

RPTR BAKER

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THE DISRUPTER SERIES: MOBILE PAYMENTS

TUESDAY, DECEMBER 1, 2015

House of Representatives,

Subcommittee on Commerce, Manufacturing, and Trade,

Committee on Energy and Commerce,

Washington, D.C.

The subcommittee met, pursuant to call, at 10:21 a.m., in Room 2322, Rayburn House Office Building, Hon. Michael C. Burgess, M.D., [chairman of the subcommittee] presiding.

Present: Representatives Burgess, Lance, Blackburn, Harper, Guthrie, Olson, Pompeo, Kinzinger, Bilirakis, Brooks, Mullin, Upton (ex officio), Schakowsky, Clarke, Cardenas, Welch, and Pallone (ex officio).

Staff Present: Gary Andres, Staff Director; Rebecca Card, Assistant Press Secretary; James Decker, Policy Coordinator, CMT;

Andy Duberstein, Deputy Press Secretary; Graham Dufault, Counsel, CMT; Melissa Froelich, Counsel, CMT; Paul Nagle, Chief Counsel, CMT; Tim Pataki, Professional Staff Member; Olivia Trusty, Professional Staff, CMT; Dylan Vorbach, Legislative Clerk, CMT; Michelle Ash, Minority Chief Counsel, CMT; Christine Brennan, Minority Press Secretary; Jeff Carroll, Minority Staff Director; Ashley Jones, Minority Director, Outreach and Member Services; Caroline Paris-Behr, Minority Policy Analyst; Tim Robinson, Minority Chief Counsel; Diana Rudd, Minority Legal Fellow; and Ryan Skukowski, Minority Policy Analyst.

Mr. Burgess. The Subcommittee on Commerce, Manufacturing, and Trade will now come to order. The chair will recognize himself for 5 minutes for an opening statement, and I do want to welcome everyone to our hearing this morning examining mobile payments, which are poised to upend how consumers pay for goods and services in stores, online, in apps, and at the parking meter. This hearing is the latest in our disrupter series, covering a variety of technologies that are redefining our lives and improving our or economic condition.

This past week, Black Friday, Small Business Saturday, Cyber Monday flooded all of our in boxes and took over the commercial breaks on television. As the holiday shopping season is in full swing, this is a good time to take a look at the consumer experience with mobile payments. This morning, we will hear from our witnesses representing a variety of innovative products and services in the mobile payments arena. This hearing is an opportunity to learn about the innovations that are available to consumers today and those that will be available in the near future, but we recognize that there are exciting innovations on the horizon for payments, including mobile currencies, which will be a topic for another day.

Smartphones are increasingly an ever-present part of our lives. It is no surprise that they are also changing the way that we shop for goods and services. You can shop on your tablet in front of the television, compare prices on your phone as you

browse in a store, and pay without ever pulling out your wallet. Consumers have access to more information, and more competitive options are at the tip of their fingers during the busiest shopping season of the year. There has not been this big an upheaval in how consumers pay for goods and services, from groceries to haircuts, since computers replaced the old knuckle-buster manual imprinters in the 1980s.

In 2014, 22 percent of mobile phone owners reported making a purchase with their phone; 39 percent used their phones to make a purchase in the store. When you find that perfect Christmas gift, you may be able to pay by tapping your phone at checkout or clicking the PayPal checkout button on a mobile Web site. When you want to send your friend money for the concert ticket they bought for you, all you need is their email address or their mobile phone number. These mobile payment options include protections not available with cash and are easy to use for consumers who may be more likely to have their phone in their pocket than carry the exact change with them.

Some basic questions remain top of mind for consumers when they think about mobile payments: Are they safe? Can I use my phone? This hearing is an opportunity to hear from companies implementing the cutting-edge technologies in mobile payments and how they are addressing these and other concerns raised by consumers.

Two of the top security topics that are raised by mobile

payments are authentication, how the device knows you have permission to make the payment with the device, and tokenization, protecting your payment data through the payment process. We all know passwords are difficult. They are difficult to remember. They are difficult to keep straight, which is why many people -- myself not included, but many people -- simply use their name for their user name and 1234 as their password. Mobile devices offer some alternatives to the traditional password that add an additional layer of protection for consumers.

Authentication is the process that a system uses to verify the identity of a person that wants access to the system. The user name and password is the most typical authentication process used to log into a variety of Web sites. Mobile devices have changed. They have changed how people think about authentication. Fingerprint sensors, cameras are found in an increasing number of mobile devices; and instead of having to remember a separate password to unlock your phone or tablet, you may be able to use the fingerprint scanner to unlock the device with just a touch. This protects the information on the phone, including access to payment options.

Another security feature that is regularly brought up in discussions about mobile payments is tokenization. We are all familiar with the tokens you get at the fair or the arcade. Tokens in a mobile payment system are similar in concept, replacing the valuable currency or payment information with a code

that then becomes useless for another transaction if someone were to steal it.

As has been the case throughout history, technology has the potential to solve problems and improve our lives. Mobile payments are no exception to that trend. So I look forward this morning to hearing from our witnesses and how they are leveraging the mix of technologies to provide an easy and secure experience for United States consumers as we make our way through this shopping season.

And I will yield back the balance of my time and recognize the subcommittee ranking member, Ms. Schakowsky, 5 minutes for an opening statement, please.

[The prepared statement of Mr. Burgess follows:]

***** COMMITTEE INSERT *****

Ms. Schakowsky. Thank you, Mr. Chairman, for holding this hearing and the series of hearings on disruptors. I just learned that at my bank, I can now make a deposit by taking a picture of the front and back of my check, and my bank will take it, although it doesn't account for my husband's really bad handwriting and says that it can't verify that the number I put in is the number he wrote on the check. That is a problem.

But I think this holiday shopping season, it is very important to hear from our witnesses about this important new technology. We do expect mobile payments to double from today to 2020. One of the fastest growing sectors of the U.S. economy, mobile payments do facilitate transactions with anyone from a food truck or farmers market seller or taxi driver, parking meter, and they have made buying and selling goods and services easier in many ways. But as this technology continues to expand, we definitely need to understand how the payment structure works, security, consumer protection vulnerabilities. How to address those issues is a responsibility of our subcommittee. We want to maximize benefits and minimize risks, obviously.

Mobile payment technologies rely on a number of nontraditional identifiers such as geolocation, purchase preference, phone numbers, email addresses. Those features can enhance protections against payment fraud. However, they can also put consumers at greater risk if they are unprotected or if their use extends beyond managing payments. With regard to electronic

communications generally, we need to ensure that all of the players engaged in mobile payments, hardware and software developers, businesses, banks, credit unions, and credit card companies, are taking reasonable security measures to protect the information that they are handling. We also need to make sure that consumers know how these payment structures differ from more traditional transactions. Consumers need to know how consumer financial liability for these types of payments differs from those made using credit or debit cards. They should also know how mobile payments can be used to cram consumers, running up bills that they never explicitly approved. And as the subcommittee responsible for consumer protection, we have an obligation to close those and other existing loopholes that leave consumers more vulnerable.

So I look forward to hearing from our witnesses, getting their perspectives on opportunities, challenges, and the way forward with regard to mobile payments.

And I yield back my time.

[The prepared statement of Ms. Schakowsky follows:]

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Mr. Burgess. The chair thanks the gentlelady. The gentlelady yields back.

The chair recognizes the Chairman of the full committee, Mr. Upton, 5 minutes for an opening statement please.

The Chairman. Good morning. And today we continue our disruptor series. We have previously examined the Internet of things, the sharing economy, and, most recently, drones.

Today we discuss the growing trend of mobile payments. No matter where folks choose to travel or shop, whether it be in Michigan, the Nation, or even across the globe, their smartphones are ever-present, always at the ready to provide direction, daily news and scores, and even make payments. Early estimates show that, for the first time ever, more people shopped online than in stores over the Thanksgiving holiday. Cyber Monday estimates are still being tallied, but we are no doubt seeing a fundamental shift in how people are buying the goods and services available to them throughout our economy. Consumers have more choices than ever before about when and where to shop. These choices open up opportunities for innovations to take root and spread throughout the economy.

We have seen this sort of disruption throughout this series of hearings, and mobile payments are certainly no different. They are impacting how the Internet of things and the sharing economy develops. The disruptor series remains important as we work to better understand how innovations impact consumers, job creation,

and our economy as a whole.

Mobile payment technologies have opened up opportunities for individuals and businesses alike, so businesses small and large can benefit from these disruptions as we have seen with a hardware like Square and software like Venmo, which make payments easier for small businesses and between respectively. These are just two examples in an ecosystem that is bursting with growth as more and more Americans get smartphones, tablets, and other mobile devices. New technologies and competition are responding to consumer needs.

Mobile payment innovation is happening all over the country. However, adoption across the ecosystem continues to be a challenge that all businesses in this space are working to address. There are a lot of facets to the mobile payment space, and I am pleased that today we are going to learn more about the options that consumers have, particularly how these options can and will continue to improve security for consumers and job creators.

And I yield the balance of my time to Marcia Blackburn.

[The prepared statement of The Chairman follows:]

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Mrs. Blackburn. Thank you, Mr. Chairman.

And I am so appreciative that we are doing this hearing today, and I thank our witnesses. You all are the experts, and we have plenty of questions that we are going to have for you. Wireless and mobile devices and quick purchases are changing things. And this past weekend, my 6-year-old grandson got into the app store on my iPhone, found something that he wanted to buy, handed me the phone and said, "Marcia, you need to pay for this," and, of course, I did not. But I use this illustration to make a point of the simplicity and also the assumption of our kids and grandkids that it is going to be at the scan of a screen or a touch of a button or with great ease that you are going to be able to make these purchases on the go, in realtime, paid in realtime, and with great convenience and security -- and security.

And that is where much of our focus is going to be, whether it is the multifactor identification or tokenization or what I want to hear from you, the "what is next?" Where do you think we are going with this? Because convenience, yes, people want it. Security, they are going to demand it because they want to be able to protect their virtual presence online just as they are able to protect their presence in the brick-and-mortar relationship with those that they are choosing to do business with. So I thank you for the time that you are going to spend with us today, your preparation in coming to the committee, and I look forward to your thoughts on what is next.

I yield back.

[The prepared statement of Mrs. Blackburn follows:]

***** COMMITTEE INSERT *****

Mr. Burgess. The gentlelady yields back. The chair thanks the gentlelady.

