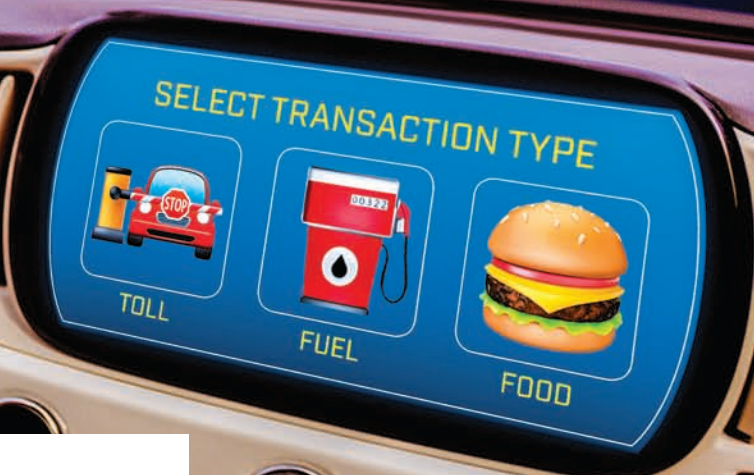


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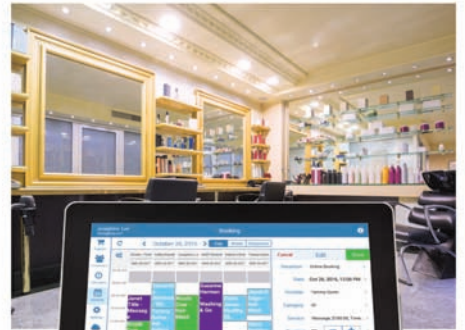
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'As more and more merchant brands join platforms like GM Marketplace, there are even more opportunities to engage with potential customers and grow the in-car commerce market.'

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Cover illustration: Jason Smith, Fotolia.com



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The Ultimate Mobile Payment

It was only a matter of time before the stars lined up to put digital-payment capability into automobiles. After all, where do U.S. consumers spend their time when not at rest? And what has been their favorite pastime, after sports, politics, or videogaming?

As senior editor Kevin Woodward explains in our cover story this month, “Hitting the Accelerator,” payments are invading that redoubt of American isolation, freedom, and engineering, the car. With the cooperation of automakers, original-equipment manufacturers, merchants, and the card networks, you can now buy everything from parking to petrol with a few taps on that dashboard screen.

It’s an exciting new frontier for payments, but at the same time it’s easy in all the hoopla to overlook a few points. First, while car-based payment capability now exists and is filtering into vehicles, it’s not yet ubiquitous. What will it mean when it is? How will that experience change the payments business? How will it change consumer habits?

Also, how long will it take? Mobile payments on smart phones became a celebrated technology when Apple Inc. launched Apple Pay for the iPhone, and yet, four years later, mobile payments are far from ubiquitous. Indeed, consumers who have started to encounter contactless chip cards may be concluding that a card tap is just as easy as a phone wave. Will automobile payments enjoy some distinction, some convenience, that overcomes that inertia in favor of plastic cards?

We think they will, if only because we spend so much time in our cars that the convenience of ordering and buying from our dashboards outweighs driving to multiple destinations in a way that the convenience of mobile payments doesn’t outweigh card taps.

Another point to remember is how this technology became possible. It’s easy to get too wrapped up in technicalities, but something like tokenization is no mere technicality. The extension of payments into smart phones first, then into the clothing we wear and the refrigerators in our kitchens, and now into cars, became possible because of the ability to digitize and mask the card credentials backing the transaction.

In another story in this issue, “The SRC Express,” we write about how tokens are key to the development of a new, multinet network system that seeks to clean up e-commerce checkouts, streamline card payment, and thwart fraud. There are a number of kinks to work out and comments to consider. But before too long, this system, called Secure Remote Commerce, will be extended not just to e-commerce but to the Internet of Things, probably including automobiles.

Keep these things in mind as you cruise down the boulevard ordering your next cheeseburger for drive-through pickup.

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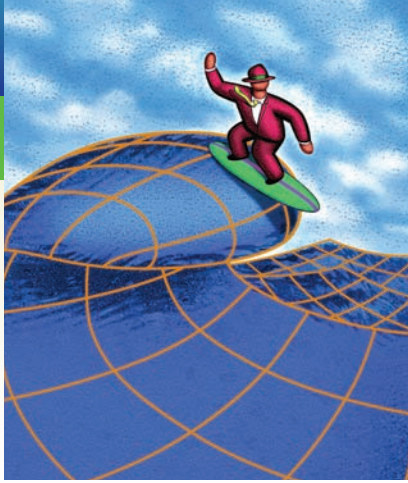
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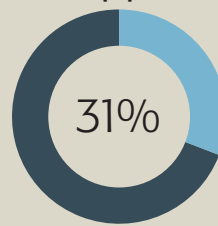
Is Facial-Recognition Technology Hurting Apple Pay?

Adoption and usage rates for the mobile wallets from Apple Inc., Alphabet Inc. (Google), and Samsung Electronics Co. Ltd. have been far from stellar, but now evidence is emerging that Apple's decision a year ago to ditch fingerprint identification on its newest smart phones in favor of facial-recognition technology could be making it even harder for Apple Pay to win mass consumer acceptance.

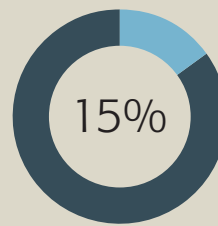
The problem appears to be most acute in physical-store settings, where critics say the process required on the new iPhones to get to the wallet and unlock payment is now more cumbersome with Face ID, Apple's new authentication technology. Indeed, some say the technology falls short all too often.

"Even if we disregard the pitfalls of the clicks and the pain of the notoriously routinely failing Face ID, a user used to momentarily holding their thumb on the home button to confirm a payment will find this [new process] monumentally more complicated," notes Duena Blomstrom, an iPhone user and chief executive of PeopleNotTech Ltd., a London-based consulting firm. Her critique appeared in early December as a post on Forbes's online forum.

An Apple Pay Snapshot



Portion of the active iPhone base that uses Apple Pay, or 253 million users worldwide



Share of Apple Pay users who are in the U.S., a proportion that is decreasing relative to overseas

Source: Loup Ventures, August 2018

The extent to which problems with Face ID may have hurt Apple Pay is unknown. Apple did not respond to an inquiry from *Digital Transactions*. The technology was introduced with the iPhone X in September 2017 and then incorporated in the iPhone XR, XS, and XS Max, launched this past fall. Unlike rival Android phones, which have added facial-recognition technology but kept fingerprint recognition, the new Apple models replaced Touch ID, the company's fingerprint technology, with Face ID.

That move, say some observers, could be problematic at busy in-store checkouts, since users must fall back to entering a password if Face ID fails.

"Based on what I've seen, Face ID has been an issue for some users since it was introduced. It could be a problem; it certainly doesn't help," says

Aaron McPherson, vice president for research operations at Mercator Advisory Group, a Maynard, Mass.-based consultancy.

For long-time iPhone users, McPherson says, Face ID also suffers by comparison with Touch ID, which he contends was easier to use because the process was more intuitive. Still, he argues Apple Pay's less-than-stellar adoption can't be blamed solely on Face ID.

Mercator's 2018 survey data indicates a strong consumer preference for either fingerprint recognition or passwords when making mobile payments, compared to facial recognition, though some of this effect could result from the relatively new availability of facial-recognition technology. Since reaching a "high-water mark" at 30% in 2016, usage of "universal" mobile-

payments services like Apple Pay and Google Pay among smart-phone-owning adults has declined to 23%, Mercator says. Apple Pay specifically has seen a drop from 14% to 10%.

Experts will caution that correlation is not causation, but other data indicates consumers are struggling to some extent with Face ID and similar technology. In a consumer survey concerned with in-store mobile payments, New York City-based financial-services consultancy Auriemma Consulting Group found those who have facial recognition on their phones were more likely than those who don't to experience a problem at the point of sale. The difference was 47% compared to 29%.

Those with facial recognition also were more likely than those without to say the problem was related to the phone they were using, 28% to 17%. The survey data included Google Pay and Samsung Pay users as well as Apple Pay users.

"Based on the responses we got on in-store experience, [facial recognition] has definitely been a deterrent," says Jaclyn Holmes, director of Auriemma's payments-insights practice. Adds McPherson: "The last thing you need now is to make [mobile payment] more difficult."

The question now, Holmes says, is whether consumers will simply bypass mobile payments and move from existing plastic cards to contactless cards as these cards become increasingly available. In her post about Apple Pay, Blomstrom expresses little doubt.

"[T]here is no instance where simply strapping a contactless card to the back of your phone doesn't make the experience more enjoyable than using Apple Pay," she writes.

—John Stewart

Venmo Hopes Revenues Stream in With Its Hulu Pair-Up

In a marriage of convenience, movie and TV streaming service Hulu LLC says it now accepts PayPal Holdings Inc.'s Venmo peer-to-peer payment service. Hulu could be a major win in PayPal's ongoing effort to increase the popular Venmo's profitability because the service will generate a recurring revenue stream.

For Santa Monica, Calif.-based Hulu, Venmo provides a point of differentiation from its powerful competitors that include Netflix and Amazon. Founded 2007, Hulu provides instant access to live and on-demand channels, original series and films, and a library of TV shows and movies. Hulu announced in May that it had more than 20 million U.S. subscribers.

"We constantly strive to make it easy for you to stream, any way you want," Hulu said in a December blog post. "And that includes how you want to pay for your Hulu

subscription. That's why we've partnered with Venmo, the app you love to use to send money, to bring you a new way to pay for your Hulu subscription. We're very excited about this partnership because Hulu is the first-ever TV streaming service to offer Venmo as a payment option for your subscription."

New subscribers can use their mobile Web browsers to choose Venmo as the payment method for monthly subscriptions. From there, the customer's Venmo balance or linked payment method will be billed. Current subscribers will get the Venmo option soon, Hulu said.

A spokesperson for San Jose, Calif.-based PayPal, which also is a billing option on Hulu, did not respond to a *Digital Transactions* request for comment. PayPal has been working steadily to add merchant acceptors for Venmo because, unlike consumers using it for

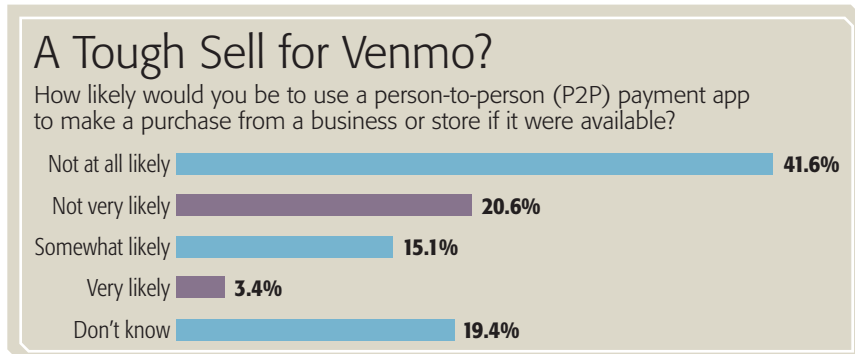
The advertisement features a colorful background with geometric shapes in shades of blue, green, and orange. At the top left, the USAePAY logo is prominently displayed. To the right of the logo, social media icons for Instagram, LinkedIn, Facebook, and Twitter are shown next to the text "/USAePay". Below the logo, the tagline "SMARTER SOLUTIONS FOR SECURE PAYMENTS" is written in white capital letters. The central part of the ad is divided into three sections: "Retail" on the left, "Ecommerce" in the middle, and "Mobile" on the right. Each section includes an illustration of a device: a retail terminal for Retail, a laptop displaying a dashboard for Ecommerce, and a smartphone for Mobile. At the bottom left, the phone number "866.490.0042" is listed, and at the bottom right, the website "USAePay.com" is provided.

P2P payments, they'll pay for the service. Recently, however, Venmo has struggled with a spike in fraud.

Access to new recurring revenues is good news, but Venmo likely will encounter some new operational issues, according to e-commerce payments analyst Jordan McKee, a research director at New York City-based 451 Research.

