DIGITAL TRANSACTIONS

Trends in the Electronic Exchange of Value

THE NETWORKS' SHOPPING SPREE

They're laying out big cash for companies in businesses ranging from cross-border transfers to real-time payments to fraud management. What's behind the buying binge?

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the gimlet eye

THE NETWORKS' M&A MANIA

ARE THE BIG CARD NETWORKS no longer content to be card networks? You might be excused for thinking so if you looked at the buying binge Mastercard Inc. and Visa Inc. have embarked over the past year or so—with some participation from American Express Co., as well. Much of this spending—now adding up to billions of dollars—has focused on payments plays that have little or nothing to do with payment cards (see senior editor Jim Daly's story, "The Networks' Shopping Spree," on page 24).

And that's really the point. Digital payments are moving well beyond the familiar card-based processing for in-store and online transactions that has characterized the industry for the past couple of decades. Now, we are seeing opportunities like cross-border payments, bill payments, business-to-business payments, and fraud and chargeback management attracting the big networks' attention—and they're writing some big checks to buy leading players.

There are some nuances to this shopping spree. Mastercard is intent on building up its ability to satisfy the burgeoning demand for real-time payments (for more on this opportunity, see "The New Reality in Real-Time Payments," page 31). Just this summer, Mastercard announced the biggest acquisition in its history, laying out almost $3.2 billion for the account-to-account businesses of Denmark's Nets Group.

Visa, on the other hand, is focusing on cross-border payments and dispute-resolution services. This includes the $320.4 million acquisition earlier this year of Earthport. Not that Mastercard is ignoring this market: It was outbid by Visa for Earthport and then bought another firm in the space, Transfast.

So what's going on? If you're AmEx, Mastercard, or Visa, non-card payments are an enticing field for expansion at a time when merchants and regulators are increasingly putting pressure on card-based fees. This is especially true for cross-border payments, an enormous market little penetrated by cards.

And, as fraud losses continue to mount, technologies that combat charge-backs and various forms of fraud can be lucrative—and can be developed and deployed more nimbly if you own them. It's no coincidence that Visa bought Verifi shortly after Mastercard snapped up Ethoca.

But perhaps the biggest opportunity for expansion-by-acquisition lies in faster payments. Companies are coming at this market from multiple directions, including cryptocurrency (see Facebook: Libra). Mastercard got an early jump with its acquisition of Vocalink, developer of the technology undergirding the United Kingdom's real-time system and a key component of The Clearing House's Real Time Payments network. The Fed's decision to jump into this market only intensifies the urgency to claim share now.

Where will this shopping spree lead the payments industry? Those who distrust the big networks are wary. Others see opportunity. We'd bet on the latter camp.

John Stewart, Editor | john@digitaltransactions.net

VENMO LEVERAGES INSTANT TRANSFERS AS IT DIGS FOR REVENUE

With real-time payments in the headlines these days, it's not surprising payments companies are jumping on the faster-payments bandwagon (more on this on page 31). But some, like PayPal Holdings Inc., are finding ways to use speedier funds to bolster revenue. PayPal last month announced its latest instant-transfer service, this one allowing Venmo users to move funds in minutes to their bank accounts.

The new service relies on PayPal's connections through JPMorgan Chase & Co. to the Real Time Payment (RTP) network offered by The Clearing House Payments Co., a processing platform owned by 25 of the nation's largest banks, including Chase.

TCH launched RTP in November 2017 and has brought 15 institutions live so far. Earlier in the month, the Federal Reserve said it will launch a real-time payments service called FedNow by 2024.

The new service for Venmo follows PayPal's move in March to make instant transfers to bank accounts available for PayPal users. That service, too, relies on the link to TCH. And pricing for both services is the same: a 1% fee, with a $10 cap.

Such revenue-raising services are important for Venmo, which is generally free to users for peer-to-peer transfers. Venmo's rapid growth has forced PayPal to seek out sources of revenue for usage, including acceptance fees to merchants and now levies for instant transfers. For example, PayPal introduced instant transfers last year for Venmo users who want to move money to a linked debit card, with the same 1% charge.