The chair recognizes the gentleman from New Jersey, the ranking member of the full committee, 5 minutes for an opening statement please.

Mr. Pallone. Thank you, Chairman Burgess.

During today's hearing, we will discuss the new ways consumers are paying for goods and services through their mobile devices. At a time when it seems like virtually everything is tied to our smartphones, it should come as no surprise that we are now able to store credit cards electronically, transfer funds directly to our peers, and make purchases by simply tapping our phones to a terminal at the point of sale.

These exciting innovations hold promise for consumers. Imagine the convenience of being able to send money instantly to a friend or family member regardless of location or proximity to an ATM. For consumers who forget their credit cards at an outing, a mobile peer-to-peer payment could be the difference between being squared away and an IOU. The ability to store credit cards in your phone may also offer consumers some peace of mind that in the event of a lost or stolen phone, their information is safe behind a pass code, and a physical card is not compromised.

Perhaps most encouraging for consumers with limited or no access to a bank, mobile payments can be a welcome alternative for purchasing the goods and services they need. For example, the use

of mobile payments has skyrocketed in Kenya, where access to banking is quite limited.

With all these new products that involve consumers' personal information, however, privacy concerns must be raised. In general, mobile payment apps can access a wealth of personal data through a user's smartphone, such as phone numbers, geolocation, email addresses, and detailed purchase histories. Consumers do not know who has access to their information or with whom it is shared. This data may be used in ways the consumer never intended, including by merchants sending unwanted advertising tailored to consumers through their mobile devices. And that personal information could also be sold, so consumers' location and other private matters are shared with the highest bidder. That is why privacy protection should be baked into these new mobile pay applications.

It is also important that consumers are ensured a secure transaction through a mobile payment system. As with any mobile device or application, digitally stored or transmitted information is hackable. With the major data breaches of the past few years still fresh in consumers' minds, mobile payment users will understandably be hesitant about using an app if there is no protection from hackers who may try to intercept their personal information. It has been made clear through this series of hearings on disruptors, innovation and consumer protection must go hand in hand for these new technologies to flourish. Mobile

payments present an exciting opportunity to make e-commerce a more seamless experience for consumers, and I look forward to hearing from today's witnesses on this topic.

Thank you, Mr. Chairman, and I yield back.

[The prepared statement of Mr. Pallone follows:]

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Mr. Burgess. The gentleman yields back. The chair thanks the gentleman.

And this concludes member opening statements. The chair would remind members that, pursuant to committee rules, all members' opening statements will be made part of the record.

And we do want to thank our witnesses for being here this morning and taking time to testify before the subcommittee. Our witness panel today -- and we do have a good and great group -- our witness panel for today includes Mr. John Muller, the senior vice president for global payments policy at PayPal; Ms. Jessica Deckinger, chief marketing officer at the Merchant Consumer Exchange; Ms. Sarah Jane Hughes, university scholar and fellow in commercial law at the Indiana University School of Law; and Mr. Sang Ahn, chief commercial officer at U.S. Samsung Pay.

We appreciate all of you being with us this morning. We will begin the panel with you, Mr. Muller.

And each of you will be recognized for 5 minutes for a summary of your opening statement.

Mr. Muller, you are recognized.

STATEMENTS OF JOHN MULLER, VICE PRESIDENT FOR GLOBAL PAYMENTS POLICY, PAYPAL; JESSICA DECKINGER, CHIEF MARKETING OFFICER, MERCHANT CUSTOMER EXCHANGE; SARAH JANE HUGHES, UNIVERSITY SCHOLAR AND FELLOW IN COMMERCIAL LAW, INDIANA UNIVERSITY MAURER SCHOOL OF LAW SANG AHN, CHIEF COMMERCIAL OFFICER, U.S. SAMSUNG PAY.

STATEMENT OF JOHN MULLER

Mr. Muller. Thank you, Mr. Chairman and Ranking Member Schakowsky, and the other members of the committee. Thank you for the opportunity to testify on behalf of PayPal. My name is John Muller, and I am vice president of payments policy for PayPal. And PayPal has been involved in mobile payments now for 16 years and started with the cutting-edge payments mobile device of its time, which was the PalmPilot, you may remember, the personal digital assistant without phone capability, but a very portable device. And PayPal was actually built to beam payments from one PalmPilot to another. At that point, we quickly realized that more people had email and Internet access than owned a palm pilot palm pilot, but we have now come back full circle to a focus on mobile payments to the point that last year, we processed 1 billion payments from mobile devices all around the world, and just in the last quarter of this year, the growth rate continues, and we processed 345 million mobile payments. I have some more

information on PayPal in the prepared statement, so I wanted to shift a little bit and just make a few high-level points about mobile payments and where we stand today.

One point is payments follows commerce, and it follows where people spend their time. Very few people, maybe the people on this panel excepted, make a payment just for fun or just to try it out. There is always a purpose behind it, and for most of us, the purpose is commerce, or the purpose might be to pay back a friend. And increasingly, we are doing our shopping on mobile devices, and we have our mobile devices with us when we are out with a friend or contacting a friend, so it is only natural for payments to be part of that broader mobile experience.

Another point is that payment has been mobile for quite some time. There are few things more portable than paper currency and coins or a plastic card. What is really new about the new generation of mobile payments is the opportunity for all of us in the payments industry to take advantage of what the technology makes available, namely increased security through things like the device identifier or geolocation on the device or biometrics on the device -- the thumbprint being the first live version of that, but certainly more to come in that arena. And then, to that security, add a better user experience compared to just paying with cash or a card: things like automatically recognizing my loyalty program, giving me points, giving me choice of funding methods. So if I have a card, a plastic card, then I have to use

that card. If I have a digital wallet like PayPal or the other wallets, I can use my mobile device in realtime to switch among all the different payment methods that I have available. So those are some of the reasons why we see the growing popularity of mobile payments.

Another point I wanted to make is we often use the term broadly mobile payments, and it really covers to a large degree three different fields. One -- and certainly the one that predominates for PayPal and many other payment companies -- is using the mobile device as a substitute for what a few years ago would be a transaction on the laptop or desktop computer, so just communicating with a new kind of device but really very similar to the kind of e-commerce transactions we were doing in the early 2000s.

The second type -- and certainly the one that gets a great deal of attention for good reason now because the opportunity to touch not just e-commerce but physical commerce -- is using the phone as a substitute for the plastic card and paying at a physical point of sale.

And then the third type, certainly not to diminish it in any way, equally important, is using the mobile device as a way of enabling businesses, mostly small businesses, to accept cards and other payment methods electronically in a mobile business environment, whether it is a food truck or a farmers market or any of the other many opportunities that small businesses use for

devices, attaching a small reader to their device and using it usually to swipe a card or enter another payment method. Companies like Square and PayPal have made that available to small businesses all over the country. And all of those are different types of mobile payments, but it is important to recognize that there are distinctions among the three.

And then, finally, also important to recognize that the field is already regulated. We have to give credit to the drafters in particular of the Electronic Fund Transfer Act. When they created consumer protections for what at the time was primarily the ATM card quite a few years ago, they drafted the statute in terms of access devices and financial accounts, not limited to plastic cards or any other kind of specific technology. So an access device can be a password or a phone or any other device, and the consumer protections remain in place supplemented by the zero liability programs that Visa and MasterCard and PayPal all offer to buyers. So I just wanted to make those broader points.

And, with that, I will conclude my remarks. Thank you, and I look forward to the questions.

[The prepared statement of Mr. Muller follows:]

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Mr. Burgess. The chair thanks the gentleman.

And, Ms. Deckinger, you are recognized for 5 minutes.

STATEMENT OF JESSICA DECKINGER

Ms. Deckinger. Thank you, Mr. Chairman, Ranking Member Schakowsky, and distinguished members of the subcommittee. Thank you for the opportunity to testify on behalf of Merchant Customer Exchange for MCX. We appreciate the invitation to appear before the subcommittee to discuss the rapidly developing and evolving mobile payment space. The subcommittee's interest in the topic is welcome as mobile payment solutions are rapidly moving to the forefront of consumer technology innovations, both in the United States and globally.

Who is MCX? So the Merchant Customer Exchange was founded by a leading group of U.S. merchants in 2012 to create a broadly accepted mobile commerce platform. MCX's members include retail leaders in the big box, convenience, fuel, grocery, quick service, full dining, and specialty retail travel categories. MCX is focused on creating convenience for consumers by allowing them to securely pay for goods and services from their handheld mobile device while also providing opportunities for merchants to directly connect with consumers to provide offers, loyalty programs, and more direct interaction with the merchants they shop with. I prepared a short video for you to get a sense of what

CurrentC, our app, is all about.

[Video shown.]

Ms. Deckinger. This new network will benefit a wide range of consumers in three ways: One, delivering a better shopping and payment experience by enabling customers to interact directly with merchants through virtually any smartphone; two, safeguarding consumers and merchants by maintaining the direct relationship that merchants have with customers and protecting customer data; three, bringing balance to the payments ecosystem.

Together MCX's member companies process in excess of \$1.2 trillion in payments annually, giving MCX scale and ubiquity that will allow consumers to use their smartphones wherever they may shop. MCX brings together the best-in-class technology and mobile payments partners to create an unparalleled network in the mobile space. To achieve this goal, MCX has launched its own proprietary application called CurrentC that can be downloaded to any smartphone a customer may choose.

We have conducted private rollouts with leading retailers and their employees, and as of September 15, 2015, this year, we are currently in a public beta operating in Columbus, Ohio. The purpose of our beta in Columbus is to gather additional learnings from consumers and merchants to continue to refine and improve the product to meet the needs of both consumers and the merchants. Expansion of the rollout will continue as additional merchants and partners go live in Columbus through the balance of 2015 with

national public availability currently anticipated in 2016.

Today consumers' experiences with payments can differ fairly drastically depending on where they are shopping. At a fuel station, they may be asked to dip their card or type their ZIP Code in to begin fueling. At a sit-down dining establishment, consumers wait for the server before physically relinquishing their card to the establishment. Other merchants have more self-service experience, where consumers swipe their own cards at checkout. And we have specifically designed our technology platform to support the best, most progressive technologies to deliver an optimal payments experience at any merchant to serve their customers in the best way possible.

