Mobile Account Management: The Mobile Commerce Enabler

There is much talk about retail banking on mobile devices, but mobile banking is just a first step toward the full-fledged account management needed to support mobile commerce. Today, financial institutions and service providers are making choices that could dramatically impact the growth and acceptance of mobile commerce.

By Barry McCarthy, President, Mobile Commerce Solutions, First Data

Author's note: Mobile technology is transforming how people monitor their financial resources, make important purchasing decisions and pay for transactions. As the fourth installment in First Data's series on the ongoing development of mobile commerce solutions, this paper focuses on mobile account management, which is really the key ingredient to a healthy mobile commerce economy. Understand, though, that mobile commerce is in its infancy. It is unlikely that First Data's viewpoint as a company, or my personal thoughts as a commerce industry veteran, is completely accurate.

Let me know what you think. Call or send me an e-mail sharing your own expectations and anticipations.

Mobile Account Management: Beyond Mobile Banking

The cornerstone of mobile commerce is the ability for consumers to manage money in their electronic wallets—bank accounts, yes, but so many other account types, too.

In the same way people manage the cash and cards they carry in their physical wallets today, consumers need to be able to manage the purchasing instruments and rewards programs in their electronic wallets. This is called mobile account management, but what does that really mean?

Today, people put cash into their wallets by going to an ATM and withdrawing money from a bank account. They pay credit card bills with checks or electronic funds transfers drawn from a bank account, and debit purchases are immediately deducted from a bank account. People increasingly manage their bank and credit accounts from a computer, transferring money from one account to another and initiating electronic payments.

Clearly, the first step toward mobile commerce is enabling some, or all, of these banking functions through the mobile phone, because this is how consumers will ultimately manage the balances of any purchasing instrument built into their mobile devices. And, while it's not pervasive yet, mobile banking through mobile phones is happening today. Companies like mFoundry, Firethorn, mBlox, Blaze Mobile, Vipera and others offer mobile phone software through service agreements with banks that enable consumers to manage their bank accounts with their mobile devices.

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We'll take a closer look at mobile banking services, but first let's see why this is just the first step toward mobile account management. Consider the following mobile commerce scenario. A young couple is out shopping for a few small home-improvement items…

At the warehouse-style home improvement store, the couple comes across a clearance area where one-of-a-kind items are marked down for quick sale. And there it is: a new bathroom vanity that would be perfect for the master bathroom, complete with fixtures, matching mirror and several matching accessories. Here is a chance to get an item with many of the features they want at one low price. But even with the substantial discount, this expenditure isn't in the budget right now. So in addition to the usual discussion between couples about such a purchase, this pair needs to figure out if they can pay for this item today, and if so, which payment method is most advantageous and least likely to ruin their budget.

They quickly open the electronic wallet application on their phone and gain access to a variety of accounts, including checking and savings accounts, credit card accounts, stored-value accounts, airline miles and other rewards accounts, their kids' school lunch accounts, and even a home equity line of credit account attached to a debit card. After checking balances, they decide the best way to pay for this bathroom set is to use a small balance they still have on an in-store gift card from last Christmas, redeem a few airline miles, then pay for the remainder out of their primary checking account.

A few quick clicks later, the decision is made and the payment method secured. Now with just a tap of the phone at the register and a Personal Identification Number (PIN) entry, the amounts are automatically deducted from the appropriate accounts. Hello new bathroom!

So how do we get from where we are today to a point where consumers can manage not just banking information with a handset, but all of their accounts—retail gift cards, airline mileage accounts, university spending cards, merchant rewards programs and utilities accounts—in one easy-to-use mobile interface? Let's begin by taking a closer look at mobile banking.

Today's Mobile Banking: Starting Point for Mobile Account Management

Mobile banking is the first step toward the level of mobile account management needed to support robust mobile commerce. This is because software and services needed to support full mobile account management are almost exactly the same as those used for mobile banking. At first glance, mobile banking appears to be an essential component of mobile commerce, along with marketing and point-of-sale payments capabilities.

There is, of course, more to the story than that. True mobile account management supports many more account types than just bank and card accounts. Examining the technology and services infrastructure behind mobile banking gives us a good sense of how close we are to true mobile account management. However, it also highlights the battles brewing between the service providers actively vying to become successful participants in the mobile commerce ecosystem.

