Mobile E-Ticket and E-Membership Services

By Noriyoshi ICHINOSE*

ABSTRACT A technology called LightHolder capable of expanding real world services for mobile phones has been developed. LightHolder enables a mobile phone to automatically access service functions on the spot, so it is a very useful real world service for mobile phones such as e-tickets and e-coupons. This paper describes two services provided by LightHolder.

KEYWORDS **Mobile, Plug & Play, E-ticket, E-membership, Contactless IC, RFID, IrDA**

1. INTRODUCTION

More than 70 million people use mobile phones in Japan; this is more than half the total population of Japan. Moreover, almost all mobile phones enable users to browse the Internet. Many mobile phones furthermore support Java VM, allowing users to execute application programs downloaded from the Internet. Recently, some types of mobile phones are being equipped with contactless IC devices or short-range communication features such as InfraRed. These phones integrate Internet (virtual) services and real world services. For example, the virtual services enable users to buy concert tickets via the Internet using their mobile phones. The phones themselves can then be used as e-tickets when the users enter the concert hall. A new platform called LightHolder for mobile phones that allows them to be used as e-tickets or electronic membership cards has now been developed. This paper describes functions and services enabled by LightHolder.

2. LIGHTHOLDER's FUNCTIONS

The functions of LightHolder are as follows:

2.1 Enhancing Convenience for Users (Plug & Play of Services)

Generally speaking, the platform — LightHolder — that provides services such as e-tickets and e-membership cards, support Java programs that can be downloaded from the Internet.

The challenge in promoting the use of these services is in encouraging potential users to download programs that provide the services and instructing users on how to use the programs. An e-ticket platform LightHolder that meets these challenges has now been developed.

LightHolder features the following:

- automatic installation and upgrading of the service program
- automatic execution of the service program (Plug & Play of services)

LightHolder enables installation of these service programs on mobile phones by short-range communication.

Using the platform, for example, if a convenience store provides its own membership program and a customer wants to join it, the customer does not need to install application programs from the store in advance. The customer need only tell the staff that he wants to join the membership program and present his mobile phone at the POS terminal. The service program is then installed and the membership service initiated. LightHolder provides automatic selection and execution of service programs according to the situation. Consequently, if the user's phone has multiple e-memberships or purchased e-tickets recorded within it, the user does not have to search the program. The user need only present his phone at the POS terminal and the desired service program is executed.

2.2 Additional Benefits of Using Mobile Phones

Figure 1 shows point-of-sales marketing functions provided by short-range communication devices.

For example, when users authenticate themselves using the devices with their mobile phones at a video rental shop, the POS terminal can send advertisements such as clips of new videos or music to the

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phone. The type of advertisements to be sent is selected after evaluating users' tastes, criteria that is based on the products the users are renting.

LightHolder could increase revenue with advertisement effect described above.

2.3 Other Types of Short-Range Communication

LightHolder can be applied to other types of bi-directional short-range communication devices such as Bluetooth.

Thus LightHolder will contribute the real-world services evolution.

3. SERVICE CASES

3.1 NEC Sports Fun Club

LightHolder provides an e-ticket service for sports events at the NEC Sports Fun Club. Because there are more than 11,000 club members, it takes a long time to deliver tickets to them. The procedure using a mobile phone is shown in **Fig. 2**: First, members subscribe on the website. An e-mail is then sent to the lottery winners. They can download the tickets by visiting the website at the URL provided in the

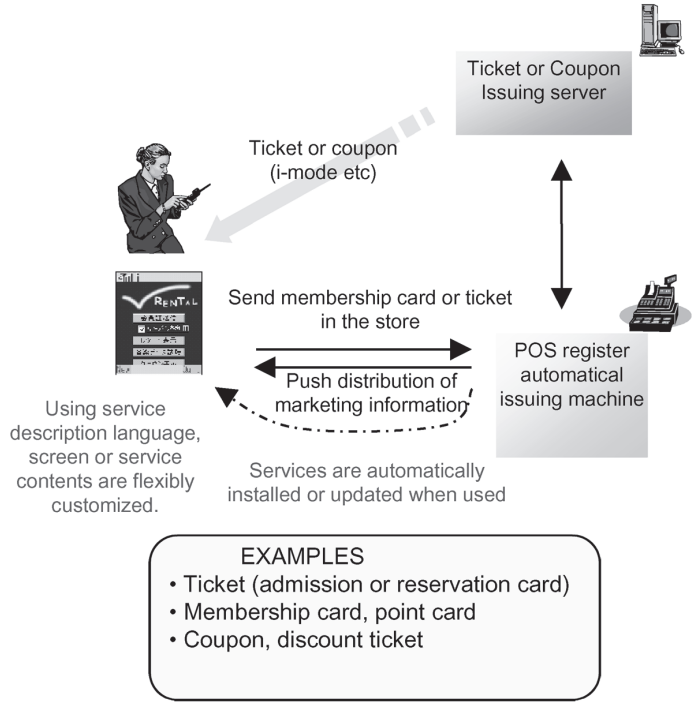

Fig. 1 System structure with LightHolder.