"Venmo's deal with Hulu signals its growing appetite to become a C2B [consumer-to-business] payment method across a variety of merchant verticals," McKee says by email. "Recurring revenues are certainly an appealing aspect of this deal, but Venmo must be prepared operationally to handle the influx of customer-service inquiries that will come with it."

Inevitably, McKee notes, some customers will forget they signed up



Note: 3,104 consumers surveyed September-October 2018.

Source: 451 Research

for Venmo billing but notice that funds are missing from their Venmo balance. "This is new territory for Venmo and it must have the support infrastructure in place to address more inbound customer-service requests," he says.

What's more, PayPal should limit its expectations for customer adoption of Venmo for C2B payments if an

autumn survey of 3,104 consumers by 451 Research is any indicator (chart).

"Just 3.4% of respondents said they would be very likely to use a P2P payment app to make purchases from a business or store if it were offered as a payment option," McKee says. "Another 15.1% said they would be somewhat likely."

—Jim Daly

Booming Acceptance Growth Abroad Beckons U.S. Acquirers

A handful of U.S. merchant acquirers have expanded overseas in recent years. Now more may have an incentive to do so if recent research showing robust growth in merchant acceptance is any indication.

The number of physical stores or outlets accepting credit and debit cards worldwide reached 69.2 million in 2017, up 13% from 2016, according to "Global Payment Cards Data and Forecasts to 2023," a study released last month by London-based Retail Banking Research Ltd. The report forecasts that number will grow to 111.7 million by the end of 2023, for an 8.3% average annual growth rate.

The fastest-growing acceptance regions are Asia-Pacific and Eastern Europe, which also are the least-developed for cards right now, according to RBR. The firm credits regulations from local governments for the growth.

Examples include India, where starting in 2018 regulators eliminated merchant-discount fees for at least two years on transactions of less than 2,000 rupees (\$28 at current exchange rates) and are pressuring banks to work harder to recruit merchants. Many of these institutions are state-owned, RBR points out.

In the Czech Republic, regulators require merchants to keep electronic records of transactions, a function payment terminals handle easily.

But regulations can be wider than local rules. In the European Union, for example, regulation capped interchange rates in 2015. Rules like this encourage more merchants to begin accepting cards, RBR says, since the caps give them grounds to negotiate better rates with acquirers. Other places that have placed limits on interchange include Brazil, which introduced caps last year, and Malaysia,

which put them in place three years ago, according to RBR.

Financial-inclusion programs in some countries also are encouraging merchants to accept cards, RBR says, pointing to markets in the Asia-Pacific region, Central and Eastern Europe, and the Middle East. As more consumers in these areas receive cards, pressure builds on merchants to accept them.

U.S. acquirers like Atlanta-based EVO Payments Inc. are already looking to expand their international positions. EVO, which has had operations in place in Europe for several years, is looking to expand in Latin America and in the Asia/Pacific region, chief executive James G. Kelly said in August.

Europe looms large for EVO. In the second quarter, the region generated 69% of the publicly held company's 771.3 million transactions. European transactions grew 24% year-over-year to 528.7 million, while

the North American transaction count came in at 242.6 million, up 5%, the company reported.

But RBR analyst Daniel Dawson, who led the research, sounds a cautionary note for U.S. companies.

“As for overseas opportunities for U.S. providers, in theory increased

acceptance should encourage companies to expand, but it may be that merchants would be more likely to opt for local providers who they may already have a relationship with,” he tells *Digital Transactions* in an email message. “I suspect it would depend on the deal the provider was able to offer

(e.g. what fees they would charge).”

The report also cautions that wider acceptance isn’t the case in all areas. For example, acceptance is still held back in places where basic infrastructure is missing because of large, undeveloped rural areas, RBR notes.

—John Stewart

The Big Divide Over the Fed’s Role in Real-Time Payments

Large banks aren’t too keen about the Federal Reserve taking an operational role in a U.S. real-time payment system, but smaller financial institutions and some big companies support the idea.

The Fed’s two-month comment period on its proposed Real Time Gross Settlement service (“The Fed Mulls Muscling in on Faster Payments ...,” November, 2018) generated more than 380 responses from private individuals, banks and credit unions, tech companies, trade associations, and others by the time it closed in mid-December, and the Fed still hadn’t processed a last-minute rush of submissions.

Some of the nation’s largest corporations are on board with the Fed taking a direct role. Addressing a question in a regulatory notice about whether the Fed should develop a 24-hours-per-day, 365-days-a-year

payment service, a letter from Walmart Inc. answers “yes.”

“Walmart believes that the Federal Reserve is uniquely positioned in the market to deliver this service,” the letter says. “The Federal Reserve has relationships with every financial institution in the country, a long track record of delivering world-class payments and settlement services, and a reputation in the marketplace as an honest broker of interests among the various stakeholder groups.”

A number of big tech and payment companies—Amazon, Apple, Google, Intuit, PayPal, Square, and Stripe—also submitted joint comments supportive of an active Fed role through the trade group Financial Innovation Now. “The proposed Federal Reserve RTGS system will provide a competitive option in the marketplace and foster ubiquitous adoption by all

financial institutions and non-bank partners,” FIN’s letter says. “Ubiquity is unlikely to be achieved without a RTGS system offered by the Federal Reserve.”

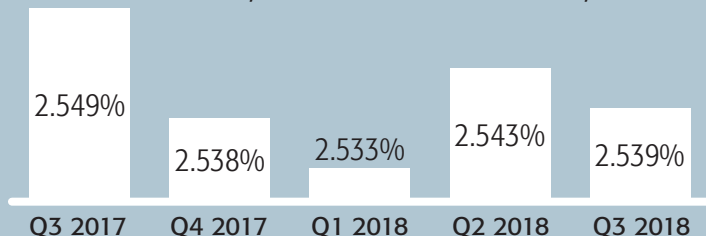
The Fed already operates one of the nation’s two automated clearing house switches. The other is run by The Clearing House Payments Co., whose parent company is bank-owned. TCH recently launched its own service dubbed Real Time Payments.

Many comments came from community banks and credit unions. By and large, they want an alternative to the TCH system, which they see as controlled by big banks. The Independent Community Bankers of America trade group told the Fed that “ICBA strongly contends industry-wide ubiquity is a distant possibility and may never be achieved without the Federal Reserve developing and operating a

MONTHLY MERCHANT METRIC

Total Gross Processing Revenue, in Percent

Sum of total discount, total transaction fee revenue, and total other fee revenue divided by total volume



Note: This is sourced from The Strawhecker Group’s merchant data warehouse of over 3 million merchants in the U.S. market. The ability to understand this data is important as small and medium-size businesses (SMBs) and the payments providers that serve them are key drivers of the economy. All data are for SMB merchants defined as merchants with less than \$5 million in annual card volume.

Source: The Strawhecker Group © Copyright 2019. The Strawhecker Group. All Rights Reserved. All information as available.



RTGS service and interoperating with the private-sector solution.”

But Early Warning Services LLC, a big-bank-owned security technology firm that also provides the Zelle person-to-person payment service, wrote that it “believes a duplicate real-time gross settlement service to the existing RTP system from The Clearing House could stagnate current

positive market momentum towards ubiquitous digital payments.”

Meanwhile, NACHA, governing body of the ACH network, said the Fed’s proposal “is grounded on a fundamental, underlying bias that ‘non faster-payment systems’ are lacking because they are not available on a 24x7x365 basis.” Still, NACHA said it “does not have a specific opinion on whether the

Fed should build such a system.”

A spokesperson says the Federal Reserve Board hasn’t announced a timetable for a decision. “The Board of Governors will determine next steps, which may include issuing a request for comment on specific services or, alternatively, no additional action,” she tells *Digital Transactions* by email.

—Jim Daly

Virtual Cards Are Poised To Dominate B2B Card Payments

Move over, checks and plastic. In a vast and rapidly growing commercial card market, virtual cards are grabbing spending share and are poised to dominate business-to-business card payments, according to Accenture Payments research.

Corporate cards, purchasing cards, and virtual cards accounted for \$523 billion in U.S. commercial card volume last year, up 10% from 2017, according to Accenture. Of the 2018 total, virtual cards, which are non-plastic accounts typically tied to accounts-receivable systems and represented by a digital token, accounted for \$169 billion in spend, up fully 24% from the year before.

Indeed, virtual cards are by far the fastest-growing of the three commercial card categories Accenture studied, with an estimated compound annual growth rate of 21% over the five years from 2017 to 2022. Purchasing cards will grow 6% and corporate cards, after some slight growth, will wind up with pretty much the same volume as they commanded in 2017. Accenture’s numbers do not include small-business and fleet card activity.

Buoyed by virtual cards, the total commercial card market will expand at a 10% annual rate through 2022. Looked at in isolation, virtual card spend just on mobile devices will

grow at a 43% clip, Accenture forecasts, totaling \$42 billion in 2022.

Mobile usage will bloom as “issuers continue to enhance solutions to issue/approve virtual cards from mobile form factors, and corporate travelers become more comfortable with mobile-wallet capabilities from the ‘Pays’ (e.g., Apple, Google, Samsung), banks, and merchants,” says Frank Martien, managing director for payments research in North America, in a blog post.

By 2021, virtual cards will command the biggest segment of the commercial card market, registering \$300 billion in volume and taking over the lead from purchasing cards (\$275 billion), Accenture projects.

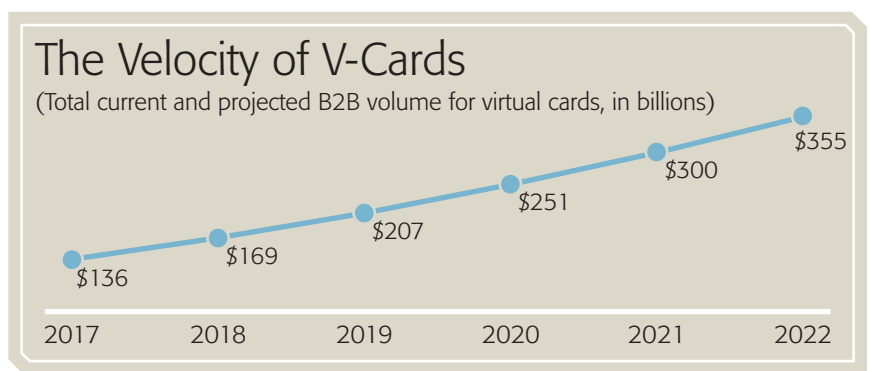
Technology companies and payments providers recently have responded to the rapidly growing opportunity in virtual cards. For example, Noventis Inc. and HighRadius Corp.,

both based in Houston, last spring collaborated to offer software that automates for suppliers the chore of processing and reconciling virtual card transactions while helping them meet PCI security requirements.

Even with a 10% annual growth rate in purchasing volume, commercial cards are barely scratching the surface of an enormous market. All told, they account for less than 1% of a business-to-business payment market estimated at \$150 trillion.

But while virtual cards may be the strongest engine driving the growth of digital B2B payments, they aren’t the only one. Others, Martien says in his post, include “continuing accounts-payable (AP)/accounts-receivable (AR) automation and integration, increasing focus on working capital, [and] improving real-time spend visibility and expense management.” **DT**

—John Stewart



Source: Accenture

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Lessons From the Marriott Hack



Gideon Samid • *Gideon@BitMint.com*

Last month, the world learned that hackers had been violating Marriott's customer database for four long years without being detected. How many similar outfits are being violated as we speak? People in my profession know

that if a breach is detected and there is a chance to hide it from the media, the victimized entity will be desperate to keep it quiet, so it's no wonder the problem is under-reported.

An aggressive cybersecurity industry uses these breaches to sell their product. At the same time, it is being whispered among consultants that a busy, public-serving database with a complex array of access credentials cannot withstand a well-funded, patient, and competent penetration campaign.

In the cyber realm, we are limited to distinguishing between "good guys" and "bad guys" by merely analyzing a sequence of bits. If a bad guy discovers the bit string that the good guy is using to authenticate himself, then he is treated as the good guy.

The bad guys are using two critical strategies: the victim's predictability and a credentials buildup.