Let's begin by looking at how mobile banking services work today. Currently, there are two ways to deliver mobile banking services to the handset:

→ **Wireless Application Protocol (WAP) Delivery:** WAP is a standard suite of technologies and protocols that enables mobile phones and other small mobile devices to access and browse Web pages
  - Customers can access account data at secure Web sites optimized for display on a handset. In this way, they can perform the basic banking functions they would do from their computer, such as check account balances, transfer funds and set up electronic payments. No special software is needed on the handsets, as access is provided through a simple Web interface directly to the various account holders. Users log into their accounts with usernames and passwords
  - WAP-based Web pages are fairly easy to set up, but they are somewhat difficult for consumers to use. They often look different on various mobile devices, and they typically suffer from poor performance on the limited Internet Protocol (IP) networks of carriers. Even more problematic, username and password logins can be compromised easily, creating major security concerns

→ **Client-Server Model:** A number of companies are developing products that use a client-server model for delivering account data to the handset
  - These systems deploy a small applet (a piece of software that runs within another application) to the mobile device, allowing secure access to a data center server where the actual account information resides. In some cases, the account data is collected from various sources, stored on the service provider's server and then optimized for delivery to the consumer's handset. In other cases, the server software pulls data directly from account holder data centers, translates it for proper display on the handset and sends it to the consumer. In this case, the data is not stored by the service provider. Both client-server models have advantages over the WAP delivery model. They do a better job of formatting information for proper handset display, and because the applet on the device and the software on the server work in tandem, there is an additional layer of security—a sort of "lock and key" relationship that is specific to a single customer's handset

Many banks have implemented a WAP solution for mobile banking because it's comparatively inexpensive, and it enables banks to offer a service to their customers without involving a third-party intermediary. However, the WAP solution is slow and not user friendly for customers, and because its security model is questionable, this solution is not likely to prevail in the world of true mobile account management.

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The client-server model offers a more easy-to-use, secure solution, but it comes at a cost. Banks pay fees to the service provider so their customers can use that provider's proprietary software and services to access account information. Fewer banks are offering this true mobile banking service to their customers, but the ones that do are discovering savings as well. For instance, a paper published by mFoundry (Strategic Mobile Revenue Opportunities, February 22, 2008) reports that call center calls cost an of average $6.50 each, and most of those calls are for account balance information (half of these calls come from mobile phones!). Providing the same information through a client-server mobile banking application costs approximately 50 cents per transaction.

It's important to understand the difference between the two client-server models currently in use today. In one model—the gateway model—the service provider is providing access to data stored at banks and translating the data for display on the handset. Alternatively, there's a stored data model in which the service provider stores data downloaded from banks, and then translates it for display by the handsets. Let's take a closer look at these two client-server models.

Gateway Model: In this model, the applet on the phone opens a door to the service provider's server, which provides a translation layer between the customer's handset and the bank. The service provider does not store or host bank data. It simply opens a secure communication-translation channel between the handset and the bank.

It's important to note that with the gateway model, there is no solution that a bank or institution hosts on its own. Because of that, banks must rely upon the service provider for account authentication. The bank cannot use its own account authentication when working with the gateway model.

One of the largest providers of the gateway model service is a company called Firethorn. Firethorn has been purchased by Qualcomm, one of the leading providers of chip sets for mobile phones. A number of the major mobile carriers in the U.S., including Verizon and Sprint, have standardized their phones and networks to work exclusively with Qualcomm® CDMA chip sets. Firethorn is working to provide mobile banking services through these and other carriers.

Stored Data Model: In this model, the service provider replicates bank account data and stores it on a special secure server. Customers use their mobile phones to access their accounts on this server, and software translates the account data for display on the handset. One great advantage of this model is that consumers access their accounts with the bank-provided authentication process.

Banks can buy the software and build their own in-house stored data solution, or they can use a hosted service. Software solutions based on the stored data model are challenging to implement. Only the largest banks are likely to have the IT infrastructure necessary to effectively install and run these applications as part of their mobile banking service. However, hosted services for stored data solutions are available and are well within the reach of any size institution. For instance, First Data offers a hosted mobile banking service based on mFoundry software. Typically, these stored data solutions provide greater flexibility and more customization options than gateway model solutions.

