

# Mobile Payments Industry Roundtable Summary

co-hosted by the Federal Reserve Banks of Boston and Atlanta

January 27-28, 2010

## I. Overview

This document summarizes a meeting convened by retail payments representatives from the Boston and Atlanta Federal Reserve Banks for key industry stakeholders involved in mobile payments in the U.S. The Fed has always been involved in payments as part of its central bank role, so we are interested in payments migration from traditional to electronic and to newer emerging payments. While the Fed has begun to do research on mobile banking and payments, we wanted to better understand where the industry is headed, barriers to adoption, and how it may impact consumers in general.

The Federal Reserve representatives wanted to learn about mobile payment services from the industry perspective to see whether or not there may be a role for the Fed as the central bank to facilitate the evolution of mobile payments. We also wanted to explore how we might collaborate on issues of mutual agreement. While our overarching goal is to encourage growth and innovation in this market, while minimizing risk to the payment system, our goal for the meeting was to have the experts inform and educate us, and to engage in a cross-industry dialogue.

There are many separate industry workgroups discussing mobile payment issues, such that some discussions are becoming fragmented and siloed. As a result, in the U.S. the adoption of mobile payments is significantly slower than the rest of the world. Many of the businesses and organizations represented by meeting participants have started mobile initiatives in Asia, Africa and Europe. Here in the U.S., there are a variety of pilot rollouts, but not necessarily commercial rollouts. The industry is struggling to define a direction for mobile payments, because of different business models and strategies.

The main expectations for the meeting were to gain a mutual understanding of the environment for mobile payments; provide a forum for participants to discuss what should be done to address barriers to adoption in the U.S.; to strive for a non-competitive agreement on how we might work collaboratively together, recognizing each organization's interests may be distinct and different; and to identify common gaps and business interests that we can address collectively.

## II. Remarks by Dennis Lockhart, President, Federal Reserve Bank of Atlanta

First, I was thinking back to the beginnings of mobile telephony. I remember the early articles around 20 years ago or more. I was fascinated that they were going to have these towers that are going to send radio waves and people will have phones that they can carry around. And the predictions, that turned out to be very accurate, stated that everyone will want to have one. In the recent financial crisis, we've done a lot of studies about some of the aspects and problems we faced. And I don't want to make light of the foreclosure issue, but there is certainly a group in the U.S. that would give up their home before giving up their mobile phones. There is a pecking order I think, perhaps, among the younger generation that you pay your mobile phone bill first and then down the list is paying your mortgage payment, and then maybe your credit card bill.

I think back to those times and the predictions of how exponential the growth in this phenomenon would be and it was accurate. Thinking back to the beginnings of the World Wide Web and Internet, the mind boggles at the number of applications that could not be predicted or imagined. Even the iPhone and similar devices have an open platform for applications. I'm astounded at the imagination reflected in those applications. You are here at a relatively early stage of something that will be equally surprising in terms of applications as we go forward. Perhaps it is not as easy to see at this point, but clearly there are many different ways technology can be applied.

Last night on the plane I did a thought experiment to consider how many applications or uses of mobile payments I could dream up that would be relevant in my life. The obvious one is user-initiated transfers, effectively mobile debits to cards or accounts where I simply initiate a payment, perhaps using the device as an entry into various electronic payment systems. The whole notion of an electronic purse that essentially embeds money into my device that allows me to then use it is fascinating. Today you can get on an airplane with your boarding pass in your phone, so I don't see any reason why you can't essentially have the phone as an electronic form of the card. I can imagine cross-country travel where you drive through several toll booth systems you haven't joined, but you can just pull out your cell phone and that will let you speed through.

Last Saturday night at dinner I was chatting with a lawyer in town whose passion is a particular historic park, and he noted that what he wants to do is have a phone app that is a guide to that park. He said that the guide might provide the ability to solicit payment for the maintenance of the park; an easy way of paying a small amount to support a cause embedded in some other type of application.

Phone-to-phone transfers have significant potential. Remember the TV commercials of kids at football games asking dad or mom to send money? When I was at the receiving end of those calls, I would have to put a check in the mail, it would take a few days to get there, and if the check was a certain amount it might take days and days to clear. Now you ought to be able to click your cell phone and mom and dad can send money. However, we may want to make sure that the payment has contingent availability and it can only be used for text books or something we want the kid to use. So I can imagine the cell phone device operating with contingent availability or limited use accounts, or something along those lines.