When we helped Heartland Payment Systems sort out their embarrassing 2009 mega-hack, we saw the very same vulnerability that we have pointed out to our clients ever since: Hackers exploit our predictability, and overcome our defenses with their unpredictability.

The fundamental solution is to tilt this balance, even a tiny bit, in our direction. This is very hard because the business instinct is to achieve a streamlining of operations by relying on smoothness and predictability. Every time you change a protocol, it's a headache.

Of course, you don't want to go overboard. But a concerted effort to randomly and repeatedly change established procedures is the best preventative for cyber ailments. A single public-interacting protocol modification could nullify an advantage hackers may have worked months to install.

Random, in-depth inspections of transaction trails will uncover treasures. When I was preaching this gospel to Heartland, their chief information officer chided me, saying:

"How about changing cyber security consultants?" "That too," I replied sheepishly.

"Convenience wins every time," lamented another client. "We are so busy, who would initiate changes for the sake of an abstract principle of unpredictability." "Indeed," I answered, "but the few who do—win the cyber war!"

An aggressive defense would use hackers' predictability against them by spotting apparently fully credentialed users who are in fact concealed assailants. So far, we humans have been instructing the behavioral software on what to look for. Soon enough, artificial-intelligence engines will hunt hackers on their own.

Hackers build up access credentials painstakingly, starting with open personal data and moving up to restricted personal data, then to classified data, and finally to highly confidential data. They start with social media to identify the targets. They learn about them through health clubs, homeowner's associations, and other low-security databases, and then climb from there. Hackers remember failing passwords used by sports-club members attempting to log in to the club. Then the hackers try the same passwords over high-security servers they suspect their victims have access to.

We developed a robust solution involving what we call "data fingerprinting" to negate this data buildup. We presented it last summer at a security conference in Las Vegas, and inquiries came from ... China!

Both solutions, insistent unpredictability and data fingerprinting, are neither cheap nor convenient. A straight-talking client confessed: "Your solution will cost me money, but will put a feather in the hat of my successor. Not what I need."

A final note on encryption. Marriott used industry-standard AES 128 bits ciphers. As the famed Israeli cryptographer Adi Shamir (the "S" of RSA) observed: "Mostly, encryption is not cracked but by-passed." The Marriott hackers just built up credentials to have access to the decryption keys.

Strategically speaking, AES and all other mathematical-complexity algorithms are no defense against a smarter mathematician or a faster (quantum) computer. Here, too, executives stubbornly apply a short-range calculus.

Across the Pacific lies a big country taking a very long-range view. Time for the U.S. to wise up. ■

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Cash Discounts: Surcharges by Any Other Name?

Jim Daly

Cash discounts are all the rage as merchants seek to lower payment card acceptance costs. But critics say cash discounts all too often are surcharges in disguise.

Few topics last year drew more interest from independent sales organizations and merchant acquirers than cash discounts. Sessions about the pricing strategy were packed at several regional ISO trade shows. And while the number of merchants offering cash discounts isn't many yet, salespeople in acquiring operations are eagerly peddling the comparatively new service.

So what's ahead for cash discounts in 2019? Supporters predict the tactic will draw more merchants increasingly fed up with paying what they say are high card-acceptance costs, especially for rewards credit cards.

George Sarantopoulos, chief executive of Access One Solutions, a Brooklyn, N.Y.-based ATM ISO that also offers a cash-discount program, says one high-end restaurant client that recently signed on is reaping the benefits. "We save this guy \$5,000 a month," Sarantopoulos says.

Trouble could be brewing, however, because a growing number of critics say cash discounts are really surcharges in disguise.

Cash-discount programs offered by different providers to ISOs vary in their operational details, but information on the Web sites of several discounting

programs reviewed by *Digital Transactions* bears one thing in common: The store or restaurant raises all prices upon starting the program, typically by adding a fee, then gives a discount to cash-paying customers. That would seem to take the actual amount paid back to the original price.

"A cash-discount program itself is surcharging in disguise ... because nothing is discounted," says Alex Nouri, president of EFT-Direct, an Ann Arbor, Mich.-based agent. "It all starts with the first step, which is adding the fee. They're using 'cash discount' to not call it 'surcharge.'"

Widespread Confusion

Proponents say there nothing inherently wrong with cash discounts, or surcharges for that matter, but any card-accepting merchant employing either tactic must abide by payment card network rules governing their use. State laws also come into play in some cases; seven states still ban surcharging.

Meanwhile, confusion about the rules governing cash discounts is so widespread that Visa Inc. in October felt compelled to issue reminder guidance to the acquiring community. Acquirers are charged with enforcing Visa and Mastercard Inc. network rules.

"Visa has received an increasing number of questions in relation to discount offers, or what are commonly called 'cash discounts,'" Visa's notice says. "While there are many different programs being offered to merchants by their processors or agents, the Visa rules on discount offers should be consulted when considering whether a program of this type would benefit the merchant."

Before Visa issued its notice, the big payment processor First Data Corp. reportedly removed several cash-discount apps from its Clover application marketplace for small and mid-size merchants because they violated the rules. Clover offers a so-called smart terminal that can run various business applications in addition to payment acceptance.

The actions by Visa and First Data call into question how long cash discounting will remain the hot new service from ISOs. Strong backers such as Matt Nern, senior vice president of sales and marketing at SignaPay, an Irving, Texas-based ISO that provides the PayLo cash-discount program, predict growth will continue.

More than 7,000 merchants have adopted PayLo since its September 2017 introduction, and a number of other ISOs, including Access One Solutions, offer it to their own clientele.

PayLo merchants "are applying a unified increase, call it convenience

fee, service fee, non-cash adjustment, to all forms of payment, that would apply to all store sales,” according to Nern.

‘You’d Think They’d Look’

For merchants, the economic rationale for cash discounts is obvious: they serve as a buffer against card-acceptance costs. But at first glance, cash-discount programs seem counter-productive for the profitability of ISOs.

“If a consumer pays with cash rather than card, ISOs don’t get paid,” notes payments attorney Jill M. Miller, a partner at Varnum LLP in Novi, Mich.

But there’s more to it than that, say processing executives. Cash discounts can be positioned as an additional service, something to distinguish the ISO in an industry still trying, despite an infusion of new tech-oriented applications from independent software vendors and the like, to fight price-driven commoditization.

Sarantopoulos of Access One Solutions says he works with a number of sub-ISOs across the country. “The ATM market is pretty mature, so a lot of our guys were looking for another product to sell,” he says.

SignaPay’s Nern says PayLo “gives you something to talk about,” and “it certainly does create stickiness.” And stickiness, or greater merchant retention, translates into lower operating expenses.



‘If a consumer pays with cash rather than card, ISOs don’t get paid.’

—Jill M. Miller, partner, Varnum LLP

SignaPay was expecting to lose some payment card transaction volume when it rolled out PayLo, but that hasn’t happened, according to Nern. Millennials, he notes, love their cards.

“We haven’t lost anything out there,” he says. “People aren’t carrying cash.”

Yet many ISOs take the opportunity to pad their margins by raising discount rates up to 4% of the sale when they roll out surcharging and cash-discount programs, critics say.

Network rules cap credit card surcharges at 4% or the merchant’s processing costs, whichever is lower. But since cash discounts can be applied to both debit and credit card sales, ISOs often raise the merchant’s processing rates for debit, too. Higher rates on card transactions often go unnoticed by small businesses, which are

satisfied just to off-load some of their overall card costs.

“You’d think they’d look, but they don’t,” says Adil Moussa, principal of Omaha, Neb.-based merchant-acquiring consultancy Adil Consulting LLC. “Very, very few people look and understand what they’re signing.”

‘A Wild, Wild West’

Payment executives agree merchants, and even people in the industry, get confused about cash-discount and surcharging rules.

Some of that confusion arises from a changing legal environment. Interest in cash discounting and surcharging has risen partly as a result of various legal actions—including the 2012 settlement of a big credit card interchange case and wording in the 2010 Dodd-Frank Act’s Durbin Amendment—that have loosened old network restrictions on merchants’ freedom regarding what to accept, and at what price.

State law also is in flux. As recently as two years ago, 10 states prohibited credit card surcharging, but surcharge bans have fallen recently in California, Texas, and Florida. New York’s ban is under appeal.

In its notice, Visa pointed to gas stations, which for years were the most prominent example of the few merchants that offered cash discounts off of prices paid by credit card-using customers.



‘We haven’t lost anything out there. People aren’t carrying cash.’

—Matt Nern, senior vice president of sales and marketing, SignaPay

“It is important to note that the discount is taken from the regular price of the fuel, and does not constitute any additional fee or surcharge that is removed when the customer pays with cash or a debit card,” the notice says.

Visa then goes on to say that “models that encourage merchants to add a fee on top of the normal price of the items being purchased, then give an immediate discount of that fee at the register if the customer pays with cash or debit card, are NOT [Visa’s emphasis] compliant with the Visa rules and may subject the acquirer to non-compliance action.”

That wording would seem to question the permissibility of many existing cash-discount programs. “There’s only one way to do it right: Everything in the store is two prices,” says Moussa.

Jonathan Razi, chief executive of CardX LLC, a Chicago-based technology provider that offers a surcharge program to ISOs, calls cash discounts questionable.

“The Visa bulletin probably said it best ... any time you add a fee, it’s noncompliant,” Razi says.

Despite requests, Visa did not make someone available to *Digital Transactions* to discuss the guidance. And First Data did not reply to requests for comment about the Clover app removals.

SignaPay’s Nern says “we’re following all the rules” with PayLo. But when asked what was behind Visa’s recent guidance, he says “there is a

A Quick Guide to Surcharging And Cash-Discount Rules

Surcharges can be applied only to credit card transactions, but discounts for cash can be offered on would-be credit and debit card sales.

Cash discounts are legal in all 50 states.

Credit card surcharging is now legal in 43 states and may soon become legal in New York, depending on the outcome of an appeal.

Surcharges are limited to the lower of 4% of the sale or the merchant’s processing costs.

Merchants wishing to surcharge must give 30 days’ notice to their acquirer and the card brands.

A surcharge notice must be placed by the merchant’s front door, at checkout counters, and on receipts.

Programs that add a fee to normal prices, then give an immediate discount for cash or debit card payment, do not comply with Visa’s rules.

Source: Varnum LLP, CardX, Digital Transactions

lot of confusion. We’ve been a bit of a wild, wild West out there.”

Attorney Miller agrees many questions have arisen within the ISO community about cash-discounting and surcharges over the past couple of years.

“That topic comes up over and over again,” she says. “ISOs are always looking for a way to add value to their merchants.”

‘The Pain Point’

While there is interest in both pricing strategies, surcharges apparently still are more popular than cash discounts.

“None of my clients have asked about cash discounts,” says Miller, whose clients include ISOs, payment gateways, and software providers. “I would say a good 40% of my clients are doing surcharge programs.”

The rules about surcharging and cash discounts vary little from network to network, according to Miller and payments executives. While common elements govern both surcharging and cash discounts, the rules have some important differences (box).

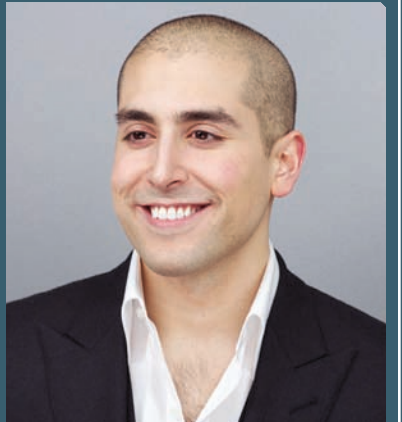
ISOs whose merchants violate the rules run the risk of having their merchant accounts closed down. Despite all the recent questions, Miller says “compliance really isn’t all that difficult.”

Since ISOs often hire tech firms to implement cash-discount or surcharge programs, “it’s important to have a partner that has done the legwork,” Miller says. “Also, they have to be on top of state laws.”

The operational tasks include identification of the card in a qualified transaction, proper calculation of the final price, notification in the case of surcharges of an ISO’s merchant-acquirer partner and the card networks, and proper signage, according to CardX’s Razi.

‘The Visa bulletin probably said it best ... any time you add a fee, it’s noncompliant.’

