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“Never before in history has innovation offered promise of so much to so many in so short a time.”

These simple but powerful words of the visionary Bill Gates couldn’t be a more fitting introduction for this issue of n>genuity journal. We have opportunities for innovation at our fingertips today that poised us to drive progress in the payments space — and global commerce — to new heights. We should embrace these opportunities, and celebrate them.

In this issue, we explore trends in payments that will be highlighted at this year’s Money20/20 event, being held at the Aria Hotel and Casino in Las Vegas from November 2-5. This event brings together innovators, explorers and thought leaders in payments and other financial services, and n>genuity journal is delighted to once again serve as the official publication of this buzzed-about event.

Speaking of buzz, it would be remiss not to highlight our recent announcement regarding supporting Apple Pay. This is a milestone for our industry, and we are thrilled to be a part of it by working with merchants, acquirers, ISOs, issuers and app developers to give consumers an easy, private and secure way to make purchases. For more information about our involvement, visit www.tsys.com/sdk.

Our cover story reminds us of the growing importance of the omnichannel consumer experience. Consumers are becoming increasingly dynamic — and demanding — in the shopping experience, and this story reinforces that a key to proper innovation is staying in touch with consumer needs and preferences.

In our evolving commercial world, cryptocurrencies like Bitcoin figure more and more prominently. This issue features an article exploring the uses and value of cryptocurrencies beyond mere use as a payment method, as well as one proposing that such technology may be the missing piece in bringing the underserved into the fold of financial services.

We revisit NFC, as one author submits that it may indeed become the “real deal” — and sooner than many think. We also take a look at the rise of API technology, and the fascinating area of indoor GPS location in the retail experience.

Big data remains a hot topic, and one author reminds us that the use of consumer data comes with great industry responsibility — even beyond privacy concerns. We present an interview with an industry scholar who took her research on the underserved and alternative financial services to a new level by actually working as a teller for a check-casher, and also bring you the latest update on regulatory news from Washington, D.C.

We hope this issue of n>genuity is thought-provoking, entertaining and meaningful. We also hope it reinforces the value of exploration and collaboration to our industry and economy. Stay connected to n>genuity by subscribing online at www.ngenuityjournal.com or following us on Twitter (@ngenuityjournal) so you can take advantage of the high-quality content you’ve come to expect from us.

As always, we welcome your feedback and thoughts in general. Feel free to email us at ngenuityjournal@tsys.com. Enjoy the issue!

Sincerely,

M. Troy Woods
President & Chief Executive Officer
TSYS
Redefining the Retail Experience
With Omnichannel Commerce
Oh, how shopping has changed. Or has it?

BY> ANDREW B. MORRIS

Constance is going shopping. But her journey doesn’t begin with a walk or a drive to the store.

Instead it begins as she sits in her home office searching for the perfect gift to give her nephew Henry. As it gets late in the day, Constance moves from her desk to the sofa and pulls out her tablet to finish her research, including reading product comparisons and reviews.
90 percent of survey respondents said they consulted multiple screens sequentially to accomplish tasks.

Once she finds something that fits her budget, is well-reviewed and a good choice for young Henry, Constance discovers that a local retailer is open and has the item in stock. She then heads out to her car and pulls up the store location and directions on the navigation app on her smartphone.

As she approaches the store, a message pops up on her phone with a discount offer — if she uses her store credit card to make the purchase. Constance runs in the store, grabs the gift item, taps her phone at the checkout to redeem her discount and make a payment with her store credit account, and then happily returns home with the purchase of Henry’s birthday gift checked off her “to do” list.

Our friend Constance’s day-in-the-life is just one example of how mobile devices (and particularly smartphones) are catalysts for a redefinition of the retail experience.

The path to purchase
For many customers in a variety of shopping scenarios, the “path to purchase” is now a multi-device and multi-channel journey that blurs the lines between bricks and mortar retail and e-commerce. The consumer may start by researching her purchase on a notebook PC or tablet in her home, locating the nearest store and retrieving coupons on her mobile device, and then completing the sale in the store — perhaps using a mobile wallet.

Consumer research from Google confirms this trend: 90 percent of survey respondents said they consulted multiple screens sequentially to accomplish tasks, while 98 percent said they moved between devices in the same day.

And it’s a complete paradigm shift for retailers who are acknowledging these omnichannel consumers and their overall impact on the bottom line. Retail Systems Research (RSR) reports that

> 3 percent of retailers believe cross-channel shoppers are significantly more profitable than single-channel shoppers;
> 79 percent of retailers believe that it is important for consumers to be able to complete their shopping transactions through their channel of choice (in order to maximize customer loyalty); and
> 79 percent think it’s imperative to create a single brand identity across channels.
Omnichannel payment challenges
How does the role of payments change in these omnichannel use cases? That is an important part of the challenge faced by multi-channel retailers that may have grown their e-commerce business as almost completely standalone from their brick-and-mortar stores. An endless array of potential new omnichannel use cases (e.g., buy online and pick up in store, buy in store and ship to home address, etc.) create new challenges for payment platforms and processes.

How to make online purchases more efficient and secure? How to leverage consumers’ smartphones to enhance the in-store experience? How to manage increasing payment processing costs with an increasing number of “card-not-present” transactions? How to integrate online and in-store channels to allow for unique retail use cases like returns or exchanges? And on and on.

Part of the answer might be “in the cloud” — that is, by moving retail technology into the cloud and away from in-store POS hardware and retail support systems. C.Wonder — a retailer of women’s clothing, footwear, jewelry and accessories, housewares, personal electronics and gifts — sought to build an unconventional retail experience utilizing better, more flexible and less costly technologies without sacrificing functionality and security. To achieve this goal, C.Wonder built its stores without traditional fixed point-of-sale registers and deployed mobile POS on Apple handheld systems. This not only allowed sales...
associates to work more closely with customers on the store floor, but it also facilitated an omnichannel retail environment.

**The challenge of legacy technology**
But C.Wonder had the unique advantage of being a newly launched brand without legacy retail technology systems to build around. Seamless omnichannel retailing is all about the ability to fully and appropriately meet consumer demands. For most established retailers with legacy systems, this is a virtually impossible undertaking in that it requires active, ongoing integration between center systems, store systems and all customer touch points — making cross-channel and even cross-store business transactions difficult to implement.

With existing foundations, omnichannel retailing would demand very high financial investments in IT, making deployment of additional touch points, such as mobile apps, cumbersome and expensive. To achieve the desired
The challenge for retailers is developing the right technology roadmap to maximize their investment toward this omnichannel transition.

Level of convergence in omnichannel retailing, retailers are finding that they must first and foremost consolidate all shopper data (including payments data) within a single, unified repository.

And they are also finding that they must abstract the data and business logic from the front-end interfaces serving store touch points, as well as online and mobile applications, utilizing a common code base to effectively eliminate traditional barriers between different sales channels. By creating an integration-free environment between different sales channels, retailers will be able to support seamless interaction with shoppers across all customer touch points.

Help is on the way
The good news is that, given the significance of the movement to an omnichannel retail environment, many exciting solutions are coming into the marketplace. And the innovation is happening across the entire retail payments value chain — networks, processors, POS hardware/software and mobile commerce solution providers. Whether it is an enterprise-wide integration or a “point solution” for a single omnichannel use case, the answers are out there.

The challenge for retailers is developing the right technology roadmap to maximize their investment toward this omnichannel transition. And the call to action for payments solutions providers is to build products and services that address each retailer’s unique set of challenges.

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The Battle for The Payments Throne
Does the payments space have a storyline like “Game of Thrones?”
One author says yes.

BY> SAM MAULE

By now it is safe to say most have at least heard of HBO’s epic drama “Game of Thrones.”
As a fan of the show, I struggle at times to define the appeal of the story to my uninterested (and judgmental) friends without coming across as a cast member from “The Big Bang Theory.”
Based upon George R.R. Martin’s fantasy novel series “A Song of Ice and Fire,” the plot line is best summed up as “The Lord of the Rings” meets “The Sopranos.”

So what does a medieval fantasy series on cable have to do with the payments space today? Let’s see: alliances forged and broken, power dynamics that constantly shift, brutal and savage warfare, a little bit of magic thrown in — a must-see storyline suitable for binge-watching.
And the HBO show isn’t all that bad either.

The following are three basic themes of “Game of Thrones” that are direct parallels to payments today:

There will be blood.
The only constant for a devotee of “Game of Thrones” is the knowledge that no character is ever safe. Fan favorites have died spectacularly throughout the show’s history. Go to YouTube and search for “Red Wedding” if you require concrete proof of this. Bloodshed and brutal conflict, whether political, mental or in actual battles, are the rules of the day. This saga of rival families, known as Houses, each vying for the Iron Throne of the mystical kingdom of Westeros brings to mind the various factions (or Houses if you will) vying for the “Front-of-Wallet Throne.”
The Payment Houses currently fall under two distinct factions that mirror the rival houses of the Seven Kingdoms of Westeros. The “Great Houses” in the series have a long lineage and history of power in this kingdom. Likewise, the House of Banks/Issuers and the House of Networks have long dominated the payments ecosystem, wielding both power in consumer adoption and political leverage. Both continue to influence the payments space through such efforts as EMV adoption, host-card emulation (HCE) acceptance and the push for tokenization.

Like I said, the only constant for a devotee of “Game of Thrones” is the knowledge that no character is ever safe. The winds of change, however, are being felt in payments. Two rival houses have emerged, having forged partnerships with the old guard while at the same time challenging their dominance.

