience gained during that time. In this feature article, we first introduce a survey of telework tools. Then, after touching upon the summertime power-saving measures in 2011 and a vision for telework, we present an in-house use case of a business continuity plan at NTT Communications. We then introduce solutions

that exploit the technical expertise of the NTT Group, discuss telework trends in Japan, and describe a satellite-office social experiment.

2. Telework tools

What types of tools are needed for telework? Here, we summarize some key tools from the viewpoint of employee-oriented telework.

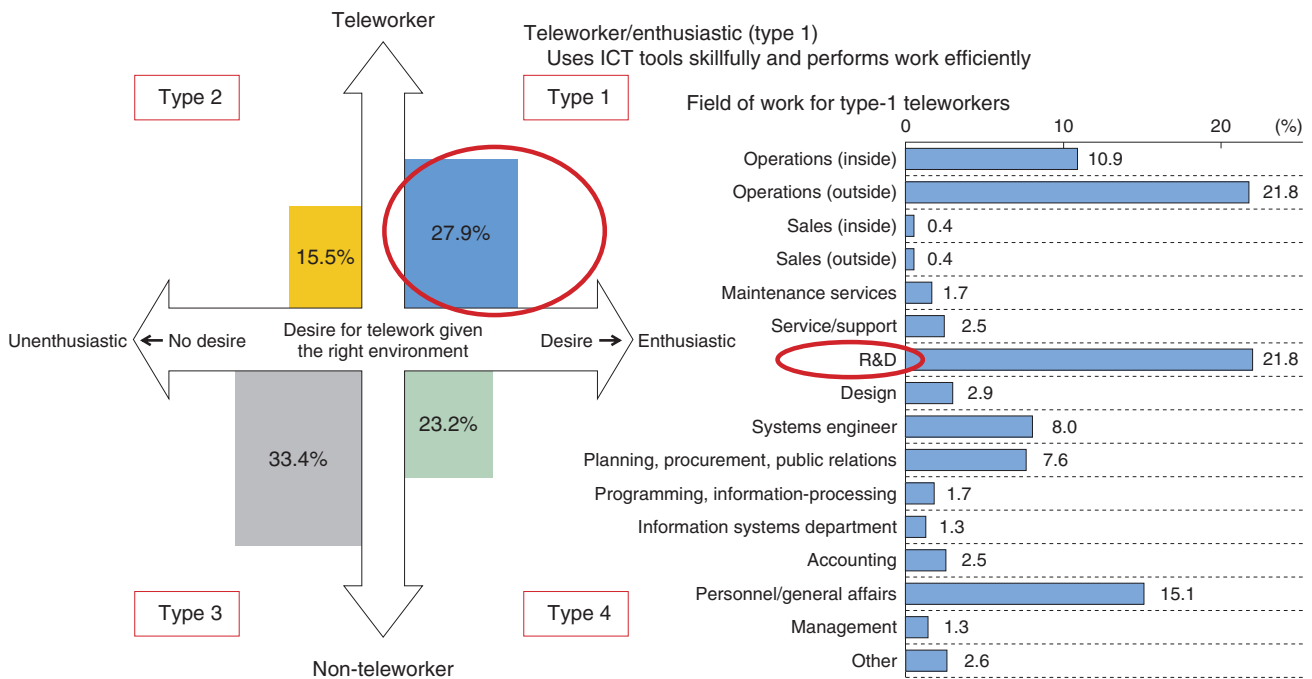
(1) Work tools

A teleworker typically needs tools such as a personal computer (PC) and file server for tasks such as gathering information and preparing documents. In telework, a remote access system and thin-client system are provided as products for accessing the work environment from a location other than one's office and for performing work. Terminals for gaining access from the outside are not limited to a notebook computer or dedicated thin-client terminal—they may also be a mobile phone, tablet computer, or smartphone.

(2) Communication tools

The telephone, email, groupware, conferencing systems, and an in-house social networking service (SNS) are tools that are needed for managing people, sharing information, and holding casual conversations. In telework, services such as call forwarding and teleconferencing, web-based conferencing, and videoconferencing to facilitate remote meetings are provided. While email is a convenient tool for performing one's duties, it is not ideal for casual conversation. For this purpose, tools such as instant messaging and an in-house SNS are used.