There's one other important point about stored data solutions. Because they store actual account data, any company that implements them must fully conform to Payment Card Industry Data Security Standards (PCI DSS) compliance rules. This is true of banks as well as hosted service providers. First Data, which performs credit and debit card transaction processing, already has systems in place that are PCI DSS compliant. Any companies considering offering a hosted content storage model as a mobile banking service—a mobile phone carrier for instance—would need to become PCI DSS compliant, and they would need to maintain compliance over the long term.

As you can see, there are a number of viable and competing solutions for mobile banking services. Many banks today offer some kind of mobile banking, and a few are making major investments in this area. But mobile banking is only a subset of the account management capabilities demanded by mobile commerce.

Next, we'll focus on how mobile banking needs to evolve in order to support true mobile commerce.

What Are the Missing Pieces to Get from Mobile Banking to Mobile Accounts?

In order for mobile commerce to thrive, mobile devices, including mobile phones, need to support more than basic banking functions like checking balances, transferring funds and initiating electronic payments. At the very least, mobile devices also need to allow consumers to do the following:

→ Manage accounts from multiple financial institutions and associations

→ Manage merchant loyalty and stored-value accounts

→ Exercise real-time control over accounts used for point-of-sale purchases

→ Initiate and receive mobile payments

→ Manage opt-in marketing programs that allow consumers to receive only the promotional offers and product information they are interested in receiving

These are features that make up an electronic wallet, and while most of these capabilities are available today, they have not yet been combined into one package with the behind-the-scenes services necessary to support them. For instance, client mobile banking applications typically support basic banking functions but often do not have other electronic wallet features. At the other end of the spectrum are electronic wallet applications that have many wallet features and attractive user interfaces, but possess relatively less robust back-end data management systems.

There is one other critically important service missing from the mix today. Somehow all the personal account information associated with each mobile device must be collected, stored and sent to individual handsets. This is a provisioning process similar to storing and transferring secure account information to the magnetic strips on credit cards. However, the process of provisioning mobile devices is considerably more complex than provisioning plastic credit cards. That's because mobile devices that are truly ready for mobile commerce contain multiple accounts, loyalty programs, stored-value accounts and other payment instruments, often distributed by fierce competitors. If consumers enroll in opt-in marketing programs, it's necessary to securely store their information and preferences as well.

Gathering all this personalized account information and preparing it for loading onto individual handsets requires a specialized data management role called Trusted Services Management (TSM). Right now, there is no TSM serving the mobile commerce environment, though many think they are up to the task. But are they really?

Who Should Be the Trusted Services Manager?

There are two big challenges for the TSM. First of all, a TSM must gather all the personalized account information from all the different independent merchant and financial entities that possess it. Secondly, the TSM must store and handle all of this individual account data according to PCI DSS standards of compliance.

Current mobile banking solutions deal with this in various ways, some of which are not very scalable, and none of which support the diversity of account types that a thriving mobile commerce environment will ultimately require. Other types of service providers in the mobile commerce environment may feel they can perform the TSM role. For instance, consider these possibilities:

→ **Telecommunications Carriers** already control access to the mobile device. Some of these organizations see the TSM role as a logical extension of their current position within the infrastructure. However, the TSM role would force carriers to build capabilities they do not currently have and that go far beyond their core business competencies. To support mobile devices with broad mobile commerce capabilities, carriers would need to establish thousands of new relationships with financial account holders, develop complex data centers that comply with industry security standards, and reach reciprocal agreements with competitors so that account access can travel as easily from device to device as phone numbers do currently. These are not things the carriers are likely to do, at least in the foreseeable future

→ **Credit Card Associations** have existing infrastructures for the credit and debit parts of the mobile accounts equation, but they lack access to a complete set of banking data, and they may not be able or willing to reach agreements about sharing data between competing entities. So, if associations take on the TSM role, consumers may be left to choose between, for example, a Visa account mobile phone or a MasterCard® account mobile phone, but not one that supports both, and certainly not one that offers special merchant accounts that do not rely on an association. Such a solution would stifle the growth of mobile commerce, which by its very nature is likely to encourage the proliferation of specialty accounts

The Ideal TSM Solution

It may be that the ideal candidate for fulfilling this role is an entity that does not yet exist—a partnership of selected businesses who together can serve as a TSM to all financial institutions, merchants and associations offering consumer accounts.