To deliver that best consumer experience at merchants, we are leveraging several types of technology solutions. We remain open to new technologies and are always looking to source the very best options for consumers and our merchants. At present, we are working with several different innovative technologies, including QR codes, Bluetooth low-energy beacons, and geolocation, providing the best user experience regardless of location.

Fundamentally the current payment system works well from a consumer's perspective. Swiping a credit or debit card is widely accepted, easy to do, and familiar. MCX and its merchants are focused on providing consumers new, more convenient, and more rewarding, and safer ways to shop.

CurrentC provides incentives to consumers in four important

ways. Wide acceptance: Our owner-merchants already include national leading retailers and regional leaders in large-format, convenience, pharmacy, fuel, drug, grocery, quick, full-service dining, specialty retail, and travel categories. We are focused on acceptance in the places where consumers shop every day. Developing that network will give consumers the ability to shop with frequency and to develop muscle memory using CurrentC, allowing it to replace the card swipe over time while providing additional security and convenience.

At MCX, we are technology agnostic. CurrentC is available on any smartphone regardless of model. We believe the consumer should have the convenience of mobile payments regardless of their hardware choices. And because CurrentC is cloud-based, it is easily transferrable should a consumer choose to change their chosen mobile device solution.

We have also partnered with merchants to provide CurrentC payments network to consumers within the merchant's own priority apps. This means a consumer can choose to access CurrentC directly or have the ability to garner the same benefits if they wish to use the merchant app which they use every day.

Merchants value their relationships with their customers and want to enhance those relationships, adding value that motivates consumers to shop in store with faster, safer, and more secure way to transact. CurrentC delivers by including consumer loyalty cards and accounts, empowering consumers to apply offers, coupons,

promotions, and when they pay in a single transaction. Our solution is designed to combine all those benefits instantaneously together in one QR code read so that a consumer no longer has to remember a phone number to activate their loyalty account or use their key chain to get discounts.

Because CurrentC is tied directly into the POS terminals at our merchants, we have the ability to deliver additional benefits, such as item level coupons, which alleviates the need to either clip or carry paper coupons or discount offers, all in an effort to provide flexibility, choice, and the ability to benefit from offers and loyalty directly from their handheld device.

Currently, we are testing several discount and incentive programs in Columbus. Two of our most popular are a coupon for a free Frosty, which is an ice cream cone, with every purchase at Wendy's, and a \$5 bonus extra care box with a first purchase using CurrentC at CVS. What we are seeing is that to the average consumer, these are tangible motivators.

Consumers will have the freedom to pay using a variety of financial accounts, including personal checking accounts, merchant gift cards, private label credit and debit cards, and general purpose credit and debit cards.

MCX recently signed a partnership with JPMorgan Chase which will increase options available in the CurrentC wallet by enabling Chase customers to use their Chase cards wherever CurrentC is accepted. It is anticipated that additional general purpose

credit and debit cards will be available in the future.

At MCX, we are always open to adding new forms of payment that will provide greater convenience to consumers and allow them to realize the benefits and incentives of moving to paying with their favorite merchants using CurrentC mobile payments platform. At MCX, we are focused on leveraging innovative and secure technology.

Consumers are inundated with headlines around data breaches and identity theft. As a result, they have become more aware of the vulnerability of various payment methods and technology. However, many consumers remain in the dark about how to leverage the latest security technologies in their everyday lives. At MCX, we believe it is incumbent on mobile payment technologies like ours not only to use the latest security technology but to help educate consumers on how it is working for them. We are leveraging cloud technology to avoid storage of any sensitive consumer information on the phone or transferred at the POS. Our app uses secure dynamic tokens uniquely generated for each individual transaction to facilitate transactions instead of constantly passing data between the consumer, merchant, and financial institution. In the simplest term, using a dynamic token means that the consumer can feel assured that their personal financial information or payment information is never stored on the device, is never stored on the merchant POS, and even if the dynamic token was stolen, it is worthless because it can never be

used again.

CurrentC was designed to ensure consumers are in control of their own personal security. It provides visual evidence to demonstrate that our security measures are working for them.

Mr. Burgess. Ms. Deckinger, let me ask you to please wrap up. We have other witnesses to hear from.

Ms. Deckinger. Okay. Thank you. I will just finish this section and then finish. Our registration process includes several security questions, a four-digit PIN, and consumers can disable their phones easily and quickly.

We want to reiterate our appreciation for your interest in mobile payments technologies and providing Merchant Customer Exchange the opportunity to share about our innovation and currently underway in the mobile payments space. We truly believe that mobile payments will provide a better opportunity for merchants and consumers to experience an improved experience overall. Thank you.

[The prepared statement of Ms. Deckinger follows:]

***** INSERT 1-2 *****

Mr. Burgess. The chair thanks the gentlelady.

Ms. Hughes, you are recognized for 5 minutes please.

STATEMENT OF SARAH JANE HUGHES

Ms. Hughes. Thank you, Mr. Chairman.

Mr. Chairman, Ranking Member Schakowsky, Representative Brooks from Indiana, and other honorable members of the subcommittee and committee who are present today, I am very pleased to be here with you to talk about mobile payments generally, and with the microphone, it will be even better -- yes -- and to talk about consumers in today's marketplace, and I am especially pleased not only to be here with you but to be here with my longtime professional acquaintance, John Muller of PayPal.

I have three disclaimers that are unique to me and a couple of others that relate to mobile that I think I should say. First, I am not here as a representative of Indiana University, so the trustees don't stand behind what I say. This is my personal opinion. I am also not here as a representative of the Uniform Law Commission, although I am currently working on a virtual currency project with them. And I am not here as a representative of the Federal Reserve System's Faster Payments Task Force, even though I am also working with them on that. So those are the formal usual disclaimers.

Now the personal ones. I do use PayPal, and I use PayPal on my phone. I do use Square, particularly to buy tickets and buy things, as Mr. Muller said, at farmers markets and at arts and crafts fairs and to make ticket purchases, and I use both Square and PayPal to make charitable contributions because it is not just the Christmas shopping season that we have right now; it is also the end-of-year charitable fund drive, and mobile payments are very important to charities. And as John segregated, even stationary e-commerce payments are very important to charities.

I don't use Apple Pay or Samsung, and the reason is because I don't have a new enough phone to make an Apple Pay, and I don't happen to be carrying Samsung.

So the committee asked us to look at four questions, and in the interest of time, the first was whether mobile payments were disrupting other forms of payments. And I personally believe the answer is not yet. And I am not certain when that moment will come when that will happen, but I think that it is a question of a level of adoption, and I am not positive, given that mobile payments will continue to rely on credit, debit, and other traditional sources of the funds for clearing and settlements, the degree to which mobile payments will disrupt in the way that we typically use the term. I would prefer to say that mobile payments can augment.

The second question the committee asked me to discuss was the security and what the technologies are. And while I agree that

there have been some significant upturns in security, I like multifactor authorization, which we do not yet have with plastic cards in this country, but in other countries, we do. I like the tokenization options, and I like the geolocation options from a security perspective. I must be honest: from a privacy perspective, I don't like the geolocation option quite so much, but that is because I am really a privacy hawk, and so I think that that is a significant issue.

The hurdles that are existing to widespread consumer adoption of mobile payments include something that MCX is going to solve by allowing ubiquitous types of utilities. But the other hurdle I believe requires significant consumer education expenses on the parts of the companies that are engaged in this, and I don't know whether you noticed, but yesterday, I saw an ad, I thought, for Samsung on this score. And I know that there have been others, but I think that there is an absence of consumer education which could be significantly enhancing the opportunities in this field.

Security depends in part on the contract between the user, me, and the providers. And so in addition to the Electronic Fund Transfer Act, which is older than my oldest child, who is 37, I think it also depends on the degree of supervision of payment processors who are not the providers and not chartered financial institutions to take good care of security in the middle.

And the next question that you asked involved privacy in this ecosystem. Many years ago now, by comparison, the privacy was put

into place in the Gramm-Leach-Bliley bill, and the banks live with other privacy opportunities and responsibilities that they believe are considerable.

I would welcome any questions that the committee may have.

Thank you.

[The prepared statement of Ms. Hughes follows:]

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Mr. Burgess. The chair thanks the gentlelady.

Mr. Ahn, you are recognized for 5 minutes please.

STATEMENT OF SANG AHN

Mr. Ahn. Chairman Burgess, Ranking Member Schakowsky, and distinguished members of the subcommittee, thank you for the opportunity to testify on behalf of Samsung Electronics America. For today's hearing, I would like to introduce you to Samsung Pay, which combines security, simplicity, and widespread acceptance like no other mobile payment solution. Whether it is fighting fraud or helping consumers zip through Black Friday checkout lines, Samsung Pay benefits consumers, retail merchants, and financial institutions.

For consumers, Samsung Pay is accepted virtually anywhere you can swipe or tap a card. It is secure, easy to use, and simple. Swipe up -- I will demonstrate on my phone. Swipe up to launch the application. Confirm your identity with a fingerprint. Hover the device over the payment terminal and pay. It is that simple and has the widest acceptance of any mobile payment service.

For merchants, Samsung Pay helps merchants provide a secure, innovative, and fast payment experience. Samsung Pay supports all payment terminal types, including magnetic stripe, NFC, and EMV terminals. For financial institutions, Samsung Pay has security features, including tokenization and fingerprint authentication,

that limit fraud and reduce liability. So those are Samsung Pay's benefits in broad strokes.

Importantly, our innovation was made possible by the government's decision to have consumers pick the winners in the mobile payments space without additional regulations. Going forward, Congress should continue to allow consumer choice to drive innovation and differentiation in this space.

Before diving further into Samsung Pay, it might help if I highlighted Samsung's presence in America and how our U.S. employees are contributing to Samsung Pay. Headquartered in New Jersey and with facilities in Dallas, Palo Alto, Austin, South Carolina, New York, and Massachusetts, Samsung Electronics America is a recognized innovation leader in smartphones, consumer electronics, IT, and home appliances. We employ approximately 15,000 people in America, and our \$15 billion investment in our Austin semiconductor plant is the largest single site foreign direct investment in America. In regard to Samsung Pay, our U.S. employees have driven much of Samsung Pay's development and success.