Just how many Venmo users there are was a closely guarded secret until this spring, when

VENMO'S VERTIGINOUS RISE (Recent payment volume by quarter, in billions)

Q1 2018	Q2 2018	Q3 2018	Q4 2018	Q1 2019	Q2 2019
$12	$14	$17	$19	$21	$24
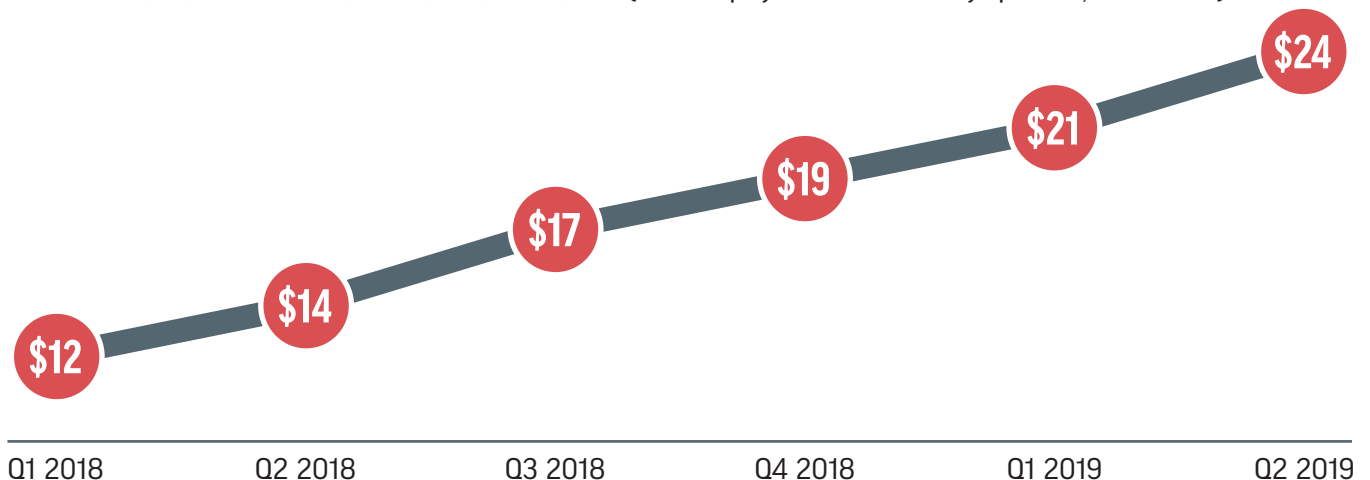
Source: PayPal

PayPal reported the service had more than 40 million. In the April-through-June quarter, Venmo racked up $24 billion in volume, up 70% year-over-year (chart). But the service faces fierce competition from Zelle, a P2P service controlled by some of the same banks behind TCH, including Chase.

While the new instant-transfer feature for Venmo broadens availability to users who have bank accounts but not debit cards, that component is likely not terribly sizable, notes Sarah Grotta, an analyst at Mercator Advisory Group, a Maynard, Mass.-based consultancy.

"It's hard to know how popular this feature will be. It's difficult to even gauge how successful the current instant methods are," Grotta says in an email message.

Also, while TCH's RTP service now reaches 51% of U.S. demand-deposit accounts, it's also hard to know how much overlap that coverage could have with the population of Venmo users, Grotta adds.

The new fast-transfer service began rolling out in mid-August and was expected to be "widely available" in the ensuing weeks, announced a Venmo blog post, which advised users to update their apps. Transfers may not always be "instant," and can take up to 30 minutes, the post advised, depending on the capabilities of the user's bank.

The standard transfer, which moves money to the user's bank account in one to three business days, continues to be available.

—*John Stewart*

AFTER A DECADE AND A MERGER, THE BofA-FIRST DATA JV CLOSES OUT

There had been whispers about the possibility for months, but this summer the parties confirmed it: The end of Bank of America Merchant Services, a long-running merchant-acquiring joint venture between Bank of America Corp. and First Data Corp., is now at hand.

On July 30, the same day that First Data officially became part of Fiserv Inc., Charlotte, N.C.-based BofA said it will pursue an independent merchant-acquiring strategy

starting next June, though it added that First Data will continue as an "important service provider supporting Bank of America's global payment solutions."

