

# i-appli Compatible Mobile Banking Solution

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Mobile phones are being made with even more functions, with increasingly larger capacities operating at faster speeds, while their place as a commonly available social infrastructure is being firmly established, which is leading to their utilization in a variety of business types and applications these days. Against such a backdrop mobile banking services that utilize mobile phones are becoming more viable as a means to improve services to customers in the financial industry.

NTT DoCoMo Inc., (hereinafter referred to as “NTT DoCoMo”) launched their “i-appli”<sup>1)</sup> banking” services in the spring of 2007 in an attempt to improve the convenience of mobile banking for their customers. i-appli is used with i-appli banking, making it possible for customers to avail of services that offer account balance inquiries, withdrawal and detailed deposit inquiries, fund transfers, as well as account transfers, through simpler operations than conventional mobile banking services.

A summary of the “Mobile Solution Compatible with i-appli banking”, which makes it possible for financial institutions to easily launch their i-appli banking-compatible mobile banking services, is introduced in this paper.

and credit associations providing such services (as at the end of March 2005). The ratio of all banking customers signed up for mobile banking services, however, remains at low levels with figures at 3.7% for commercial banks, 1.4% for regional banks, 0.8% for second-tier regional banks and 0.3% for cooperative banks and credit associations<sup>1)</sup>.

The inferior usability of conventional mobile banking with web browsers on mobile phones in comparison with services offered for use with personal computers, which is due to the limitation on the amount of information that can be transmitted or displayed on the screen, can be cited as a contributing factor for the low utility rate of mobile banking by banking customers. The fact that buttons must be pressed and information must be entered several times before a desired menu screen can be displayed, for example, or screens, which need to be scrolled down in order to view the displayed information are examples of such usability issues. The i-appli banking service provided by NTT DoCoMo was developed to give mobile banking the same degree of ease as services provided for personal computers, by utilizing the rich expressive capabilities of i-appli.

## Background for development of i-appli banking

Mobile banking is being made available by a high percentage of financial institutions, with 100% of commercial banks, 98.3% of regional banks, 95% of second-tier regional banks and 87.7% of cooperative banks

## Mechanism of i-appli banking

The i-appli banking service, a common platform provided by NTT DoCoMo, can be used by multiple financial institutions and has been incorporated into mobile phones as a standard feature since the 904i series of handsets. A mechanism for providing sophisticated services, which had not been possible with



Fig. 1 Screens of i-appli banking service (mobile application screen image for users of Mizuho Bank, Ltd.)

\*1) “i-appli” is a registered trademark of NTT DoCoMo Inc. Corporate names, product names and service names appearing in this paper are the trademarks or registered trademarks of their respective companies.

web browsers, is now being offered with i-appli. Significant improvements to usability have been achieved with the sliding menu, which can be used to call up menus freely when mobile banking services are used, as well as screen transitions and operating methods that alleviate the bother of pressing buttons and entering information (Fig.1). Furthermore, once a logged in user sets the “abbreviate entries for each login” function, it is no longer necessary for the user to enter their relevant information each time they log into the services provided by the financial institution, since it is possible to encode and store registered user identification numbers and such for each individual financial institution. Services, such as account balance inquiries, detailed inquiries for deposits and withdrawals, as well as intra-bank and inter-bank fund transfers, therefore, become available to users through simple operations.

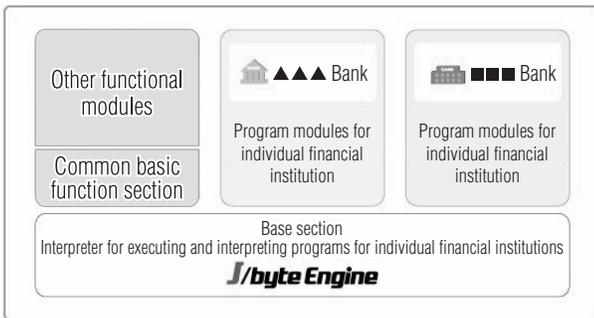


Fig. 2 Structure of i-appli banking

The i-appli for i-appli banking services is comprised of the following four components<sup>2)</sup> (Fig. 2):

- (1) A common basic function section.
- (2) An interpreter for executing and interpreting programs for individual financial institutions.
- (3) Programs for individual financial institutions (development required for each financial institution).
- (4) Other functional modules.