For example, a group consisting of several large mobile phone service carriers, a traditional credit and debit card provisioning entity, and a mobile banking service provider could come together and be successful. By pooling their core capabilities and existing resources, they could forge a complete TSM solution capable of managing personal data and provisioning any phone with any individualized account information.

Although the early stages of mobile commerce are likely to produce proprietary TSM solutions with limited commerce potential, in the longer term one or more large-scale, market-neutral TSMs will emerge. The real challenge to all of us involved in enabling mobile commerce is establishing business relationships that promote TSM solutions capable of accommodating competing consumer businesses. Only then will mobile commerce become a major channel for consumer spending and high value, highly targeted mobile marketing.

→ **Financial Institutions (FI)** would benefit by fulfilling the TSM role because this would give them a firmer hold on their customer relationships. Also, banks already have access to their own customer data as well as secure data center capabilities that allow them to directly serve existing clients. But with thousands of independent banks all competing for customers, it is unlikely the partnerships and alliances necessary to adequately serve multiple accounts across multiple carrier networks could ever work on a large enough scale to effectively sustain a healthy mobile commerce environment

→ **Transaction Processors,** like First Data and others, may be best suited to fulfill the TSM role. These companies provide multiple-account payment processing services and also perform credit and debit card provisioning. Because of this, they already possess some of the basic qualifications that a TSM needs, including:

- Existing, extensive relationships with banks, merchants, credit card associations, and stored-value account service providers

- A robust infrastructure for securely handling large amounts of financial and transactional data
- Agnostic service of various credit and debit instruments—they come closest to being able to offer a TSM "free trade" zone in the mobile commerce economy

But transaction processors, too, need to forge new relationships, specially with mobile carriers, and to develop expanded relationships with banks if they are to fully service consumer account management.

So how will all the companies currently vying for a foothold in the mobile commerce environment find enough common ground to bring mobile commerce to every consumer's pocket? The answer lies in how the industry decides to deliver mobile account management services. Let's see why.

Building Tomorrow's Mobile Account Management Infrastructure

We began this paper with the scenario of a young couple in the home improvement store reviewing their accounts and moving funds so they could finance an impulse purchase.

In that example, they touched multiple accounts from a variety of entities through their mobile handset. Their ability to do that quickly and spontaneously enabled their purchase. Without that capability, there would have been no bank transactions, the merchant would not have registered a sale, transaction processors would have no transaction to process, and carriers would not have passed any transaction data.

This illustrates how mobile account management enables transactions that trigger revenue opportunities for all participants in the mobile commerce environment. In fact, the greater the volume of mobile commerce transactions, the better it is for everyone. So what's needed to maximize mobile commerce?

There are really only two basic requirements:

→ **Easy-to-use, feature-rich electronic wallet:** This electronic wallet should support total account management, including merchant accounts, card association accounts, bank accounts, stored-value accounts and account types that have not yet been invented. It needs to support various kinds of payments, including point-of-sale transactions, person-to-person transfers and remittances. In addition, the electronic wallet must support enrollment in marketing programs so consumers can opt-in for product messaging and promotions of specific interest. It needs to support other features like geolocation functionality related to commerce (i.e., where is the best price nearby for an item) and text notifications regarding account balances or unusual account activity. Perhaps most important of all, the interface needs to be fast and easy to use. Every carrier, and possibly each consumer, could have its own customized wallet depending upon its needs; the TSM will require interoperability with many wallet applications

→ **Market-Neutral TSM entity:** The availability of the electronic wallet features described above will depend on a back-end process that has access to a wide variety of personal account data and individual preferences. Right now, there is a natural tendency for different entities like banks, associations, carriers and even hardware manufacturers to offer solutions favorable to their own individual market positions. This tendency risks fragmenting the total mobile commerce market and limiting the commerce potential of any given mobile device; reducing the power of mobile devices as instruments for making purchases consequently reduces their value as vehicles of distributing targeted marketing—which will, in turn, dampen the potential of mobile commerce for everyone: merchants, carriers, associations and banks, handset manufacturers, and consumers