Bank of America Merchant Services says it processes 17.3 billion transactions annually at more than 700,000 merchant locations.

The announcement said the joint venture will end when the current contract expires. BofA said there

BAMS is 'not an SMB-only book. It's a fairly large enterprise book.'

—FRANK BISIGNANO, PRESIDENT, CHIEF OPERATING OFFICER, AND DIRECTOR, FISERV

should be no service disruption because of an agreement between the two to serve BAMS clients through at least June 2023. First Data will continue to provide processing services at current rates through 2023. Unlike two other First Data joint ventures with banks—those with Wells Fargo & Co. and PNC Financial Services—BAMS had a 10-year contract when signed in 2009. The others are five-year pacts and have been renewed several times.

Bank of America and First Data will split the merchant portfolio based on the joint-venture ownership rate. Fiserv/First Data expects to retain 51% of the merchants, while BofA will keep the remaining 49%.

The contract will govern the division of merchants, Jeffery W. Yabuki, Fiserv chairman and chief executive, said in a conference call with analysts about the announcement.

While the BAMS portfolio has a sizable small and mid-size merchant contingent, it also has numerous enterprise clients, Frank Bisignano, Fiserv president, chief operating officer, and director, told analysts. "This is not an SMB-only book," said Bisignano, the former CEO of First Data. "It's a fairly large enterprise book."

Bisignano said many of the larger merchants came from First Data and have been part of the joint venture since its inception. "We will do what's right for our clients," he said. Executives with both companies agreed not to disregard that notion as the division of clients happens, he added.

The end of the joint venture is not indicative of the relationship between the two companies, Yabuki said. "We have a deep commitment to continuing to work with Bank of America," Yabuki said. "Bank of America will continue to be a very important client." The dissolution is a reflection the respective strategies of the two companies, he added.

Bank of America also pointed at the role of payments for the move. "Payments are at the core of our business, and this announcement is another step forward in our global strategy to provide companies of

all sizes an integrated payment offering," said Mark Monaco, head of enterprise payments at Bank of America, in a statement.

"We look forward to investing in our merchant solution and delivering the capabilities our clients need to thrive in an ever-changing payments environment," Monaco continued. "We look forward to continuing our long-standing business relationship with First Data."

Multiple factors likely contributed to the decision not to renew the BAMS joint venture.

"There are a lot of reasons why BAMS could have done this," Thad Peterson, senior analyst at Boston-based Aite Group, says in an email. "Fiserv directly supports processing for thousands of competitive banks, so having the First Data processing function JV in place as part of Fiserv might be seen as a competitive threat. Note that they will still be using First Data processing for offshore payments, which wouldn't be competitive with BAMS."

Bank of America also may have considered the rate of change and consolidation in merchant processing and wanted "more control over their offering and how it's delivered by bringing it in-house," says Peterson. "It's critical that BAMS be able to effectively support their merchant base as new payment alternatives and processes come online. They need to control their own destiny in the space."

Rumors of the dissolution of the 10-year-old joint venture began surfacing in May, in the wake of the January announcement of a merger agreement between Fiserv and First Data. That deal closed July 29.

—*Kevin Woodward*

UBER CUTS THE FARE IT PAYS FOR CARD ACCEPTANCE

Well, it appears it can be done. Ride-sharing leader Uber Technologies Inc. reported last month that it's had some success in reducing payment card acceptance costs, though it didn't say by how much.

"We continue to make good progress," Nelson Chai, San Francisco-based Uber's chief financial officer, said on a conference call with analysts to review the company's second-quarter results.

"I would say the team has done a very, very good job in terms of reducing some of the payment card fees," Chai continued. "A lot of it is working with our partners, and we've been able to reduce some of the things. It literally has been better than we would have expected, both on a quarter-on-quarter and year-on-year basis."

While rising card-acceptance costs have become a major issue for most merchants in recent years, Uber didn't disclose its costs in its latest financial report. But *Digital Transactions* estimates the bills total at least $1 billion a year. That estimate is based on figures from the registration statement Uber filed ahead of its May initial public offering of stock.