Similarly, if you can send payments you can send guarantees from one phone to another phone. It's not the exactly the money but whatever supports the drawing of the money - payment authorization going through the cell phone device.

Finally, this is where it gets interesting for those of us who are regulators and are very focused on banking system and in these times, reform of regulation. If payments are made to a telecom account in excess of the balance, that's a credit balance. This scenario is similar to a bank deposit, which gets thorny in deciding who is and isn't a bank, and how they are going to be regulated.

Your field raises issues of security and issues of regulation. I think it is reflected in the room with some of the participation from Finland and elsewhere that this is something we should be thinking about globally. Everyone is well aware of the potential in developing countries to draw the unbanked into the banking system, today most abetted by the use of a cell phone. Again, like our younger generation, even the poorest people in many countries are able to afford a cell phone. Or put differently, very intelligently, the companies that are providing the service are pricing to ensure that they get as many people as possible. So even in poverty-stricken areas around the world you see the prevalence of the cell phone.

This puts into play the issue of cross-border transactions. I clipped an article entitled "Big Senders" and it's a review of the cross border remittance world. There are some interesting developments. First, the U.S. is no longer the dominant remittance sender of funds. The ethnic and national Diasporas have spread so much in the last decade that the U.S. as the sending nation has gone from 31 percent to only 18 percent. We now have more very high-volume bilateral country pairs where money is flowing from a worker in one country to a family in another country. The amount of remittances today eclipses development aid. The most important flow of funds worldwide for economic development is remittances, not foreign aid. So clearly there is a cross-border aspect of this phone-to-phone remittance issue to a recipient in another country.

This group is talking about technology conjoining telecom and banking. There are many interesting issues to deal with in that area, such as collaborative business models. For better or worse, the regulatory reality around the world is going to require collaborative and joint venture type business models. We would be concerned about consumer protection, fraud detection, fraud prevention, and privacy, for example. Then there is the question of when does a telecom become a bank? For many years in this country we have had a fundamental principle of the division between banking and commerce. The banking system is the banking system and we in effect create boundaries around that and at least theoretically don't allow the banking system to be in a major ownership position in the industrial world, and vice versa. We simply will have to sort this out going forward.

If I overpay my cell phone account I have made a deposit conceivably with the telecom company. If send out a payment and the telecom pays it in advance of receiving the funds, they have made a loan. Credit balances that accumulate in this way on the balance sheet of a telecom are likely to be invested, which is a banking function, if you will. We are at a critical juncture with a fascinating set of issues and everyone in this room is a pioneer. I hope that the intellectual stimulation of being at the pioneer stage of something like this is as fulfilling as I expect that it is. Many of you in this room may have never been in a Federal Reserve Bank and probably

don't have a clear answer of what the Fed does. We are delighted to have you here and to convene this group. I hope you have a wonderful conference.

### III. Discussion of the the Mobile Payments Environment

Mobile is a transformational enabler of financial commerce in every human endeavor, particularly in developing countries.

Several questions were posed to begin the discussion. Where does mobile commerce stand today and where are the opportunities? Is it more or less where we were a couple of years ago? Has the economy changed things? Is technology where we think it should be? Is the media creating a disconnect between the perception and reality of mobile payments? For example, a recent news article projects that mobile payments transaction volume will reach over \$250 billion in 2012, and that one in four payments transacted will be a mobile payment. This reflects a growth rate of 68 percent per year since 2008, most in Asia. Some participants consider this projection overly optimistic because while 2012 is not very far away when one considers payment behavior changes on a global basis; people are very conservative about money.

From the perspective of one trade organization, it is difficult to estimate the mobile payment market size. Numbers can be deceiving. It is important to understand the real dynamics in the ecosystem, including the real barriers and the real threats - because human payments behavior changes very slowly. Finally, if there are no agreements on the business models it is hard to expect that mobile payments will grow that rapidly in two years.

For example, France announced an initiative to roll out national mobile payments in 2007 or 2008, but it has not yet happened. Instead, this initiative has been scaled down to a pilot and is no longer a commercial rollout. It is hard to estimate projected growth of mobile payments, when there are starts and stops in terms of commercial implementations worldwide.