Several years ago, Samsung Pay's R&D teams examined mobile payments. We found that consumers would transition from plastic cards to mobile payments if the technology solution is, one, secure; two, simple to use; and, three, widely accepted at most merchants nationwide. We concluded that many companies can make a secure and easy-to-use mobile payment solution, but the trick is

making the payment solution widely accepted by merchants. Current solutions rely on NFC, near field communications. Although NFC shows great promise, only a small fraction of merchants in the United States have adopted NFC-equipped point-of-sale terminals. Without the infrastructure in place for accepting NFC-based transactions, consumer acceptance of NFC-only mobile payment services has remained low.

Enter Samsung Pay. Unlike other mobile wallets in the market, Samsung Pay lets you pay at most any terminal where you can swipe a credit card. To accomplish this, we are using an innovative new technology known as MST, magnetic secure transmission. MST leverages magnetic stripe technology already accepted by more than 30 million merchants around the world. Specifically, MST emulates a swipe transaction thanks to a tiny coil in our phones that transmits the same magnetic data and code that magnetic stripe readers normally get from a credit card or debit card. By including both MST and NFC technologies in our phones, Samsung Pay enables customers to make secure payments almost anywhere regardless of the merchant's point-of-sale equipment.

Because of Samsung Pay's wide merchant acceptance, we can make a meaningful contribution to payment security by enabling the largest footprint of secure, tokenized payments. With tokenization, Samsung Pay never provides a consumer's personal account number to a merchant. Instead, Samsung Pay provides

merchants with tokens yielded created by the consumer's credit card company that enable the merchant to process the transaction without exposing sensitive customer information to potential data thieves.

Samsung Pay utilizes biometrics as well, which allows users to apply a fingerprint to the phone's built-in sensor to authenticate a transaction. Additionally, our smartphones incorporate the Samsung KNOX security platform, keeping all payment data locked and secure.

Finally, getting user privacy right is critical. For Samsung Pay, we do not and cannot monitor user purchases. The transactional details are encrypted and can only be decrypted on a consumer's device.

Samsung wants all consumers, regardless of income, to make secure payments. No other mobile manufacturer reaches as diverse an audience as Samsung or offers its consumers such a wide array of innovative products at different price points. Accordingly, we closely are examining how to include Samsung Pay in a greater range of devices. As we do so, we would welcome your thoughts any input from your constituents.

Thank you, again, for holding this hearing and allowing Samsung to share our thoughts and benefits about mobile payments.

[The prepared statement of Mr. Ahn follows:]

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Mr. Burgess. The chair thanks the gentleman.

The chair thanks all of our witnesses for providing testimony today and food for thought.

We will move into now the member question part of the hearing. I will begin recognizing myself for 5 minutes for questions.

Ms. Deckinger, let me just ask you, obviously, we have heard from Mr. Ahn about some things that are rather device-specific, but you talk about being agnostic as to the type of device. So how does that interplay into the consumer experience having a device, any device, which is then able to use your product?

Ms. Deckinger. Thank you so much for your question. We are very focused at MCX on creating consumer choice and enhancing that, making it available to all consumers. We feel like it is very important to have consumers have the option to use whatever device they would like to. Therefore, we have designed our technology to work on all devices, all smartphones. Virtually any smartphone that a consumer has can leverage our technology pretty easily.

Mr. Burgess. I have got to ask the question. What about a flip phone? Some of us still have them.

Ms. Deckinger. We are not quite there yet.

Mr. Burgess. Not quite there yet. Mr. Ahn, you bring up some great points, and I think you heard Ranking Member Pallone talk about providing services to the unbanked in places where the

infrastructure for check to bank does not exist, whether it be because of civil strife or warfare or poverty. So you actually could to some degree bridge that gap, could you not, with the devices that you are talking about?

Mr. Ahn. That is right. We have the opportunity through our phone ecosystem -- and remember we have over 700 million devices in market around the world, and we are a global company -- we have the opportunity through application to provide payment solutions that are relevant for consumers. What we are doing in the United States with our recent launch of Samsung Pay is providing an opportunity for the user, the consumer, to pay at any merchant location, whether it is a big box retailer, like many of the MCX merchants, or small mom-and-pop shops.

MCX, as you remember, there are many partners within MCX that we are very close with; we are in discussions as partners. MCX is designed to be a large consortia of the largest merchants, and they are relevant and important from a consumer experience point of view. However, we think that we need to go beyond just large box retailers into mom-and-pop stores. Anywhere there is a transaction, we want to be there for the consumer. So that is our near-term opportunity.

Having said that, I think it is the early stages of this payment ecosystem, and all innovations are helpful. As a rising tide lifts all boats, we want all innovations to succeed and move the payment ecosystem forward, primarily creating additional

security for the user moving forward.

Mr. Burgess. Very good. Mr. Muller, let me just ask you, PayPal, one of the originals and I think when I ran my first campaign 13 or 14 years ago, I actually had a PayPal option as far as for people who wanted to support. You have probably had more experience in this space than almost anyone else. How do you leverage the security? How do you add layers of security to or additional layers of security for the transactions for the consumers?

Mr. Muller. So it is always a matter of trying to add security with user convenience and the user experience, and that is what the mobile device offers in a somewhat unique way, is the way to improve both the user experience and security, and that is a rare thing in the payments field, through the kinds of technologies we have already mentioned, like the device location or unique device identifier, and do it in a way where the user controls what information they are sharing. So that is the Holy Grail we are all trying to achieve. And I also want to emphasize that all the same risk programs are still running in the background, so we don't assume that there is a silver bullet type solution in security. So even if we do have a customer who is taking advantage, say, of the fingerprint authentication or device location and they pass that test, we are still running all these other tests in the background looking for risk variables in the transaction. So it is a matter of adding to risk-reducing

programs that already exist, not substituting them purely with new types of authentication or security.

Mr. Burgess. Well, thank you. I do just want to -- this is not a question. It is an observation. We had a hearing here not too terribly long ago about senior citizens who were taken advantage of by various phone solicitations. And as this technology becomes easier and more ingrained, I would just ask you to be thinking about, you have always got to stay one step ahead of the very clever thief out there, so to help protect senior citizens against this type of activity, do be thinking about what type of safeguards may be incorporated into the technology.

With that, I am going to recognize Ms. Schakowsky for 5 minutes for questions.

Ms. Schakowsky. So, Ms. Deckinger, we celebrated Small Business Saturday. I went to a number of small businesses, took selfies, in my neighborhood. So your technology right now really favors larger operations. Right?

Ms. Deckinger. At the moment, yes. We are in the early stages of a pilot at the moment. So we are still developing our technology and working to build a network that consumers can use CurrentC in places where they shop every day, yes.

Ms. Schakowsky. I wanted to ask some questions about consumer privacy.

Professor Hughes, what kind of data is collected by these apps, and is that data different from what a more traditional

means of payment might collect, like a credit card?

Ms. Hughes. Thank you, Ms. Schakowsky. I think it depends a great deal on the system. Mr. Ahn has just said that Samsung Pay which was relatively recently introduced in the United States, does not have, does not allow the merchant to see any of the information, and so the authentication device does not share that information with the merchant. It operates in a more traditional way, like an escrow service, if I understood you correctly, for that information. You keep it, and you are passing the payment through, but you are not passing the consumer's information through. PayPal --

Ms. Schakowsky. Is that a correct description?

Mr. Ahn. That is correct. The way we implement today is we send a data package over that is completely encrypted, and no one sees what is inside.

Ms. Schakowsky. Is that unique to your company?

Mr. Ahn. No, it is not.

Ms. Schakowsky. But it is not mandated in any way right now. Right?

Mr. Ahn. This is one implementation of tokenization that is prevalent in the market by leading technology companies.

Ms. Schakowsky. Okay. Go ahead.

Ms. Hughes. I was about to say, but I think your clarification was extremely helpful, that PayPal also operates in an escrow mode because the transaction flows into PayPal, and then

PayPal processes the payment transaction in a way that is lots more like an escrow than many people believe. That is not true of every app that might be available, which is one of the reasons why I said when it comes to security and, indeed, to privacy also, it really depends on who the provider is, whether it is a branded company like PayPal and Samsung, whether it is an app for another purpose.

The manner in which tokenization is employed is also very random at this stage, so there are a number of alternatives that do not have the same levels of security and/or customer privacy as Samsung and PayPal have.

Ms. Schakowsky. You know, my experience with these kinds of things is that they ask you to accept the deal. And that is preceded by a lot of stuff on a very small device that you have to figure out in legalese whether or not you push accept. I would challenge almost anyone whether or not they carefully scrutinize those things before pushing "I accept" and then moving on to use. I am just wondering if since there are alternatives, some more secure than others, should there be some standardization? Should there be some requirements to protect consumer privacy?

Ms. Hughes. I had mentioned earlier that I am a privacy hawk, but I believe very firmly that everybody should have the privacy protections that Congress and many States have already provided, basically Congress has provided. I believe that everybody should have the same access to those privacy

protections, but I also believe that one of the dynamic forces in mobile payments is the ability to compete to provide better than other people do. So the companies that are working with multifactor authentication, working with tokenization, that are doing, as Mr. Muller suggested, continuing to run their risk platforms, which are old-fashioned, artificial intelligence operations in the background that are monitoring the payments transactions that are coming through their systems. As long as there is a floor, then I believe people should be able to compete to offer better tokenization, more extensive or unique --

Ms. Schakowsky. That is something we are going to have to consider if we think competition based on level of risk and protection for consumers is a legitimate way to compete.

I have actually run out of time, so I am going to I yield back.

Ms. Hughes. Would you like me to answer the question?

Ms. Schakowsky. Yeah, sure.

Ms. Hughes. I think the answer is right now among the various payment systems in the United States, there is already a broad array of risk that relates to privacy and security. And because we have silos around different kinds of payments, this has been the constant in the marketplace back to the 1970s or the early 1960s. And efforts to harmonize that were not successful in the past, and whether they can be successful in the future remains to be seen.

Ms. Schakowsky. Can I just say, I am not talking about necessarily harmonizing the method or the technology, but I am talking about setting a level of risk that is acceptable in the marketplace. So I need to move on.

Mr. Burgess. The chair thanks the gentlelady.

The chair recognizes the vice chair of the full committee, Mrs. Blackburn, for 5 minutes for questions, please.

Mrs. Blackburn. Thank you, Mr. Chairman.