The document said Uber paid $749 million in credit card processing fees in 2017, up 62% from $461 million in 2016. While the filing didn't give 2018 acceptance figures, it did say 87% of Uber's gross bookings last year were on credit or debit cards.

Next up for Uber in the payments area is "testing, broadening

out some of the capabilities, particularly in Latin America," Chai said without being specific. The goal is to give drivers options to operate more frequently and to reduce cash payments in some markets, particularly Brazil.

Anything Uber can do to reduce expenses will be welcomed by its top brass and investors in light of the $5.24 billion loss the company reported for the second quarter versus an $878 million loss a year earlier.

UBER'S ACCEPTANCE TAB (In millions)

Year	Amount
2016	$461
2017	$749
2018	$1,000[1]

1. *Digital Transactions* estimate.　Source: The company

Though much of the recent red ink is attributable to IPO expenses, including $3.9 billion of stock-based compensation costs and a $298 million "driver-appreciation" award, Uber still finds operating profitability elusive.

Uber reported $15.8 billion in second-quarter gross bookings, up 31% year-over-year. Uber's book-ings typically come through its mobile app. Revenue increased 14% to $3.17 billion. The company said it had 99 million active cus-tomers who used its ride-sharing, other mobility options, or the Uber Eats restaurant-delivery service at least once a month in the second quarter, up 30% from 76 million a year earlier.

Uber drivers made 1.68 billion trips in the second quarter, a 35% year-over-year increase from 1.24 billion.

—*Jim Daly*

VISA AND KROGER: A SETTLEMENT IN ROUTING, BUT SKIRMISHING CONTINUES

As July rolled into its final week, The Kroger Co. and Visa Inc. settled a 2016 federal lawsuit in which Kroger alleged Visa interfered with its trans-action-routing plans for EMV debit cards. In a separate dispute, however, the leading standalone supermarket chain was still boycotting Visa credit cards in some of its stores.

The lawsuit that Kroger filed in U.S. District Court in Cincinnati was dismissed July 24. Visa reported the settlement in a recent filing with the Securities and Exchange Commission.

Terms of the settlement are con-fidential. In a brief emailed state-ment to *Digital Transactions,* a Visa spokesperson said, "Visa and Kroger have reached an agreement in principle to resolve the lawsuit that Kroger filed in 2016 related to its acceptance of Visa debit cards." A spokesperson for Cincinnati-based Kroger did not respond to requests for comment.

Kroger's civil complaint por-trayed Visa as playing the heavy after it first learned in 2015 of Kroger's plans for accepting the then-new EMV chip cards. Kroger's planned point-of-sale EMV config-uration would have diverted onto PIN-debit networks many signa-ture-debit transactions that oth-erwise would have gone over Visa's payment network.

Visa threatened Kroger with fines and even the loss of its abil-ity to accept Visa debit cards—a highly popular payment choice among Kroger customers—if it didn't change its plans, the suit alleged.

Visa denied the allegations and said it was guarding cardholders' rights to choose how to authenti-cate a debit transaction.

Another dispute between Kroger and Visa remains unresolved, this one involving what Kroger says are

MONTHLY MERCHANT METRIC

Q1 2019 Account Attrition And Growth

Account Attrition:
Total attrited accounts in given period divided by total portfolio active accounts from same period of the prior year.

New Accounts Added:
Total new accounts in given period divided by total portfolio accounts from same period of the prior year.

Beginning
100.0%

Account Attrition
-23.3%

New Accounts
+25.2%

Ending
101.9%
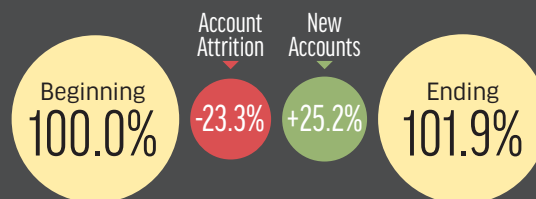
Note: This is sourced from The Strawhecker Group's merchant data warehouse of over 3 million merchants in the U.S. market. The ability to understand this data is important as small and medium-size businesses (SMBs) and the payments providers that serve them are key drivers of the economy. All data are 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.