It's likely the industry will eventually work toward a market-neutral TSM fulfilled by a selected group of service providers capable of handling personal account and preference data according to PCI DSS standards, who have extensive merchant, bank and association relationships who can

provide provisioning services to mobile devices; and who can manage access to mobile devices. The best way to maximize mobile commerce to everyone's benefit will be to provide all mobile commerce infrastructure providers with equal opportunity to use the TSM services. Banks, merchants, associations and carriers would all be able to reach their own customers (and potential new customers) with innovative product offerings. Consumers will benefit with products and services that make purchase decisions easier for them, and a ubiquitous mobile commerce environment will provide larger revenue opportunities for everyone

Conclusion

In many ways, the electronic wallet and mobile banking applications appearing today are bridge technologies to the true mobile account management functionality needed to support mobile commerce. They represent essential steps toward building an account management infrastructure, and they introduce consumers to the idea of managing money with their mobile devices.

Some current electronic wallet applications support accounts associated with contactless stickers. A contactless sticker is a payment form factor with a Near Field Communications (NFC) chip inside (First Data offers one of the most popular sticker chips, under the GO-Tag™ solution brand name). Consumers use them to make purchases at points-of-sale equipped with contactless readers. When the customer taps their sticker on a reader, an account associated with the sticker is debited by the amount of the purchase.

Contactless stickers frequently come in formats suitable for sticking to the back of mobile phones or other convenient personal items. Phones equipped with mobile banking and one or more contactless stickers bring consumers a step closer to true mobile commerce. Now they can use their mobile banking application to transfer money into an account that is debited when they make a purchase using the contactless sticker.

Most of the technologies needed to support full mobile account management and a vibrant mobile commerce environment exist today. The greatest obstacles to putting a mobile commerce-enabled device in every consumer's pocket are the still-emerging business models between mobile commerce infrastructure providers. Partnerships, alliances and acquisitions happening right now will define the next generation of mobile commerce solutions.

Although many players will be tempted to carve out exclusive solutions for specific market segments, and perhaps some will try to dominate the mobile commerce environment with their proprietary solutions, these efforts will more likely fragment the market and reduce the revenue potential for mobile commerce. Our industry stands to gain the most by working toward infrastructure solutions that support the broadest possible purchasing power within each mobile device.

I'm always interested in your thoughts on this or any other mobile commerce topic. So please, contact me or any member of my team. We not only want to help, we want to listen. I can be reached directly at: barry.mccarthy@firstdata.com.

For more information, check out the full mobile commerce white paper series at www.FirstData.com:

→ The Risks and Opportunities in a Mobile Commerce Economy
→ Mobile Payment: The Linchpin of the Mobile Commerce Economy
→ Going Direct with Mobile Marketing

About The Author

Barry McCarthy was appointed to lead the newly formed Mobile Commerce Solutions business unit of First Data in January 2008. There, he has responsibility for commercializing all First Data assets globally for use in mobile commerce. In this role, McCarthy and his team work closely with a variety of industry partners, from the largest wireless carriers to young start-ups, financial institutions, technology provider and terminal manufacturers.

Previously, McCarthy led Global Product and Business Development for First Data and before that, product development for the Commercial Services business unit. Prior to joining First Data, McCarthy was vice president and general manager of VeriSign's Internet Payments & Risk Management business unit, a NASDAQ 100 technology company. Before VeriSign, McCarthy co-founded and later sold MagnaCash, a Silicon Valley micro-payments company that is currently owned by Digital River (NASDAQ: DRV). Previously serving Wells Fargo (NYSE: WFC) as vice president and general manager of the ATM business, McCarthy had P&L responsibility for $110 billion in annual transaction volume and 14 million active ATM cards. McCarthy started his career at Procter and Gamble (NYSE: PG), where he spent 12 years in roles of increasing responsibility, first in sales and sales management and later in customer marketing and brand management. He earned a masters in business administration from the Kellogg School of Management at Northwestern University and completed his undergraduate studies at the University of Illinois, Urbana.

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