Unified Communications Applications

TSUTSUI Kensaku, ARAO Shinya, SERADA Teruharu, NISHINO Sunao

Abstract

This paper defines Unified Communications (UC) applications as communications applications with high added values implemented by combining various communication tools or combining communication tools and task management systems. Here, the added values consist of the saving in routine tasks made possible by the above combinations and the resulting improvement in productivity. In this field, NEC is focusing on accelerating individual business programs by linking task management systems and communication tools and decreasing the frequency of inter-process delays caused by human intervention in the task process.

This paper discusses actual examples and the UC applications produced by such combinations.

1. Introduction

We are living an age in which the use of various communication tools including e-mailing, telephony, cellular phones, web conferencing, IM (Instant Messaging), video conferencing, application sharing and voice mailing in routine tasks are all a matter of course. We select the optimum communication tools according to the situation but these tools can exhibit more enhanced performances when they are combined rather than when they are used independently.

This paper defines Unified Communications (UC) applications as communication applications with high added values, implemented by a combination of communication tools or of communication tools and task management systems. The added values consist of the saving in routine task work made possible by the above combinations and the resulting improvements in productivity. In this field, NEC is focusing on accelerating individual business programs by linking task management systems and communication tools and decreasing the frequency of inter-process delays caused by human intervention in the job process.

This paper will discuss actual examples of such combinations and the UC applications produced by them.

2. Combination of Communication Tools or Combination between Communication Tools and Task Management Systems

Typical examples of combinations between communication tools and those between communication tools and task management systems may be classified as follows.

2.1 Combination of Communication Tools

(1) Association of Different Communication Tools
1) Telephone → Voice mail → Telephone
This refers to a case in which a person places a call and finds that the person called on the phone does not answer the call, the calling person can then post a voice message in the voice mail. The called person can later call back to the original caller after hearing the voice message.
2) Telephone ←→ E-mail
This is a case in which, when a person places a call and finds that the person called on the phone does not answer the call, the calling person can transmit the message by e-mail. Another example is that a person receiving an e-mail places a phone call to the message sender to answer the e-mail message.
3) Fixed phone ←→ Cell phone or In-premises PHS
This is a case in which, when a person receives a cell phone call when he or she is out, the called person calls the call-

ing person via the fixed phone after returning to the office. Another example is a system capable of switching from cell phone to fixed phone without interrupting the call.

(2) Combined Use of Communication Tools

1) Telephone and E-mail or Web Browser

This is a case in which the persons communicating on the phone talk while viewing the same e-mail or webpage.

2) Telephone and IM or Teleconference/Web Conference and IM

This is a case in which IM is used simultaneously with a phone call to transmit messages that must not be heard by other persons in the office via IM. Another example is to exchange secret messages between specific persons during a video conference involving more than two persons.

3) Telephone and File Sharing or Application Sharing

During a phone call, it is sometimes convenient to share and edit an application, such as a presentation created using Microsoft ® PowerPoint ® jointly between the two parties (application sharing). Though joint editing is not possible, it is possible for the two parties to view the same file (file sharing).

4) Telephone and Remote Assistance (Display Sharing)

When the call center of a PC vendor performs remote setting of a customer's PC, remote assistance (PC display sharing) is possible during the call (**Fig. 1**). Recently, some financial type call centers are enabling entries to webpage application forms by customers while they simultaneously view the same webpage as the customer (webpage sharing) (Fig. 1).

5) Softphone and Fixed phone/Cell phone/PHS

This is a case in which video communication or application sharing is performed on the Softphone on the PC while holding a call on the fixed phone.

2.2 Combination of Communication Tools and Task Management Systems

In this section, the task management systems refer to CRM

Remote operation of customer's PC
• Remote assistance
• Webpage sharing

PC

Operation guidance via phone
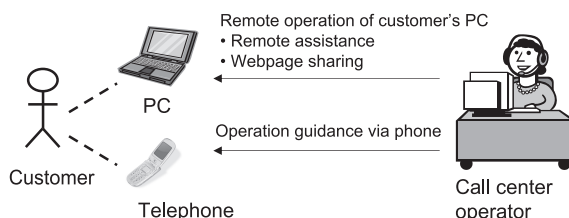
Customer

Telephone

Call center operator

Fig. 1　Telephone and remote assistance.