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high costs for accepting Visa credit cards. Kroger, which has over 2,800 stores nationwide operating under a number of banners, in August 2018 stopped accepting Visa credit cards at one of its small subsidiaries, Foods Co., which has 21 supermarkets and five gas stations in California.

In March, Kroger turned up the heat by expanding the Visa credit card boycott to its Smith's Food & Drug Stores chain, which operates 134 stores in seven Western states.

The two companies reportedly are talking, but so far no agreement on the resumption of Visa credit card acceptance has been announced.

—Jim Daly

MORE DIGITAL PAYMENTS, MORE FRAUD THREATS

As payments companies expand ways for consumers to make digital payments, 62% of North American merchants, bankers, and fintech providers expect more such payments within the next two years, says Forrester Research Inc. in a report called, "Understanding the Evolving Payments Landscape" released last month.

Commissioned by Visa Inc., the report also found that 46% expect ways to make payments via the Web or on a mobile device will increase. This won't be just for large merchants either. Forty-seven percent say more small businesses will rely on a mix of credit and debit cards and digital payments.

Yet, with additional merchants accepting digital payments, acquirers and banks will face new fraud threats, the report suggests. Sixty-one percent said that new payment technology make them more susceptible to fraud.

"One downside of this advancement

WHERE THE WORRY IS (Areas where payments professionals said they are "concerned" or "very concerned" about fraud)

68% Mobile bill pay

60% Digital wallets

58% P2P payments

Source: Forrester Research

in payment technologies is that as payments get more innovative, so do fraudsters," the report says. "Businesses are acutely aware of the new fraud risks that come with the adoption of new payment technologies"

When asked about the level of fraud concern for mobile banking bill-payments, 68% said they were concerned or very concerned. Similarly, 60% held that attitude about mobile wallets and digital wallets, and 58% did for peer-to-peer payments.

Forrester's recommendation to contend with fraud-associated digital payments is to use a combination of tools and strategies. Among them

is artificial intelligence and machine learning to analyze payment data and fraud, tokenization, and an integration of fraud-management systems and research interfaces to make it easier to track potential fraud.

Further recommendations are to use advanced authentication techniques and to treat fraud management as a process, not as a single project.

The study, completed in March, surveyed 566 professionals internationally, encompassing one-third each from fintech providers, retail banking—including acquirers—and merchants. DT

—Kevin Woodward

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BREACHES SHOW IDENTITY IS KEY

BY GIDEON SAMID

gideon@bitmint.com

CAPITAL ONE IS KNOWN as the "Technology Bank" by its early adopters. It is the last bank at which someone would expect a massive breach. And, indeed, with its 77 million victims, Capital One's breach in March is not even among the top five breaches in the United States.

So why is it so alarming? We are all new migrants into cyberspace, where our identity is reduced to a string of bits. Stolen identity strings may harm us for many years hence, especially if the bits represent immutable data like Social Security numbers or a date of birth.

Financial databases store hundreds of millions of ID strings, and when they are breached it is a cyber catastrophe. So database administrators put a fence around their data. Alas, this fence is replete with gates.

Large financial databases field millions of transactions per day, and may have scores of bona fide user classes. Each user class has to have a tailored set of access rights to some and not other parts of the safeguarded data. To allow the proper users of all classes to have access to the data and keep all others out, the database administrator writes myriad sets of access rules, called protocols. These protocols are smart, elaborate, and represent the defense strategy of the database manager.

How does this strategy get articulated? The database administrator writes a series of (n) attack scenarios, reflecting every imagined way to compromise the data. Each of those scenarios is appraised as to its likelihood. If the likelihood is too high for a given scenario, the access protocols are adjusted to suppress this likelihood to acceptable levels. Security is about suppressing the likelihood of success for a given attack scenario.

The unrecognized truth is that often the hackers have more imagination than the database administrators. They carry out attack scenario (n+1). That scenario will defeat the protocols and lead to massive data theft.

Seasoned and scarred database administrators look beyond the protocol game to consider (i) hardware security, and (ii) de-incentivizing breaches. Hardware security emerged recently when it became clear that most breaches rely to some extent on an inside job. Some key data is then secured in a physical enclosure that either (a) cannot be tampered with without making the breach obvious (Patent #9471906), or (b) is self-destructing upon detection of tampering (Patent #15293352).