Another trade association developed a mobile financial services best practices initiative two years ago. Along with mobile financial services, mobile payments need to be addressed specifically. Payments can occur in more than one way using a mobile phone, including NFC contactless technology, which could be a major component of financial services. However, use of NFC for mobile phones requires a long lead time to be widely disseminated in any market. Emerging markets of Africa and Asia are showing large growth in mobile payments, not just in terms of account alerts, but in the ability to actually transact through SMS. If mobile payments can function in Africa and Asia, we need to ask why it can't function in the U.S.

The current U.S. model cobbles together the existing infrastructures of mobile operators, the bank network, and payment service providers. The challenge is that there are many alternative payment methods and no differentiating factors or obvious substantial benefits that consumers can see yet from mobile payments. In other countries there is greater cooperation between financial and telecom markets, as well as merchant inclusion. The Indian Reserve Bank has driven initiatives for financial inclusion, realizing that not everyone has access to a bank account. The mobile device is now the life blood of many individuals on a daily basis as you can see in

the development of SMS proprietary infrastructures pulling in the banks and the large merchant communities. Much can be learned from what has occurred in markets such as Korea and Japan where mobile payments have been more successful. One suggestion was that the U.S. might focus first on efforts to market mobile payment services to the under-banked and underserved who are possibly disenfranchised yet reliant upon their mobile phone.

Banks have shown a lot of interest in the past three years, but many prefer to be fast followers, not leaders. Most banks, except the very large, have moved slowly, waiting for others to show how it is done and prove its investment worth. Only 1,000 of the approximately 17,000 banks offer mobile banking in the U.S. However, 40% of U.S. consumers use online banking. Many stakeholders believe that in 2010 and 2011 there will be a lot of momentum for financial services to get more involved in mobile (banking and payment) services. The U.S. is also unique in that banks and credit unions look to their existing providers to provide solutions without too much upfront cost.

## **IV. Drivers of and Barriers to adoption**

### **A. Consumer demand**

A discussion on consumer demand revealed different perceptions as well. Recent surveys show that two of the top five areas in which financial institutions are investing are mobile banking and mobile payments. While many banks believe there is a positive ROI, some organizations may be limited by focusing only on the online consumer. The best way to provide service is from the viewpoint of the consumer, so it is important to ascertain what the consumer wants and will adopt. Will consumers trust the use of text or browser-based applications to conduct payments?

One organization hosted a consumer focus group on personal payments. Consumers said they would not interrupt a dinner conversation to send the person across the table money because it is too clunky and difficult to do on a mobile device; and these were sophisticated folks who had iPhones, Androids and Blackberries. Does their perception match reality?

Talking to consumers revealed that the two top things that they are most worried about are security and not understanding the value proposition. Some of this can be solved with marketing and education that puts payments in context for the consumer to recognize and understand the value in the change. It is important for stakeholders to help solve the problem for the consumer.

The iPhone is shifting demand in the U.S. This device became a game changer because it gave consumers an interface to the web and many new applications. Consumers demonstrated their desire to use the iPhone for multiple functions, which led to many new applications, creating a paradigm shift in the U.S. This is in contrast to Europe where consumers buy different phones and just keep the SIM card.

The way data is priced in the U.S. also differs from other countries. U.S. carriers offer unlimited pricing plans which are not expected to go away, and may shape some of the delivery systems going forward.

The ‘not yet banked’ is a different consumer segment to consider: teenagers who represent the new mobile generation and are accustomed to the ease and convenience of mobile technology and want to use it for payments. That is where the success of mobile banking lies.

It is important to consider what the consumer wants in mobile payments. This is challenging because carriers have many customers with different needs to consider. Business strategies require careful consideration rather than simply trying things out. Product success has not been spectacular in terms of value but it has only been a few years. More time is needed to understand and learn what the customer wants. As a group, it is important for the stakeholders to understand this and collectively do a better job disseminating information to consumers.

The typical U.S. consumer today has access to many payment options, unlike developing countries, such as India, where there is a large unbanked population. If a mobile payment product does not provide value to everyone (the consumer, merchant, bank, carrier, or other stakeholder), it will not be adopted.

Banks and nonbanks are offering different banking and payment services, so it is difficult to determine from a strategic perspective what to offer and to whom. Does the industry need to offer everything to everybody? Ultimately the consumer decides whether to adopt a payment solution or not.