—Jonathan Razi, chief executive, CardX LLC



“The compliance overhead is so significant—how are merchants going to do this?” Razi says. “That’s the pain point.”

‘Just a Little More Clarity’

In light of all the recent questions, just how much enforcement of the rules can ISOs and merchants expect from their acquirers and, above them, the card networks? The answer depends upon whom you ask.

Anecdotal evidence indicates that enforcement so far has been uneven. One speaker at a regional ISO conference in September said some merchant and ISO violators “just get away with it” (“Surcharging and Cash-Discount Programs Continue To Attract ISOs,” October, 2018).

“I have never heard or had any client discuss with me ... a network or card brand start an investigation,” Miller says. But she adds that “it could

just be my clients are coming to me asking for guidance, not for forgiveness,” since as a group they’re inclined to abide by rather than evade the rules.

Nouri of EFT-Direct says “I highly doubt Visa is going to do enforcement.” But he adds that “I applaud Visa for putting out the statement.”

Razi calls Visa’s notice “a step in the right direction” and believes more enforcement is coming. “As that market grows and grows you are going to see more enforcement from the card brands,” he says. “We are a strong advocate for more enforcement.”

Razi argues that surcharges are a more straightforward way of enabling a merchant to reduce its card-acceptance costs than cash discounting. Despite the negative connotation of the word “surcharge” compared with “discount,” a surcharge program can actually grow the card-accepting merchant base by giving low-margin businesses

an option for offsetting costs, he says.

“We signed more than 3,000 locations this year,” Razi said in early December.

Cash-discount backers believe the good programs will survive the heightened scrutiny. “The sky is the limit for all of us,” SignaPay’s Nern says. All that’s needed, he says, is “just a little more clarity” from Visa and Mastercard.

Sarantopoulos of Access One Solutions says he has many merchants in New York City who are getting hit by rising rents, a tightening labor market, and higher minimum wages taking effect at the end of 2018 and 2019. Small businesses that brushed off Access One’s cash-discount program six months ago are now highly motivated to defray costs, including card costs, he says, adding, “I would say in the next 30 to 60 days our phone is going to blow up.” **DT**

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Buy Online, Steal in Store

Peter Lucas

In just a matter of months, this new e-commerce fraud has emerged to exploit weak or non-existent links between merchants' online and physical stores.

If you're a retailer, what's not to like about offering consumers the option to buy online and pick up in-store?

Most customers who use the service make an additional purchase when picking up their goods (chart, page 20). It provides an edge against the competition, including Amazon. It appeals to Millennials and Gen Zers, who favor self-service channels. And it engenders consumer loyalty by making the customer experience more pleasant.

Consumers are high on it, too. They save shipping charges and enjoy the convenience of having an item picked, packed, and waiting for them in a less than an hour. Plus, they can inspect the merchandise—something they can't do when ordering online.

The convenience and flexibility of BOPIS (buy online, pick up in-store) explain why 67% of consumers said they used it during the previous six months, according to a 2018 survey by omnichannel platform provider Kibo.

For many merchants, that's enough to make BOPIS a big part of their business. A survey by Signifyd, a provider of fraud-prevention solutions,

says that among 83% of retailers surveyed, at least 20% of online sales comes from BOPIS orders.

Safe No More

But for all the plusses that BOPIS offers retailers, it comes with a potentially big pitfall—a significant risk of fraud.

Criminals are flocking to this channel, driven by myriad reasons. Foremost among these is that BOPIS is a card-not-present purchase, which negates the fraud-prevention benefits of chip cards at the point of sale.

Also, BOPIS gets around a key fraud-detection practice used by retailers for e-commerce purchases—vetting the customer's shipping address. It's common for online merchants to compare billing and shipping addresses as a fraud indicator. Some merchants will even go a step further by checking how many miles there are between the Internet Protocol address of the customer's device, and the shipping address. If the distance is too great or the IP address originates in another country, the transaction may be fraudulent.

"The lack of a shipping address for a BOPIS order breaks the relationship between the billing and shipping

addresses that retailers use to detect fraud for an e-commerce purchase, which BOPIS is because payment is made online," says Stefan Nandzik, vice president of marketing for San Jose, Calif.-based Signifyd. "This creates a new problem that cannot be solved using existing e-commerce fraud-detection tools."

Another problem is that the scope of this fraud has not been accurately measured, experts say. A key reason, according to the Washington D.C.-based National Retail Federation, is that it can take from 35 to 40 days for a retailer to determine whether an online purchase was fraudulent. That means BOPIS figures are often under-reported at any given time.

Nevertheless, the NRF estimates that fraud losses represent 3% to 5% of BOPIS sales. Some merchants, however, see losses as high as 10%, according to Signifyd (chart, page 19).

Many experts also say this fraud is gaining momentum fast. "A year-and-a-half ago, BOPIS was a relatively safe transaction. That's not the case any more," says a spokesperson for Riskified, a New York City-based provider of fraud-detection and chargeback-prevention technology.

But the immediate fraud losses make up just one piece of the puzzle. A more vexing problem is that criminals are double-dipping by returning a BOPIS order to nearby stores immediately after pick-up and exchanging the

item for cash or a gift card that can be resold through online exchanges. The problem is an extension of the buy-online, return-in-store scheme criminals use for e-commerce purchases.

Robert Moraca, vice president for loss prevention at the NRF, says return fraud is a loss that's not always associated with BOPIS fraud.

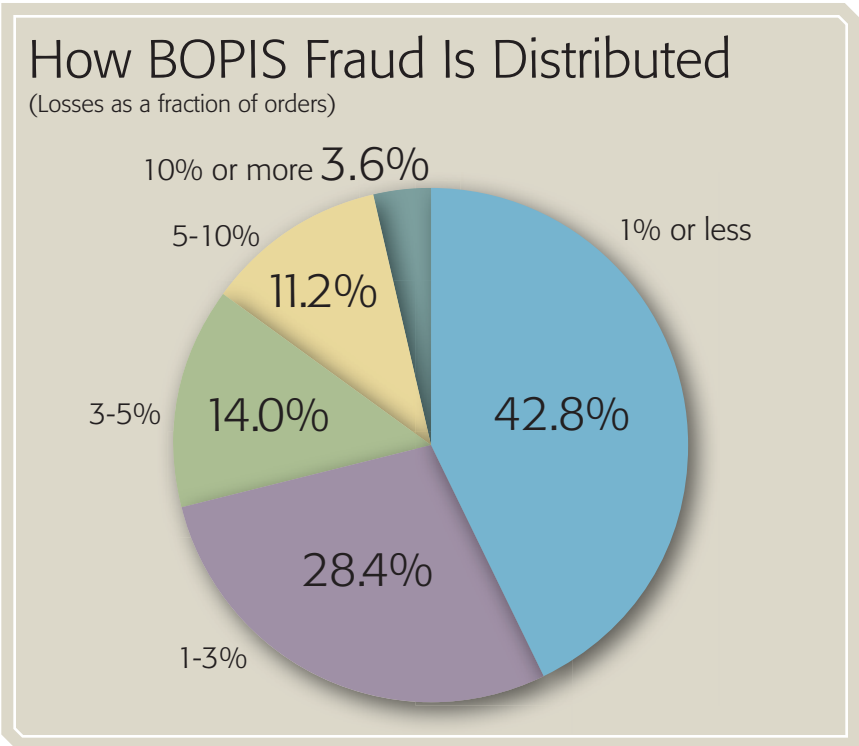
Straw Buyers

With BOPIS fraud on the rise, retailers are scrambling to block it. The challenge they face is how to implement fraud-detection solutions that don't degrade the experience for legitimate customers, experts say.

The option that's gaining traction is a tool that takes into account data on customer behavior to search for patterns within BOPIS orders that can indicate dodgy intent. "This is the direction retailers are moving to fight BOPIS fraud," Moraca says.

Signifyd, for example, has compiled a database of credit card transactions across more than 10,000 merchants containing consumer-order histories. In addition, the company uses behavioral analytics to track how a customer navigates a retailer's Web site. For example, a shopper who conducts a search for more than one product, sorts the results by price, and chooses the highest-priced item in each category without looking at any of the other listed items, may be flagged as a fraud risk.

Other telltale signs can include whether the items being purchased are commonly targeted by criminals for



Source: Signifyd

resale, such as electronics, or are out of character for a consumer's known purchasing habits. Riskified offers a similar solution.

Compiling a database across so many merchants also makes it possible for Signifyd to screen first-time customers for fraud, since it is likely those shoppers have order histories with other merchants in the database.

"If an item is flagged, there are actions we can take to verify the shopper without breaking the customer experience or we can deny the transaction," says Nandzik.

Another step retailers can take that doesn't complicate the order process is to require the customer, when

he comes into the store, to present the card used to make the purchase. That determines that the card physically exists.

"That technique is one jewelers' will use," Nandzik says. "Some retailers that question a purchase may also notify the shopper they can't designate another person to pick up the order."

Nonetheless, many retailers that offer BOPIS allow shoppers to designate someone else to pick up the item. To cover their tracks in case the retailer attempts to verify the identity of the designated pick-up person by validating their driver's license or a photo ID, fraud rings will use straw



'If an item is flagged, there are actions we can take to verify the shopper without breaking the customer experience or we can deny the transaction.'

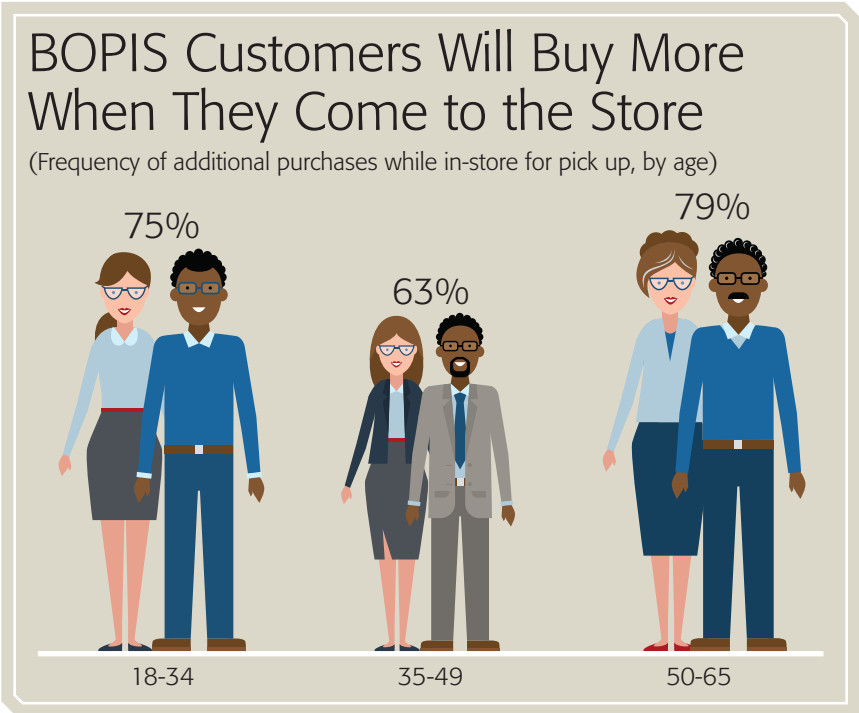
buyers to pick up an item on their behalf. A straw buyer gives criminals cover because they can produce a legitimate ID to collect orders.

But criminal rings have become so proficient that straw buyers aren't always necessary. "It's not hard to make a fake ID that passes a screening test, and many retailers have not trained their staff on how to spot a fake ID," says Julie Conroy, research director for Boston-based Aite Group's retail-banking practice. "Plus, ID-screening technology is not cheap, so there are retailers that won't spend the money on it."

Rather than request additional steps to verify a customer's identity during the online checkout, some retailers will opt to manually review a flagged BOPIS transaction in the hope they can approve it before the customer picks up the item. But that approach poses a serious problem for the many retailers that guarantee BOPIS orders will be ready within an hour.

A scenario in which a consumer expects to pick up an order on her way home from work, gets to the store, and is told the order is still awaiting approval, or worse, has been denied, is not good for the merchant's brand, particularly in the age of social media.