[†] NTT Research and Development Planning Department
Chiyoda-ku, Tokyo, 100-8116 Japan



Source: Prepared from NTT "Survey of User Needs for Telework Tools" 2011.

Fig. 1. Employee distribution by telework usage and attitude.

(3) Awareness and presence tools

These are tools for determining the status of other employees, such as whether they are available to talk. It is said that telecommuting can generate a sense of alienation compared with working in an office. For this reason, a manager is responsible not only for managing telework but also for maintaining morale and order. When many people are teleworking at the same time, as in long-term telework or home-based call centers, employee needs can be extensive.

3. Market survey

3.1 Overview

At NTT, the telework tools described above are already being provided to some extent, but it has become apparent that they are not being actively used. With the aim of clarifying obstacles to telework penetration, we conducted a user-needs survey on telework tools in fiscal year 2010.

3.2 Survey results

(1) No expansion in current state

Regardless of the presence or absence of telework systems, the number of employed people currently

involved in telework has reached a saturation point with respect to the total working population. In its current state, telework is incapable of reaching the level targeted by the Japanese government (7 million telecommuters). Why is telework not expanding? It has become clear from group interviews and web surveys that employees have misgivings about telework, which they feel reduces their opportunities for communication and degrades the way that they work and their sense of worth (value) within the company. Furthermore, when we talked to enterprises that had introduced telework, we often heard the opinion that "It is still unclear whether telework can raise productivity in an organization." In short, both managers and employees expressed doubt about telework. To overcome this barrier to telework, it is important to present good telework methods to employees and prepare case studies of successful telework in terms of productivity.

(2) Creative employees

In the survey, employees were divided into four types in terms of using or not using telework and being enthusiastic or unenthusiastic about teleworking, as shown in Fig. 1. We focused on the combination of teleworker & enthusiastic (type 1). Employees