## **B. Industry Challenges**

Larger organizations have historical entrenchment in this space and look at the best way to deploy investment dollars. They need a very refined business case that elaborates on what the value proposition is and includes one and five year forecasts. The participants all have different challenges. Some newer non-bank entrants have no entrenched infrastructure to overcome, and have capital to invest. Rather than allowing the payment networks to become disintermediated from payments providers, the group should collaborate to overcome organizational hurdles to make mobile payments happen. If not, the two-year prediction will not come true, and the risk exists that individual parties will act alone to extract value from the marketplace.

The economic downturn has impacted investments in technology hampering what we can do by the resources available today. There are limited funds to launch projects because banks have a big backlog of projects competing for the same dollars as they emerge from the economic downturn. The technology sector may be more nimble than the banking sector, so while solutions may not come from banking, banks must collaborate if they want to be participants in mobile payments going forward.

The U.S. has a large noncash infrastructure that does not exist in other countries. One challenge for stakeholders is to decide collectively on the rails and infrastructure to use while considering cost issues. Attempting to establish different payment infrastructures at the same time may not work well. With the right infrastructure, some of the key players can align, new applications will be developed, and consumers will use the service. Otherwise, disruptive innovators will figure out solutions to provide services in a way that may not be optimal for security reasons.

### C. (Contactless) chip technology

The industry is starting to see more activity around contactless chips in cards. The major banks have been issuing chip cards, and are expected to flood the market soon. However, the mag stripe is still a barrier since everyone uses it. The implementation of readers at the merchant point of sale also must be considered.

There is a big move in public transit toward open loop contactless fare payments with card network acceptance. Large banks are partnering with transit systems to pilot contactless card initiatives, helping to expand chip technology in the market and increase the network effect. As use of chip technology expands in public transit it can change consumer habits. Consumer adoption is a barrier but optimism exists because of recent trends. At the same time there is only one chip enabled mobile device (from Nokia) on the market, so some industry participants are considering peripheral devices such as NFC stickers on phones as a bridge.

Is NFC technology the right technology to drive mobile payments? Some participants think that implementing barcodes and stickers confuses the market and creates delays in getting to the final goal of full NFC deployment and adoption. Others think it is better than doing nothing for now. Generally, the group thinks that there are many trials and pilots occurring globally and we need to start to implement some commercial applications with NFC soon.

### D. Merchant challenges

Merchant challenges are substantial. The capital investment in point of sale equipment for contactless technology is very expensive, so they are trying to delay those investment decisions until they are sure where the market is headed. There are concerns that by the time EMV technology is deployed in the U.S., it will be obsolete because there will be a new technology to take its place. Merchants want to know where the road map leads and the plan is for the industry overall. Merchants would like to minimize implementation costs and they want to do it once.

Smart devices are causing excitement and may result in a richer loyalty experience by having coupons sent to the mobile phone. There are a lot of things that can be built with different network devices, but the building pieces must be in place. The hope is that NFC stays because there are a lot of things in development based on NFC. Ideally we can run on the same infrastructure and are able to get the kind of applications that matter to the consumer.

Another challenge for merchants is the possibility that off-line merchants will compete with on-line merchants because consumers are using their phones to compare prices online. This is a potential new venture so the challenge is selling ideas. The key point is to have broad and open infrastructure that can provide for more than payments. For merchants who want to provide multiple payment options, uniform infrastructure is important. Because ultimately what is convenient for the consumer is what the consumer wants. Whatever technology is developed needs to be agnostic to the payment type and needs to work everywhere.

It is unclear whether mobile payments developments will influence the structure of interchange. Some say interchange should be a standard operating cost while others do not. It makes intrinsic

sense that a more secure transaction would be less costly. At the end of the day NFC is not pervasive because no one wants to be out the money. And no one thinks there is a business case for NFC on payments alone.

### **E. Drivers**

Most banks continue to investment in mobile (although not as a substantial proportion of their technology portfolios) possibly because bankers saw the dramatic changes in consumer behavior due to the iPhone, despite the challenges in the economy.

One bank has a unique customer-driven business model for mobile banking, with customers all over the world who have greater demand for mobile services. The lack of a branch environment has driven their strategy to invest heavily in technology – particularly in the mobile space.

The Haiti mobile phone donations demonstrate people’s comfort with SMS mobile technology to make a mobile payment. In this situation, consumers had frictionless payment capability with ease of use and access. If mobile commerce is where we want to be in two years, it needs to be frictionless and secure. For Haiti and in pilot rollouts, success was achieved when the mobile device was seen as a necessity to conduct the transaction.