The House of Merchants continues to invest in the Merchant Customer Exchange (MCX) solution and also continues to strengthen its base in signing new partners. Starbucks has arguably the most successful mobile wallet solution in payments today. Likewise, the House of Carriers has attempted to flex its muscles with solutions like Softcard and T-Mobile’s play for the underbanked.

**Chaos isn’t a pit. Chaos is a ladder.**

A major story arc in “Game of Thrones” is that of Daenerys Targaryen, the Mother of Dragons (yes, there are dragons in the show — just play along). Her army of former slaves and three dragons is an ever-present invasion-threat to the Seven Kingdoms — the invasion being a disruption the rival houses are ill-prepared to battle, mainly due to their own in-fighting.

What better analogy of disruption is there than the imagery of too-big-to-ignore dragons in a given space? Technology is driving the rapid change of innovation (chaos, if you will) in payments today.

The potent brain-trusts and financial arsenal of such tech giants as Google, Amazon and especially PayPal are successfully establishing beachheads in the well-entrenched payments arena. Add in the ability for these tech giants to acquire additional firepower through their M&A efforts, and one can understand the underlying sense of the potential revenue threat these “dragons” bear with respect to the “Great Houses” of payments.

Smaller and more dynamic technology companies continue to affect the payments (r)evolution. Simple, GoBank and Moven are transforming the mobile banking model. Square, Stripe and Dwolla are driving change in the transfer of money and definition of a merchant. New companies like Venmo and Loop, and innovations like beacon technology are redefining the interaction model of payments and consumers. Disruption is the new norm when it comes to payments. One can only imagine what new dragon will hatch tomorrow in this space.
Winter is here. Seasons can last well over a decade in the kingdom of Westeros. The inhabitants of this land have enjoyed an extended summer period; however, the impending winter and all its perils are on the horizon. The Great Wall, an immense barrier of solid ice more than 700 feet tall and 300 miles wide, was built centuries ago to protect the citizens of Westeros from the mythical White Walkers of the North.

Little is known about these enemies of mankind; some even doubt their existence. As the story of “Game of Thrones” unfolds, however, there is no doubt that these creatures do indeed exist and pose an immense threat if they are able to breach the Wall.

Replace “Winter is here” with the phrase “Apple is here,” and let the debate over the future of payments begin. This technology titan has finally entered into the payment space with Apple Pay, and it’s safe to say “all hell has broken loose.” Strategic alliances with all four U.S. networks and with the largest issuers stateside have positioned Apple strongly. A collective sigh of relief across the payment space was also audible with the announcement that Apple will support NFC. The one potential weakness lies with merchant partnerships, and an epic battle for consumer adoption will take place between MCX and Apple over the next few months. As Google can attest, consumer payments adoption is a tough nut to crack.

Money and tech superiority alone aren’t enough. One must work within a complex ecosystem dependent upon multiple industry partners and regulatory oversight to truly impact the space. This type of engagement model doesn’t line up well with Apple’s traditional insular approach to products.

There are two traditional approaches to warfare. One can enter the fray — raise an army, strike an alliance, become a mercenary force, etc. Or, one can choose to sit out the battles and sell swords and armor to the participants. Apple, yet again, chose a third approach. In Apple’s case, it made the decision to create a gate in the Great Wall, one where it controls access to its lucrative customer base and one in which it controls the authentication for payments via biometrics and tokenization. Customer identity remains in the ownership of the card issuers (as it should).

The new season is upon us. I wait with fan-boy anticipation for the latest twists and turns in this lavish, ruthless, addictive and compelling storyline.

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Beyond Bitcoin: Why its Use as Currency is Just the Tip of the Iceberg

Non-payments applications of distributed ledger & cryptographic technologies

BY SANJIB KALITA

Within the last year, Bitcoin has crossed over from financial technology circles into mainstream consciousness. Much has been written about the Bitcoin protocol and infrastructure in the context of currency, but that is just the tip of the disruptive iceberg.
Distributed ledger and cryptographic technologies have applications beyond currencies that could have broader implications in areas such as contracts, identity and ownership. And leading companies and technologies are looking to expand the Bitcoin protocol beyond currency into new applications.

**A creative combination of existing technologies**

The most innovative and disruptive technologies are often clever and creative combinations of existing technologies. Prior to the World Wide Web, computer networking, hypertext and electronic communication were all in existence. Prior to the Apple iTunes ecosystem, MP3 players, digital music stores and digital rights management systems had been available to the mass market for years.

But once we saw our first webpages on a MOSAIC browser, or first listened to music on an iPod, our expectations were altered and we never looked at these categories in the same way again. Elements of these solutions were available before, but the specific construct and user experience made us forget all that came beforehand.

The Bitcoin system comprises several technologies that existed previously:

- Virtual token representing value
- Cryptographic protection with multiple keys
- Distributed documents and files
- Application-specific computer networks
- P2P arbitration algorithms

Virtual tokens of value have existed in several forms, primarily as loyalty currency or as a prepaid store of value in a closed system. Multi-key cryptographic systems are keystones in market standards like PGP encryption standards, and distributed document and file systems such as BitTorrent have existed for years.

Application-Specific Computer Networks have long been part of the mainstream dialogue driven by hobbyists managing the SETI network to search for extraterrestrial life, or by media consumers accessing the gnutella network’s music and video files. The gnutella network was also one of the first large-scale implementations of a distributed peer-to-peer network, complete with arbitration, resource access and management, etc.

The genius of Bitcoin is the clever packaging of all of these technologies into a system that is elegant and enables a digital currency that can operate independently of a governing body. And while Bitcoin was initially envisioned primarily as a currency, many believe that the long-term value lies not in the currency but in the system. The lynchpin of the Bitcoin system is the block chain.

**Bitcoin block chain**

The block chain is a secure digital ledger tracking the history of Bitcoin transactions. A full copy of the block chain enables one to track the ownership and transaction data at every point in history.

Once a transaction is executed, this gets recorded on the block chain and replicated on other copies of the block chain on the network. As a currency, one Bitcoin is of equivalent value to another.

As a tracking system, each Bitcoin is unique with an associated transaction history that can be transparently viewed by all nodes on the network. This uniqueness, history and transparency are the keys to non-currency applications of Bitcoin.

**Ownership: reapplication of the distributed ledger**

One of the shortest leaps in the use of Bitcoin beyond currency is ownership. For example, if one assigns a nominal portion of Bitcoin as owning an asset, completing
a transaction and transferring an asset would simply require sending that particular portion of Bitcoin to the new owner. To put it another way, if Mary were to sell her car to Joan, they would need to use an intermediary third party to transfer the title.

This title transfer would need to be logged by the state. Then a new title would be sent to Joan. This process would involve time being spent by both Mary and Joan. This would also require payment to the third party.

If the Bitcoin system were to be applied for a title transfer, when Mary purchased the car, a segment of Bitcoin could be annotated to indicate implied ownership of the car. This would be read and replicated across the block chain. When Mary decides to sell her car to Joan, Mary simply sends the Bitcoin segment to Joan.

This transaction gets recorded on the block chain. No third party needs to be involved in the transfer, because ownership can be determined by reading the block chain. The above scenario can be accomplished using a concept called “Colored Coins.”

To assign ownership to a Bitcoin segment, additional information is layered on top of it — or, in Bitcoin parlance, the coin is “colored.” As one would expect, creating something of this nature involved intense work in standardization. Colored Coins (coloredcoins.org) is an open standard protocol — like http or bittorrent — used to exchange value over the Internet.

Taking this back to currency, what if one could “color” a coin to represent ownership in a standardized amount of gold? The owner of the Bitcoin would then be the legitimate owner of this gold.

While governments moved away from gold-backed currencies decades ago, individuals could create and transact in cryptocurrencies that are gold-backed. This would be an interesting scenario of going “back to the future.”

**Identity: reapplication of the Bitcoin wallet**

Identity currently remains a tangled amalgam of systems that is neither clear nor accurate. Governments create identity systems such as Social Security Numbers or driver’s licenses.
End users attempt to prove and protect identities with passwords, PINs and other tools that are easily guessed and hacked. In order to prove one’s identity, a consumer usually has to share their identity number with everyone they transact with (i.e., one needs to provide their Social Security Number (SSN) to open a financial account).

Yet it is this very number that can be easily stolen and used to open additional fraudulent accounts. According to the Bureau of Justice statistics, approximately 7 percent of individuals 16 and older — 16.6 million people in the U.S. — experienced identity theft in 2012. Financial losses from identity theft totaled more than $24.7 billion. This is $10 billion more than losses due to all other property crimes in that year.

The Bitcoin wallet includes both a public key and a private key. The beauty of the system is that the public key is only used for inbound transactions for the wallet. In other words, if a hacker were to access the public key, the only damage they could do is to put more items into the Bitcoin wallet — they would be unable to take anything out.

In the Bitcoin transaction system, there is no need to share the private key with others. Perhaps this processing methodology could be the foundation of an identity system that is less susceptible to hacking.

The private key on a wallet is used to withdraw assets from the wallet. A private key stored on a hard drive or accessed via QR code can still be hacked, albeit with much more difficulty than stealing a password or SSN.

Earlier this year, Bionym, a Toronto-based biometrics technology company, created a Bitcoin wallet secured by one’s ECG, which retains a unique pattern for each individual. The Bitcoin wallet security foundation begins at a higher starting point than other identity schemes, and technology innovators are looking to build upon that head start.
Contracts: reapplication of the Bitcoin system

Contracts are documents that outline terms for a relationship-based transaction. Contracts typically outline the reciprocal obligations required of each party.