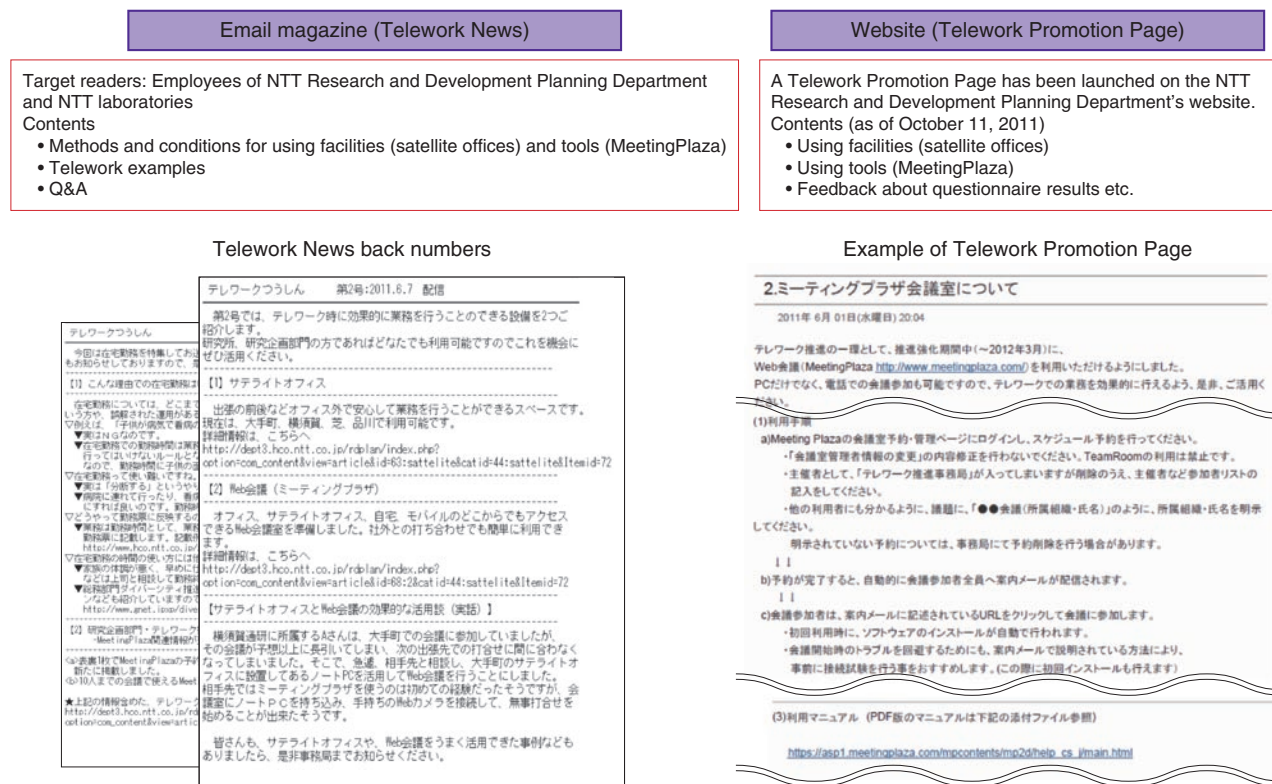


Fig. 2. In-house promotion of telework in NTT laboratories.

of this type skillfully use the information and communications technology (ICT) environment provided by the company and efficiently perform their work. We therefore considered that the policies and measures associated with this type of user would be effective in preparing successful case studies. Furthermore, in examining the field of work or job position of type-1 users, we found that many worked in research and development (R&D), so we decided to make a connection between the approach to telework inside NTT laboratories and expanding the telework market.

4. Telework promotion at NTT laboratories

On the basis of the results of the abovementioned survey, telework promotion activities were launched at NTT laboratories in FY2011. A number of suggestions for improving the telework environment were obtained through questionnaires and other means. These included establishing satellite offices, providing communication tools, and raising the efficiency of mobile working. As a result, several satellite offices have been set up at various locations including

the NTT Research and Development Planning Department (in Otemachi, Tokyo) and four online conference rooms in NTT IT's MeetingPlaza*1 [1] service have been made available for use by teleworkers. Information promoting telework is also being provided through an electronic magazine emailed to users and via the Research and Development Planning Department's website (Fig. 2).

5. Telecommuting during power-saving measures

After the Great East Japan Earthquake, power-saving measures were imposed from July to September 2011. NTT as well as NTT Communications, NTT DATA, NTT DOCOMO, NTT Software, and other NTT Group companies saw an increase in the number of employees working from home in some way and in the number of days when telework systems were used. As a result, a large number of people had the opportunity to experience telework firsthand.

Below, we review the work patterns that evolved

*1 MeetingPlaza is a trademark of NTT IT.

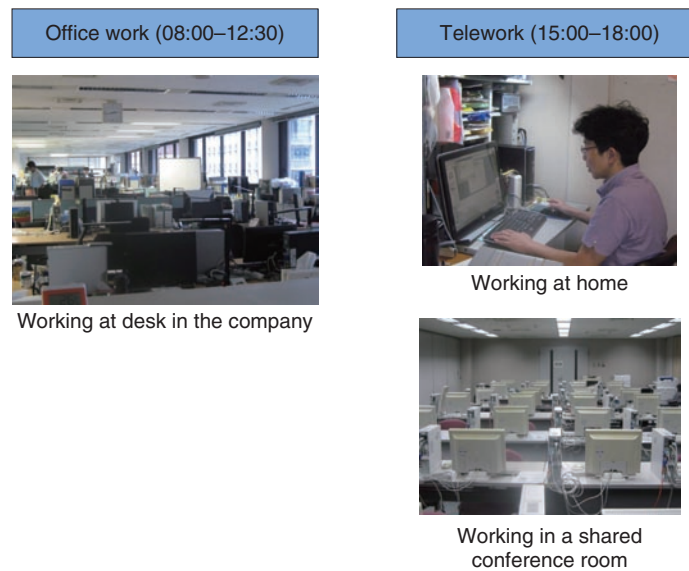


Fig. 3. Example of work format at NTT Research and Development Planning Department during the summer power-saving period.

during this period at NTT's Otemachi offices in relation to the different types of telework tools described earlier. The teleworking took place in either the morning or afternoon on a floor-by-floor basis (**Fig. 3**).