Ms. Schakowsky might be moving on, but I will just kind of put a comment to the end of her words. We have had a privacy and data security working group here at Energy and Commerce, and we all are focused on making certain that consumers are safe in the marketplace. And Mr. Welch and I have worked on a data security bill. And we continue to try to push this forward so that we can do some preemption, establish some breach notification, and bring some certainty to bear. So I appreciate the questions that are being asked around this issue this morning, and we hope that you appreciate them too.

Ms. Deckinger, I want to come to you. Those of us who appreciate the virtual marketplace and want to see people in it, and then we see articles like this, and it makes you go "ouch." It is the "Apple Pay Rival and Walmart-Backed MCX Hacked, User Emails Snatched." And this was in your beta test period. It was October 2014. That was a Forbes article that was written about this.

And, Mr. Chairman, I am going to pass this down so Ms. Schakowsky can see it because I know she is, like me on this privacy issue, very concerned about that.

I want you to provide some information about that hack and what you did on resolving it?

Ms. Deckinger. Yes. Thank you so much for the question. So a subcontractor of MCX, not MCX itself, had a security incident where some emails were released. That subcontractor was immediately terminated as a partner.

Mrs. Blackburn. How long did it take you to isolate the hack?

Ms. Deckinger. Immediately. We also opted to notify folks within hours of finding out, very rapidly after finding out that this occurred, and we have taken extensive precautions. Security is very important to us. Obviously, it is very important to our users. We have taken extraordinary precautions now to address any issues that we found with that subcontractor with additional subcontractors that we have then partnered with in the future. We continue to evolve our security platform and are always looking. There are always, as someone mentioned earlier, clever and creative criminals out there who will seek to look for data, and no security is perfect. But we are working we hard to achieve a --

Mrs. Blackburn. Okay. Let me pick up on that evolution in this process. Talk to me about what precautions you are taking

around data security when it comes to the multifactor authentication or tokenization. What are you moving toward, and are you pleased with those advances? And I am coming to each one of the rest of you on this panel, so get ready. The clock is ticking, 30 seconds.

Ms. Deckinger. So we have a cross-functional security council internally within MCX. We work together regularly and meet regularly to discuss the latest technology innovations, the latest security innovations. We are always evaluating what is possible to make things more secure for consumers, to make them more secure for merchants and for the app. We are always -- always -- implementing the state-of-the-art technology that we can, whatever is available for us to implement, and we will continue to do so. Obviously, the trust of consumers and their feeling of security when using an app is of the utmost importance, and we recognize that, and so we have worked to make sure that we are always sitting on the cutting edge.

Mrs. Blackburn. Okay.

Mr. Muller?

Mr. Muller. Okay. I think for all of us, you will probably hear the theme that it is constant battle and constant investment in security because the fraudsters are out there also continually changing their methods of attack. And so we have tried to make that investment, and it is certainly a huge part of our cost base. And then we also try to do what we can, first of all, to minimize

data collection, because, frankly, if we don't have the data, then even if we were somehow to be breached, it would be less vulnerable.

Mrs. Blackburn. Okay. Mr. Ahn, I am going to come to you. Talk about the Fast Identity Online Alliance and your protections.

Mr. Ahn. So the security protocols we put in place are quite extensive. What we think about is putting multiple walls up such as the fraudsters have to hop over many, many steps to reach the information. One of the things that we do is we have at the integrated chip level, the microprocessor alone has a way for us through KNOX, which is our proprietary solution, to shut down in the event of a rooting event. The application must be authenticated by fingerprint or PIN to get into the application. If the phone is lost or stolen, we have the ability to remotely turn off payment credentials completely and turn them back on. And when the card networks --

Mrs. Blackburn. So hold on. So you have got three tiers of encryption before you get to --

Mr. Ahn. We have multiple ways of protecting the consumer information. The last one is that the card networks and credit card companies that we work with themselves have the ability to remotely turn on and off tokens. So what happens -- and the last and most important piece is we purposely architected our solution to not store personal information and card transaction information. We only pass along a token. And so, for us, there

is no central point to hack. The only information that is available temporarily is transaction history for the last 10 transactions on your device, and this one device is not a rich enough target for fraudsters. So that is how we view security.

Mrs. Blackburn. Thank you.

I yield back.

Mr. Burgess. The chair thanks the gentlelady.

The chair recognizes the gentleman from New Jersey, Mr. Pallone, ranking member of the full committee, 5 minutes for questions.

Mr. Pallone. Thank you, Mr. Chairman.

I wanted to ask Professor Hughes, a consumer's ability to dispute unauthorized charges on a mobile payment varies depending on the payment method being used. For example, a consumer's liability for unauthorized charges on a credit card after a certain date is lower than on a debit card. Could you tell me what protections are available to consumers who do not have access to a credit or debit card and choose to link a mobile payment to their mobile phone bill?

Ms. Hughes. I believe, Representative Pallone, that you have hit upon the single greatest challenge from the consumer perspective. And this particularly affects unbanked and underbanked individuals. So the persons who are using credit cards and debit cards have access to two Federal statutes that have been in place, in one case, for more than 40 years and, in

the other case, for 37-plus years: the Fair Credit Billing Act and the Electronic Fund Transfer Act. You are correct that their standards are slightly different. You have to report faster on an EFT transaction than on a credit card transaction, and your liability can be different, although Visa and MasterCard on the credit card side have a no-liability policy. And PayPal, as I remember since I am a PayPal user, does have a no-liability policy, and there are other opportunities.

The consumer, however, who is billing to a mobile phone statement, as opposed to using a financial institution for the clearing and settlement of the payment they are making, does not have the same level of protections because those are both either because there is a credit card present or a bank account present. And so the credit and debit cards are access devices to those two different kinds of accounts that many people who are unbanked -- certainly they won't have debit cards -- although they may have prepaid or payroll cards. And the prepaid and payroll cards are increasingly being brought under the Electronic Funds Transfer Act.

So the key gap at the moment is the person who is billing something to their mobile phone account without some other financial services provider doing the clearing and settlement for the payments. And that is the gap that exists in Federal legislation right now, and that is a gap that also exists in the States.

Mr. Pallone. So you said that with prepaid cards -- and what about gift cards -- there is some protection?

Ms. Hughes. That is correct. Not all of the electronic fund transfer protections currently extend to gift cards. Some of the issues about dispute resolution do not extend all the way through the gift card family at this stage, but payroll cards have better protections than regular gift cards do in the same environment because of efforts to bring them under the Electronic Fund Transfer Act.

Mr. Pallone. What do you suggest that we do legislatively, agency action, whatever, to have the strongest protections for all these different things, particularly the ones that have the lesser protection, based on what you said?

Ms. Hughes. Well, one issue which this committee doesn't have is jurisdiction, so the Federal Trade Commission doesn't have jurisdiction over carriers for that purpose, for example, and I don't believe the CFPB does either. The States, because of the strength of the Federal Communications Act, I don't think the States have authority to do all of this work. If you wanted to do that, I think it would be up to Congress to instruct the Federal Communications Commission, giving them some additional authority to play in that realm, or to extend the reach, if you felt it was important, to extend the reach to persons who do not use financial institutions and access devices to accounts, either credit cards or debit cards, to have comparable protections. I haven't thought

about exactly what those would look like, but I think it is an extremely interesting topic.

RPTR GENEUS

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[11:25 a.m.]

Mr. Pallone. I have just a little time.

With so many vendors and third parties involved in some of the mobile payment transactions, I was concerned that consumers could be given the runaround, in other words, each vendor pointing the finger at the other? Do you want to just comment on that? We only have just a little bit of time.

Ms. Hughes. I think that the consumers may go to vendors for that purpose, but I think consumers largely go to their financial service providers, whether, it is Samsung and PayPal or their bank, to get resolution of disputes. The one gap you have identified, sir, is the one where they are not going to have that person to help them --

Mr. Pallone. Okay.

Ms. Hughes. -- not in the same fashion.

Mr. Pallone. All right. Thank you.

Thank you, Mr. Chairman.

Mr. Burgess. The gentleman yields back.

The chair thanks the gentleman. The chair recognizes the other gentleman from New Jersey, the vice chair of the subcommittee, Mr. Lance, 5 minutes for questions.

Mr. Lance. Thank you, Chairman Burgess.

Ms. Deckinger, it is apparent that one of the biggest hurdles to getting consumers to adopt a certain payment method is scale. What steps need to be taken in order for a payment method to be accepted with enough ubiquity that consumers find it to be beneficial? And, from your perspective, are there any legal impediments in order to make sure that this is the case that we can move forward?

Ms. Deckinger. Thank you so much for your question. We believe, fundamentally, that you have to have what I mentioned earlier, which is muscle memory for consumers. They are very comfortable with our current forms of payment. They are very comfortable going to a store and stripping a credit card. It is not difficult for them. So getting them to change that behavior we believe requires having a presence at places where they shop every day and multiple times.

We believe that our network includes that kind of scale and has that great reach. Consumers are gassing up at fuel stations several times a week if not at least once a week. They are at coffee shops. They are at their big retailers doing their grocery shopping. We feel like having that scale is really going to drive that adoption and regular usage that will create that muscle memory for consumers to get used to using a new form of payment.

I don't currently feel that there are any legal restrictions that are keeping us from getting that kind of scale, but I would welcome other input on that.

Mr. Lance. Yes. Anyone else on the panel?

Professor Hughes?

Ms. Hughes. I would agree with Ms. Deckinger that there are no legal imperatives or hurdles to the greater adoption. As I mentioned earlier in response to a question from the chairman, I believe it is one which may involve consumer education more than anything else. And I think that the -- it may also be generational. And so I think it is a -- millennials are much more likely to use mobile payments than older people. My late mother, who was very clever, never used an ATM, not because she didn't feel like it, just because she wasn't a particularly mechanical person, and I think she was comfortable with the option she had. And the comfort level with the options that are currently available, even though they are expanding, is a difference between us and other parts of the world where the banking system is not as robust, where the penetrations of the Samsung and PayPal style opportunities are not as great, and where, in the case of some, you have to have a smartphone, and a new enough smartphone to use it. You are going to see in older generations and in less affluent generations lots of smartphones, but not everybody has one. And so the mechanical barrier may be, depending upon the nature of the service being offered, the mechanical barrier of what kind of device you have available for this purpose, which is something that just takes a maturation of a marketplace.

Mr. Lance. Thank you. Mr. Muller, you said how many transactions from PayPal a year? A billion did you say?