"Manual reviews take much longer to approve or deny transactions, creating added friction for legitimate consumers and often leading to cart abandonment and changed brand loyalties," says Michael Reitblat, chief executive and co-founder of Forter, a Tel Aviv, Israel-based



Source: Invesp

e-commerce fraud-prevention company. "As BOPIS sales increase, this approach alone is unable to keep up with the growing consumer demand and resulting fraud implications."

'A Sticking Point'

What retailers need to effectively combat BOPIS fraud is fraud-detection technologies that combine artificial intelligence software that learns as it goes with continuous human research of fraud trends, Reitblat says. The combination of the two, he argues, makes it possible for retailers to stay a step ahead of criminals' evolving fraud tactics.

"Retailers must be able to leverage all of their offline and online data

to properly understand their users, accounts, and ecosystem," says Reitblat. "Many retailers view their data in silos, not connecting information from online shopping with in-store information, which creates a vulnerability with BOPIS."

Applying real-time fraud-screening technology to the returns process can help cut down on returns fraud, says Erik Morton, senior vice president for product and strategy at CommerceHub, an Albany, N.Y.-based provider of drop-ship-fulfillment technology for multi-channel merchants. "The more (customer touch points) this technology can be deployed the better," Morton says.

The popularity of BOPIS with consumers has prompted some retailers to



'Manual reviews take much longer to approve or deny transactions, creating added friction for legitimate consumers and often leading to cart abandonment and changed brand loyalties.'

expand their offering by installing lockers where consumers can pick up their items at the store without having to go to the customer-service desk. Walmart and Home Depot are two retailers that have begun deploying pick-up lockers at their stores.

While shoppers must have a four-digit code or barcode to open the locker, fraud experts warn that this BOPIS channel is not immune to fraud.

“If a criminal is in possession of someone’s credit card data, chances are they can present an email address or mobile-phone number that will pass a fraud screen to get the codes needed to open the locker,” says Nandzik.

So far, at least, BOPIS fraud does not appear to be a huge problem with orders picked-up at in-store lockers. “Our customers tell us they have less than 1% of fraud on BOPIS orders,” says Georgianna Oliver, chief executive of Package Concierge, a Medfield Mass.-based provider of automated package-locker systems.

One of the fraud-prevention technologies that could come into play is biometrics. Requiring facial recognition or a fingerprint scan at the time of purchase online or at pick-up is one way retailers envision stronger customer validation.

The stumbling block is making consumers comfortable enough with the technology that they will put their biometric data on file. Offering a discount or coupons is one possible solution.

“The registration phase is the most time-consuming part, so it can be a sticking point with consumers,” says Moraca. “The technology is available and consumers do use fingerprint scans to unlock their mobile phones, but right now retailers are only talking about using this technology.”

Indeed, Oliver says Package Concierge has facial-recognition software it can deploy to compare a real-time photo of a consumer picking up at a

locker against a photo on file, but, she adds, retailers aren’t asking for it yet.

‘A Balancing Act’

While retailers understand the tremendous opportunities BOPIS offers, they are also keenly aware of the fraud challenges it poses. That’s creating optimism they can fend off the bad guys.

“Retail loss-prevention and asset-management executives have a balancing act between loss prevention and maintaining the customer experience,” says the NRF’s Moraca. “They are essentially building the plane as it moves down the runway, but they are making progress.” **DT**

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HITTING THE ACCELERATOR

TALK ABOUT MOBILE PAYMENTS. CARD COMPANIES, AUTOMAKERS, AND MERCHANTS ARE READYING TECHNOLOGY TO MAKE CARS A PAYMENT METHOD AS FAMILIAR AS PLASTIC—AND PHONES.
BY KEVIN WOODWARD



An informal consortium of payments companies, car makers, automotive suppliers, and merchants is trying to make it easier, and safer, for consumers to buy fuel, order meals, make a dinner reservation, and pay for parking and tolls while sitting at the wheel using the infotainment systems built into their dashboards.

Doing so requires surmounting a number of daunting challenges, among them forging new business relationships, making automobiles secure payment environments, and developing transaction processes that don't interfere with driver safety and create more distracted-driving issues.

Enabling in-car commerce is more than adding fuel-station icons to a GPS map or cautioning motorists not to use their phones to order a pizza for pickup. It's about making the car a Web-connected device that acts as a channel for moving payments from the consumer to the merchant. If anything, it's the ultimate in mobile payments.

The potential value of such transactions is an enticing prospect. By 2022, there could be as much as \$4.2 billion in payments made via car dashboards, Visa Inc. says. On a larger scale, the global potential could be as much as \$253 billion by 2025, according to Machina Research, a unit of Gartner Inc., a Stamford, Conn.-based research firm. Telco operator AT&T Corp. said in October that 24 million cars were connected to its network and that it has relationships with 29 global car brands.

Some key steps already have been taken. More than a year ago, General Motors Co. launched Marketplace, its in-car app store that includes brands like Dunkin' Donuts, Shell, and ExxonMobil. Once a consumer links her account for any of the brands to the in-car app, she can then select purchase options using the dashboard infotainment screen.

GM is not alone. Hyundai announced in May that development had started on an in-car wallet that could be used for payments. Xevo Inc., the Bellevue, Wash.-based developer of GM Marketplace, also is helping Hyundai with its digital wallet.

Hyundai said it expects initially to offer in-car fuel payment at Chevron and Texaco stations, as well as the ability to order and pay for Applebee's to go and to find, reserve, and pay for ParkWhiz-enabled parking.

In 2017, Jaguar and Shell launched an in-car payment service for fuel using PayPal or Apple Pay via the car's touchscreen.

'THE POST-PLASTIC WORLD'

Drivers are not only a captive audience, many spend a lot of time behind the wheel, especially those that face 45-minute commutes or road trips. Part of the reason for the escalation of interest in in-car commerce is to let consumers choose ways to make purchases during their time in cars.

"The potential is significant, as it could simplify and accelerate transactions that either take place in the car or are adjacent to the vehicle, like fuel or quick-serve restaurants," says Thad Peterson, senior analyst at Aite Group LLC. "The rate of growth depends on how the payments ecosystem is implemented in vehicles."

Figuring out how the payments ecosystem intersects with automobiles and driving is exactly where much work remains to be done.

Visa took a big step in that direction when in 2017 it hired Olabisi Boyle away from Fiat Chrysler Automobiles. At Visa, Boyle's title is vice president

A DRIVER TAPS THE DASHBOARD DISPLAY TO PAY FOR SOME SHELL GASOLINE.

(PHOTO: GM)



for the Internet of Things platforms. Boyle's last position at FCA, where she worked for 12 years, was director for engineering, planning, and technical cost reduction. She worked eight years at Ford Motor Co. prior to FCA.

Visa sees its role as an enabler for in-car commerce, Boyle says. "We want to partner with companies that know how to deliver technology to the OEMs," Boyle says, referring to the original-equipment manufacturers that supply components to automakers. Suppliers to Detroit automakers and startups developing alternative-fuel vehicles are among those being eyed.

"In the post-plastic world, basically anything can be a point of sale," Boyle says. That means one of the critical payments technologies making in-car commerce possible is tokenization, which masks the actual card number with a randomized string of digits that if stolen would yield no connection to the underlying credit or debit card.

Though tokenization has been available for many years, it began to get widespread adoption only after the card brands began tokenizing cards in 2014.

'CONVERSIONS ARE GREAT'

At GM, Scott Goddard, Marketplace senior manager, has had about a year to learn how consumers interact with the in-car commerce available in

their dashboards. "Some people will never do this," says Goddard, but it's important that they know the capability exists. Marketplace use is an opt-in choice for motorists.

While highlighting the convenience and service for the consumer, Goddard says merchants also reap rewards. "The opportunity, being about 4 million cars, may not be as big as others they've had, but the merchants who have [participated] have said the conversions are great," he says.

The Marketplace app is embedded in the dash. Hence, the vehicle is its own device, Goddard says. There is no need to link a cellphone, and no separate data plan is needed. GM has offered 4G LTE connectivity in its cars for four years, Goddard says.

No payment information is stored in the telematics—the term for vehicle systems that meld telecommunications and vehicle data—or in the SIM card in the car. "All we've done is give the ability to link that existing account to the in-dash experience," Goddard says. The car passes a secure token to the merchant. "The merchant has the ability to say, 'I know that secure token is associated with that user and this password.'"

There essentially are two types of transactions within the Marketplace, though they may look the same to the consumer. Goddard labels them deep transactions and lighter ones. Deep transactions



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AN INFO-TAINMENT DISPLAY SHOWS SOME OF THE BRANDS AVAILABLE IN THE GM MARKETPLACE APP.

(PHOTO: GM)



extend beyond the payment and enable loyalty and offers between the brand and its consumers.

Merchants want ways to bring their loyalty programs to consumers wherever they may be, he says. “We’re not necessarily interested in reinventing the wheel when it comes to transactions,” Goddard says. “We learned it was easier for GM to stay out of that relationship.”

As an example, consumers with a Dunkin’ Donuts account would tap the donut shop’s icon on the Marketplace screen to authenticate themselves and link their account to the Marketplace Dunkin’ Donuts app. Preferences, such as saved payment methods and favorite foods and beverages, are shown on the vehicle’s dashboard screen instead of on the smart-phone display.

“We give the driver a few options,” Goddard says. “You find that consumers are creatures of habit. They have their coffee in the morning or their favorite Friday night restaurant.”

The lighter transactions might be simply filling the tank or paying for parking, which could happen anywhere and with any parking provider. “How can we make it so when you pull up to any gas station you can activate a pump, not just at your Shell or ExxonMobil station?” Goddard says.

Xevo, developer of the Marketplace technology, said 71% of surveyed drivers said it would be useful if

their car’s in-dash system allowed them to order food or coffee so they could pick it up when they arrive. Sixty-nine percent said paying for fuel the same way would be beneficial.

The GM Marketplace, now a year old, validates this demand, says Dan Gittleman, Xevo chief executive. “GM Marketplace has experienced above-average user engagement and click-through rates for merchant-partner experience,” Gittleman says. “As more and more merchant brands join platforms like GM Marketplace, there are even more opportunities to engage with potential customers and grow the in-car commerce market.”

TAKING THE INITIATIVE

The global market could be worth as much as \$63 billion in transaction value in 2021, says Juniper Research, a United Kingdom-based advisory firm. “It’s primarily limited by the refresh rate of cars, as well as specific partnerships,” says analyst James Moar. “It’s tied to specific deals at the moment, and will need a more universal set of payment mechanisms before it can become more widely adopted.”

That’s why Visa is taking the initiative, Boyle says. “All the technology supporting a seamless experience that works for the consumer currently exists today,” Boyle says. “It’s not like it’s new technology that has to be invented. To make this work for the consumer, all of this has to be integrated for the



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A MOCKUP OF THE CONFIRMATION SCREEN FROM THE HYUNDAI DIGITAL WALLET IN DEVELOPMENT BY XEVO.

(PHOTO: XEVO)

consumer.” Visa, she says, wants to use its leadership position to form one system.

A likely approach is to adapt the digital wallet to the car experience, Boyle says. Consumers would store multiple payment methods or accounts in a single digital account that would be accessed by the in-car commerce system.

But just exactly which payment model or models will become dominant is uncertain for now. One prospect is that the automakers or their commerce-technology suppliers would levy fees for providing in-car payment services.

“With the advent of OEM pay solutions, if cars can be another way to extend those, then Apple, Google, Samsung and the rest can charge transaction fees from cars in the same way as they do for other channels, which benefits simply from an increased transaction volume,” Juniper’s Moar says. For now, GM does not charge any fees to consumers to use the service, which is being funded by merchants, Goddard says.

One vision that Visa shares in a video shows a motorist authenticating herself by looking into the rearview mirror to complete an iris scan. As she drives to pick up her friends to attend a concert, the car alerts her to low fuel and asks if she wants to fill up. A “yes” reply routes her to the nearest station, where the car authorizes the pump and completes the payment.

After picking up a friend, the motorist and her passenger decide to get coffee for themselves and two other friends. Again, the driver is routed to a coffee shop and pays for the beverages using a digital wallet attached to the car.