A more far-reaching strategy is to remove sensitive data from the digital grid (where hackers roam) and into a nanotechnology-manufactured lump, where the atomic structure reflects the data. That requires access to the physical device, which is pre-manufactured in limited numbers, and resists duplication (Patent #15898876).

A new US patent (#16228675) offers a conclusive way to prevent thieves from benefitting from their breach, discouraging them from breaching again. Here, the private data kept on the server is minutely different from the same data held in the customer's phone. This minute distinction plays no role in normal operation. But if the server is breached and the stolen data is fraudulently used, this minute distinction will implicate the identity thief. Next time, hackers will attack a database that does not use this "gotcha" protection.

Digital money will make a big difference in preventing data theft. Solutions like BitMint (Patent #6823068) fuse value and identity into a bit string, which then can be communicated (paid) cash-like, so no private information is required. Blockchain technology offers a dynamic view of identities to void the ongoing damage from a past breach.

Remember, identity is key. If identities are authenticated by a limited count of bits, someone has a chance to claim to be you. **DT**

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FINESSING CARD-ON-FILE

Ever more numerous digital payments and better management tools are helping transform the venerable stored-credential transaction.

BY **KEVIN WOODWARD**

AS UBIQUITOUS AS CARD-ON-FILE TRANSACTIONS HAVE BEEN, the expectation is that this payment method is poised to grow in volume and importance in coming years, especially as more commerce moves online and consumer comfort with the transaction type increases.

As an example, 36% of U.S. adults, as of January, had used a ride-hailing service. That requires storing payment card credentials in the app or using a wallet that does so, such as Apple Pay or Google Pay. That's up from 15% in 2015, says the Pew Research Center.

Apps are just one avenue for exploiting the convenience of card-on-file transactions, but it's one that has a potentially significant growth outlook. Though Javelin Strategy & Research is working on its projections for card-on-file transactions for 2020 through 2023, early data show that 45% of customers made a mobile purchase within a 30-day period, and 63% made a browser-based purchase in the same time frame, says Krista Tedder, director, payments, at the Pleasanton, Calif.-based firm.

Card brands and other payments providers are making it easier for merchants to store a consumer's payment credentials without the challenges of just a few years ago.

"Merchants have access to a number of encryption technologies which enable them to safely store personally identifiable information," Tedder says. "The technology generally resides at their payments processor or payment service provider."

Some methods, such as Apple Pay, Google Pay, Samsung Pay, and Amazon Pay, offer additional security because they create tokens for the cards that are stored in the digital wallets, she says.

Using tokens in lieu of actual card data is safer and makes updating stored data easier when the original card is replaced through expiration, loss, or inclusion in a breach.

CHANGING EXPECTATIONS

One major reason for the surge in interest in card-on-file payments (Visa calls it credential-on-file) is

that consumer expectations are changing. "They expect frictionless payment experiences," says Ansar Ansari, Visa senior vice president of digital products. "Therefore, not having to go back and re-enter credit card information after losing your card becomes increasingly important to the consumer."

Subscription payments are one manifestation of the usefulness of card-on-file transactions, says Julie Conroy, research director for Aite Group's fraud and anti-money laundering practice. She says these transactions also are essential to e-commerce, which continues to grow. It now accounts for 10.7% of U.S. retail sales according to the U.S. Census Bureau.

More and more merchants want less friction in the checkout process to make a purchase as easy as one click, she says. "The more clicks you can reduce for the customer the more likely they are to fulfill the transaction," Conroy says.

One of the early standard-bearers for pushing payments to the background is Uber Technologies Inc., the ride-share service. Now, delivery services for groceries and restaurant meals reliably take advantage of this payment method.

Visa's vested interest in ensuring the integrity and ease of making card-on-file transactions is evident. One way it does that is with the Visa Token Service (other card brands offer similar services), which replaces the actual personal account number throughout the transaction flow, Ansari says. Using the service can result in a 3% improvement in authorization rates and a 67% reduction in fraud chargebacks, he says.

While early tokenization services provided value—especially for security and PCI compliance by reducing the amount of actual card data stored in merchant databases—they did not address problems surrounding reissued cards, says Alisa Ellis, vice president of digital and emerging products at Discover Network.