(Customer Relationship Management), ERP (Enterprise Resource Planning), SCM (Supply Chain Management), etc.

Groupware and ERP often use e-mailing for giving instructions to employees in the task processes. In some cases, IM is also used for urgent purposes.

A case involving telephony is Click to Dial. For example, when the CRM provides a GUI (Graphical User Interface) on a PC screen and shows a list of customers, by clicking on a customer name the targeted customer is called on the fixed phone.

For a more complicated example, there is a case in which when a serious problem occurs in a factory production line, persons capable of dealing with the problem are contacted via an emergency e-mail or IM.

3. Presence and One–Number Applications

There is a problem posed by combinations of the communication tools discussed in the previous section. This is the need to manage a large number of addresses and numbers by identifying individual communication tools when an individual uses multiple terminals and communication tools, Presence and One-Number applications are a means for managing multiple terminals and communication tools together. We will discuss them below.

Each communication tool is assigned a number or ID for identifying itself. It is for example the fixed phone number, cell phone number, extension/intercom number, e-mail address or IM handle name. In addition, each terminal represents an individual.

Communication tools are currently diversifying but it would be even more convenient if a single user interface could easily use a desired choice from multiple tools according to the occasion. Also, if a person who is starting a call can identify the communication tools currently available to contact the person to be called, it would be very helpful reference information for selecting a communication tool.

The Presence application offers a means of representing the status of the intended called party, the list of his or her terminals and the attributes of these terminals (types of communication tools, availability, etc.) together (**Fig. 2**).

In general, Presence information can be referenced from the buddy list (Fig. 2). The buddy list was originally designed to show whether or not the persons in a chat are online, but it also functions as a shared phone directory covering various means of communications in the age of UC.
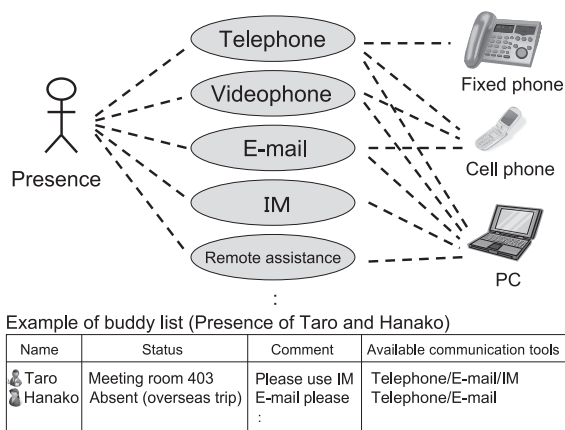
Fig. 2   Presence and buddy list.

More recently, Presence information is able to be referenced via means other than from the buddy list. Some such examples are the popup from the PC taskbar and the Smart Tag. These will be discussed in section 4 below.

Presence represents individuals, the multiple terminals each individual has and the communication tools that can be used by them.

However, Presence cannot be a common user interface because Presence information is usually not able to be used from terminals that cannot display buddy lists. To deal with this issue, it is also possible to let a single phone number "One Number" represent multiple phone terminals belonging to an individual, e.g. by assigning a common number for the fixed phone, cell phone and Softphone.

4. Examples of UC Application Implementations

This section will introduce some of the UC applications based on combinations of tools.

(1) UMS (Unified Messaging System)
UMS is the oldest UC application, which was released before the term "UC" was widely known in society. It is based on the combination of voice mail or fax with e-mail.

(2) Contact Center
The Contact Center is also one of the oldest UC applications, it combines a means of inquiry using fax, e-mail, chat or web services with the call center function.