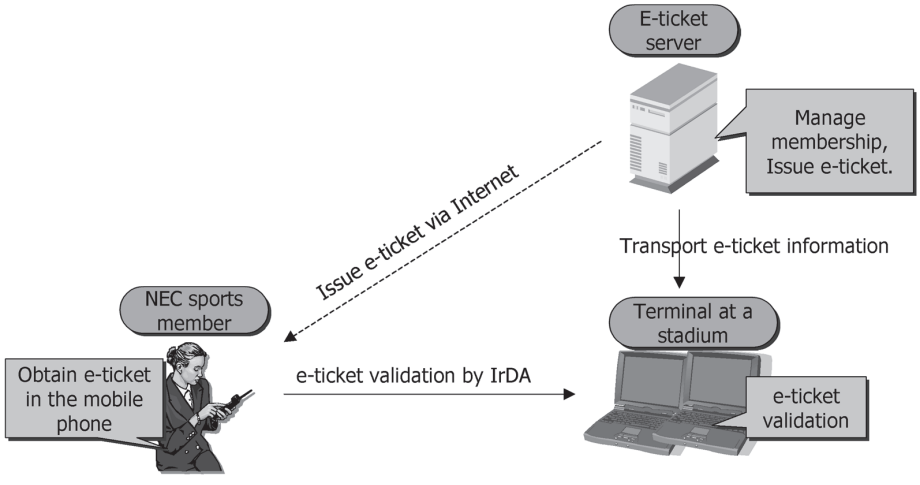

Fig. 2 NEC Sports e-ticket system.

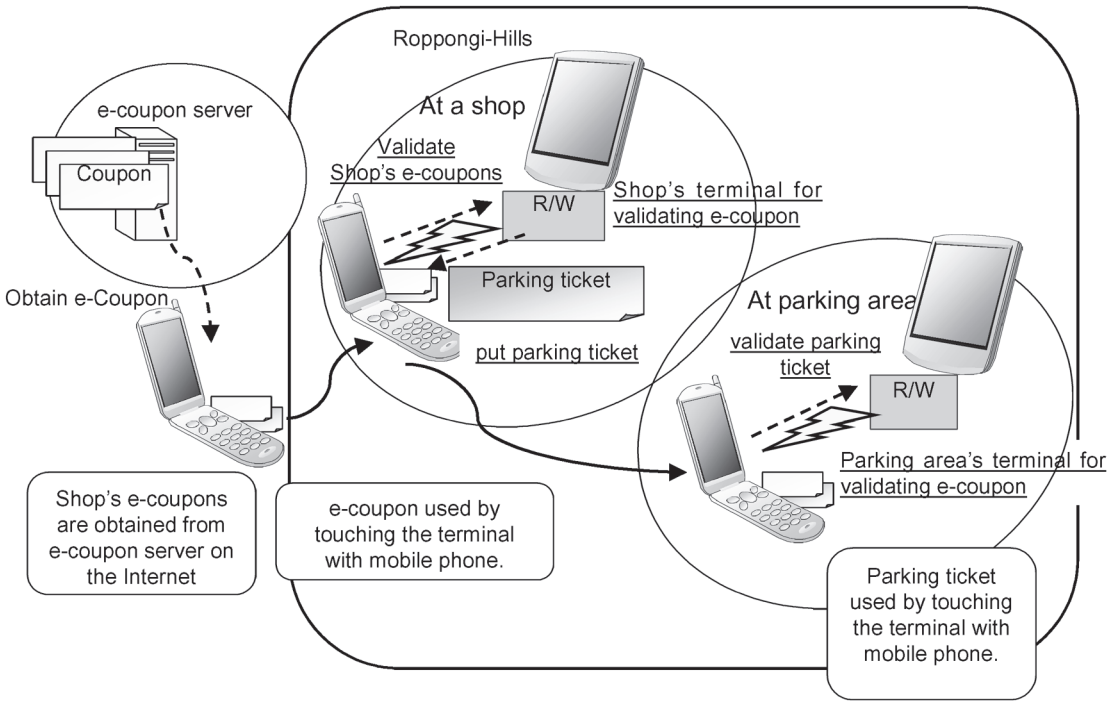

Fig. 3 E-coupon system at PIA i-mode FeliCa preview service in Roppongi-Hills.

e-mail. At the stadium, the ticket is validated by mobile phone and terminal using short-range communication. Accordingly, it is not necessary to send tickets to members by ordinary mail, so cost of providing services is reduced. In addition, LightHolder can be used as a marketing tool by offering other services by sending this information together with verification. This system will soon be able to be used for other companies' sports ticket services.