Such a concept, and Boyle stressed this is just that for now, would involve OEM suppliers, carmakers, merchants, and payment companies. It would tap into artificial intelligence and use application programming interface code to issue alerts about low fuel or when passing a favorite merchant, she says.

Relying on the Visa Token Service to secure the card data, the system sends a token to the merchant once the transaction authorization is received. There would be another API to alert the consumer when rewards are available. “The consumer just wants this convenience while in the car,” Boyle says.

Gentex Corp., an OEM supplier based in Zeeland, Mich., could have a key role in this scenario. It offers a rearview mirror that has a built-in toll module. As the car passes through a toll booth, the module can verify payment. In the future, it could be used for paying for parking, fueling, and food purchases, Gentex says. Audi is the first customer to offer the integrated toll module in its vehicles.

“It allows automakers to offer yet another connected-car feature to their customers and benefit from an ideal, high-performance transponder location,” says Craig Piersma, Gentex director of marketing and corporate communications. “Motorists benefit by convenient, unfettered access to the country’s toll roads while eliminating toll-tag windscreen clutter and the need to manage multiple toll accounts.”

‘WE’RE REALLY MOTIVATED’

As a carmaker, GM wants to enable convenience, but it must do so in a safe and distraction-less way, Goddard says. GM is “very conscious” of this digital transformation, evident not only with the burgeoning in-car commerce market, but also in how smart-phone use has become a daily interaction for many, he says.

THE GM MARKET-PLACE APP FOR APPLEBEE'S.

(PHOTO: XEVO)



"We think it's just what we have to do," he says. "It's a big decision factor when buying new cars. There's also the drive for safety and security. You start to see people get into accidents because they're fumbling with their phones. The question always is, how does in-car commerce get enabled that adds to the consumer's productivity in a safe manner?"

That's where a company like Xevo can play a vital role. "Payment transactions from motor vehicles are designed to reduce driver distraction and simplify the payment process," Gittleman says. "The interface is designed with large buttons and minimal text, so it is easy for drivers to see without having to take their attention off the road. Drivers are able to complete transactions with a few simple taps on their in-vehicle touchscreens."

Motorists are acutely aware of the potential for distracted driving in general. Forty-nine percent of those surveyed by the AAA Foundation for Traffic Safety this year said they recently talked on a hand-held phone while driving, and 35% sent a text or email.

Gittleman says the technology for in-car commerce strictly adheres to national safety guidelines for vehicle technology. In 2015, the National Highway Traffic Safety Administration proposed guidelines for in-car commerce systems, such as limiting actions to one hand only and disabling social-media browsing while the car is in motion.

All this work, of course, is done with the potential in mind to increase the volume of electronic payments and to further personalize a consumer's interaction with her vehicle. It's going to take time, though.

"There are a lot of different players and ecosystems to penetrate this space," says Aite's Peterson, and "I'm unclear on what [the payment companies'] role will be beyond providing basic payment functionality to other parties."

Visa sees its role as an enabler for in-car commerce. "There are a lot of revenue-generating touchpoints," Boyle says, such as parking, ordering food, and paying for fuel. The technology must offer a unique selling proposition, she says.

Carmakers are interested, too, not only because of the convenience such embedded systems offer, but also because it could be a way to earn more revenue, such as from more car sales.

That's a large reason for GM's enthusiasm for the technology. "We're really motivated to be the first to market with a lot of this technology," Goddard says.

If consumers want this experience, the only way to get it, at least for now, is to drive a new GM vehicle. GM says it wants other carmakers to join the effort to change how consumers interact with their cars. "We have to work together to change that behavior," Goddard says. **DT**

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The SRC Express

John Stewart

A network-sponsored spec for streamlined digital payments rolls toward implementation later this year, promising cleaner checkouts but also stirring questions about how it will work.

Remember all the excitement last spring about a so-called common buy button the major card networks were working on (“The Shared Checkout’s Slow Check-in,” June)? Well, that concept—faster, easier, and more secure online checkout—is now much closer to reality. And while the Secure Remote Commerce specification was understood to apply to e-commerce, the clearer picture that has emerged in recent months indicates the spec will apply also in emerging technologies like the Internet of Things and voice commerce.

What has also become clear is that the networks aren’t the only parties trying to work out a better consumer experience online. A technical body called the World Wide Web Consortium has been designing a specification for browser-based payments not just from cards but also from bank accounts. Alphabet Inc.’s Google unit has already adopted it, with more deployments in the works.

Now the two specs are barreling toward the finish line on parallel rails, and experts are starting to sweat the details on how they will interact.

So when will the SRC, shared check-in and all, become a commercial

reality? American Express Co. says it will have something in the market by the middle of the year. Visa Inc. likewise says first half of 2019. But this is a complicated enterprise.

“We’re only at the spec level. Nobody has developed the actual application,” says Thad Peterson, a senior analyst who follows digital payments at Aite Group LLC, a Boston-based consultancy. “I think we’ll see an execution [this] year. I don’t think we’ll see scale.”

And skeptics fret that SRC could pose serious challenges. “The question remains with implementation. That’s where we have fears,” says Laura Townsend, senior vice president of operations at the Merchant Advisory Group, a payments-focused trade association for the nation’s biggest retail chains and airlines.

‘Tons of Questions’

SRC is the brainchild of EMVCo, the standards body run by six big card networks, including American Express, Discover, Mastercard, and Visa. In coordinated fashion, the networks released a close-to-finished SRC spec, dubbed version 0.9, in October and asked for comment, setting a Dec. 3 deadline. And, in an

unusual move, EMVCo allowed entities submitting comments to indicate whether they wanted them to be public or private. Visa says about 130 comments had been submitted by the deadline, but at the time of this writing the public comments had not yet been posted.

Based on the submissions he had seen by early December, “There were no big surprises,” says TS Anil, global head for payment products and platforms at Visa. “We’re feeling pretty good about the process and the feedback to it.”

SRC represents an ambitious effort to fix two glaring problems in e-commerce: clunky checkouts and rising fraud. Both problems, observers say, are only getting worse.

The degree of difficulty and confusion besetting consumers once they proceed to checkout is important because for some consumers the slightest inconvenience can result in cart abandonment (chart, page 31). The overall average abandonment rate varies by source, but most sources put it at well over 60%, though it’s typically higher on mobile phones than on desktop machines.

SRC seeks to fix this problem with a smoother flow and a swifter checkout based on card credentials and shipping information already enrolled by the consumer. The spec envisions a cleaner checkout screen featuring not the usual jumble of buy buttons but a

single SRC button that would lead to the registered card or to other choices enrolled by the consumer.

The result, say the networks, should be less frustration and a higher completion rate at checkout. “It’s incredibly hard to put numbers on it, but we certainly expect abandonment rates to drop,” says Anil, though not all at once. “It will be a buildup,” he cautions, though he points with optimism to how the spec will make for sleeker transactions in emerging technologies like the IoT.

“The next two-to-five years is the real journey,” says Anil. “There will be new form factors. Ultimately, any digital experience [should incorporate SRC].”

Given that many of the common causes of abandonment relate to the checkout, he could be right. But observers aren’t so sure. “The process flow is pretty complex,” warns Aite’s Peterson. “I still have tons of questions about how this is going to work.”

Indeed, SRC may well reduce some of the clutter but not all of it, he argues, since it applies only to the major card



‘We shouldn’t have to choose between security and our routing rights.’

—**Laura Townsend**, senior vice president of operations, Merchant Advisory Group

systems. Non-EMVCo payment systems, such as PayPal or Amazon, aren’t contemplated in the spec.

Dodgy Transactions

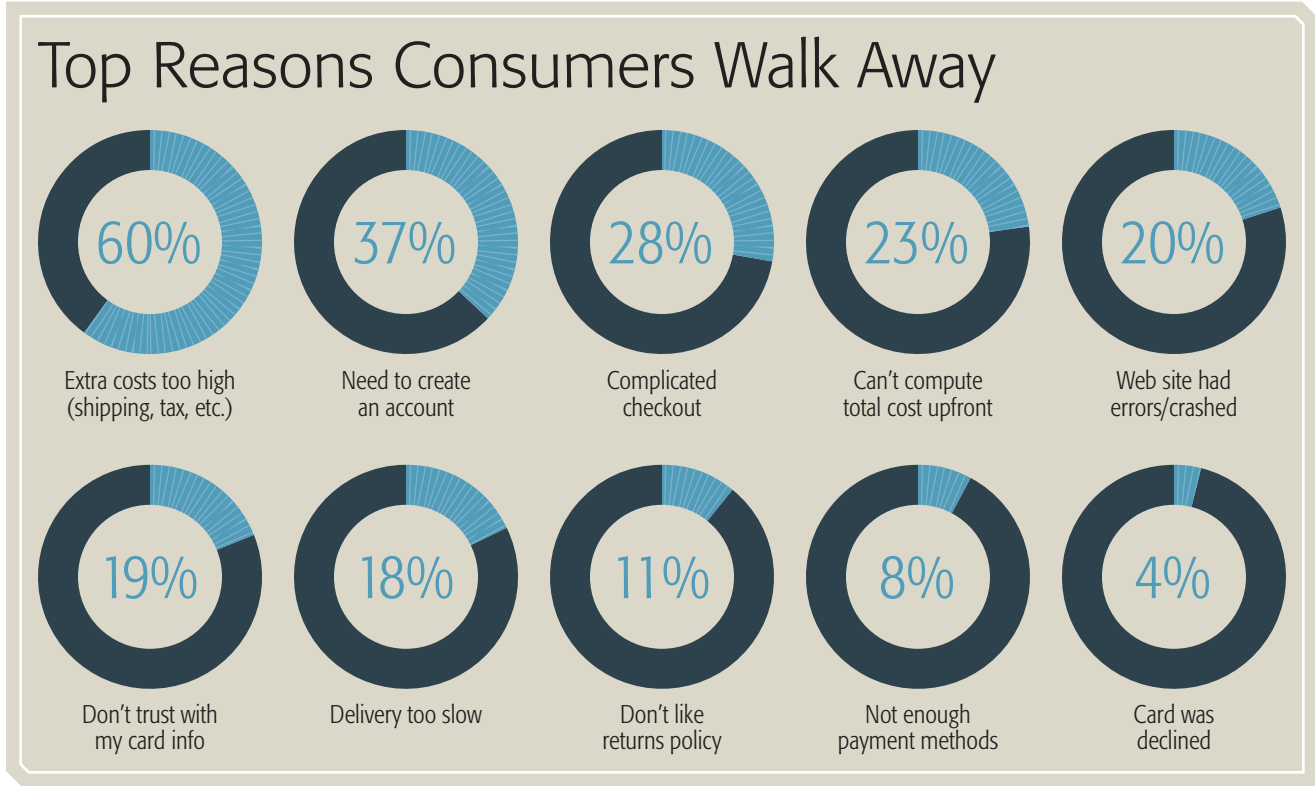
Nor can anyone be sure how well SRC will tackle fraud until it has been fully deployed. Losses from dodgy transactions have long been a problem in online commerce, but they have grown worse in recent years with the U.S. rollout of EMV chip technology in physical stores.

A study out last month from LexisNexis Risk Solutions, for example, found a 35% increase in just one year in fraud attempts at online stores (chart, page 32).

EMVCo has already updated its online authentication standard, 3-D Secure, to make it much more sophisticated and less likely to interfere with merchants’ interaction with customers. SRC now adds a tokenization regime that will mask card credentials with randomized bits of code.

That reliance on tokens, though, is what has some merchants concerned. They’re not worried so much about the spec itself, but rather with business rules applying to SRC transactions.

For example, network rules concerning tokens could interfere with merchants’ freedom to route debit transactions to the network of their choice, argues the MAG’s Townsend,



Note: Survey gathered 1,799 responses from U.S. adults. More than one answer allowed. Source: The Baynard Institute, 2017

Online Fraud Accelerates

(Average number of reported fraud transactions per month)

2017

Total Attempts: 193

66 Attempts Prevented

127 Successful Attempts

2018

Total Attempts: 260

118 Attempts Prevented

142 Successful Attempts

Note: Based on self-reported data by selected small, midsize, and large e-commerce merchants. Source: LexisNexis Risk Solutions

if the rules prevent outside networks from decrypting card data.