"[A] problem merchants faced was when card re-issuance or expiration caused their stored card information to become inaccurate and transactions to fail," Ellis says. "Customers needed to visit each merchant that had stored their card information and manually provide the new card information."

That's why account updater tools were created. They enable merchants to submit the stored cards to a network and receive updated information before the customer attempts the next transaction, she says.

Current tokenization services, which Ellis dubs tokenization 2.0, attempts to solve the issue of safely storing card data and eliminating customer inconvenience. "In the new world, EMV-grade network tokens come with a built-in account-update functionality that enables transactions to continue in the case where a primary account number may get outdated, such as when a card is lost, replaced, or expired," Ellis says.

Discover, she says, is working on additional services for merchants that use card-on-file transactions.

"For instance, some merchants may prefer to keep primary account numbers for continuity of loyalty programs or other reasons," she says. "For those merchants, we're improving our account-update solution so that instead of a merchant having to submit their stored cards, we can actually deliver the update within a transaction using the old primary account number, so the very first transaction will succeed and the account will be updated at the same time."

Discover expects to introduce this capability early next year, Ellis says.

Javelin's Tedder says account updater tools provide a valuable service to consumers. "Visa and Mastercard require U.S. issuers to participate, which enables the merchants to take advantage of the service at scale," she says. "With the number of card reissuances due to data-breach events, the EMV migration, and now

the move to contactless, consumers are receiving a lot of new cards."

"We've seen a steady increase of merchant card-on-file transactions in the last five years," Ansari says.

For merchants, such services can be key differentiators, says Aite's Conroy. "The more you can do to make it super easy to shop on your site … that will increase the through-put through your funnel," she says, referring to a common e-commerce descriptor for transaction flow.

RISKY BUSINESS

But there are some issues with card-on-file transactions that must be addressed, experts say. They include: data retention; timeframes for how long merchants can store credentials when a consumer is no longer active; participation in security protocols; and how to incorporate biometrics, Tedder says.

Card-not-present fraud, account takeover (when a criminal masquerades as a legitimate online consumer), and new account fraud will continue to be the challenge, Tedder says.

Though he doesn't cite data, Ansari says merchant credential-on-file transactions typically have a lower risk of fraud. "Fraud is actually much more likely to happen on a single, independent transaction," he says. "One of the main benefits of Visa tokenized transactions is that they facilitate more information passed to the issuer, which helps with issuer decisioning."

That will become more important as EMV 3-D Secure 2.0 enters the market over the coming months. This online fraud-prevention technology sends scores of transaction

data to an issuer, which aids their ability to decide on approving or declining a transaction.

"The addition of multifactor authentication, specifically the 3DS 2.0 protocols, which balance security with consumer experience, are promising," Tedder says.

Other fraud-prevention tools, such as device fingerprinting, can make card-on-file transactions less risky for merchants, Conroy says. "Device fingerprinting is something that a lot of merchants use," she says. It is a technique to uniquely identify online devices and computers by their distinct characteristics with a reasonable degree of certainty, according to NS8 Inc., an online fraud-prevention provider.

'A DRAMATIC INCREASE'

Another tool card-on-file merchants can use is transactional analytics, which may use machine learning, to evaluate patterns of transactions, Conroy says. Technology that can interrogate an email address for its reputation also may help, she adds. This technology can look at how old the address is and see if it's been used on other sites. A new email with limited use online may indicate potential fraudulent activity.

Despite the challenges, the prospects for card-on-file transaction growth is very positive.

"Tokens will see a dramatic increase in adoption in the years to come," Discover's Ellis says. "With innovation in the payment space, we will see an increase in engagement and commerce via emerging experiences such as connected cards, connected/smart homes, augmented and virtual reality, gaming, and voice." ⓓⓣ

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HOW TECH IS REMAKING REWARDS

From back offices to the point of sale, and from digital wallets to the blockchain, fintechs are fomenting a revolution in loyalty and rewards. Here's how that's playing out— and where it's heading.

BY **MARIA ARMINIO** AND **BO BERG**

BANK AND MERCHANT CARD issuers are looking for ways to distinguish their rewards programs from others. The motivation is straightforward. The best rewards programs drive more sales, increase market share, and sustain growth through customer stickiness.