3.2 PIA i-Mode FeliCa Preview Service in Roppongi-Hills

This summer a mobile phone with a contactless IC chip called FeliCa will be unveiled. FeliCa is the same as the chip used in the Suica service provided by JR East. Using this chip, we can provide such viable services as Suica.

PIA has provided an e-coupon trial service known as the PIA i-mode FeliCa preview service in Roppongi-Hills since May, 2004 to 200 participants using mobile phones equipped with FeliCa (PIA net service members called "@PIA premium members"). The participants are able to use e-coupon service at certain shops in Roppongi-Hills. Details of this service are shown in **Fig. 3**: First, an e-mail with the coupon information is sent to participants in this trial service. Participants access the website at the URL provided in the e-mail, and get coupons sent to their mobile phones. Then they can redeem the coupons at participating shops. With mobile phones currently equipped with FeliCa, participants only have to touch a terminal for validation, just as they do to validate a Suica ticket. To validate the coupon, parking ticket discount information is imported to the mobile phone from the terminal. The mobile phone can also automatically use the parking discount service function through LightHolder. The ticket can be used by simply touching the terminal for ticket validation with the mobile phone.

Reaching individuals and providing them with information are two important problems for marketing. Most people usually carry mobiles these days, so contacting individuals by phone is an effective marketing tool. Providing coupon services using mobile phones is particularly effective for inducing consumers to buy products.

3.3 Services Collaborated with RFID

RFID-based system services are hot today. Although most of such services are currently applied to physical distribution systems, it seems that much more will be applied to consumer services in the near future.

Figure 4 shows an example of such consumer

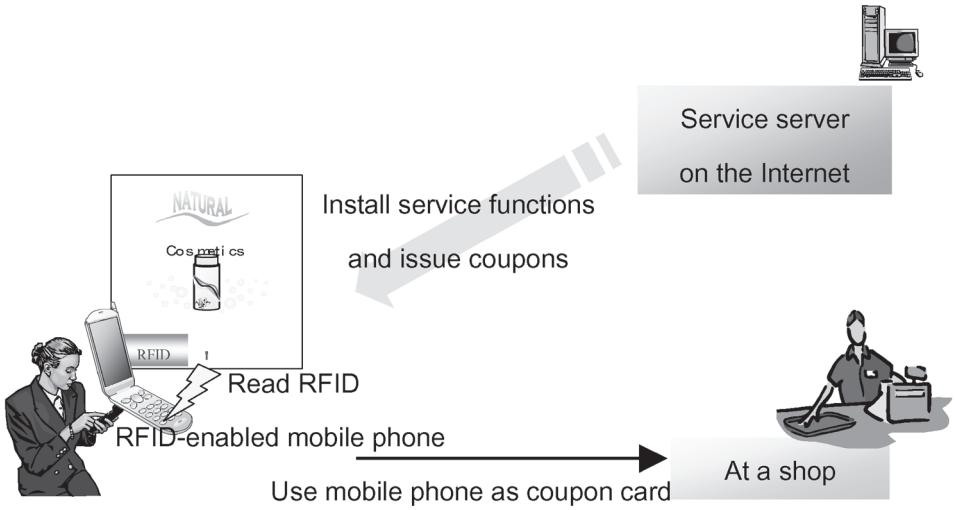

Fig. 4 An example of consumer services.

services. When a user reads an RFID by a mobile terminal equipped with an RFID reader, the terminal shows him/her some related information, for example, a Web page. This enables the service provider to navigate the consumers through whatever information relevant, for example, through some Web sites.

The Service Plug & Play technology mentioned above adds another dimension to the RFID-based consumer services. With this technology, mobile terminals cannot only show information like Web pages but also get service functions that are relevant to the RFID just read.

An example scenario goes like this. A user reads by his/her mobile phone an RFID on a poster of a cosmetic product. Then his/her mobile phone gets the service functions associated with the RFID and also gets a free coupon for a trial kit of the product, so he/she can use his/her mobile phone as a coupon card.

The point here is that a service is installed into the mobile phone. Unlike the Web pages that are transient in nature, the service can stay there (until removed) and continuously provide services.

Although RFID-enabled mobile phones are yet to be widely available to consumers, they are something that must be watched with keen interest.

4. CONCLUSION

LightHolder will help popularize real world services powered by mobile phones using a contactless IC chip. LightHolder enables a mobile phone to automatically access service functions on the spot, so it facilitates use of real world services powered by mobile phones. LightHolder will be able to be used for services other than purchase of e-tickets and e-coupons, such as using mobile phones as an ID card or a key.

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