**Summary of mobile banking solution compatible with i-appli banking services**

In order to implement i-appli banking services, it is

necessary for a financial institution to connect its existing mobile banking system by readying programs for individual financial institutions, as described above. Ordinarily, this means that they must prepare their existing mobile banking system with an interface that is dedicated to programs for individual financial institutions.

The i-appli banking compatible mobile banking solution, offered by OKI, relays communications between i-appli banking services and existing mobile banking systems in order to absorb the difference between interfaces.

A summary of this solution is presented in Fig. 3. The i-appli banking relay server (hereinafter referred to as the “relay server”) relays communications between i-appli banking and existing mobile banking systems, to fulfill the roles described in items (1) to (4).

- (1) The relay server receives information for individual financial institutions sent by the programs in mobile phones.
- (2) The relay server assembles codes based on the information received for individual financial institutions from the programs and sent to the mobile banking system.
- (3) The relay server receives a CHTML file (screen display) from the mobile banking system and the information necessary is obtained, triggered by the use of specific keys on the mobile phones.
- (4) The information obtained in step (3) is translated into a format easily interpreted by i-appli and sent to the programs of individual financial institutions.

\* Multiple CHTML files (screen displays) are obtained as needed, based on the context of the transaction.

This solution enables financial institutions to minimize modifications to their existing mobile banking systems, making it possible for them to offer their customers mobile banking services that feature superior usability and compatibility to i-appli banking services in a short period of time and at a lower cost.

**Advantages of using i-appli banking compatible mobile banking solutions**

- (1) Keeping modifications of mobile banking systems to minimum

As mentioned earlier it is ordinarily necessary for an interface to be dedicated to programs for an individual