Many would argue that contracts are built upon a foundation of mistrust — skepticism that the counterparty would do what is asked of them without a contract. Correspondingly, they are also built upon trust that with a contractual agreement in place, the counterparty will do what is required. If not, there is legal recourse.

Distributed contracts do not extend the capabilities of existing contracts, but simply automate and make transparent the terms of contracts. Participation in the Bitcoin system creates a framework for contracts to be automated on top of the Bitcoin protocols. Though similar in concept to ownership and colored coins, contracts require logic, inputs and outputs, and greater complexity.

Etherium is a startup focused on creating technology that lies atop the Bitcoin protocol that enables the creation, execution and monitoring of contracts that lie beyond legal jurisdictions. One of the biggest benefits of using this technology is to simplify the contracting process, removing middlemen and making the process less intensive from both a resource and time perspective.

Initially, Etherium sees their technology being used for: 1) Currencies; 2) Applications requiring middlemen; and 3) Financial/Identity/Credit-scoring applications. However the company has stated that the best applications of the technology likely haven’t been envisioned yet.

This is just the beginning

Trying to envision how Bitcoin technology will evolve is a difficult task, similar to trying to predict how the Internet would affect commerce back in the mid-‘90s. Elements of the Bitcoin system have been repurposed for applications unthinkable at onset.

As Bitcoin encroaches upon legacy financial, technology and legal systems, the possibilities for new applications grow. Ownership, identity and contracts are three examples highlighted herein, but it is likely that the killer application for Bitcoin technology has yet to be developed.

About the Author

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The Sharing Economy Comes to the Financial Services Industry

What Airbnb, Uber and oDesk can teach us about innovation

BY BILLY ROBINS
Since the dawn of the Internet, technology companies have been trying to control the universe — and while none of them have achieved such universal dominance, whoever scaled the fastest has usually come out on top. Bigger equaled better... until recently. Now, it's all about sharing and smarter management of resources to meet on-demand needs.

To this end, a new breed of company is rising. Companies like Airbnb, Uber and oDesk have practically become household names — not by asserting full-scale vertical dominance, but rather by building technology to fill very specific market gaps and letting individuals and communities take care of the rest. Welcome to the age of the Sharing Economy, where people collectively participate in the process of creation, distribution, sale and consumption of goods and services offered by other individuals and companies.

**A novelty no more**

In a very short span of time, the Sharing Economy has transformed from a novel concept to a full-blown market force. Airbnb lists a staggering 300+ million properties across 192 countries. Traditional travel companies cannot even come close to these numbers.

Similarly, Uber has become such a popular alternative to standard taxi services that the company’s name has become a commonly used verb. Need a job done or help with some errands? oDesk and TaskRabbit help millions of people around the world complete projects and errands.

The pioneers of the Sharing Economy have learned strategic lessons that can help those in the financial services industry drive innovation:

- Access trumps ownership.
- Bringing supply and demand under the same roof eliminates search costs.
- Unbundling the experience helps identify new solutions.

But can these guiding principles from the Web 3.0 world be applied effectively to FIs and fin-tech companies? You bet.

**Outsourcing and space-sharing**

Over the past ten years, in an effort to find alternatives to high-cost operations, most banks have outsourced their customer service overseas and opened up offshore development centers. Some have also explored lower-cost alternatives to operating stand-alone branches by sharing real estate with grocery stores or co-locating their branches with coffee shops to jointly drive customer visits. Through their outsourcing and sharing of real estate with other businesses, banks (either knowingly or unknowingly) have dabbled in the Sharing Economy.

PayNearMe (where I work, for full disclosure) takes it a step further by offering billers, government agencies and online businesses the option to accept cash payments at retail locations across the U.S. According to CEO, Danny Shader, “It’s as if the local 7-Eleven or dollar store loaned out their cash registers on a transaction-by-transaction basis to billers across the country.”

In the past, the biller — think auto lender, municipal agency, property
manager or utility — would need to host a walk-up window or collect cash at an office, both of which cost time and money. And what about online businesses and service providers? They simply avoided accepting cash because there was no viable system to tie cash to a digital transaction.

Now, any type of business or government agency can take advantage of staff and registers already in place at stores around the nation to accept payments in real time — and at any time. In true Sharing Economy spirit, that’s a great example of access trumping ownership.

**The rise of e-lending**

In the last few years, we’ve seen a rise in online marketplaces that facilitate introductions between lenders and borrowers. On the consumer finance side, Prosper and Lending Club have stepped in with person-to-person lending. Prosper connects people with capital to those who need loans. Through Lending Club, individual consumers — now the new lenders — can make loan-related decisions in a matter of minutes based on proprietary standardized criteria.

Similarly, Lendio provides a way to match small businesses that need loans with banks that are willing to lend, eliminating search costs for both parties. Banks that once found it too costly to offer smaller loans can now profitably reach that market segment. At the respective cores of Prosper, Lending Club and Lendio is a common key Sharing Economy principle — matching supply and demand.

And why should a bank build out technology to process routine and largely commoditized transactions? Consider Standard Treasury, which is building middleware that allows a bank’s customers to programmatically interface with their bank. “Banks building their own interfaces leads to a one-size-fits-all model,” says Dan Kimerling, Standard Treasury, CEO. “We live in a time where customers want customized user experiences. Opening up allows the banks to engage in mass customization with greater speed and scale than previously possible.”

Beyond offering APIs for commoditizing transactions, startups like DeMyst Data and Plaid are delivering solutions based on risk models and data aggregation. By unbundling the value chain, these companies are able to deliver innovative solutions for specific problems with nimbleness and efficiency that institutions who manage the full end-to-end value chain can only dream of.

**To share, or not to share**

As banks and FIs move forward and consider ways that the Sharing Economy can have a positive impact on their business, they should consider the following questions:

- Does a capability drive a competitive advantage? If it does not, it’s a good candidate for an outsourced or shared offering.
- Is the service a high-frequency need or is there a high cost to roll out the service (either initially or at scale)? If it’s lower frequency or requires a great deal of investment, chances are sharing makes sense.

Now, any type of business or government agency can take advantage of staff and registers already in place at stores around the nation to accept payments in real time — and at any time.
Is there a credible replacement service in the market? If so, evaluate it for sharing.

When you unbundle the solution, how does it change the view?

Are you competing in scale (cost or reach) or experience (quality)? If it’s experience, there is less incentive to outsource. But if you’re competing in terms of scale, sharing could make perfect business sense.

About the Author
Billy Robins is Vice President of Business Development at PayNearMe, where he builds the partnership ecosystem with banks and software vendors serving the Financial Services industry. Before coming to PayNearMe, Billy spent several years at Wells Fargo, where he led a product team that rebuilt the proprietary version of the company’s Mint.com functionality. Billy is active in the FinTech community and co-hosts a monthly San Francisco MeetUp, which has led Bank Innovation to name him as a Banking Innovator to Watch in 2013. Before diving into the world of finance and payments, Billy held a variety of entrepreneurial roles at gourmet coffee, online yellow pages and cloud computing companies. He is a graduate of Emory University and the University of Michigan’s Ross School of Business. You can reach Billy on Twitter: @WARobins.
Making the Payment Disappear
Ways to reduce friction in mobile commerce

BY> ANDREW B. MORRIS
Smartphone penetration is approaching 80 percent in the U.S. market, and consumers are ready, willing and even demanding to use their mobile device for all kinds of daily activities. Reports from Nielsen Media Research reveal that consumers are more likely to use their smartphone than their tablet to locate a store, check a price or even to research an item before the purchase.

But the same consumers are much more likely to complete a purchase of a digital good, a service or a physical item using their tablet or PC than their phone. In fact, the “checkout abandonment” rate for mobile commerce is about 67 percent.

**Mobile commerce as customer self-service**

One key aspect of mobile commerce is that it is a self-service experience. Customer self-service use cases show us that this can create both the best and worst types of experiences with a brand. Well-executed customer self-service, such as the airport kiosks and mobile apps deployed by major airlines, save consumers time and create convenient, enjoyable experiences with the brand. Another example of effective self-service is enrolling consumers for online bill presentment and payment.

If properly implemented, these investments can drive down costs while also increasing customer satisfaction. But poorly executed customer self-service can be extremely costly. The implications are damage to the brand, the cost to remedy, lost revenues, reputational risk and competitive pressures.

Analysts tell us that mobile commerce is growing to a $500+ billion global opportunity. So why are U.S. consumers doing more browsing than buying on their smartphones?
Are consumers ready?
A recent study conducted by InsightsNow for AOL and BBDO explores the primary motivations for consumer smartphone usage. To marketers, the prospect of reaching shoppers through their smartphones is tantalizing. But mobile doesn’t always mean “on the go.”

The survey data shows that 60 percent of consumers’ smartphone use happens at home. And users’ most common activity is not shopping or socializing, but engaging in what the researchers call “me time.”

At the same time, the types of transactions that consumers are willing to complete on their smartphones can be quite amazing. Phones are now used as everything from car keys to a mobile wallet. And these use cases seem to be indicators that consumers are ready to move to the “next level” in mobile commerce despite the alarming stats around checkout abandonment.