“We shouldn’t have to choose between security and our routing rights,” she says.

Visa’s Anil argues this is a non-issue. “That should not be a concern,” he says. “Visa is tokenizing the transaction, we’re standing by the security.” Cases where networks can’t decrypt the credentials behind a transaction also shouldn’t occur, he says, as merchants “get the associated data.”

The Other Spec

But the SRC spec isn’t the only blueprint looking to enable sleeker and more secure transactions online. The major networks are also participating in the Web Payments Working Group, a committee formed in 2015 by the World Wide Web Consortium, or W3C, as it’s known, to create a standard for browser-based payments.

The group, which also comprises tech companies and financial institutions, is looking to exploit the insight that browsers already serve as repositories of multiple bits of information, including shipping addresses and sometimes payment data.

But while the SRC and W3C specs have a common objective, the latter’s scope is broader, as it would enable payments based on both non-card and card information.

“We’d like to support methods like cryptocurrency and Klarna, for example, though we include card payments,” says Ian Jacobs, a W3C spokesman.

At the same time, the W3C initiative is limited to the Web, while the SRC spec contemplates environments not necessarily dependent on the Web. Where the two initiatives intersect, then, is where they might find scope to work together, Jacobs adds.

The W3C spec contemplates two application programming interfaces, a Payment Request API and a Payment Handler API. The former issues a call for payment credentials, shipping data, and contact information that can be interpreted and fulfilled by the Payment Handler, typically a digital wallet.

The Payment Request API has already been adopted by Google’s Chrome browser, while the Handler API is expected later this year. A prototype of the complete system should be in place by year’s end, Jacobs says.

How Many Wrinkles?

How to get the two specs to work together is the next question. “We will see experiments with SRC in 2019,” Jacobs predicts. Much needs to be worked out yet, but one possible scenario, he says, involves the user selecting a card in the Payment Handler, which would call out to the SRC environment for data that it would then pass on to the browser.

“We’re still very much in discussions” with the SRC initiative, Jacobs cautions.

The good news out of all of this for the payments business is that, one way or another, smoother, more secure e-commerce is coming. How soon will depend on how many wrinkles need to be ironed out, and how big an iron will be required. **DT**



‘I think we’ll see an [SRC] execution [this] year. I don’t think we’ll see scale.’

—Thad Peterson, senior analyst, Aite Group LLC

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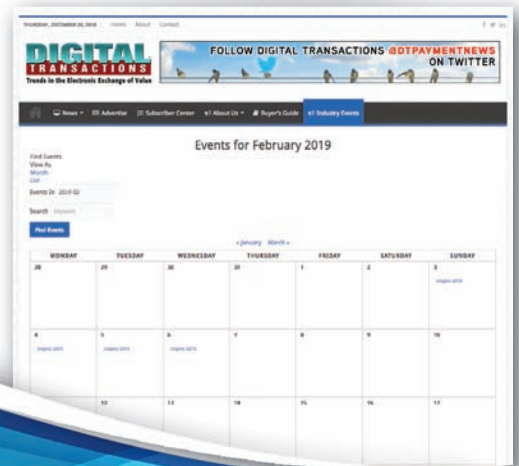
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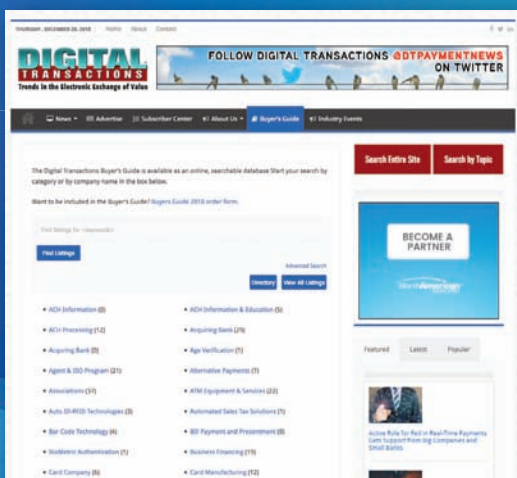


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Plumbing Meets Human Reasoning

María Arminio and Bo Berg

To make faster payments a reality, decades-old core systems have to be streamlined. Here's an approach that relies on artificial intelligence to avoid the system overhauls that have been tried in the past.

The Federal Reserve's faster-payments initiative has created a catalyst to improve core systems to respond to the demands of real-time authorization and settlement of transactions, and to provide the recipient with irrevocable access to funds upon receipt.

Mundane as they might be, core systems function as the plumbing of the payments infrastructure. These systems support the daily banking functions related to deposit and loan transaction processing, including eligibility determination and access to general-ledger and back-office servicing. To say that the systems are legacy is an understatement. Most baby boomers were at the early stages of their careers when these systems were first implemented.

The risks associated with making any changes to these inflexible, inefficient, and outdated core systems often outweigh the benefits. The transaction-processing and database functions are inexorably tied together, making it extremely difficult integrate these legacy systems with new applications and products not only to create product interdependencies, but also to support complex risk-management

frameworks and the associated information reporting. Furthermore, these systems do not support multidimensional views of the customer or cross-channel access.

Next-Generation Core Systems

The movement in the late 1990s and early 2000s to completely replace core systems with enterprise payment switches failed. A complete system overhaul proved to be too much to tackle. The next-generation core systems were destined to be updated incrementally, particularly focusing on improved access to data sets across multiple systems and channels.

Yet, faster payment requires system enhancements to support three important functions: (1) faster access to data and the ability to retrieve information from multiple sources; (2) quicker decisioning processes, facilitated through enhanced analysis capabilities; and (3) a higher degree of accuracy, increasing the level of confidence in the quality of the information, thereby reducing risk.

How do we move to the next-generation core system to support

this functionality without a complete replacement of legacy systems? The answer is to design core systems to separate the presentation layer (i.e., channels) and customer data management from the transaction processing, settlement, and accounting functions.

These modifications will be facilitated using open application programming interfaces (APIs) and incorporating a middle layer. New technologies can then be applied in targeted application areas to further remediate the legacy-system shortcomings.

AI As a Strategy

Here's where artificial intelligence (AI) is key. AI uses human reasoning as a guide to provide better services or create better products. While APIs provide access to internal and external data sets that have been historically siloed, AI marries these data sets for enhanced onboarding and risk profiling.

AI can not only enhance the authorization function but also provide a deeper understanding and multidimensional view of the customer and his/her behavior. AI will be part of any core system enhancements, providing a better understanding of what the customer is doing.

The use of AI is emerging in three areas relating to security and compliance, namely: identity management,

access management, and know your customer (KYC). Here's a look at all three:

Identity Management

Identity management is the process of verifying and authenticating the identities of individuals and corporations. It requires access to robust data sets and incorporates the use of both static and dynamic biometric data as the basis for user authentication. As part of the identity-management process, AI analyzes user behavioral patterns and activities and detects anomalies automatically.

Identities are registered as part of the onboarding process and maintained in identity directories. Identity management is not limited to consumers but includes businesses as well. A business-to-business directory from NACHA, the governing body for the nation's automated clearing

house network, provides an example of how this might be structured using blockchain technology.

Access Management

Access management goes hand-in-hand with identity management. It enforces policies and access rights to all of the data sets. AI will be embedded into future products' enabling systems to learn about the user for access management. User names and passwords with algorithms will be replaced by smart systems that verify identity. Access management will move from being user-controlled to machine-controlled, thereby improving overall security and enabling regulatory compliance.

Know Your Customer (KYC)

KYC is all about truly knowing the identity of a customer or company and parsing those data sets into meaningful buckets so that due diligence can be

performed. KYC entails the comprehensive collection of personal information about a customer or business as part of the onboarding process and ongoing management of customer relationships. It must be a dynamic process, tracking the activity of customers throughout the life-cycle of the customer relationship.

AI enhances the KYC data-collection process, particularly in helping to identify high-risk customers. AI takes the information available from disparate internal and external sources, puts all this information together, and makes sense of the data. AI automation parses multiple data sets, creating associations with many different types of data instead of just a single piece of information.

These data sets include account data, payment components, customer history, credit-score profiles, static and dynamic behavioral patterns, and



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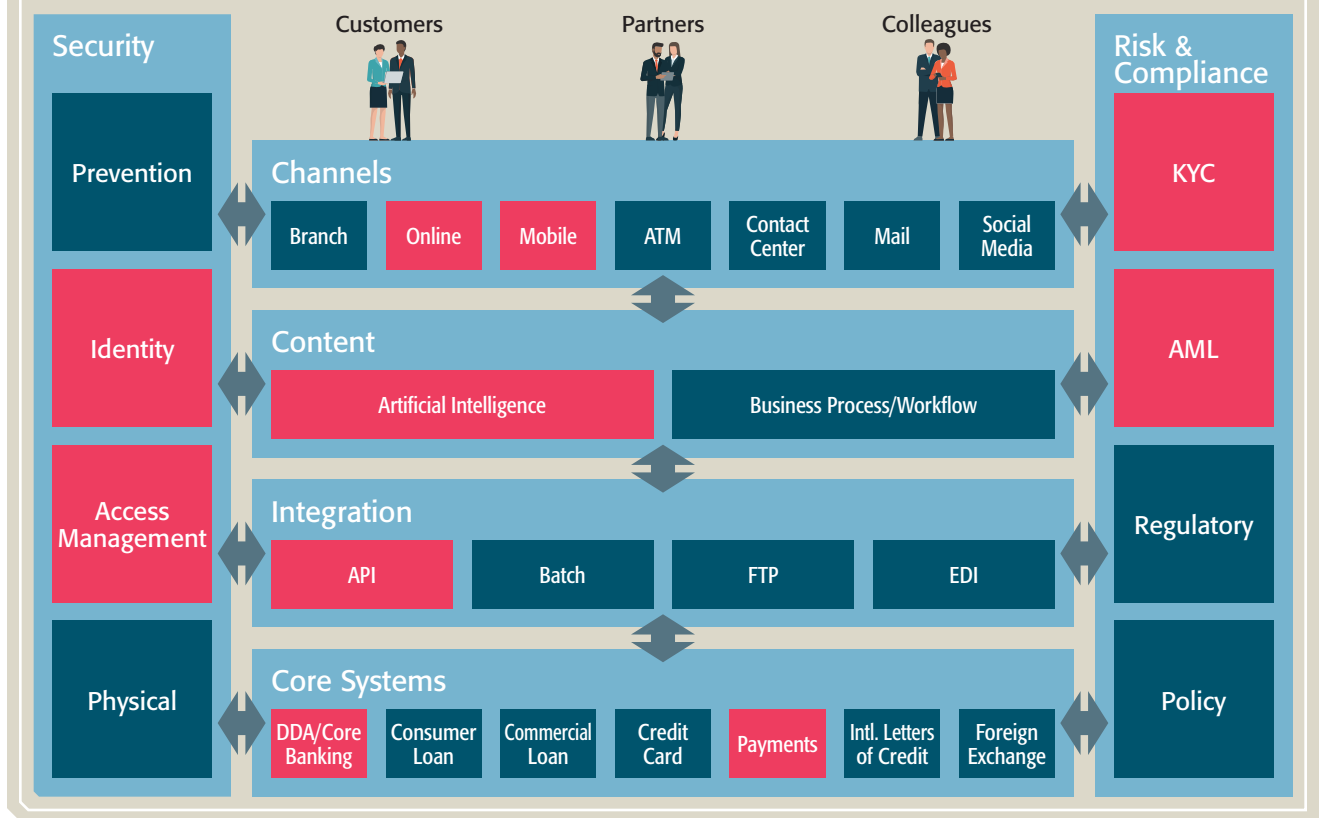
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Reference Architecture for Faster Payments With AI

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even societal data from social-media sources. Although these data sets are constantly evolving, AI can help with both their movement and activity. AI can also be used to evaluate the accuracy of the data sets.

AI automation partitions raw data flows by tagging, analyzing, and delivering enhanced data. AI compiles all this information and builds a customer risk profile, including a credit risk score. AI will be instrumental in supporting real-time data verification of KYC—an essential requirement for faster payments.

The development of accurate risk scores supports faster and more accurate real-time decisioning. For example, AI enables real-time anti-money-laundering background checks and performs sophisticated verification services simultaneously.