Mr. Muller. A billion in 2014. That is right.

Mr. Lance. And there will be more, you believe, this year, because in your last quarter, it was 350 million or something like that.

Mr. Muller. That is correct.

Mr. Lance. What percentage are in the United States? And what percentage are in Europe? And what percentage are in Asia?

Mr. Muller. So our largest markets overall in the world, you know, are by and large the English-speaking countries: U.S., U.K., Canada, Australia, also Germany. And in all of them, we see pretty comparable rates of mobile payment as a proportion of total payment, so getting toward a third of all of our payments are on a mobile device, again, usually either a phone or a tablet that is used where 5 years ago, it would have used a laptop or a desktop.

Mr. Lance. Thank you.

Mr. Ahn, explain Samsung's latest device. In your testimony, what did you say that Samsung is doing next? Samsung Card?

Samsung --

Mr. Ahn. So the question is with respect to our products --

Mr. Lance. Yes.

Mr. Ahn. In the ecosystem?

What we are doing today is we have reflexive devices, which we call Galaxy and Note. We are looking at future devices and a

broader ecosystem where we can put Samsung Pay onto them, whether they are additional mobile devices or even wearables. We are looking at a broad ecosystem.

Mr. Lance. A wearable would be a --

Mr. Ahn. A watch.

Mr. Lance. -- a watch? And you can then purchase items or pay for items from that device?

Mr. Ahn. That is part of our thinking.

Mr. Lance. Has that occurred yet, or is that still in development?

Mr. Ahn. We are evaluating and developing now as we speak.

Mr. Lance. Thank you. And thank you for making New Jersey your headquarters in this part of the world. We deeply appreciate that. And I have been at your world headquarters in Seoul and have been deeply impressed with them.

Thank you, Mr. Chairman.

Mr. Burgess. The gentleman yields back. The chair thanks the gentleman.

The chair recognizes the gentlelady from New York, Ms. Clarke, 5 minutes for questions.

Ms. Clarke. Thank you, Mr. Chairman. And I thank our ranking member.

Transparency. Unlike simple cash transactions, using a mobile payment system can bring in unseen third parties. So Professor Hughes, it seems like there are often many entities

involved in mobile payment transactions than consumers may realize. How can we assure consumers know who is involved in their mobile payment transaction apart from themselves and the service that they are directly interacting with?

Ms. Hughes. Representative Clarke, that is a very interesting question, and I believe it is one to which we do not have a very clear answer. So I think that there are systems that operate, particularly apps, not services of the kinds being offered by PayPal and Samsung. And where the app is involved, it is much more likely that there are unknown third parties involved in processing for the merchant, particularly, because merchants use a lot of third-party payment processors. And third-party payment processors are among the least regulated entities in the payment space today. They are not very well regulated by the States. Some of them are regulated as money transmitters; some of them are not. And they are not particularly well addressed by congressional legislation to this point.

Asking the merchant, for example, or the app provider to make that kind of disclosure could possibly be more burdensome than it would be worth. So I think it is more important to ask -- and each of these groups and others do -- for people to engage in robust supervision of the choice of providers that they use along a tract that may be involved and to supervise them appropriately for risk-management purposes.

The members of this panel might not be excited, but you might

care to read a study that was issued in August of 2015 by The Clearing House payments company on, which I would be happy to provide to your staff if someone tells me to which person it should be sent. That study talks about this issue in particular in greater depth than I have time to do this morning or you do. And so I would suggest that it might be something that you would read on that particular narrow subject, which is quite an important one.

Ms. Clarke. So let me --

Ms. Hughes. I urge you not to make it too complicated because people choose providers based on their histories with them, and it would be very difficult to make new disclosures constantly if you had to abandon a provider because they didn't behave appropriately and choose a new one --

Ms. Clarke. I think we are concerned more about breaches. You know, you are then dealing with many more entities that are holding the data, right?

But let me move to ask about lack of transparency and consumer consent, the notion of consumer consent.

How can consumers consent to business relationships with entities that they are unaware of?

Ms. Hughes. Well, Representative Clarke, that is a very complicated question. And I think that as there are already lots of payment processors operating in the United States where we are not seeing a lot of transparent consent, I think that it may be

the necessary level of consent, maybe the consumer who chooses the payment method and the consumer who chooses the merchant at this point. And I firmly believe that the mechanics of this are such that we should put the primary focus on the merchant to choose wisely and on the payment provider to choose wisely and to ask them to perform the functions that are currently present in Federal and State law to supervise them.

Ms. Clarke. Do you believe that greater transparency could encourage more consumer use of mobile payments? Because, certainly, consumers who are unwilling to use mobile payment services may feel unsure about who will have access to their data afterward.

Ms. Hughes. That, too, Representative Clarke, is an excellent question. And I think the more that consumers understand how mobile payments work, as a general, as opposed to a specific proposition, but perhaps both, the more they are likely to be willing to use them because just like ATMs 40 years ago, there was a period of adoption, and it made a difference when consumers --

Ms. Clarke. But ATMs don't have a third party. You know you can just walk into that --

Ms. Hughes. Some do, actually.

Ms. Clarke. Absolutely, right. Absolutely. Clearly.

Ms. Hughes. Kiosks in stores and other places have a landscape and an ecosystem that is very much like mobile payments

today. So the answer is, but there, you are talking about your bank, and you are talking about the place where you use the machine, assuming you remember where it is, and it is usually on your receipt. So I am not sure that that is so much different than what consumers are already dealing with with a fair amount of comfort. I just think they need more education.

Ms. Clarke. I yield back. Thank you.

Mr. Burgess. The gentlelady yields back. The chair thanks the gentlelady.

The chair recognizes the gentleman from Mississippi, Mr. Harper, for 5 minutes, please.

Mr. Harper. Thank you, Mr. Chairman. And thanks to each of you for being here.

I guess I would have to say that I never envisioned the title of mobile payments would be exciting, you know. So it is an incredible topic, and it is affecting our lives in so many ways as we look at this. And so I am all in. This is a great topic.

Mr. Muller, if I could start with you. In your testimony, you mentioned that PayPal has been involved in mobile payments innovation since the PalmPilot devices. What have been some turning points that you have seen in the development of mobile payments from PayPal's perspective, and what are the next big applications that we should be on the lookout for?

Mr. Muller. So, you know, like most companies, there have been some successes but also some learning opportunities. One

was, as I mentioned, the switch away from the PalmPilot as the focus towards email and Internet connection. A second generation really starting, I think, in 2006, we launched a mobile payment feature available to users to make payments mostly intended for person to person, but a few also businesses had signed up using text message and just sending a text message with a certain -- with the amount and a certain code in it. And that, frankly, was not very successful I think largely for some of the reasons that have come up about security and many consumers just feeling a little bit too uncertain that just by pushing a text message, the money would go to the right place and be credited correctly.

So that --

Mr. Harper. Does that mean it was too simple to give confidence?

Mr. Muller. Well, I think perhaps to some degree, I don't know if too simple or simply too unclear, too little information associated with the actual transaction itself. And this was at a time before -- just before the iPhone. So we are still talking about flip phones and other types of phones with very small screens.

So the whole texture of the experience, to some degree, was not as comforting as is available today with smartphones and larger screens.

So I think we have learned that lesson, and a big part of

what we have done that got to us to the 1 billion transaction number that I mentioned is not just building mobile apps and experience on the consumer side, but also helping our merchants, who are, by and large, mostly small- and medium-size businesses optimize their Web site and their checkout pages for mobile devices so that the experience is as good as it can be on the smaller screen.

Mr. Harper. So what is the next big thing to look for? Where are we headed?

Mr. Muller. Well, so one thing that is already live for us -- and it is an experience, again, that many other payment companies are also in their way matching or trying to -- is what we call the one-touch experience, taking advantage of the information that the consumer has chosen to share with us, recognizing them the next time they go shopping even at a different merchant than they have shopped at before. We can recognize them so they don't have to type in information on a small screen. We can recognize them if they have chosen to opt into this feature and, again, improving both the shopping experience and the merchant checkout. And then the other set that is coming out, say, is at the point of sale, where to date, you know, certainly PayPal is less prominent, but finding that right match of convenience and merchant acceptance and speed and security, something all of us are working on, and that is coming. Just who unlocks the right combination is yet to be seen.

Mr. Harper. You know, our time is almost up. But one phrase that was of interest was in your testimony; you note that 17 of the 100 most unbanked places are in Mississippi. How do you envision mobile payments increasing consumer options in those communities?

Mr. Muller. So that is another challenge for the industry as a whole that we are eager to take on and do more. Today, I would say, really, that the primary vehicle linking the unbanked to mobile transactions is through prepaid cards or prepaid accounts of different kinds that different providers are offering. You know, and there are, of course, starting with the baseline that many of the financially underserved today do have smartphones.

Mr. Harper. Mr. Muller, I apologize. My time is well over. Mr. Chairman, I yield back.

Thank you, Mr. Muller.

Mr. Burgess. The gentleman yields back. The chair thanks the gentleman.

The chair recognizes the gentleman from California, Mr. Cardenas, 5 minutes for questions, please.

Mr. Cardenas. Thank you very much, Mr. Chairman. And thank you to all the witnesses that are here enlightening us of what has been, what is, and even what may be coming in the future.

But I think the main concern of this committee is the safety and security of Americans and people in our country, whether they are visiting or what have you, making sure that they feel

comfortable and confident that we have a system that actually works and hopefully works for as many people as possible.

Speaking of as many people as possible, there are still many communities here in the United States of America that are underbanked and underserved by financial institutions and instruments, et cetera, so they tend to not experience or see the safest and best technologies and, unfortunately, sometimes actually are subject to more problems because they don't have the best systems available to them.

That being the case, when it comes to these kinds of communities, how can mobile payment providers better reach minority communities and underserved or poor communities and ensure that these consumers also enjoy the safe and community commerce that everybody else expects or can experience?

The main thing there is, certainly, if there is a community with a lot of wealth and a lot of activity and probably a bigger contributor to the billion transaction mark, you have other communities that want to participate, yet, at the same time, how do we make sure that we have an even system that is available to them, really?

Professor?