Reducing friction
Consumer research by Nielsen Mobile indicates that consumers are more likely to use their smartphones than their tablets for activities like using a store locator to find a store, checking prices or researching an item before purchase. On the other hand, tablets are still the device of choice for purchasing a digital good, service or physical item.

And so how do we get willing consumers to increase mobile online purchases? The prevailing thinking is that solution providers will need to find ways to streamline the clunky aspects of the user experience and take the “friction” out of mobile commerce. In many cases, it is the checkout or payment experience that is the biggest obstacle.

Mobile services like Uber (which allows the user to locate a taxi or black car and then effortlessly pay for the ride with a credit card they have stored on file) have enhanced the mobile commerce experience by essentially making the payment “disappear.” When payment credentials are not stored on file, the smartphone’s camera can be used to pull the critical information from the face of a payment card and eliminate data entry requirements. Other solution providers are looking for ways to streamline the checkout experience for mobile commerce purchases to “one click” or even “zero click” using technologies like biometrics.

What’s next?
Uber has become the classic case study, but others are emerging. For merchants, it’s increasingly important to understand the obstacles that their mobile purchase experience puts in the way of consumers. For solution providers, the imperative is to build new and innovative solutions that streamline the mobile commerce and payments experience.
If properly implemented, these investments can drive down costs while also increasing customer satisfaction. But poorly executed customer self-service can be extremely costly.

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Why NFC Could Soon Become the Real Deal
Buoyed by a software solution, the race is on to offer contactless payments

BY> CHARLES KEENAN

Financial institutions suddenly find themselves in a race to develop mobile apps that use near-field communication (NFC), a payment method that until recently has been plagued by false starts and difficult economics.

NFC has languished in part due to the inability of banks and phone carriers to agree on how much should be paid for access to a computer chip on a phone that has transactional functionality. Beyond pilots, banks have balked at the fees proposed by the carriers to access a portion of the chip — known as the “secure element.” They also have been hesitant to cede any control of transactions to the carriers.

Yet for all the buzz about Apple’s inclusion of NFC in the latest versions of the iPhone, it might be recent developments with open-source software that give NFC new life, essentially allowing financial institutions to bypass the secure element on smartphones. The software allows for “host card emulation,” or “HCE,” giving the mobile device the ability to act as a credit or debit card at existing NFC terminals, presenting a virtual duplicate of the card. And its open-source format allows vendors and financial institutions to develop their own proprietary solutions.

Big players, big push
This new idea might have staying power, as big players are giving HCE legitimacy. One major move came when Google folded HCE into a version of Android released in November of 2013. Then MasterCard and Visa said in February they would issue specifications for payments using HCE by financial institutions.

Carriers’ pricing, as high as $4-5 per customer per year in one NFC project, has backfired, says Steve Mott, principal of BetterBuyDesign, a payments consultancy based in Stamford, Conn. “The lesson of HCE is anytime somebody tries to use technology to set up a toll gate, there is going to be a way to work around it,” he says.

Yet recent developments with open-source software have given NFC new life, essentially allowing financial institutions to bypass the secure element on smartphones.

That “toll gate” spurred innovation that led to HCE, adds Linda Mantia, executive vice-president of cards and payment solutions at Royal Bank of Canada. “It removes one of the biggest challenges, which was the stranglehold in the U.S.”

RBC, based in Toronto, is one of the large banks out in front with HCE, having already deployed it on certain Android phones. The bank launched a mobile app in January for its Canadian market, allowing customers with certain Samsung Galaxy phones to pay by NFC. Also, Capital One Corp. has
Yet for all the buzz about Apple’s inclusion of NFC in the latest versions of the iPhone, it might be recent developments with open-source software that give NFC new life, essentially allowing financial institutions to bypass the secure element on smartphones.

worked with MasterCard in a pilot to help the network develop HCE specifications.

While MasterCard wouldn’t cite specific banks beyond Capital One, interest is high in getting NFC-enabled mobile wallets to market, says James Anderson, group head in emerging payments. “There is a lot of pent-up enthusiasm in the payments community to be able to implement mobile transactions,” he says. “Banks are active in the space, with people launching new initiatives internally to figure out how to get things to market quickly.”

RBC debuted its Android-based wallet to a limited set of users — those with Galaxy S III or S4 phones on Canada’s Bell phone network. Consumers with RBC Interac debit or Visa credit cards can use these phones to make small purchases at merchant locations that accept contactless payments. RBC expanded to the MasterCard network in the spring.

**The path of least resistance**

HCE was developed by two entrepreneurs, Doug Yeager and Ted Fifelski, who looked for a way around routing NFC transactions through the secure element on the phone. They noticed the secure element was a big sticking point in NFC adoption, started writing code, and then marketed it under the company name SimplyTapp, based in Austin, Tex.

“We discerned if you can have a software solution not dependent on a relationship with hardware, there would be a lot more flexibility in the market to give NFC at least a fighting chance,” says Yeager, chief executive officer.

Essentially SimplyTapp’s work has created a secure element in the cloud, which has caught the attention of Google. Keeping HCE open-source in nature allows the market to grow rapidly. As for SimplyTapp itself, it is looking toward growth by selling a proprietary HCE Android solution mainly to processing companies and other payment aggregators.

**Barriers to entry**

Still, despite the promise of HCE, obstacles remain. One is securing the software on the device and its communication with a point-of-sale terminal. Stakeholders will have to feel comfortable enough with safeguarding software from hackers.

“The secure element in the cloud is wholly dependent on the security of the software of the device,” says Simon Blake-Wilson, executive vice president of the mobile security business division at Inside Secure, a software security firm based in Aix-en-Provence, France.

While HCE might not match the security of using a SIM card on the phone, it could be secure enough, and offer a more practical solution for it to gain market share, Yeager adds. “It all comes down to user experience versus security,” he says. “If nobody is using it, it could be the most secure platform in the world and who would care?”

Terminals are another problem. Today there are about 2 million merchant...
locations worldwide that accept contactless payments, according to MasterCard. But most of those are at sites outside the U.S. The most likely first adopters of NFC terminals are the largest merchants. Yet only about 20 percent of terminals at these merchants can handle NFC transactions, according to The Nilson Report.

**NFC’s potential**
But the promise for NFC is there. One big catalyst is Apple, which has announced the inclusion of an NFC antenna on its iPhone 6 and iPhone 6 Plus. The technology will be used in part for Apple Pay, a mobile wallet the company debuted in October that will use a secure element chip. With Apple’s move, most new smartphones on the market will now come with NFC technology, so the critical mass is there.

But HCE could enable much more. “It is going to open up new types of applications outside of payments that people hadn’t actually thought about before,” says Michael Ting, vice president of payments at SecureKey, a Toronto-based vendor that provides cloud-based authentication solutions. For payments, HCE development will augment security such as authorization and tokenization for card-not-present transactions, experts say. Beyond payments, the open-source format will prompt developers to write apps for other uses for NFC in a mobile device, such as loyalty programs, building access, transit passes and beyond.

**About the Author**
Charles Keenan has written about payments since joining the American Banker as a staff reporter in 1997. His work at the American Banker included writing about credit and debit cards, merchant processing, and bank stocks. He later freelanced for the Banker and industry publications such as Banking Strategies, Bank Director, Community Banker, and U.S. Banker. He also writes about investing, insurance and health care, and is based in Los Angeles.
Using Disruptive Technology for Financial Inclusion

Why mobile and cryptocurrency technologies may be the answer for the financially underserved

BY SANJIB KALITA

Disruptive technologies often gain traction among the segments of a market experiencing the greatest pain. The underserved markets at the “bottom of the pyramid” have been largely left out of the electronification of financial services driven by credit and debit cards.

Mobile and cryptocurrency technologies — both quite disruptive — have tremendous potential to serve as the new “on-ramps” to financial systems and services. Across the world, these technologies have the capacity to bring the next billion people into the mainstream.

Different forms of disruption

Mobile technology is disruptive for its ubiquity and for the persistent connectivity to computer systems it provides. Cryptocurrency technology is disruptive because of its distributed control network and the trust that the community has placed in cryptographic tokens. Both technologies
Technology has destroyed barriers that have historically stood in our way to get to people in remote areas or people who have been seen as not viable from the traditional banking point of view.

Individually, as well as in collaboration, have potential to rebuild financial services for underserved markets.

According to Arjan Schutte, founder and managing partner at Core Innovation Capital, a Los Angeles-based VC firm focused on financial technology companies for the emerging middle class, “their particular financial needs — liquidity, fast payments and access to affordable credit as well as saving and planning tools — are poorly met by industry incumbents. Build solutions for the emerging middle class, and you’ll create value for everyone.”

Mobile

Figures from the World Bank state that 55 percent of people in the East Asia and Pacific Region have accounts at a formal financial institution. Meanwhile there are 81 mobile subscriptions per 100 people in the region. In the Middle East and North Africa, 18 percent have financial institution accounts, and 89 percent have mobile subscriptions.

In the U.S., most carriers will pull the credit score of an individual to determine if they are financially eligible for a mobile contract. In most of the rest of the world, the telecom carriers will have more history about individuals than would a bank. Even within the U.S., there are several startups focused on determining an individual’s creditworthiness based on their digital or mobile footprint.

Inventure, a Los Angeles-based company, has several offerings focused on mobile financial services for the underserved market. It enables consumers running small businesses, like a food cart or vending stand, to track their finances with an SMS-based accounting tool. These entrepreneurs can then view the summary and history once they have access to a computer. Additionally, Inventure uses this data to create financial credit scores for individuals that likely would have no other similar documentation.

afb, a company based in South Africa, has built consumer and small business financial services businesses operating in several African countries. Using the power of mobile data, they are also able to deliver non-traditional credit scoring information for consumers and businesses.