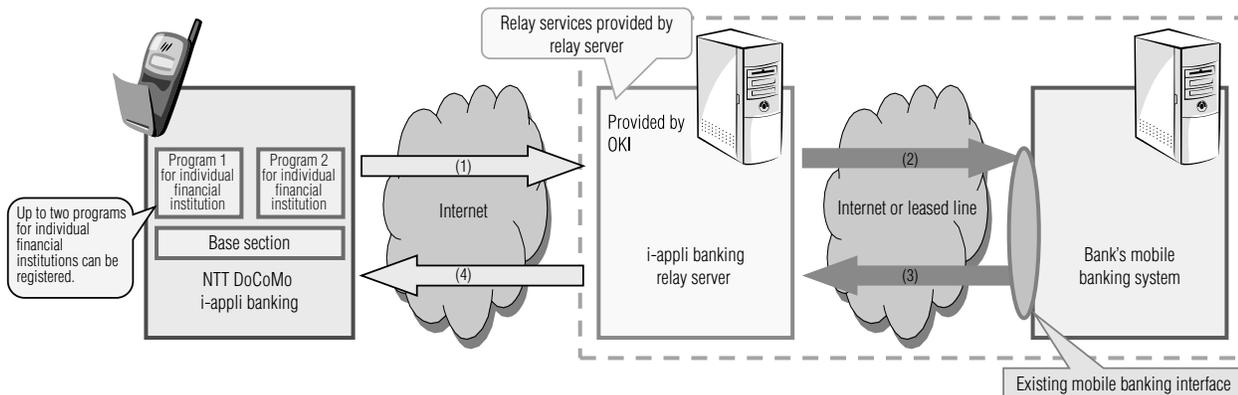


Fig. 3 Summary of mobile banking solution compatible with i-appli banking

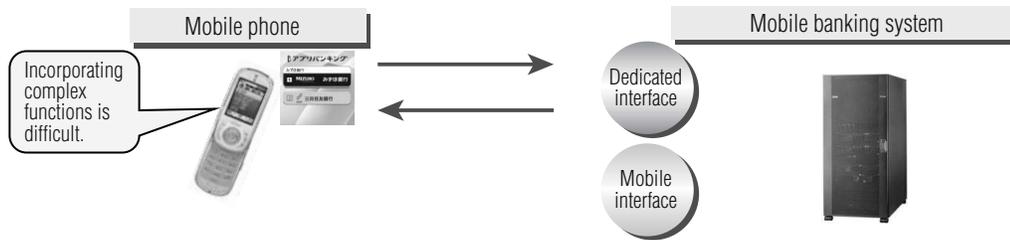


Fig. 4 Example not using this solution

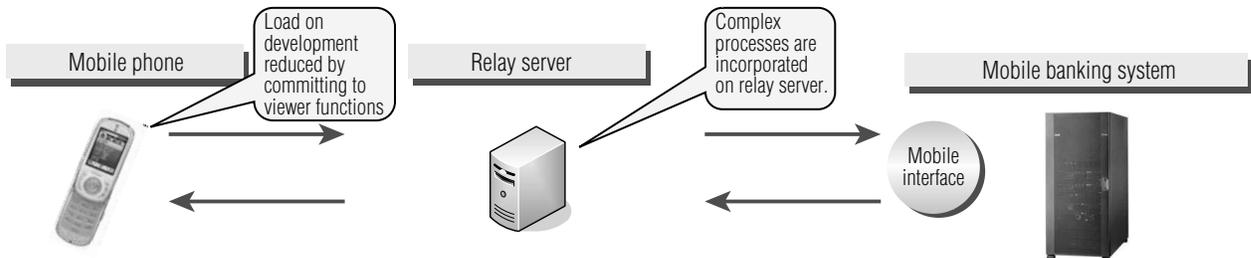


Fig. 5 Example using this solution

financial institution in order for the financial institution to implement i-appli banking in the existing mobile banking system. This results in changes to the system that brings about new additional costs and man-hours, which becomes an issue for a financial institution. When the mobile banking services for web browsers remain the same, on the other hand, the burden of developing programs for individual financial institutions increases. Furthermore, since mobile phones have far less resources, such as a CPU when compared with personal computers, it is difficult to incorporate complex processes (Fig. 4).

It is possible to limit the amount of work needed to be implemented on the mobile banking system using this solution, since the relay server uses the same existing interfaces as they are and takes charge of all complex processes. Programs of individual financial institutions, furthermore, can be dedicated to viewer functions, such as displaying response data from a relay server or entering figures. This results in a reduction in the load on the development for logic components (Fig. 5).

**(2) Multiple requests can be unified into single request**

In comparison with existing mobile banking, i-appli

banking supplies more information on each individual screen and also realizes speedy transitions between screen displays since no communication takes place with the mobile banking system, even when a detailed screen for inquiries of deposits and withdrawals is displayed, for example. In order to make this happen, multiple requests must be sent to the mobile banking system to collect and make the necessary information available in advance.

The relay server performs multiple communications with the mobile banking system and responds to the programs of individual financial institutions by providing an adequate amount of information required by each communication. This not only reduces the load on the development of programs for individual financial institutions, but also reduces the amount of communications that must be performed by the mobile phone, thereby improving responses particularly with SSL communications (Fig. 6).

**(3) Coordinated linkup with other services**

Relay servers can have coordinated linkups with systems and services other than those for mobile banking. This makes it possible to withdraw funds, for example, using the mobile banking service, with a request to have electronic money issued to a value issuing server provided by an electronic money service