(3) Presence Popup and Smart Tag
The Popup displays a change in the Presence status of a specific person in the toolbar of the PC screen. On the other

Fig. 3   Communication tools of Gadget.

hand, the Smart Tag enables referencing of the Presence of a person by simply clicking on the name of a person in a Microsoft Office document. It can also use "Click-to-Dial" at the same time.

(4) Widget/Gadget
Here, the Widget/Gadget means small applications displayed permanently on the PC desktop, for example on the Dashboard of Mac OS X or the sidebar of Microsoft [R] Windows Vista [R] . These small applications are used to display the clock or weather forecast. Providing the communication tools in the form of Widget/Gadget makes it possible to activate the frequently used communication functions directly from the desktop (**Fig. 3**).

(5) Softphone on Browser
The software Graphical User Interface (GUI) is usually displayed on the PC desktop, but it is sometimes more convenient to embed the GUI in a specific webpage (**Fig. 4**). For instance, when a task management system such as CRM (Customer Relations Management) is built onto a webpage base so that a user may access it on the web browser, embedding the Softphone in the web browser allows a single browser display to control both the CRM and telephone functions.

(6) UC Application on Browser Built into Fixed Telephone
The usages of the fixed phone are not limited to business and consumer use but some fixed phones are also equipped with a browser function in the same way as the cell phone. The main usage is to display an electronic phone director on the browser and to enable Click-to-Dial, but it is also possible to equip the fixed phone with a touch-panel LCD and various sensor devices and to provide kiosk terminal type applications
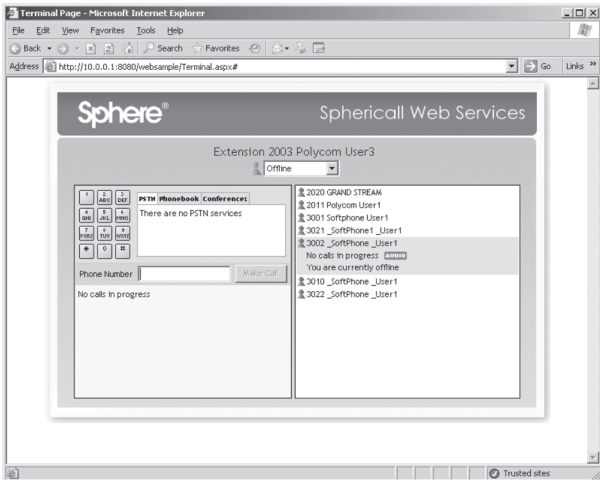
Fig. 4   Softphone on browser.

Fig. 5   UC Applications on touch panel LCD.

(**Fig. 5**). An example is the provision of the concierge services of a hotel to the customer in remote guestrooms via such a terminal.

(7) Remote Shops and Virtual Shops

Some major banks provide a remote shop service combining the videophone, ATM terminal, scanner and entered form collection equipment in order to accept remote customers during non-business hours. These systems are usually installed in special booths in the bank branch buildings. They allow customers to advance procedures while receiving explanations from bank employees in remote locations. In some cases, the bank employees can input the customer address and other information remotely or explain financial instruments or commodities while sharing the same display as the customer.

At NEC, we announced a concierge solution for shops at the distribution industry trade show, RetailTech Japan 2008. This solution universalizes the remote shop functions,
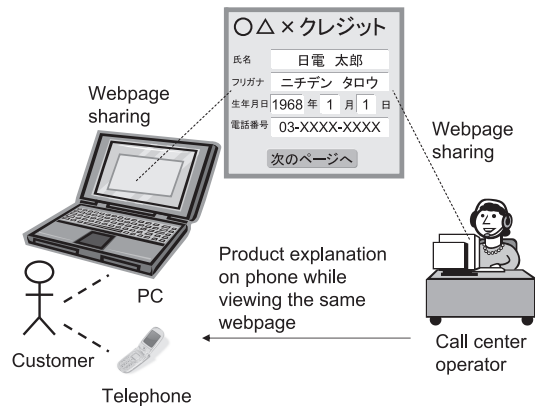

Fig. 6   Shop concierge solution.