According to Andrew Watkins-Ball, founder of afb, “We believe everyone should have access to the value of their own digital footprint, whether GSM, mobile money, point of sale or a combination of formats.” Working closely with mobile networks, afb has been the first to do real-time credit advances in several countries. They have also partnered with retailers to issue payment cards to the mass market.

“Technology has destroyed barriers that have historically stood in our way to get to people in remote areas or people who have been seen as not viable from the traditional banking point of view. We can now be a real-time choice for someone in a village 200 kilometers from the nearest bank, at 3 o’clock in the morning, when he or she needs working capital to go and purchase goods from farmers to sell in a market,” said Watkins-Ball.

Cryptocurrencies

There has been a lot of hype around cryptocurrencies like Bitcoin. Venture investments in the space have been frenetic, and there has been talk about how it is the most disruptive technology since the Internet.
One of the most network-centric financial services for underbanked individuals is the remittance market. Globally, remittances represent a $550 billion annual market. Lower income consumers using retail-based cash remittance services are typically charged 5-10 percent in fees.

Ripple Labs is a company attempting to disrupt this market with a cryptocurrency protocol called Ripple. Ripple is an open-source, decentralized global payment network that enables free and instant payments to merchants, consumers and developers with no chargebacks and in any currency. Consumer fees for using these transfer schemes would be significantly less than current offerings.

According to Chris Larsen, co-founder and CEO of Ripple Labs, “The Internet leveled the global playing field for information exchange by granting everyone free, instant access to communication and information. Yet individuals from underserved markets still struggle to tap into modern financial services — most of which rely on a pre-Internet payments infrastructure. By underpinning the current model with an Internet-based, real-time payments protocol, we are ushering in a new wave of finance in which billions of underserved individuals can carry out low-cost, frictionless payments across borders.”

Beyond remittances, cryptocurrencies provide liquidity, access to cash and access to credit. ZipZap is a company that enables individuals to buy Bitcoin and other cryptocurrencies with cash — even in retail locations. Thus far, it has enabled 20,000 locations in the U.K. to sell cryptocurrencies.

Circle enables consumers to purchase Bitcoin with traditional currency, and does not charge a fee for this service. The account is maintained in Bitcoin, but the funds are quoted in local currency based on the real-time exchange rate.

Once a consumer has cryptocurrency, how can they use it? Xapo is developing Bitcoin and Ripple-based credit cards, so consumers can spend the cryptocurrency they receive. Xapo positions its offering as a new way to bank, but it is also partnering with existing banks and payment networks to deliver solutions that are as secure as traditional bank products.

Looking ahead
There is more energy being spent on financial inclusion than ever before. Mobile financial services and cryptocurrencies have the potential to empower entire underserved populations.

Perhaps it’s not too much of a leap to believe that the best is yet to come.

About the Author
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A Hidden Pitfall of Big Data: Discrimination?

Industry responsibility for use of consumer information goes well beyond privacy concerns

BY> STAN MERRITT

Philosophical debates surrounding big data abound.

“Is it cool...or is it creepy?”

“Do aggregators provide a valuable service to merchants and consumers...or are they just ‘stalker-ish?’”

“How much consumer information is too much?”
In a SearchCIO article by Nicole Laskowski, Kord Davis, a former Capgemini consultant and published author, aptly states that in such debates, “we revert back to our own personal moral codes.” But should the big data industry seek to establish a common, shared moral code?

And what about lines that are not so blurred? What about behavior that’s clearly prohibited — moral codes and conundrums notwithstanding? What about big data and the law?

Is “unintentional discrimination” an oxymoron?

It is obviously prohibited under federal law to discriminate based on race in a contractual setting. And we’re not just talking about government bids or federal employment. It is forbidden to discriminate in any contractual setting, whether it’s the purchase of a car, a life insurance policy or any widget of choice.
Now consider the financial services industry: Loan underwriting. Consumer credit extension decisions. Mortgages. Variable APRs. These are all clearly contractual settings.

So what does this have to do with big data? Tons.

In the legal realm — specifically employment law — there are often-juxtaposed concepts called “disparate treatment” and “disparate impact.”

The former involves intentional adverse action toward a certain class or category of people — for example, an employer refuses to hire women. The latter involves a harmful effect on a class or category regardless of the intent — for example, an employer refuses to hire people under six feet tall simply because he or she likes tall people, and this results in gender-based discrimination because women are generally shorter than men.

The gray area involves situations in which crafty perpetrators intend to discriminate against certain groups, yet attempt to justify the discrimination based on a factor besides the one that invokes legal protection from discrimination. So it is entirely possible for discrimination to be perpetrated intentionally, unintentionally — or via intent cleverly disguised. In a world replete with algorithms, formulae and automated decision-making, it’s quite possible for discrimination to occur even without the data user’s understanding.

**Decision-making or profiling?**

Government officials agree there are risks. In May 2014, a report titled “Big Data: Seizing Opportunities, Preserving Values” was published by the Executive Office of the President at the behest of the Obama administration.

The study explicitly acknowledged that “big data technologies can cause societal harms beyond damages to privacy, such as discrimination against individuals and groups.”

The aforementioned distinction between discriminatory intent and discriminatory effect was also recognized, as the study noted that “discrimination can be the inadvertent outcome of the way big data technologies are structured and used,” or the result of outright “intent to prey on vulnerable classes.” As a frame of reference, the report mentioned the early 20th century practice of “redlining,” through which American banks drew boundaries around various ethnic neighborhoods to whose residents they refused to lend money.

The perpetrators of “redlining” claimed that geographic location was the pivotal underwriting factor for denying loans. In reality, they did not want to lend money to the ethnic residents of the neighborhoods, and geography was a ruse.

This practice was finally prohibited by the Home Mortgage Disclosure Act of 1975, but its prevalence demonstrates how data that is not on its face discriminatory can have a discriminatory effect — whether intended or not. Through analogy, the report noted concern that “big data technologies could be used to ‘digitally redline’ unwanted groups, either as customers, employees, tenants, or recipients of credit.”

**A counterpoint — and an industry crossroads**

The report from the Executive Office of the President, while realistically cautious, was by no means all gloom and doom in terms of discrimination and big data. Noting that the same technologies that enable discrimination could also help victims enforce their rights and empirically confirm instances of
Given the potency of big data as both a tremendous asset and a potential liability to society — and one that is here to stay in either iteration — industry ethics and responsibility are paramount in this area.

discrimination, the reporting committee emphasized the pivotal crossroads at which the data industry currently stands.

The committee stated, “Whether big data will build greater equality for all Americans or exacerbate existing inequalities depends entirely on how its technologies are applied in the years to come, what kinds of protections are present in the law, and how the law is enforced.”

An industry responsibility
It’s clear that the committee recognizes the place of legislatures and regulatory bodies — legal entities — in preventing the abuse of big data. But it also implies a tremendous data industry responsibility for self-governance.

One hopes that the data industry will follow the lead of Scott Howe, president and CEO of Acxiom, who in an April 2014 article on adage.com called for industry adoption of self-imposed rules for responsible use of data — regardless of legal parameters.

As Kord Davis noted in SearchCIO, all businesses want to minimize risk, and the area of big data is clearly no exception. He submits that the key factor in mitigating big data risk is a clearly articulated policy, vetted by corporate stakeholders with complete honesty, aligned with corporate values — and with total transparency.

Like so many legal concepts, what constitutes “discrimination” is, unfortunately, a moving target. There are different discrimination-related laws subject to different interpretations. There are technicalities that render seemingly unjust results. The law is imperfect, and it is tricky.

Given the potency of big data as both a tremendous asset and a potential liability to society — and one that is here to stay in either iteration — industry ethics and responsibility are paramount in this area.

The data industry simply cannot sit idly and hope that the law will prevent and cure discriminatory effects of data usage.

About the Author
Stan Merritt is the editorial coordinator for ngenuity Journal and a member of the Digital communication team at TSYS. In addition to writing industry articles, he focuses on studying payments industry trends, product innovations, regulatory issues and game-changing technology. Prior to joining TSYS, Merritt was engaged in the private practice of law for more than 15 years.
Payment processors, issuers, networks and retailers are all focused on improving payment security. The liability shift deadline for EMV implementation in the U.S. has been reconfirmed by the card brands as October 2015, but retailers still face great uncertainty about how to secure payments today while also investing for their future.

And EMV is only part of what must be a holistic payments security solution. Other technologies like point-to-point encryption, tokenization and biometrics must also come into play in order to secure both online and in-store payments.

How is the industry responding to these challenges? This is a problem with many dimensions, two of the most important being technology innovations and cross-industry partnerships.

Emerging technologies
EMV represents vast improvements over the basic security that is inherent in the decades-old legacy technology of magnetic stripe cards. But EMV is fundamentally designed as an authentication technology rather than a data-security technology. EMV is extremely effective in eliminating fraud that stems from counterfeit payment cards, but the
EMV is extremely effective in eliminating fraud that stems from counterfeit payment cards, but the implementation of EMV alone does not protect the entire payment transaction process.

In particular, there are two key areas of vulnerability in the payments process that EMV alone does not address: 1) from the point of card insertion or tap, when the card data is transmitted in the clear to the processor or is later stored by the merchant post-authorization; and 2) other transactions where a chip-enabled card is not present.