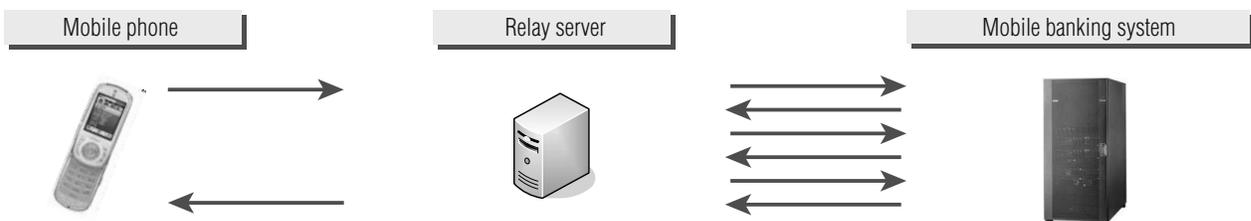


Fig. 6 Relay server integrates multiple requests into one

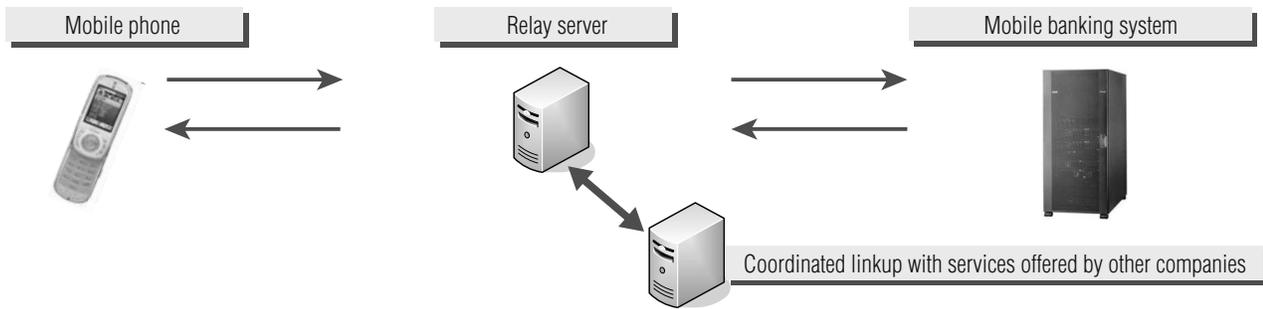


Fig. 7 Coordinated linkup with other services

provider and charging to the mobile phone is completed using an application installed on the mobile phone. It is also possible to make applications available with a mechanism to realize instantaneous settlement on mobile phones that are linked with the sale of merchandise (Fig. 7).

#### Implementation case example

Mizuho Bank, Ltd., (hereinafter referred to as “Mizuho Bank”) is the first user to adopt our service. Mizuho Bank launched their “Mizuho Direct” (a mobile banking service) using i-appli on May 25, 2007.

Amidst a rapid increase in the popularity of mobile phones and ongoing technical innovations, Mizuho Bank has been undertaking activities to proactively offer various banking services through mobile phones. In the spring of 2006, as part of such efforts, they took into consideration mobile banking services that are compatible with i-appli banking. The completion of the development for the i-appli banking system in a short period of time was a major concern for Mizuho Bank, due in part to the development schedule of new mobile phones models at NTT DoCoMo. In order to come out on top of this issue, Mizuho Bank determined that the relay service offered by OKI was optimally suited for their requirements. Also due to the fact that OKI has had past experience in the business of providing relay services using mobile phones for “mobile electronic money charging” services, Mizuho Bank decided to adopt this solution.

#### Future outlook

Numerous financial institutions throughout Japan, particularly regional banks, are providing mobile banking services by utilizing cooperative mobile banking centers. By linking relay servers to individual cooperative centers it will become even easier for financial institutions to offer services compatible with i-appli banking. Therefore, this will benefit customers, who will be able to receive the same level of services regardless of their location throughout Japan. At OKI, we intend to proceed with the establishment of coordinated linkups utilizing individual cooperative centers, while offering numerous financial institutions mechanisms for providing mobile banking services with superior usability in the future.

#### Conclusion

A summary, a description of the advantages and a case example of implementation for a mobile banking solution compatible with i-appli banking, have all been introduced in this paper as a solution that enables financial institutions to easily start their mobile banking services compatible with i-appli banking. Financial services must be provided safely, with simplicity and convenience to as many retail banking users as possible. New models of mobile phones are launched semiannually, while at the same time, new features are incorporated into mobile phones one after another, resulting in an evolution with a pace exceeding that of personal computers. With this trend in mind we, at OKI, will offer our support to financial institutions by taking advantage of our technical capabilities and know-how so that financial institutions are able to offer services in a timely manner to their customers.

#### References

- 1) The “Survey regarding systemization of work operations at financial institutions” (September 2005), Special Issue No. 59 of the Financial Information Systems.
- 2) News release of KLab Inc., April 19, 2007.

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