Fig. 7   Next-generation call center.

enables remote consultations such as the bank services described above and offers the potential of various applications (**Fig. 6**).

The remote shop service is not only available in specialized booths installed in branch shops but is also becoming available on PC. PC usage makes it possible to receive explanations about products or to perform various procedures by sharing the web browser display while talking with the call center operator via fixed or cell phone (**Fig. 7**). This service may be regarded as a virtual shop on the web and it is expected that a similar service will be available in the near future that uses the web browser function of the cell phone. The remote shop and virtual shop can also be regarded as next-generation call center services to be provided by enterprises to their customers. However, a similar service that is internal to an enterprise is also conceivable as described below.

The awareness of information security in enterprises is currently becoming very high. However, the PCs used by the employees have various security tools and encryption tools installed and the employees are often troubled by the self-management requirements of such tools to which they may not be accustomed. Consequently, there is sometimes a drop

in the efficiency of their work. In such cases, the burden on the employee may be reduced considerably when specialists at the information processing department support are able to support the employees in the setting and management of security tools via a remote assistance telephony function.

(8) Telepresence

The Telepresence function can be installed in a meeting room equipped with a large-screen teleconferencing system and/or high-definition audio system in order to achieve a feeling of presence, as if each user in a remote location can feel as if persons in other locations are talking in front of the user. It also offers the function of facilitating presentations across many locations by allowing the display of materials in notebook PCs to be shared with persons in other locations. The Telepresence system is for the present expensive but more enterprises are expected to introduce it when the price is reduced and this will also lead to reductions of both business trip expenses and CO_2 emissions.

(9) Personal Assistance

When an external enterprise calls a specific phone within an office the Personal Assistance function answers the call so that the employee can set the call forwarding rule of the PBX or control the voice mail system via IVR (Interactive Voice Response). Recently, voice recognition technology is being applied in addition to IVR, enabling for example, play back of the voice mails to the system by talking "Play messages."

(10) Linkages with Task Management Systems

In the efforts being made at NEC, an important focus is placed on the linkages of the UC applications with task management systems.

An example is the linkage with the quality management system of a factory production line. In the case of a problem on the production line, the person in charge immediately registers the trouble in the quality management system and when the system judges it necessary, it notifies all of the persons who may be capable of solving the trouble of details of the line trouble via IM.

For detailed case reports regarding task management system linkages, see "NAMAKIZU-SOKURAN System: UC to Reform Staff Consciousness" on pages 65 or 69 and "A New Communications Style Based on Linkages between Task Management Systems and Unified Communications (UC)" on pages 19 to 22 of the present issue of the NEC Technical Journal.

5. Conclusion

In the above, we introduced the characteristics and actual examples of UC applications. While a variety of UC applications are conceivable we focus on applications based on linkages between communication tools and task management systems as well as on a simple combination of communication tools. We are aiming to enhance the range of UC applications based on combinations with task management systems by consulting customer opinion in the context of "it will become more convenient if such usages are possible."

*The brand names and product names mentioned in the above are trademarks or registered trademarks of their respective owners.

*Mac and Mac OS are registered trademarks or trademarks of Apple Inc. in the United States and other countries.

References

1) Smart Tag:
http://office.microsoft.com/ja-jp/word/CH060829821041.aspx
2) Skype Web Toolbars:
http://www.skype.com/help/guides/webtoolbar_us/

Authors' Profiles

TSUTSUI Kensaku
General Manager,
UC Software Development Division,
Enterprise Solutions Operations Unit,
NEC Corporation

ARAO Shinya
Manager,
UC Software Development Division,
Enterprise Solutions Operations Unit,
NEC Corporation

SERADA Teruharu
Assistant Manager,
UC Software Development Division,
Enterprise Solutions Operations Unit,
NEC Corporation

NISHINO Sunao
Manager,
2nd Middleware Division,
Platform Operations Unit,
NEC System Technologies, Ltd.