Ms. Hughes. Well, I think this is a truly important challenge. And I think that mobile payments are an enormous opportunity to help unbanked and underbanked individuals. Unbanked individuals don't have bank accounts. Underbanked

individuals may just not have a bank very close by. And if we think about the ability of someone to make a payment remotely or to take a payment from an employer or to pay their rent using their mobile device and not having to take time off from work to do that or to take time to go to the bank to deposit checks and the like, I think that the underbanked communities that have bank accounts or other credit union accounts, et cetera, but may not have time to get there during reasonable work hours are among the communities that will benefit the most from mobile payments.

I think the opportunities in those markets are huge. I think they will help the citizens of Mississippi and California and the other jurisdictions that are here. They will help inner city people as well, people who no longer have a corner branch of a bank to help them. And because, as Mr. Muller suggested, there are opportunities to use prepaid cards, including payroll cards, and to spend money out of them using devices of this kind, the opportunities for unbanked and underbanked persons and minority individuals residing in rural or very urban communities expand.

The last thing I would say, sir, is that the least secure thing on the face of the planet in the United States, as least, is cash. So if you have a way to link to some form of an account and to use it as if you were using your bank account through a mobile payment, you may level the field for lots of people to participate in commerce, both the recipients of payments and as people who can make payments on time and, therefore, avoid late fees and other

charges that are associated, and that these opportunities are enormous for helping a lot more Americans have a lot better access to payment options than they have had in the past.

Mr. Cardenas. Well, my last question, because our time is limited, is it is interesting that 60 Minutes talked about this payment system in Kenya that you touched on, Mr. Muller, that has to do with the texting, and it doesn't have to be a smartphone, et cetera. The thing that concerns me about that isn't that it is kind of cool; it is that I would imagine that the safety of those individuals in those transactions are a lot more vulnerable than, perhaps, what Americans understand that we are not as vulnerable with the systems and the advances we have.

I would like to know, as quickly as possible, due to constraints of time, the fact that in this country, we do have regulations and we do have benchmarks and push industry to make sure that they have safeguards for our consumers and our participants, is that something that is helpful to the industry? Or is that something that you can do without?

Mr. Muller. So I would say, certainly, it is helpful, in general, of course, the right kind of regulation. But, in general, regulation is certainly one component that leads to consumer adoption. And, as you said, if people viewed these kinds of transactions as really, the same as cash with no purchase protection or no protection against unauthorized transactions, they would be much less inclined to use it.

So regulation is one component of addressing that issue. Industry efforts, like Visa and MasterCard and PayPal, zero liability, all come together to lead to the broader mobile adoption for all of us.

Mr. Cardenas. Thank you.

I yield back my time.

Mr. Burgess. Thank you. The gentleman yields back. The chair thanks the gentleman.

The chair recognizes the gentleman from Kentucky, Mr. Guthrie, 5 minutes for questions, please.

Mr. Guthrie. Thank you very much. It is neat having this hearing today. I was flying back yesterday reading a biography of Andrew Jackson, and it is amazing moving an army, speculating land, all the others things that he did; one of his biggest concerns was always how did he move concurrent cash, how did he pay people. Was it going to barter, bank drafts? It was just a big issue then. And so how currency moves really played into how he was able to move his armies and so forth back and forth. So we are still talking about moving currency, and how we move it in the best and most efficient and safe way.

And I was watching, I guess, a football game or so this weekend. And Samsung had their advertisements. They must have bought a lot of time because I remember seeing the app that we are talking about here today. And I grew up in a rural grocery store, so I always view things through rural, kind of, groceries. So it appeared that anywhere that you can do a credit card, your phone would work. So if you can pay at a pump, then you can actually scan or whatever the technology is, if I am using the right term, that your phone works in all applications like that? So if any merchant takes a credit card, then you have the ability to use your application? Is that --

Mr. Ahn. So, Congressman, thank you for the question. When we say virtually anywhere, what we are talking about is very, very high percentage of locations and terminals that accept any credit card or debit card. However, we say "virtually" because we are

not fully 100 percent there. There are instances such as DIP readers, gas stations, ATMs, and a small percentage of merchants where the technology software needs to be upgraded for us to get to everywhere. And so we are not quite there yet, but we are substantially ahead of our competition.

Mr. Guthrie. Well, thank you.

My first question was your level of mixes of security and how it protects consumers. You answered that with Mrs. Blackburn, I think.

So does it prevent the consumer from doing it to themselves, I guess we would say? Are there things the consumer needs to do? Once they use your phone, your phone is -- can the consumer -- like if, the old days, when you swiped a debit card and you didn't throw the receipt away and somebody took it out of your garbage or you didn't tear it up, is there something like equivalent to that the consumer can do, or have you protected them from all aspects?

Mr. Ahn. So the consumer is essentially protected behind a level of password protection and fingerprint indication that is required to open up the app. And, therefore, everything that they are doing is really sitting behind that level of protection. We don't publish that information. It is not easily accessible. And the consumer really has full control over that. So, to that extent, it is secure.

In terms of usability, I think all mobile payments have

usability issues because people are -- for the most part, their muscle memory today is credit card and debit swipes, and so it is going to take the ecosystem to work together to help educate consumers about the advantages of having more secured payments and a new way of tapping, a new way of paying. This is happening in different parts of the world. Western Europe, for example, is actually more tap-centric payment countries. In the U.S., we are further behind.

However, you know, as a technology company, we are very optimistic about technology advances. Five years ago, the cell phone, smartphone penetration was very different than it is today. New applications of services are quickly adopted if they are helpful and make an impact. So we are hopeful that there is enough security, utility, and a better experience to compel consumers to move toward a more technology-centric way of paying.

Mr. Guthrie. Thank you.

And, Mr. Muller, I understand that PayPal utilizes the cloud for storage of consumers' payment information. And why did you choose to utilize the cloud instead of storing payment information on the phone or the app? Is it more secure, I guess, is the question I am getting at?

Mr. Muller. Well, for us, it was partly out of necessity in that we don't have the same access to mobile phone hardware and operating system that some of the other companies that are operating point-of-sale payments through a mobile device do. But,

also, we do think there are some advantage of storing the information in the cloud and not -- certainly not storing any of the information on the device. I mean, that is clear, and that is undesirable. But, also, we don't have the same access to the device as the handset manufacturer might.

Mr. Guthrie. So being in the cloud, you are obviously -- PayPal is not a device. You are not device-specific. That is your --

Mr. Muller. Yes.

Mr. Guthrie. So what innovations have you seen over the last year or two that would make online payment data more dynamic and less useful for criminals?

Mr. Muller. Well, so, certainly, tokenization continues to develop. It just started, so it is certainly not static by any means. But the first, really, live implementation of tokenization in a practical way that we have seen is a big step forward, and the controls that can be built in for one-time use of the token, merchant-specific use of the token, all those are certainly, a step forward compared to where we have been with the primary account number being stored and transmitted in many ways. So that is probably a major recent development.

There are new ones coming out all the time that we read about. So it is an exciting field with, certainly, dynamic codes. Sort of the three-digit or four-digit code in the back of your card that you are used to entering, now companies are coming up

with a capability to generate that dynamically and change it for every transaction. So certainly new developments are coming out, and there will be more to come.

Mr. Guthrie. Well, thank you. And I only have 15 seconds. I am not going to ask another question.

I yield back, Mr. Chairman.

Mr. Burgess. Thank you.

Mr. Kinzinger.

Mr. Kinzinger. Thank you, Mr. Chairman.

And thank you, all, for being here. I appreciate it. The innovation of mobile payments is at the forefront of many consumers' minds, especially those that were considering purchasing a new smartphone and all consumers interested in the technology to ensure their transactions are safe and secure.

Like with many new technologies, it is subject to some suspicion before adoption, and many consumers want to know if their personal information, including financial and personal health information, will remain protected and private.

Certainly, no system is foolproof. In the technology world, we frequently read about cyber attacks and successful hacks of various systems. Consumers have a right to be concerned about new technology, but I am hopeful that today's conversation will showcase some of the great strides in technology that we have made and what its future could look like.

Mr. Muller, the number of smartphones in the U.S. continues

to grow, and obviously, mobile payments are increasing in popularity. Over the course of PayPal's involvement with mobile payments, what have been the largest keys to consumer adoption, and what have been your biggest challenges?

Mr. Muller. So, certainly, one of the keys is the one you mentioned, which we certainly can't take credit for, but is the proliferation of the smartphone and the affordable smartphone through the work of the handset manufacturers and the mobile carriers, and that is probably -- that is the baseline for all adoption that we have been talking about.

And then, really, there is just the passage of time, as we have seen with other payment devices. Professor Hughes mentioned the ATM card, the credit card, the debit card as a purchase device.

Consumers get comfortable through word of mouth, through -- there are always early adopters, and that is one of the things we are lucky to have in the U.S. is people who are eager to try new things, and if it works for them, to spread the word.

And then, ultimately, another important factor has been merchant adoption and getting the merchants to realize this is something that is good for them as well. It creates a good experience for their buyers and ultimately more transactions for them. And so just that extra nudge from some of the merchants to encourage their consumers to try their app on the mobile phone, that can be the deciding factor for many consumers.

Mr. Kinzinger. And you also, you know, you obviously, described, that when you started up, you called it, basically, an early form of tokenization. Very like 50,000-foot level. Can you just briefly describe how your security methods have evolved over the years from 16 years ago to today? I know we can talk for hours about it, but --

Mr. Muller. Well -- so the first, as I said, the basic component and what we were referring to as that early form of tokenization is just not creating a process where the merchant receives the card number in the first place. So, with PayPal, they receive news of the payment in the form of either an email; or, for some more advanced merchants, they might receive an automated notice to their systems; or they can just go look at their account to see that the payment is there. But, in any case, they are not receiving the consumer's card or bank account information to start with. So that is a similar concept to what tokenization is now achieving more broadly.

That, of course, makes it incumbent upon us -- we are receiving the account information -- to protect that account information. We had the good fortune, as one of our founders was and still is a computer security expert and designed the system in a solid way. And, of course, as I said earlier, continuing to make investments on that foundation for both encryption of the data and limited access even by employees to the data.

Mr. Kinzinger. Well, Mr. Ahn -- I hope I said that

correct -- some of the security concerns that I have heard raised with the NFC-based mobile payments has been eavesdropping, data manipulation, interception attacks, relay attacks, and device theft. Can you discuss if these are real concerns or misconceptions and perhaps how the Samsung Pay approach addresses some of these?

