NEWS RELEASE

NTT

(Press Release)

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Nippon Telegraph and Telephone Corp.

# Development of Voucher Trading Service Platform that will turn Mobile Phones and IC Cards into Secure, Reliable, and Convenient -- "Ultimate Wallet"

Nippon Telegram and Telephone Corp. (NTT; Office: Chiyoda-ku, Tokyo; President: Norio Wada) has announced the development of the Voucher Trading Service Platform, a new information distribution platform that enables high-speed and secure reservation, purchase, and confirmation of tickets or other values using diverse user devices, e.g., mobile phones and IC cards.

The Voucher Trading Service Platform is a construction that establishes an electronic medium through which the right to claim services or values is digitalized and freely used in both brick and mortar stores and the Internet. This platform digitalizes diverse types of values including tickets, prepaid cards, point cards, coupons, membership cards. It securely, reliably, and freely realizes the reservation of tickets, the purchasing of tickets, shopping, and the confirmation of railroad or amusement facility tickets. NTT has already developed a system that offers high-speed processing through the use of highly secure public key encryption (*1). Its speed surpasses that of existing contactless IC card systems.

To fully utilize the high performance available, the platform allows each IC card to hold various kinds of electronic values to cover significantly more application areas. In addition, we have developed a new user device called the "IC Card Booster." It allows existing contact-type IC cards, which are widely used in financial applications, to realize contactless high-speed processing. Furthermore, by using the infrared communications (IrDA) (*2) links provided by mobile phones and PDAs for the confirmation and settlement of vouchers, we have further expanded the utility of existing user devices. By the development of this platform, we have brought to life an information distribution platform that realizes full-scale voucher trading services. The development of this platform means that practical voucher trading businesses can now be started.

**<Usage scenarios>**

The voucher trading service platform transforms the mobile phones and IC cards that users are accustomed to into the ultimate wallet that combines various settlement and ticket examining functions. More specifically, as in the two example representative usage scenes described below, we have achieved a brand new type of communication that can securely, reliably, and freely exchange various "assets".

(1) Shopping scene

When shopping in a store, it is possible to settle a transaction through a combination of multiple electronic values such as a compound payment consisting of money, credit points, and coupons. At this time, users can use devices other than contactless IC cards such as mobile phones and PDAs, which are more familiar. For example, users hesitated to use traditional IC cards because they were not able to confirm the balance of the card when it was used. Since the display function offered by mobile phones and the IC Card Booster can now be used, we can now confirm the balance and conduct transactions without anxiety. Moreover, the IC Card Booster greatly extends the application area of the conventional contact-type IC card, which is widely used in the financial area, as a contactless IC card.

(2) Ticket collection scene

Ticket collection and ticket confirmation at railway stations, concert halls, amusement facilities, etc. can be performed in the highest speed yet reported. In the same way as when shopping, users can use mobile phones, PDAs, and existing contact-type IC cards, which are more familiar than the contactless IC card. IC cards are inconvenient because we are not able to confirm the contents of digital tickets stored in an IC card. The new platform removes this anxiety by using the display function incorporated into mobile phones and the IC Card Booster. We can now easily confirm card contents and use them by simply flashing the ticket at the ticket examination machine or gate equipment (wicket) to board a train or enter a facility.

**<Technological points>**

(1) Public key encryption support and high-speed payment processing

Based on use of public key encryption, a different secret key is stored in each card, and the terminal discloses only the public information. Unlike a shared key based system, even if the secret key is disclosed in some way, the damage is localized.

In addition, this platform completes payment processing within 60 milliseconds, a world record for payment by a contactless IC card.

(2) Service control technology widens the application areas

Our service control technology enables one IC card to hold multiple types of vouchers. Using this technology, even an IC card with low memory capacity can provide a number of services such as prepaid services, points, coupons, digital tickets, and licenses (company ID card or member's card).

(3) IC Card Booster

The introduction of contact-type IC cards is spreading banks and stores. We have developed the IC card booster to enable these cards to be used for contactless payments via local communications links such as IrDA. The booster's display can be used to show the card's balance and digital ticket information. Moreover, this technology was used to confirm the realization of an IC card with a display. Based on these advancements, we anticipate further enhancements in the convenience of using IC cards.

(4) Utilizing mobile phones and PDAs

We developed a technology based on IrDA, two-dimensional barcodes, and RFID tags (*3) that enables mobile phones and PDA to be used to pay for prepaid services and as ticket confirmation terminals for digital tickets. For example, we can use a PDA or mobile phone to pay for goods or services at a vending machine or use them to confirm digital tickets off-line at high speed. Due to the infrared communication (IrDA) technology now in mobile phones and PDAs, settlement methods and digital tickets have attracted much attention. Currently, the standardization of IrFM (*4) is progressing, and NTT is actively contributing to realize a global standard in this area.

**<Future expansion>**

The voucher trading service platform will change existing trading functions for physical merchandise into the trading of "assets" by providing a platform that enables digitalized "rights" and "values" to be circulated from enterprises to individuals, individuals to individuals, and individuals to enterprises in a secure, reliable, and cost-effective manner. It will revolutionize the existing supply chains.

Based on these results, the NTT Information Sharing Platform Laboratories, in cooperation with businesses, are working toward the development and expansion of products targeted at expanding the use of this platform in conjunction with the expansion of voucher trading services.

**<Glossary>**

*1 Public key encryption
An encryption method that employs a pair of keys for data encryption and decryption. It is also called asymmetrical encryption. One key is used as a public key and is distributed widely. The other key, a secret key, is restricted such that only the user knows it. In comparison to using shared key encryption, which uses the same key for both encryption and decryption, the use of separate keys makes key management easier and provides a higher degree of security.

*2 IrDA (Infrared Data Association)
The Infrared Data Association is an industrial standardization organization established in 1993 to set the technical specifications of infrared communications. The term IrDA refers to the infrared communications standards set by this organization.

*3 RFID tag
RFID (Radio Frequency Identification) is an IC tag based on wireless identification technology. An extremely thin tag comprising a microchip and data transmission antenna, which is several millimeters square, is embedded into an object. An auto-recognition system is constructed by reading the information stored in the tags.

*4 IrFM (Infrared Financial Messaging)
IrFM defines a model and protocols for proximity payment as developed by the IrDA. The first version of IrFM was published in January 2003.

- Figure: Overview of Voucher Trading Service Platform

For further information, please contact:
NTT Information Sharing Laboratory Group
Planning Department, Public Relations
Iizuka, Sano, and Ikeda
TEL: 0422-59-3663
E-mail: koho@mail.rdc.ntt.co.jp