Convenience is another driver. When people have a better experience they change their expectations. This group must envision the future for the consumer and show that convenience from the mobile can be achieved just as easily as it is now with debit and credit cards. A good example for changing user experience is remote deposit of checks.

In mobile pilots in other countries, banks earn money from customer use of bank products, for example offering NFC and smart cards to reach the unbanked. In India where there are more cell phones than bank accounts, banks look at mobile users from a customer acquisition standpoint. A mobile phone is more of a necessity for unbanked populations, and this incents stakeholders in those countries to develop innovative technologies, such as putting the mobile application on the secure element. In the U.S. making payments via mobile phone is a novel concept, and the mobile phone is still viewed as just another channel. There are so many channels in the U.S. that mobile payments will only make sense if cash is replaced with a “killer application.”

## **V. Industry roles and responsibilities**

The goal of this session was to discuss roles and responsibilities in mobile payments in the context of business models and payment usage.

The mobile environment is characterized by a wide range of participants. To move forward, it is critical to establish a collaborative work environment and know how the consumer piece of the equation will be solved. For example, if an incorrect transaction is posted to a phone bill, the error resolution process needs to be defined. It is critical to begin thinking of these kinds of scenarios, because whoever takes responsibility will ultimately influence the business model

development related to questions about who bears what expenses and who gets what revenues in the value chain.

One of the Fed's goals is to let free markets work without intervention for as long as possible, to allow markets to resolve problems before government intervenes. This recent mobile payments development introduces a whole new cast of characters that complicates issues with regard to responsibility and liability, and how much trust we ought to have in that market place.

### **A. Customer ownership**

The group agreed that no one group in the ecosystem owns the customer. That is the problem. It is more difficult for a customer to change bank accounts than it is to change cell phone providers, and those customers who use mobile banking applications don't switch banks that often. While this is a business model argument, it does not necessarily mean that customers belong either to the bank or to the carrier exclusively. It is a question of infrastructure, because depending on the business model and infrastructure multiple organizations will say they own the customer.

Customer ownership may also depend on the consumer's perception of ownership, and who he believes has committed the error in the payments transaction.

An organization may own customer data through its relationship with a customer, and is obligated to protect that data. This is different from owning the customer. Today, we have a conjoining of two or three different ecosystems, which is why implementation of mobile payments is so complex.

Complications can arise when multiple stakeholders have relationships with consumers that provide them different sets of data. If data spending patterns gathered by banks and carriers are treated as a mosaic and there are no efforts at data sharing, we will not be able to reduce fraud as much as we could collectively. This is a key area where stakeholders should assume the challenge to think differently because each will want to approach the ecosystem using individual data sets as leverage to maximize their own value extracted from the process. Moving forward, it is important to consider the different data models across banking and telecom industries and what should be shared to fight fraud.

### **B. Security**

Security is a complex issue in the context of roles and responsibilities. Who is responsible for provisioning security for transactions that expand across the mobile space from the phone, to the carrier, to the processor, to the bank, and then settlement? In the banking sector there are encryption translations. In the mobile world, the secure element connection into the network is solid and well established, although nothing is impervious. There are strong encryption methods for protecting the user data during transmission. How is information translated between a bank and a carrier to execute a customer transaction? The complexities begin when different parties begin to share data.

### C. Standards and risks

Some standards are mandated and others are voluntary. There are standards bodies for banks and for carriers. We have financial standards and NFC standards. But what happens when we need to bring the different groups together to pass a transaction end-to-end? Often standards are created in a vacuum. So do we need a standard “standard?”

The group discussed whether there are gaps in standards as far as rules or best practices. Is there a banking standard or rule that could be changed or modified to use for a mobile device? There are a couple of standards that are fairly well documented. NFC technical standards and PCI standards, which are association standards in terms of payment networks, have not necessarily been followed. The group must decide whether to follow existing, or create new, standards. This analysis may be an opportunity for collective review. There are reasons why PCI has not been followed by the telecoms. If we know “why” we can identify gaps and create new standards.

The payments business has well-defined groups that set standards, such as the American National Standards Institute (ANSI) or a collective like NACHA. Who convenes the mobile payments industry to use the standards? Do we need an industry forum to say we are going to use this ISO standard?

Even if standards are voluntary, the leaders of the payment channels have the power to enforce them. It is their responsibility to ensure that the parties in the value chain follow the standards. For an SMS delivery, the aggregators who connect the content providers contractually link to the final party. (They put language in their contracts stating that participants must comply with industry guidelines.) In terms of standards enforcement, if guidelines are not followed then customers will be upset. This seems to work since there is a lot of text messaging going on.