EMV also does not address merchant-specific risks such as the interception of card numbers in transmission on the merchant network or attacks against repositories of card information within the merchant, acquirer, processor, network or issuer environment. This risk can be somewhat mitigated by encryption, the process of using algorithmic schemes to transform plain text information (i.e., the PAN) into a non-readable form called ciphertext.

A key (or algorithm) is required to decrypt (or unencrypt) the information and return it to its original plain text format. This protects card data from the point of capture and maintains this protective state throughout the transaction.

A process called “tokenization” can be particularly impactful for securing online transactions. With tokenization, random digital representations of the personal account number and other payment-account credentials are created and distributed by the account issuer, and then this secure digital token is offered to merchants for payment. Stolen tokens typically can be used only one time and are of no value to the fraudster, thus mitigating fraud concerns.

**Moving forward**
The three largest payment networks (Visa, MasterCard and American Express) have jointly proposed a standard for tokenization. In addition, The Clearing House Payments Company (whose owners include Bank of America, Citibank, Capital One and JP Morgan Chase) is also working with member banks to see how tokenization can be applied to online and mobile payment environments to protect against fraud.

The effort stems from what the group says is the need to address gaps in the EMV standard involving mobile and online transactions. The resolution of these standards for tokenization will be vital for its benefits to be fully realized.

Perhaps even more interesting is the progress being made toward biometrics playing a significant role in securing payment transactions. The Apple iPhone 6 is equipped with a fingerprint scanner...
Another response to the retail data breaches over the past year is an increasing number of partnerships between merchants, financial institutions and law enforcement.

FIDO Alliance (for “Fast Identity Online”) continues to build momentum toward its mission of eliminating passwords by promoting biometric technologies and standards.

Cross-industry partnerships
Another response to the retail data breaches over the past year is an increasing number of partnerships between merchants, financial institutions and law enforcement. The Retail Industry Leaders Association (RILA) has been particularly active in this regard.

In February 2014, RILA announced a partnership with the nonprofit National Cyber-Forensics and Training Alliance (NCFTA) to improve cybersecurity information sharing and aid retailers’ proactive approach to cyber-threats. RILA also joined forces with the Financial Services Roundtable to head a collaborative effort between the retail and financial services industries.

The goal of these cross-industry partnerships is to improve cybersecurity capabilities by sharing threat information, exploring innovative technologies and enhancing the security of the payments system. RILA’s partnership with the NCFTA, a non-profit corporation specializing in establishing public-private partnerships, will provide a trusted forum through which retailers can collaborate on effective solutions to combat cyber-criminals in a cooperative environment.

The path ahead
As cyber-criminals continue to make gains in organization and sophistication, the challenge to secure retail payments is great, but shows positive momentum toward solutions. Most experts are recommending a “layered approach” to payment security, which incorporates several of the technologies described here. And, thus, it is becoming clear for all payments stakeholders, and particularly for merchants, that significant new investment in both technology and cross-industry partnerships will be a requirement going forward.

About the Author
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Indoor Location GPS: Coming Soon to a Store Near You

Service could be a boon for marketers, with customized deals down to the aisle

BY CHARLIE KEENAN

Pinging customers with product offers when they walk into a store or down an aisle could soon become a key driver for loyalty.
Hardware providers have been installing beacons in stores, shopping malls and airports to allow consumers to use their phones to navigate and take advantage of deals.

Indoor-location GPS tracking has not yet arrived in any big way, but retailers are quietly gearing up for this phenomenon, described by Square co-founder Jim McKelvey as “the next frontier in advertising.” For retailers — and financial institutions — it’s a tempting new avenue to building loyalty and capturing customer information.

Hardware providers have been installing beacons in stores, shopping malls and airports to allow consumers to use their phones to navigate and take advantage of deals. The beacons rely on sensors now standard in many smartphones, including technology such as Bluetooth, GPS, near-field communication (NFC) and Wi-Fi.

“With the back-end technology, a lot of the building blocks are already in place,” says Gary Singh, director of product solutions and marketing at Motorola Solutions. “They can really start to connect the consumer to the product.”

For instance, Motorola Solutions, based in Schaumburg, Ill., in May launched MPact, which uses Wi-Fi and Bluetooth technology to communicate with shoppers while they’re in the aisles of participating retailers. Combined with front-end apps, the technology helps to locate products in the store, offer reviews, compare prices and look up information.

It can track how long the customers are in the store, what sections they have browsed, and the type of products for which they are shopping. Similarly, iBeacon, offered by Apple Inc., offers transmitters that can notify retailers of nearby iOS7 devices. Other competitors include Gimbal, Datzing and Philips’ VLC Beacon.

With society now going mobile, the allure of customer information means more chances to build loyalty and generate income with targeted product marketing. “We are an app economy now,” says Jeff Vining, a research vice president at Stamford, Conn.-based Gartner group. “It’s another way to channel revenue.”

**Most transactions still in-store**

While there has been much hype over online retailing, regular retail still dominates, notes Phil Philliou, chief executive officer of TruBeacon, an Omaha, Neb.-based vendor. E-commerce transactions made
up just 6 percent of sales in January 2014, according to the National Retail Federation.

“Despite all the interesting noise around online, the reality is the majority of transactions still happen in store retail,” Philliou says. “Those are the transactions we are trying to facilitate and where we can provide the most value.”

One of TruBeacon’s products, dubbed “Rewards Beacon,” enables shoppers to opt-in and receive customized offers and personal assistance via in-store transmitters that use iBeacon, which uses Bluetooth Low Energy (BLE) to communicate with handsets. TruBeacon began testing its product in May at a coffeehouse chain based in the Midwest, but would not disclose other details. It is also offering a white-label beacon app platform to financial institutions.

“We are creating the opportunity for merchants to communicate with customers as they are entering the store,” Philliou says. “It gives them the ability to send real-time offers to acknowledge their best customers walking into the store.”

Aisle411, a St. Louis-based vendor backed by McKeelvey’s venture firm Cultivation Capital, provides an app that lets customers shop with indoor mapping for retailers such as Walgreens, Home Depot and regional supermarkets. Other big retailers have expressed interest. Macy’s, a Motorola client, quietly debuted last December its iPhone app’s ability to map location in the flagship Herald Square store in New York.

**Mapping anywhere**

One limiting factor for geolocation is lack of market dominance — similar to the mobile wallet conundrum. The solutions being offered mostly require users to download the retailer’s app, or a service app such as Aisle411, which is limited to its participating retailers.

Providers are working to develop indoor location systems that don’t depend on participation of retailers or other locations, but instead can map mobile users anywhere. This format also relies on Wi-Fi, Bluetooth and GPS, and a newer technology known as MEMS, short for micro-electromechanical system. MEMS is key because it doesn’t require permission from other providers for access, McKeelvey noted.

MEMS allows for robust mapping, adds Carol Politi, chief executive officer of TRX Systems Inc., a vendor based in Greenbelt, Md. One of TRX’s products, “NEON Mobile,” layers on mapping algorithms that help decipher incoming data and correct location errors. TRX has worked with the U.S. Army to deliver a training system to support
real-time location and tracing of soldiers in urban areas where GPS is unreliable or not available.

Limitations, but promise abounds
Privacy could be one obstacle to rapid adoption in the coming years. But Singh notes that retailers will take a cautious approach with location services, offering an “opt-in” approach. “There is a lot of misunderstanding in terms of privacy issues,” he says. “They have to be very careful it doesn’t come across as a creepy solution.”

Battery power is another block. For example, driving in a car for 2.5 hours with geolocation turned on for Google Maps on an iPhone 5 drains a fully-charged battery almost completely. So batteries and software for indoor location will need to improve.

But the promise of indoor location is too great to ignore. The key will be to figure out how to make the shopping experience better, Singh says. “The question is, ‘How do you really engage on that footprint of physical products in the store and warehouse?’”

Those who figure it out first will attract a loyal following.

About the Author
Charles Keenan has written about payments since joining the American Banker as a staff reporter in 1997. His work at the American Banker included writing about credit and debit cards, merchant processing and bank stocks. He later freelanced for the Banker and industry publications such as Banking Strategies, Bank Director, Community Banker, and U.S. Banker. He also writes about investing, insurance and health care, and is based in Los Angeles.
Achieving the Elusive “10x Factor” in Payments Innovation

With startups galore, how will new innovations gain traction? And who is leading them?

BY DEBORAH BAXLEY

With 200 mobile payment startups launched so far in 2014¹, it’s obvious that mobile payments are a hot topic. But the problem with mobile payments is a perennial one: New payment types hardly ever succeed. Our industry’s history is littered with new payment technologies — including Pay by Touch, Mondex, and contactless cards — that never gained traction in consumer adoption.

¹. https://angel.co/mobile-payments
And the jury is still out on today’s mobile wallets, including the Softcard (formerly ISIS) mobile wallet founded by three large U.S. telephone companies, Google Wallet and the CurrentC wallet founded by a group of large U.S. merchants. It’s just a plain fact that the well-established legacy payment infrastructure we enjoy in North America is hard to beat.

**Displacing cards is a tough proposition**

It’s very hard to improve the speed and convenience of swiping a payment card. Ironically, mobile technology has even served to prolong the life of 300-year old paper checks by making checks easier to deposit using cell phone cameras.