Mr. Ahn. Some of the concerns you mention are real; some are misconceptions. The real concerns are related to device theft and loss that relate to relay or replay attacks. There are a number and a host of ways that fraudsters can steal information, and our job is to be ever-vigilant and put the best and most advanced security features in cooperation with our partners, with banks, the Visas, MasterCard of the world, the networks, and make sure that we have as much fortification as possible.

With respect to Samsung Pay, we have looked at every possible angle of security, and it starts, again, as I mentioned before, at the baseline level, moves all the way up. We are very, very concerned about security.

As a matter of background, Samsung is one of the most respected brands around the world. We have a very strong relationship with a large base of consumers. That relationship and trust and brand is sacrosanct to us. We will not jeopardize it. And so when we think about what we put into market, we will index heavily toward security. And, yet, as a viable consumer solution, we have to have it usable and simple. And so that is

our challenge and our burden to bear.

And so we take that very seriously, and we would be happy to share additional information in more detail.

Mr. Kinzinger. Thank you, Mr. Chairman. Thank you for your leniency. I yield back.

Mr. Burgess. Thank you very much.

Congresswoman Brooks.

Mrs. Brooks. Thank you, Mr. Chairman.

This past August, I had the opportunity to visit Tanzania, Africa, where I saw the majority of the population utilizing mobile payments and paying for everything from cabs to a dinner tab to hotel stays, and so the mobile payment technology I think is incredibly advanced in Africa. And we know that in a large part of sub-Saharan Africa, traditional banking has been hampered by a lot of infrastructure problems and transportation. And we now know that so many people worldwide, approximately 2.5 billion people, don't have formal accounts at financial institutions, as Professor Hughes touched on. It is allowing these communities to provide for the unbanked and the underbanked individuals and businesses to conduct business.

And so I am curious, though, how it is that Africa, in many ways, has leapfrogged over the United States in using this technology? And it was being used in the smallest of shops and to the large hotels. And so I am curious, particularly, for anyone with any -- companies with the international background, how and

why did that happen? Mr. Ahn?

And what should we be thinking about in seeing that, you know, other countries -- and I am talking about visiting with people in huts that didn't even have significant access to electricity at times. And so a lot of them were charging their phones with solar-powered devices and so forth. But how is it that Africa has, I think, advanced so much faster than we have?

Mr. Ahn. So, Congresswoman, one thing I would add is the examples in Africa highlight that necessity is the mother of invention. In Africa, the financial institutions and the infrastructure for typical banking is at such a state of underdevelopment that those in need of payment remittance, access to funds, needed to find some other way to move money around, pay each other, and to conduct commerce. And so these payment solutions on pace in Kenya and other leading applications leapfrogged the need for established banking institutions in such a way to create viable payment commerce.

And I think the relevant piece of what we have learned in developing countries for us is the question that the Congresswoman asked earlier with respect to how we serve our underbanked populations and provide access to as many people as possible for these payment solutions.

For us, we argue that mobile changes everything. Mobile does not tie you down to location or place.

As Ms. Hughes was saying, you can, at your own time, at your

own choosing, and location, conduct transactions and services that are important to you and have access on a more equal playing field than if you were tied to time and place. And so when mobile is coming into the picture, we believe that our job now is to then open up access to the services and solutions that we can make an impact for consumers. The way we think about it is we have a large device footprint. We want, as I mentioned in my testimony, we have plans to continue to evaluate broader ways to provide Samsung Pay on more devices. One very easy way to do so is when previous generation phones are in market, they come down in price point, making it more accessible for different consumers. In addition, we know from our own data that Samsung as an OEM has one of the highest percentages, if not the leading percentage, of share of market in underserved populations as well as lower income populations. And then, on top of all of this, the way we have constructed our solution is to open our doors for all payment types. What that means is that we can support credit cards, debit cards, prepaid cards. We will roll out in the near future gift cards. We have every opportunity for any payment instrument in any tendered type to be usable in our device. So that is how we think about this.

Mrs. Brooks. Thank you.

Professor Hughes, I am curious what you believe the impact is going to be for this type of payment method for the -- is there going to be any burden of entry for entrepreneurs who are just

starting businesses, or do you think this will be beneficial to them?

Ms. Hughes. Oh, Congresswoman Brooks, I think -- oh, I did it. It just didn't happen. Thank you.

I think this is a boon to small business. I think, as I mentioned earlier, it is a boon to farmers markets and artisans and music festivals like we have in Bloomington, Indiana, and arts organizations and charitable causes around the country. I think particularly for smaller businesses, this is an enormous advantage because it will allow them to take payments that they may not have been able to take before in a speedy and secure environment.

And I think that we should be optimistic about the future of mobile payments and their ability to serve underbanked, unbanked, and small business.

Mrs. Brooks. Thank you. Thanks for your testimony.

I yield back.

Mr. Lance. [Presiding.] Thank you.

Mr. Olson.

Mr. Olson. I thank the chair.

And welcome to our witnesses.

I have a challenge for you, Mr. Ahn, Ms. Deckinger, and Mr. Muller. In preparing my questions for this morning, this testimony, I relied on advice from people here in D.C., lots of folks back home, and two of my own personal experts, my two teenagers, my 18-year-old daughter and my 15-year-old son. They

are all about mobile. That is all they know. And they are current and future consumers, big consumers.

So, Mr. Ahn, can you explain how your mobile technology works that I can show my daughter and my son, explain to them and their friends, "Hey, Samsung has got this great vision"? What can I say to my kids? How could you explain it in English?

Mr. Ahn. So, apparently, the previous testimony was --

Mr. Olson. No, it was good. It was good for D.C. I want to make sure my kids understand this because they are the future.

Mr. Ahn. So the young population is an important demographic to follow. What they do and what their habits are, are leading indicators of what new consumer trends will be. For them, what is important is the ability, I think, to focus their life around services and goods that revolve around mobile devices. Our view is that we want a future where consumers have the ability to pay in a store offline, inside an application, an app, let's say an Uber, or a mobile-Web context. Anywhere you are, in any space that you are, we want you to be able to pay with the secured credentials that you have loaded. So we have that opportunity as we build out our product roadmap.

What the Samsung phone allows you to do is to take a credit card or debit card or any other payment instrument, put it into the phone, and make a secure payment at the terminal. Over time, we expect to create more intelligent services that create more consumer impact, things that we can't discuss today. But over

time, we expect that the ability to pay in a secure method with a phone allows you -- allows us to open the door for new innovations that will have a direct impact for them.

Mr. Olson. Is there any PII left after -- PII, personal identifying information -- after a transaction with your mobile system?

Mr. Ahn. There is no PII except for you do know that the phone belongs to a certain user; traditional information is already there. But no additional information is left.

Mr. Olson. Mr. Muller, same question. Explain to my kids, how does PayPal's system work, and is there any PII involved after the transaction?

Mr. Muller. So, PayPal system, you know, works somewhat differently, or it is not tied as closely to the physical device. It does involve working through an account that has to be set up to start with either by the individual themselves if they are over 18, since that is one of our rules --

Mr. Olson. One is there; one is not.

Mr. Muller. -- or by their parents. We do offer a student account capability where parents can control an account on behalf of the student. But there is that initial step of setting up an account. Once the account is set up, we then have a broad network of merchants that the user can access through their mobile device, through their laptop, or other kinds of device. So it becomes very easy to make that payment once that initial step of setting

up the account.

Mr. Olson. Any PII left over after a transaction with PayPal system?

Mr. Muller. So, you know, the PII is something that is kept only by us, so we do have it, and we do have the information, and then the merchant has what they need. If they are shipping physical goods, inevitably that means they need a physical address to ship it to.

But, really, that is the extent of the information.

Mr. Olson. And, Ms. Deckinger, you are the new kid on the block. How does currency envision its testing phase, and can you explain how your mobile technology works for my daughter and son?

Ms. Deckinger. Yeah. We have some pretty cool technology --

Mr. Olson. I like it already, the word "cool."

Ms. Deckinger. -- that would help ease the path. One of the great things we have, for example, is Pay at Table. So that frustrating experience when you are at the end of the transaction in a restaurant, sitting in a restaurant, and you want to pay your bill and you are waiting for the server to come over and bring your bill, we allow you to scan the QR code that is on the receipt, pay and leave without having to do that. We allow to you stay in your car when it is 100-plus degrees in Texas and pay from the comfort of your car.

Mr. Olson. Thank you.

Ms. Deckinger. And we allow to you pay at the drive-through

without handing a card out the window to the person on the other end. Pretty cool thing, the phone actually that when you pay at drive-through is pinged through the Bluetooth low-energy beacon, so that is a fairly cool technology that your teenagers will find fascinating. And PII was the other question.

Mr. Olson. That is a -- yes, ma'am. How are you guys planning on protecting that if you have any after-transaction left over? So like Mr. Muller --

Ms. Deckinger. Similar to Mr. Muller, there is some PII involved. However, we do not pass any financial information through the transaction. So we use tokenization, everything from a financial perspective is tokenized and encrypted. So that means that there is never any financial information stored on your phone, nor information that is of worth to anybody to store on your phone. So should your phone be stolen or hacked or taken by someone nefarious, nothing can be done with it.

Mr. Olson. Thank you. My time is up. My kids would be very happy. Thank you, all.

Mr. Lance. Thank you, Mr. Olson.

Mr. Welch.

Mr. Welch. I got here a little late. I missed -- would you like me to comment?

Mr. Lance. Very good.

Is there anyone else who would like to ask questions?

Thank you.

I thank each of the members of the panel for participating. I think this has been a very interesting and informative hearing. Before we conclude, I include the following documents to be submitted for the record by unanimous consent: A statement from the Electronic Transactions Association; a statement from the National Association of Convenience Stores and the Society of Independent Gasoline Marketers of America; and a statement from the National Retail Federation.

[The information follows:]

***** COMMITTEE INSERT *****

Mr. Lance. Does the ranking member have anything that should be included in the record?

Mr. Schakowsky. I don't, but I approve all those inclusions.

Mr. Lance. Thank you. Pursuant to committee rules, I remind members that they have 10 business days to submit additional questions for the record. And I ask that witnesses submit their responses within 10 business days upon receipt of the questions.

Without objection, the subcommittee is adjourned.

Mr. Schakowsky. Thank you.

[Whereupon, at 12:13 p.m., the subcommittee was adjourned.]