A significant challenge is that there are multiple standards in play. The early movers are going to the standards specific to each business and combining them in such a way to create capability. If they can move enough of the market then it will become a status quo standard. However, there will be variance.

The question is not whether we need to develop standards, but what application to use to write the standards. There are still standards to be written. When building new standards they should not overlap existing standards, but should be complementary. It is a huge challenge to figure out which existing standards we will be able to use; and what can be done to fill the gap and be complementary, while promoting interoperability and fairness to everyone.

First, there are default standards, industry standards and then the real standards. The GSMA standards are mandatory. There are real standards in the payments space as well. Some of the standards that are required are defacto standards. We must have industry-wide support for the business requirements that are the basis of the standards. Otherwise, the result will be more situations where an industry standard is created in isolation and no one uses it.

There are two areas where standards seem to have a significant impact. One is interoperability efficiency. The other is regulatory authorities. Most organizations’ business models address mobile marketing and advertising and a common infrastructure that improves profitability. A big issue in the regulatory environment in the U.S. is the FTC and privacy. The FTC is interested in mobile because they don’t want the same issues that exist in online marketing, or charges for

SMS messages related to unwanted advertising. The FTC does not want the bandwidth used up by the mobile marketers.

The FCC regulates the telecom industry, but it is unclear what the FCC is doing about privacy. For example, if a bank signs up a customer for mobile banking, the bank must get the customer to sign a waiver allowing disclosure of the cell phone number so that the bank can conduct transactions. The FCC has not said that GSM can have an unambiguous, uniform, unique identification number that would protect privacy and confidentiality. Nor does the FCC allow all of the members of the ecosystem to identify the account and the individual associated with the device in a way that could solve an operational problem for all of the non-competitive support functions.

If we are going to share and store data, standards need to have cross-fertilization that meets all the privacy, confidentiality and quality requirements. That is the role that standards can play, assuming that is the context that this group is trying to influence. Standards without that context and without the confluence of the telecom and banking industries will be ineffective.

The Atlanta Fed's Retail Payments Risk Forum has convened many oversight groups to talk about risk, fraud, and privacy issues to collaborate more effectively, and realized a number of successes. Perhaps this group or the Retail Payments Risk Forum could lead this function and convene those regulatory oversight groups to form a new type of working group. Otherwise, anyone that works in this space has to assemble a position from each angle that is right for their organization, which is inefficient and takes a long time.

The U.S. banking industry is highly regulated and has lots of standards. The telecom industry is analyzing levels of encryption, data packets, and other variables. Getting the two industries together is the challenge. We may need an intermediary technical piece, for example, a TSM-type translation device. It would be helpful to conceptualize a framework that leverages well established standards in the banking world. If there are gaps that prevent us from getting to where the industries converge we can address needed standards. Where multiple banks and carriers choose to participate, there needs to be an open framework in which all parties know their roles. If we map out and agree on the business requirements and the flow we can take existing standards, plot them on top of the requirements and determine where there are gaps.

To conduct the gap analysis, the group must select whether to map local payments via NFC or remote payments because they are different. There are other standards already in place for contactless payments. In the remote payment space, a link between the existing payment methods such as the ACH, card networks, and stored value accounts to mobile is missing. To implement that, we may need some standards or international implementation that is interoperable.

The primary reason that no one has taken the initiative in this area is regulatory risk. Pilots are attractive because they can be turned off easily, and doing a large rollout on a country-wide basis is out of the question. Being able to create a work product that can satisfy internal risk management and regulatory folks where you can say that you have discussed this with the Fed, the FTC or other regulators will help to remove the internal friction that can prevent things from getting done.

One take-away is that we may need a legal regulatory ecosystem map that overlays all of the participants since they are subject to regulation by several different entities. To build in this space, it's important to get ahead of the game, rather than trying to fix the legal and regulatory problems afterwards. To make the investment the organization must feel comfortable that what it is doing is satisfactory in terms of having the data security that is expected by the regulators.

#### **D. Business models**

Different TSM business models exist. There may be multiple TSMs depending on the business architecture that are responsible for different functions, but still connected.