According to Andy Grove, former Intel CEO, for a change to achieve mass adoption by consumers, it must provide an experience that is at least ten times better than consumers’ current one — something Grove referred to as the “10X factor.” How have payments innovators achieved the 10X factor? Looking at some successful recent payment innovations reveals the common denominators for payments innovation success: the “Three E’s”:

1. **Easing checkout**
2. **Eliminating friction**
3. **Enabling marketplace**
This trend is noted by the latest research. For example, according to Capgemini’s World Payments Report, origination players — those that enlist customers while they go about their daily life — are embedding propositions to trigger commercial transactions from any location.

Achieving one or more of the Three E’s ensures that the payment approach meets an unmet consumer need, or improves the experience enough to drive behavioral change. This helps ensure that people **will want** to use the service.

Let’s look at some of the more successful payment innovations and see how they made progress with the elusive Three E’s.

1. **Easing checkout**
   **Apple Pay:** Emblematic of Apple’s reputation for usability and design, the payment solution couldn’t be easier. Combining Touch ID and NFC, there is no need to fumble with PINs or depend on unreliable bar code scanning.

   **Starbucks:** More than 14 percent of all Starbucks transactions in the U.S. are now made with a mobile device. Starbucks achieved this phenomenal level of adoption with an intuitive, easy-to-use mobile app that is faster than reaching for cash and is coupled with Starbucks’ loyalty card.

   **Loop:** Loop solves the “fat wallet” problem by allowing users to store payment, loyalty and identity magnetic stripe cards in a mobile app. They then can interact with almost any point-of-sale (POS) device via patented Magnetic Secure Transmission technology (non-swipe), which sends a burst of data that “tricks” POS terminals into thinking a card has been swiped. The Loop fob passes along the same card data that swiping a magnetic stripe card would, but users can carry a single device to replace almost every card in their wallets.

2. **Eliminating friction**
   **M-Pesa:** The Kenyan mobile money system is the most successful and arguably most famous system of its type in the world. A textbook example of eliminating friction, M-Pesa was initially conceived to solve the problem of domestic person-to-person funds transfers. Before the creation of M-Pesa, the most common way a worker could send money home to his village was by bus service. M-Pesa reshaped payments, and in so doing, literally saved people from highway robbery. After a successful launch, including the positioning of thousands of cash-in and cash-out agents, M-Pesa rapidly expanded into point-of-sale proximity and other person-to-person payments, such as taxi payments. M-Pesa is now used by more than two-thirds of Kenya’s adult population.

   **Amazon 1-Click Payment and Apple Pay:** What’s worse than typing 23 digits, your name and address onto a tiny screen, pressing “go” and then having to type it all over again because you made a keying error? Not much. Amazon 1-Click eliminates this problem securely through its patented and highly secure 1-Click Payment method. Apple Pay’s in-app purchasing with Touch to Pay eliminates typing card numbers on a tiny screen and authenticates with a fingerprint verification.

   **Jamba Juice and PayPal Order Ahead:** PayPal is always on the look-out for ways to eliminate commerce friction with mobile technology. Its Order Ahead service, first deployed with Jamba Juice, embeds payment into the experience of ordering your favorite drink before arriving at the store. The customer can then pick up their drink without standing in line.
3. Enabling marketplace

PayPal and eBay: One of the most exciting recent payment industry movements is creating trust in marketplaces. PayPal with eBay is the poster child for this movement. PayPal achieved a viral level of success by enabling commerce between two strangers who never meet face to face — a type of commerce that had been impossible previously.

Uber: This car service mobile ordering system is a more recent phenomenon, which creates trust in a different kind of marketplace by incorporating best practices like rating systems and frictionless payment. Uber users are more likely to use a car service because they don’t need to have cash and because of the system’s reliability in timely pickups.

OpenTable and Apple Pay: OpenTable provides demonstrable value to restaurants with its tool allowing potential diners to search, rate and also make reservations when dining out. Additionally, consumers can now use OpenTable to pay the bill. Embedding Apple Pay into apps like OpenTable underscores trust in marketplaces and triggers a payment in the context of a dining experience.

Don’t expect a mobile slow-down

NFC promises to open up a whole new world of payments-related innovation, including location-based services, couponing, loyalty and marketing, which will provide further incentives for consumers to use the mobile wallet. Eventually, NFC and mobile technology will eliminate plastic cards, make payments more secure and make people’s everyday lives easier.

There will continue to be a proliferation of new alternative payments approaches. The winners will be chosen by consumers from among the payment options that merchants offer.

A successful new payment method has to satisfy an unmet need, or offer an improved experience that has enough value to drive behavioral change. These will be the game changers we believe will drive innovation. Being mindful of the Three E’s will be vital to the success with a new payment innovation.

About the Author

Deborah Baxley is a Principal with Capgemini Financial Services Consulting. She is a recognized expert in the payments industry and 30-year IBM veteran with 20 years consulting experience in 14 countries. She is an officer on the Smart Card Alliance Payments Council, co-founder/officer of NYPAY networking group, and Certified Smart Card Industry Professional. She is a frequent keynote speaker and prolific author on the topics of mobile and advanced payments innovation.

Planet of the APIs
Application programming interfaces’ movement up the technology food chain continues

BY SANJIB KALITA

Technology platforms are opening up, increasingly offered with tools that distribute development capabilities to third parties who are able to build applications and enhance utility. From the perspective of a seasoned developer in the fintech space, the world has morphed into a completely different planet — the planet of the APIs.
Planet of the APIs

Application programming interfaces’ movement up the technology food chain continues
APIs are now available for payments processing, bank access, crowdfunding, marketplace development and much more.

**Evolution of APIs**

APIs have been around for decades. When APIs first arrived on the technology scene, they resided lower in the technology stack, and were primarily used by software applications users to access operating systems or underlying hardware. For example, a program could utilize APIs in the operating system to generate 3D images via software or hardware acceleration.

In 2000, APIs moved up the stack when Salesforce introduced Web-based XML APIs as part of their service. E-commerce sites like Amazon and eBay introduced APIs to enable third-party developers to incorporate content from their sites.

In 2004, APIs went social when the photo sharing site, Flickr, launched an API that enabled users to embed images stored on Flickr in their own websites or social streams. Google Maps deployed their APIs within six months of launching because the application was so popular and so many developers were hacking the application to create their own versions.

In 2006, Amazon pushed the API market forward with the launch of their S3 and EC2 services, enabling developers to access storage and other resources in the cloud. These services, accessible via APIs, enabled businesses to run mission-critical applications.

**Payments APIs: first steps into commerce and financial services**

The advent and adoption of broad services via API opened minds about how this technology could be extended into new domains.

A couple of the leading companies competing with APIs in the payments space are Braintree and Stripe. Both of these companies offer payments services and more via APIs.

The simplicity of incorporating previously complicated processes via APIs led to their adoption by upstarts, like Uber and AirBnB. Companies were able to push payment technology into the background and focus limited engineering resources on improving user experiences.

Existing technology companies entering new markets introduced their API philosophy to these markets. eBay’s PayPal APIs enable businesses to accept credit card and PayPal payments. Google Wallet Instant Buy enables the completion of an e-commerce or m-commerce transaction via a simple API call. The goal of all of these implementations is to create a frictionless commerce experience.

According to Mike Dudas, Co-Founder and Chief Revenue Officer of Button, an API provider focused on loyalty, “A simple, robust, well-documented API that allows read and/or write access — with careful permissions — to critical data is essential to the growth of the best financial technology companies, and is a key differentiator versus their competitors.”

**The current API state of the art**

Once some of the aforementioned companies created a pathway to success for payments, new APIs within commerce and financial services began to bloom. A recent innovation has been bank access via APIs. Two of the leading companies in this space are Standard Treasury and Plaid.

APIs should increase efficiencies for both banks and businesses. With the increase in non-banks offering financial services requiring high volumes and frequent transfers, expectations are that the market will be seeking these solutions.
According to Standard Treasury Co-founder and CEO, Dan Kimmerling, “Banks are having to evolve their business model to engage with the proliferating number of non-banks. The best way to do so is to become a platform for non-banks to engage with, and to do so requires them to have great APIs.”

Interface to the future
The evolution from desktop Internet to mobile Internet has revolutionized how users interact with applications. This revolution will continue with the proliferation of devices and form factors.

Entering a 16-digit credit card number is acceptable on a desktop PC, very annoying on a touchscreen smartphone, and extremely risky via voice interaction with a wearable device in a public space. Ironically, the drive to simplify end-user experiences will dramatically complicate the technology required. Development cycles would become unnecessarily long if businesses are unable to use APIs to simplify processes and move them to the background.

If we follow the trajectory of the evolution of technology applications in commerce and financial services, we can expect them to connect across platforms, create user experiences that are dependent upon context, and deliver real-time intelligent results. These trends should increase the profile of APIs as a key component in applications design.

We truly could now be in the dawn of the planet of the APIs.

About the Author
Sanjib Kalita is the Knowledge Director of Money20/20.
With the elections and the lame duck session of Congress upon us, it makes sense to focus on the legislative and regulatory issues facing the payments industry. A “lame duck” session is the time between the elections and the end of the year. “Lame duck” refers to those members of Congress who have lost their re-election effort, but are still Members until the session actually ends. Traditionally, there is lots of activity as Congress and federal regulators work to resolve unfinished business in a very short time frame.

Attending conferences to stay informed on regulatory issues is a great way to get business done, but it is important to also be involved with what policymakers are doing to make it easier or harder to conduct business. With the stroke of a pen, one piece of legislation or a regulation can have devastating effects on the way you conduct your daily business.