AI is used to create clear definitions of policies and procedures beginning at enrollment or product introduction.

Human analysts can use this enriched data to examine relationships and draw conclusions about the customer or business risk profile. Ultimately, these people are in control and they will decide what needs to be hardened in the proof-of-concept to move to real-time decisioning at the point of transaction.

What's Your AI Strategy?

Industry specialists can help organizations develop a strategy to identify the low-hanging fruit and to update, modernize, and enhance customer information sets so they work more efficiently with the faster payments real-time authorization requirements. The reference architecture (see diagram) suggests a point of departure for getting started.

We need to change our current thinking. Most financial institutions think they are in the business of moving money, but their business is really about monetizing information

the same way Google, Facebook, Amazon, and Netflix do.

These behemoth information companies treat client information as an asset, creating new products and services based on customer behavior and patterns, and innovating based on an understanding of how, when, where, why, and what the client is doing.

A comprehensive approach to AI used in combination with native APIs and business rules and logic will securitize next-generation core and digital platforms, resulting in safer, more efficient, and predictable payments and thereby supporting the faster-payments initiative. **DT**

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Managing Real-Time Payment Risks

Donna Turner

Person-to-person transactions in real time pose unique risks. Here's how to manage them while ensuring a great experience for users.

Splitting the lunch bill. Paying a friend back for picking up those last-minute tickets. Covering the cost for your kid's college textbooks. Each of these scenarios represents an opportunity for digital payments to replace cash and checks. But the question remains: What are financial institutions doing to ensure your payments are easy, fast, and (most important) safe?

The demand for digital person-to-person payments has grown rapidly, and as more people use the capability and experience it for themselves, continued growth is almost certain. Aite Group sized the U.S. P2P payments market and projects over 200% growth from 2015 to 2020—from \$100.3 billion to \$316.6 billion.

However, this move to real-time payments comes with a very real set of risks that FIs must be aware of and prepare for. It isn't enough for fraud executives to stick with their current tools and expect positive results in real-time fraud protection. It takes a strategic approach to foster a fraud-risk environment that balances loss mitigation with the desire for a frictionless customer experience.

Here are four common risk moments and some mitigation strategies for banking professionals to consider:

1. Registration Fraud

Knowing that customers are who they say they are is vital when protecting real-time payments. Once a customer is ready to initiate a real-time payment, it's too late.

FIs must strengthen their application controls and perform a series of identity-validation and authentication checks on consumers before they even initiate a payment. They can do this using state-of-the-art identity-proofing data sources. This is in addition to validating the consumer based on information from layered authenticators, such as device intelligence or data directly from the mobile network operators.

2. Account Takeover

Account takeover (ATO) fraud occurs when a fraudster impersonates a customer and takes over their account. According to Aite Group, this is the single largest type of fraud that FIs are facing in digital channels.

For most FIs, this is nothing new, but it takes on an added sense of urgency with real-time payments due to the expediency of funds availability. Accounts only need to be controlled for a short while for damage to be done that is increasingly difficult to reverse.

As ATO continues to grow, it further proves the necessity for upgraded authentication measures that can protect customers' accounts and keep fraudsters out.

3. Mobile Threats

Although some fraud executives believe the mobile channel is easier to secure than online, there are several threats that are unique to the mobile channel that FIs must guard against.

These threats include phone-number ports, spoofed calls, SIM card swaps, and mobile-specific malware that can infect the device. Threats such as these can allow a fraudster to appear to be a legitimate customer and defeat fraud-prevention steps performed by the FI.

Malware that detects one-time passwords and forwards them to a fraudster is another very real threat that allows criminals to take over accounts and steal funds. A layered approach that combines network, device, and behavioral data can help thwart some of these mobile threats.

4. Consumer Understanding

The lack of understanding by many consumers on how real-time payments work and the ramifications of faster funds availability is another large concern for FIs. Some of the incidents stemming from payments systems are based on misdirected funds and lack of consumer knowledge.

Consumer education and reinforcement of proper etiquette with real-time payments are musts to maintain a successful payment system and cut down misdirected payments. For example, payments through Zelle are typically considered direct and irrevocable, so consumers must only transfer money to people they know and trust.

By contrast, paying from a third-party site to someone you've never met for concert tickets is definitely not a recommended best practice. The appropriate ways to use real-time payments must be communicated to the consumer.

Actionable Best Practices

In the world of fraud, it is wise to be prepared for the worst, as it then becomes less likely to materialize. Fraudsters are constantly reinventing themselves and their methods of attack. Those offering real-time payments may become targeted by these groups and that could result in a higher probability of attacks.

Mobile network operator data is one option that can be leveraged to cross-check customers' information directly with the mobile carriers. This technology can alert FIs as to whether a phone number or device has been recently ported or had ownership changes or a recent SIM card swap—all of which could be reason to deny access or to step up authentication. Having access to this data is pivotal in securing the mobile channel.

Additionally, FIs have technology that can bind the customer's device through a unique identifier that is recognized in future logins. If that identifier is not recognized, an FI can similarly engage in stepped-up authentication to further validate the customer. And device intelligence can be integrated into an FI's digital-security suite to help identify the health of a device and identify the malware or other threats impacting the device itself.

FIs should always be evaluating their fraud protection to make sure

there are no gaps as it relates to emerging threats or changes in technology. A layered approach of authentication capabilities is always key. This can incorporate passive, behind-the-scenes authenticators such as MNO data, along with active, stepped-up authenticators.

This approach will help balance friction and risk within the experience for legitimate customers, while making it much more difficult for fraudsters to gain access.

Having proper intelligence on current offerings, key threats, and vulnerabilities is a straightforward step, but a very necessary one that is sometimes overlooked.

Other Security to Consider

As FIs think about offering real-time P2P payments, what are the particular considerations that need to be taken into account to use accurate and up-to-date phone numbers and/or emails when sending payments?

In most real-time P2P payment networks, mobile-phone numbers or emails are used as "tokens" to be the unique identifiers for consumers participating on the network. These tokens enable consumers to receive payments by linking directly into the bank and the account they've designated at time of enrollment.

More important, they are the key to an inherently safer digital-payments experience, an experience that removes a consumer's personally identifiable information (PII) from the equation, along with their sensitive bank-account information.

The concept of the token as an identifier is intrinsically important as more and more consumers are making every effort to protect themselves in digital channels. But it is equally important to ensure priorities such as token management and portfolio contact information cleanup and maintenance are also monitored.

FIs must evaluate their complete portfolio of contact information to

ensure accuracy. Additionally, FIs will also need to monitor and track those tokens and keep them up-to-date, as customer mobile numbers can change periodically.

While many of us keep the same phone number for years, there is actually a large portion of the population that gets a new mobile number when they switch carriers, receive device upgrades, move, or even when they are looking for a more desirable number or area code. Email addresses can be just as precarious, as people change names or get overloaded with spam emails.

As mentioned before, MNO intelligence can confirm whether or not the mobile number or token being used in your P2P directory is associated with the correct customer. It can also tell you if a number has been deactivated by the carrier or canceled by a customer.

For FIs preparing to launch a P2P platform, at minimum, a one-time token cleanup of their existing customer base is a good practice to ensure accurate payments, and, more important, happy customers.

That's a great first step, but remember you'll want to perform a token cleanup on a regular basis. The timing, pacing, and cadence will vary by your specific financial institution's needs. But it would be ill-advised to rely solely on just the one-time cleanup effort from a long-term perspective. This regular maintenance includes line-type monitoring as well, as customers could port a mobile number to a VoIP or landline after it's been successfully registered.

Real-time payments will only continue to gain momentum as they become more mainstream. Having the appropriate fraud and risk solutions in place, however, will help ensure an easy, fast, and, most important, safe experience for your customers. **DT**

Donna Turner is chief administration officer at Early Warning Services, Scottsdale, Ariz.

Most of us are unaware of what our biases are and may even see ourselves as unbiased, which of course is not the case. We all have biases.

It's Past Time To Hire— And Promote— More Women

Too many companies are still ignoring the talents women can bring to senior roles in finance, technology, and other areas, says Karla Friede.

We need more women leaders in technology companies. Having personally experienced gender bias during my career, it's hard for me to say this because the last thing I want to do is advocate for bias of any kind. The goal should always be to hire the best person for the job, and I don't think having an X or Y chromosome has anything to do with that.

However, when you look at the makeup of the workforce today, it's hard to draw any other conclusion than we need more gender diversity in leadership. Making a conscious effort to find and elevate qualified women, especially in tech-finance roles, is a good place to start.

Women hold more than half of the accounting and auditing positions in the U.S., but just 12.5% of chief financial officer positions in Fortune 500 companies and only 11% of executive positions in Silicon Valley companies. The need in the tech industry is acute.

Despite the scarcity of women in leadership roles, there's no shortage of research on how women leaders are enabling businesses to perform better across a wide variety of metrics. Why is that? What are women leaders bringing to the table that's helping them drive better performance?

I think there's an argument to be made that those who have experienced bias—be they women or any other underrepresented group—are likely to have developed some distinctive

qualities in response. Some of these qualities are particularly valuable in a finance-leadership role in a tech company.

Strong financial leadership is every bit as critical to a fledgling tech company as engineering, sales, or operations. One of the most important things finance does in an organization is to use data and analysis to help business leaders see things they might not see otherwise.

These are the folks who keep you grounded in the world of reality, instead of the world of hope and hype. Timely, accurate, unbiased financial information is important to understand the realities of your business and make changes quickly.

Finance becomes even more critical as your business grows and founders are not involved in every funding meeting or sales call. The finance team needs to step in and apply data and analysis to operating, sales, and business-development decisions.

Trial by Bias

I think there are four qualities that make someone really good at finance: the ability to listen and learn in an unbiased way, to look at things from a lot of different perspectives, to stay calm in stressful situations, and to withhold any bias from analysis.

The biggest challenge to overcoming bias is ourselves. Most of us are unaware of what our biases are and may even see ourselves as



Karla Friede is co-founder and chief executive of Nvoicepay, Beaverton, Ore.

unbiased, which of course is not the case. We all have biases. I believe people who've personally experienced bias are more aware it exists, even in themselves, and are better equipped to guard against bias creeping into their thought processes. If you haven't had a lot of experiences with bias, it's less likely you're going to recognize it when it's happening.

Women in finance, tech, or fintech witness plenty of bias. We are almost always greatly outnumbered by men wherever we go. In such settings, I am often aware that not only does the group perspective differ from my own, but that it also comes as a surprise to the rest of the group that anyone would see things differently.

In these situations, it can be very challenging to offer a differing opinion. You have to have courage, your facts down cold, and do a good job of listening and understanding other perspectives—all while acknowledging you've considered other points of view as you articulate your own. These are great qualities for a finance leader to have.

People who rise from groups experiencing systemic bias have excelled in the face of greater challenges. It's a kind of trial by fire. They're often high achievers, because succeeding under those circumstances takes more determination. You have to be so good that you simply cannot be ignored.

Twice as Good

One study of applicants to fellowship programs in biomedical sciences found women had to be 2.5 times more productive than men to be seen as equally competent. A 2015 paper by the National Bureau of Economic Research found black workers get extra scrutiny from bosses, often leading to worse performance reviews, lower wages, and job loss.

So, if you're considering hiring a candidate from a group that has experienced bias, recognize the person sitting in front of you may have

Challenge your ideas about how leaders look, speak, and act. Focus on the qualities that make a person good in a role.

had to work harder, overcome more obstacles, and achieve quite a bit more just to be in contention for that leadership role.

I'm not saying the qualities that make for a successful tech-finance leader are exclusive to women, or that all women possess them. Also, women are not the only group we should be making efforts to elevate. But they are the largest group, encompassing a whole range of demographic, experiential, and cognitive diversity, making them a good place to start.

If companies want to innovate and differentiate, they need to start thinking differently about their workforce. Challenge your ideas about how leaders look, speak, and act. Focus on the qualities that make a person good in a role.

Just about every industry claims to be facing a talent shortage, but there are large pools of talent right under your nose that are simply being omitted. In the hunt for the next generation of talent, overlooking large segments of the population is going to catch up with you. I'm betting on it. **DT**

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