5.1 In relation to work tools

In the past, a telework environment was achieved by having users remotely access their desk PCs at the office from company-supplied PCs or approved home PCs. During the power-saving period, however, power was expected to be turned off across entire floors of the Otemachi building, which necessitated a migration of the desk PC environment to a cloud environment (Biz desktop); this led to a change in work style, which let teleworkers access their own PC environments from any PC, which could be located on their desks, in their homes, or even in shared conference rooms. As a result, work that could not be completed during normal working hours could be placed on the PC desktop in the cloud and be completed later during telework periods. It was also possible for teleworkers to access their organization's file server from the cloud environment, which meant that it was no longer necessary to physically carry essential materials out of the office as long as they were in digital form.

5.2 In relation to communication tools

More attention than expected was paid to commu-

nication tools during this period. For example, someone calling an office extension number that had been set up by a teleworker to be switched to his or her mobile phone would not know that the call was being transferred. For this reason, teleworkers placed their mobile phones nearby when teleworking so that they could answer quickly in line with normal office practice. Moreover, it was difficult to secure meeting space owing to the shortage of conference rooms in Otemachi at this time, so microphone/speaker equipment for voice conferencing (such as RealTalk^{*2}) was used to hold meetings among employees in the office, employees out of the office, and teleworking employees. Web conferencing (such as MeetingPlaza) was also used to hold meetings among teleworking employees, but as many employees had no experience of using such a system outside the company, some guidance was necessary such as connection trials. These measures undoubtedly reduced the number of unnecessary, non-urgent meetings, but it also reaffirmed the importance of communication in the work process. The feeling was that there is room for further improvement with regard to communication tools.

5.3 In relation to awareness and presence tools

The status of one's superiors and colleagues was determined through existing schedulers and by

*2 RealTalk is a trademark of NTT Advanced Technology Corporation.

	Life	Work	Society
Vigor	<p>Develop a zest for living through an autonomous way of working</p> <ul style="list-style-type: none"> • Enable the sharing of individual expertise throughout society by enhancing individual presence. • Make <i>flat</i> connections between human resources independent of time and place and assemble an optimal task force composed of individuals with abundant social experience and advanced knowledge. 	<p>Become more competitive through new management methods</p> <ul style="list-style-type: none"> • Revolutionize organizational structure and work processes by using next-generation ICT and make telework mainstream. • Develop new management methods independent of organizational scale, time/place, and personnel flow and become increasingly more competitive. 	<p>Achieve a society full of possibilities</p> <ul style="list-style-type: none"> • Achieve drastic integration across the entire country including urban and regional areas • Instead of society being run through regulations and guidance from above, let people themselves create space in their cities and regions to make best use of their resources and create a society that is best for them.
Wisdom	<p>Enhance knowledge and sensitivity through diverse exchanges</p> <ul style="list-style-type: none"> • Use the time gained from less commuting and more efficient work practices to generate diverse exchanges and learning opportunities over the network. • Increase awareness of the community and sense of citizenship and help promote cultural and artistic activities toward a more comfortable and prosperous society. 	<p>Create new sense of value through network knowledge</p> <ul style="list-style-type: none"> • Facilitate decision-making through visualization and standardization of work processes and accelerated communication. • Create a foundation for greater productivity in the service industry and white-collar fields to trigger a fusion of knowledge and increase added value. 	<p>Revitalize regional communities through ICT and business creation</p> <ul style="list-style-type: none"> • Treat problem solving in regional communities as a business process operated by individuals with a strong sense of community and citizenship. • Link individuals with a corporate organization having work visualization and standardization know-how to create business and expand national restoration to regional areas.
Peace of mind	<p>Enable people to lead fulfilling lives meeting childcare and care-giving needs</p> <ul style="list-style-type: none"> • Provide ample care for families without career disruption and financial risks. • Balance work and time spent with children, parents, and spouses for greater peace of mind and more stable lives. 	<p>Ensure business continuity</p> <ul style="list-style-type: none"> • Introduce telework to establish a work environment outside the office and ensure business continuity by simultaneously maintaining the ICT infrastructure and human resources. • Make telework a habit to consolidate resources and knowledge and shorten the lead time for work restoration during times of emergency due to natural disasters, pandemics, etc. 	<p>Address disaster, depopulation, and environmental problems</p> <ul style="list-style-type: none"> • Use the communication lines deployed to homes for daily work and enhance the information environment and degree of literacy in the home as effective countermeasures to natural disasters and environmental problems. • Connect the network to depopulated areas to improve inhabitants' degree of self-sufficiency through the development of new service industries and revitalization of primary industries.