**Operation Choke Point**

Perhaps the greatest current threat to electronic commerce is the effort by law enforcement and regulators to hold payments companies liable for fraud committed by categories of merchants. This effort is called Operation Choke Point (OCP).

Through focus on broad categories of merchants instead of on specific individual violators of the law, OCP has caused banks and processors to stop servicing certain categories of merchants en masse. Additionally, OCP has transformed the long-standing cooperative relationship between payments companies and law enforcement into an adversarial one.

The financial services industry has deployed a presence in Washington to push back against OCP — arguing that the broad effort by law enforcement should focus directly on bad actors, and not the payments industry as a whole. As part of this effort, payments trade group members have produced 100 pages of underwriting guidelines to build upon the industry’s existing fraud detection and prevention efforts.

In meetings with more than 100 Congressional offices and regulators, the industry has used these guidelines as an example of how to properly detect and eliminate fraud. Having testified before Congress on the issue, I am pleased to report that a federal regulator has withdrawn its list of categories of targeted merchants. Hopefully, regulators will continue to redirect their efforts to focus on those directly committing violations, and not the payments industry.

**Data breaches**

When a national company experiences a data breach, it must comply with 42 different state laws regarding notification. The payments industry is in favor of creating one national data breach standard. There are five bills pending before Congress, but work on creating a uniform national standard for notification of customers when a data breach occurs has largely stalled.
Cybersecurity
Congress also held hearings on protection of customer data, and sharing of information within the government and between businesses. The Senate Intelligence Committee proposed a bill to remove restrictions that inhibit the flow of cyber threat information between the government and industry. This legislation faces an uphill battle as privacy and consumer groups are expressing concerns.

Regulators and mobile payments
Federal and state regulators also set policies affecting the payments industry. Lobbying efforts are underway to educate federal regulators in the latest developments in the industry, including mobile payments and mobile data security.

State issues
The payments legislation battles don't stop at the beltway. In California, a bill that would have made the use and acceptance of EMV cards a state law was defeated. This victory was important to the payments industry, as California is a leading policy indicator, and many additional states likely would have followed its lead.

Clearly, there are currently a number of hot-button policy issues that could affect the payments industry in major ways. Policy debates are shaping the industry in Washington, and across the country. Stay tuned.

About the Author
Scott Talbott, J.D., C.P.A., is SVP of Government Affairs at the Electronic Transactions Association. He is an experienced policy advocate and communicator with two decades of experience in Washington. Talbott has represented the largest financial services firms in the country before Congress and federal regulators, most notably during the fiscal crisis. He is also an expert on communication, appearing regularly on national and international media. He has been called the voice of the financial services industry and one of the most recognizable faces in the industry.
You worked as a teller at a check casher in the South Bronx for eight months. What was the strongest preconceived personal notion you had that was changed by the experience?

Honestly, I tried to go into the fieldwork experience without any expectations about what I would find. I strongly suspected that the people who were using check cashers and other alternative financial services were doing so for good reasons. I just didn't know what those reasons were, and I worked as a teller in order to find out.

You certainly met some underserved customers who also had dealt with banks. Was there a common thread in how they compared the two experiences?

After I worked behind the counter as a teller, my research assistant and I interviewed 50 RiteCheck customers. Later, I did the same thing in Oakland, California. After completing more than 100 interviews, it became clear that customers chose the check casher over the bank for three reasons: cost, transparency and trust. These customers had found that banks were more expensive for them than check cashers and that it was easier for them to understand what they were paying — and when and why — at the check casher than at the bank.

Did you observe an element of trust in the relationships between underserved customers you met and the check casher?

Absolutely. In fact, it's interesting that you use the word “underserved.” I know what you're getting at, but most of the people I dealt with wouldn't define themselves that way. They tend to be quite happy with the products and services they receive at the check casher. One difference between check cashing and banking is that the check cashing business model relies on a high volume of transactions, and a significant portion of customers come into the store a few times a week. As a teller, I was trained to be service-oriented — to greet customers by name and make them feel welcome. This makes a big difference, it was not uncommon for customers to tip the tellers. Regulars sometimes bought us coffee in the morning, and they'd even ask about us if we were sick.
How can traditional banks foster relationships with the underserved?

Well, one thing would be to make the products and services they offer — along with their costs — much more clear and transparent. Imagine that you didn't grow up going to the bank, like I did, or that you were a new immigrant. Walking into a bank branch would be pretty intimidating — there is very little signage explaining what products and services are available and how much they cost. When you walk into a check cashier, everything you can do there — paying bills, buying money orders, cashing checks — is displayed on large signs with the prices alongside. This kind of transparency is essential for people who are living close to the edge.

You've observed before that the use of check cashers and payday lenders by the underserved is actually the only economically realistic option for them. Could you explain a bit?

Many believe that people use check cashers and payday lenders because they don't know any better. In other words, if everyone had better information and lived closer to a bank, they'd definitely choose to have a bank account. That's not what I found. The customers told me that they found banks to be more expensive than check cashers.

Most payday borrowers do say that the loans are expensive. The problem is that they have no alternative. They need the money for some sort of emergency, or to bridge an income gap — income volatility has doubled over the past 30 years — and they have nowhere else to go. Of course they would prefer cheaper credit, but they have nowhere to get it.

Real wages have been declining since 1972, and the gap between the minimum wage and the average hourly wage is the largest it's ever been. At the same time, the costs of education, health care and child care have skyrocketed. I think we need to stop focusing exclusively on the suppliers of alternative financial services, and think more about the situations that lead people to need these services. Financial instability is more widespread than ever, and it's getting worse. That's a problem we really need to focus on.

About the Author

Lisa J. Servon is professor at The New School for Public Engagement and former dean at Milano School of International Affairs, Management, and Urban Policy. Professor Servon holds a PhD in Urban Planning from the University of California, Berkeley. She teaches and conducts research in the areas of urban poverty, community development, economic development and issues of gender and race. Her current research focuses on the alternative financial services industry. Servon is the author or editor of numerous journal articles and four books. She lives in Brooklyn.
In Payments, The Times They Are a-Changing
Observations on our industry’s continuing responsibility as payments technology evolves

By James Cranfield

The modern day cards business may be one of the few industries to experience double-digit growth since birth. And this growth has provided a platform for change that has truly revolutionised payments.

Here’s what we’re seeing:

**Plastic is going**
We’ve moved from the metal charge plates of 100 years ago to the paper credit cards of 60 years ago, to almost ubiquitous plastic. Looking forward, however, it is clear that digital technology will ultimately replace even plastic.

But it’s not just the physical token that has changed. First we signed with a pen, and now we enter a PIN. We used to swipe, but now we insert or even wave. First we visited the branch, then we called, and now we email or even tweet.

**A changing cast**
The players are also changing. The traditional boundaries in the classic four-party model have been blurred substantially:

> A mobile phone with a device can turn a cardholder into a merchant.
> A merchant can become an issuer either via co-branding or by issuing their own card.
> A Kenyan farmer can become a merchant using his “not-so-smart” phone, and telecommunications companies (telcos) can become payment schemes.
> Issuers can use social media and crowdsourcing to design their own card products.
> A scheme may launch a wallet that allows a competing scheme’s card in it.
> Payment schemes can bypass telcos by building payment functionality into apps on Android devices.

It is hard to draw a real-world four-party model without adding at least 10 other key stakeholders into the diagram these days. What is becoming clear is that partnerships and collaboration are becoming vital for survival in this
industry. Fear of disintermediation in the past is starting to give way to an appetite for survival amongst the incumbent players and growth for the new players.

The dynamic evolution of payments
Since the “failure” of the first true credit card launch by Joseph P. Williams in 1958 — which saw huge losses in the first year due to fraud — technology has always played a significant role in the card payments arena. Most of this technology is never seen. Just like in the airline industry, most payments technology is there primarily for safety and security. But even those areas have been commoditised increasingly, and the industries have been focusing on customer “wants” now that their “needs” have been fulfilled.

At first, the cards industry had to wait for technology (computing power) to catch up with it, and now technology is waiting for cards to catch up. With the advent of mobile payments, the need for traditional infrastructure that was designed half a century ago is being slowly eroded.

You don’t need to be a futurist to envision a day when payments are enabled not by your device but by yourself. A simple PIN number on a pad that recognises your fingerprint and iris (or even DNA) might send a message to the cloud-based issuer host system for authorisation. Wearable tech will have an important role to play as well, but the biggest challenge here is the diversity itself — glasses, watches, bracelets, buttons, rings. It’s hard to see how one technology might dominate.

We don’t all wear glasses, but we do all have biometrics. I think we can learn a great lesson from M-Pesa here: Don’t rely on universal adoption of new technology — let’s leverage what we’ve got.

Technology with purpose
And just because the technology exists doesn’t mean it’s right for the payments space. Every day we hear about issuers deploying technology for the sake of technology (i.e., simply because it is there or because their competitors have launched it). Like any feature, decisions on deployment of technology should be consumer-driven, not issuer-pushed.

We should ask ourselves a couple of questions as we move forward: What (and whose) problems are we trying to solve? And does the new technology make the payments process easier?

Constant industry mindfulness of these questions will keep the evolution of payments technology purposeful.

About the Author
James Cranfield is co-founder and owner of Insight Consultancy, a global payments advisory firm providing consultancy and training services to issuers, acquirers, payment schemes and processors across the globe.