The three main roles of the TSM are to manage risk, settlement, and security. There are inherent complexities and concerns in any model regardless of who becomes a trusted provider or platform, or even a clearing house. The right business model for this function in the U.S. needs to be determined and the questions of who is prepared to drive the TSM concept and support the TSM architecture and who has the technical capacity to fill that role at this time still need to be answered.

Ultimately the TSM is a neutral technology facilitator. The TSM should be agnostic to any specific payment type and accept any wallet. One primary use of a TSM is for set up and credentials, OTA provisioning of payment applications/card to the phone and life cycle management.

For example, if a customer loses his mobile phone, any applications that were on the secure element can be re-downloaded onto a new phone on behalf of the MNO and or the bank. This can also be done for retail customers who have prepaid cards, gift cards, and loyalty cards.

Other possible functions include key management, commercial management of the secure element, and the management of application downloads. However, the TSM does not provide the mobile wallet or touch the point of sale transactions.

## **VI. Meeting Summary**

Much of the discussion focused on payments as a derivative of what people are trying to do commercially; that is developing mobile payment applications. Therefore, rather than designing the technology or the business rules around the payments, we should allow mobile payments to develop organically, allowing consumers to choose which payments methods they will use in order to transact in the most efficient way possible.

During the discussion of mobile payment infrastructure needs there were a few key issues that surfaced. There seemed to be some agreement on a need for uniformity and common elements that would span the ecosystem. This is necessary in order to have a common user experience - making a mobile payment on one handset should look and feel like making a mobile payment on another, etc. Mobile payments must be secure and security should not be something that providers compete on. Privacy is also a big concern. The potential marketing value of customer

data when tied to mobile payments is huge. If we are not careful about privacy, this data could potentially be abused and access to mobile payments data – purchase data, location based data, etc. could turn this into “telemarketing” at its worst.

The barriers that the industry alludes to really didn’t appear to be daunting to most people. In particular, the technological barriers seemed to be a non-issue. People don’t seem to be intimidated by the risk in mobile payments and actually understand that the risks are different from the risks associated with online payments. Also, many people believe that mobile actually improves the security for the payments world in many respects.

Banks are accustomed to managing settlement risk; the telecoms have the mobile customer relationships, while service providers offer service utility.

Not everyone agrees on secure elements or the status of NFC, but stakeholders are moving to improved mutual understanding. What underlies these issues is the need to have a better, more secure form of digital transaction than we have today. We should not revert back to legacy systems and ignore the opportunity to design something new that takes advantage of mobile and digital properties.

Standards help with interoperability and help define the regulatory purview. It would be valuable to map out the business requirements and flows and then overlay the current standards and regulations to see what is missing. It is also important to engage all of the appropriate regulators, the bank regulators, FTC, FCC, and law enforcement as we move into the mobile space. There is value in getting the regulators on the same page and agreeing on what the initial rules are up front, then reconvening the regulators at some point to recalibrate and ensure that the current regulatory structure is working for everyone.

The consumer expects payments to work. To make sure payment systems function seamlessly the business model has to be structured so that no one group exerts unreasonable control. It is up to the industry, working collaboratively, to make this happen. While this concept is new in the U.S., we should learn from what has been done in Europe. Stakeholders will need to assume risks to move the ball forward.

## **VII. Potential Topics to Promote Shared Mobile Infrastructure and Adoption**

1. Continue to solicit inputs from the mobile ‘eco-system’ (e.g., further meetings of this group, known now as the “Mobile Forum”), aimed at generating specific action items.
2. Convene a ‘college’ of cross-industry regulators (once the Mobile Forum has assembled a list of regulatory issues to nail down and a plan for how the infrastructure sharing is intended to proceed); this might be an ongoing dialog.
3. Create a road map for regulatory purview and milestones/target dates for resolving open issues.
4. Identify high-level business requirements for eco-system sharing the infrastructure (including technology ownership and provision) in conjunction with regulatory road-map (above).

5. Publish a white paper defining the challenges and opportunities for mobile payments as a platform and carving out Fed's role for all to observe.
6. Define options for ownership and management of key technology to be shared within the mobile payments infrastructure including options for secure elements, TSM(s), and security/settlement options in advance of a critical mass of SEs/NFC).
7. Coordinate inputs to various standards bodies and determine if there is a role the Fed could play in facilitating such work.
8. Weigh-in on broader payments infrastructure options for supporting payment types beyond bankcards that meet immediate needs of big banks and big carriers (especially ACH options).

### Next steps

The group agreed to continue this discussion with a follow-up meeting in April.