Source: Prepared from Japan Telework Society, Telework 2.0 Study Group 2009.

Fig. 4. Telework possibilities: Telework 2.0.

exchanging information about the starting and ending times of telework: no new presence indication tools were introduced during the power-saving period. Since employees usually went into the office every day, there were no real obstacles to business operations, but since those with busy schedules were not always in front of their PC, the need was felt for some kind of linkage with a mobile tool to check on another employee's schedule or presence.

6. Home-based call center

One example of telework that NTT has come to provide is the home-based call center. It has recently become possible to transfer enquiries made to a call center to home operators by using a cloud-based platform and distributing USB flash drives (universal serial bus memory devices) that have a fingerprint-based authentication function to those home opera-

tors. All the terminal software required for call center operations can be provided on the USB flash drive, so the home operator only needs to have a home PC and broadband connection. Such services are already being provided, as in NTT AT's MatchPhone ASP Home product (ASP: application service provider). Staff at NTT Com CHEO who use its CAVA^{*3} (.com advisor & valuable agent) are also attracting attention as participants in a next-generation work style that is expected to expand.

7. Telework 2.0

In 2009, the Telework 2.0 proposal was announced as a vision of telework in the future. This proposal

^{*3} CAVA: A system from NTT Com CHEO that consigns ICT-related work to home-based call center operators who have obtained Internet certification through a program operated by NTT Communications.

was drafted by the Telework 2.0 Study Group of the Japan Telework Society [2]. Based on a vision of individuals, organizations, and society with 20% of the working population consisting of teleworkers by 2010, as described in the government's e-Japan Strategy II, Telework 2.0 was a study on future telework. Its objective was to define a new approach to telework and create proposals and measures for achieving it from diverse viewpoints including management and organization, business processes, human resource management, technology, the workplace, and cities and regional areas [3].

In the matrix shown in **Fig. 4**, the life, work, and society columns represent things that must be undertaken on the basis of the state of society, while the vigor, wisdom, and peace-of-mind rows represent a proactive search for new possibilities in the way people work. In relation to this vision, the *cloud* has come to be viewed as a major paradigm shift since 2009, and looking forward, it is thought that Japan should recreate itself as a more flexible and powerful society by revolutionizing work styles by using cloud services [4]–[6].

8. Concluding remarks

The tools mentioned in this article can be used for work on a routine basis and can facilitate the work process even outside the office during a time of crisis,

and they can be used for raising an organization's productivity. The telework promotion in NTT laboratories and the expanded use of telework during last summer's power-saving period have shown that the provision of tools in itself is not a solution and that a problem-solving approach is best, as in searching for the most effective way of using available tools in accordance with an organization's environment. With this in mind, we aim to accelerate our activities toward expanding the telework market.

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Yukie Tachi

Manager, Strategic Incubation Team, NTT Research and Development Planning Department.

Since joining NTT DATA in 1987, she has been working on system development for the retail and consumer goods industry. She moved to NTT Research and Development Planning Department in 2010 and is currently working on incubation themes such as telework.



Yoshiaki Noda

Senior Research Engineer, Speech, Acoustics and Language Laboratory, NTT Cyber Space Laboratories.

He received the B.E. and M.E. degrees in electrical engineering from Ritsumeikan University, Kyoto, in 1989 and 1991, respectively. Since joining NTT in 1991, he has been working on R&D of automatic speech recognition technologies. He is currently engaged in improving NTT customers' in-house equipment and planning telework business.