In distinguishing rewards programs one from one another, the architects of these programs tout the merits of point-based vs. cash-back programs and social media vs. tiers. But much of the real innovation in reward programs is dependent upon the enabling technology that serves as the backbone for delivering a compelling consumer experience.

This article is not about the types of rewards programs that are best for your customers. Rather, it's about how to build the underlying infrastructure, tools, and technologies that enable your rewards programs to flourish.

Perhaps not surprisingly, fintech companies are proffering some of the most creative and innovative solutions to enable consumers to acquire, aggregate, and redeem rewards across multiple channels.

FIVE EXAMPLES

What are the most common challenges with rewards programs?

▶ Creating a compelling, enriched user experience that is personalized, easy to use, customer-parameterized, and inextricably tied to the payment component.

▶ Accumulating and tracking points from multiple sources (e.g., alliance partners) and translating, redeeming, or converting points for purchase of goods and services.

▶ Supporting the program seamlessly across multiple distribution channels, whether at the digital wallet or point of purchase.

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▶ Protecting the safety and security of sensitive information from fraudsters.

Some of the most interesting and ground-breaking ideas for addressing these challenges have come from the fintech world. In its latest "Quarterly FinTech Insights and Annual Almanac," FT Partners identifies fintech companies in the payments sector as one of the fastest-growing industry segments.

Fintech companies bring a new foundation of technology that is changing the point-of-purchase
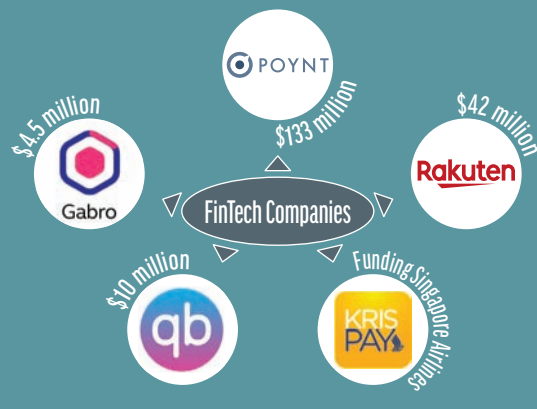
borderless cryptocurrency, called Rakuten Coin.

Next, Poynt represents one of the best examples of an integrated payments and loyalty program. This fintech company has reimagined the payment terminal by bundling hardware, software, and business applications into a compelling customer experience.

This smart terminal is built on top of an open operating system and runs third-party applications. A single card reader identifies the customer, facilitates the purchase, and applies

KrisPay has developed a unique way to convert rewards points via a digital wallet, enabling easy redemption of frequent-flier points. The KrisPay digital wallet converts frequent-flier miles into instant purchases on the mobile phone and works cooperatively with participating partners.

Another industry disruptor is qiibee. Its wallet provides improved tracking and use of loyalty and rewards points by giving customers the ability to exchange loyalty tokens and to redeem them for rewards. Loyalty tokens can also be sold for fiat or cryptocurrency.

POINTS IN COMMON

From an infrastructure perspective, these innovative rewards programs have some baseline commonality.

First, they all stress an enhanced user experience. All payment-distribution channels—ATMs, point of sale, online, and mobile—are heavily focused on ease of use and personalization, so an omnichannel approach with consistent look and feel becomes an imperative. Rewards programs are easy to use, anticipate consumer demand, and operate in real time, thereby meeting the customer's need for instant gratification.

The user experience operates at the digital wallet, where the value proposition is further enhanced through daily deals and special offers for registered members. But it also extends to the POS by supporting new third-party applications.

Next, they all require a paradigm shift for accessing and processing data. Aggregation tools and technology are fundamental for compiling data on rewards customers,

FinTech companies in the payments sector that support rewards programs are heavily funded.

$4.5 million — Gabro
$133 million — POYNT
$42 million — Rakuten
$10 million — qb
Funding Singapore Airlines — KRIS PAY

FinTech Companies

experience, resulting in enriched rewards programs. Following are five examples of very exciting loyalty programs and their enabling technology:

Those of you that watched the NBA Finals may have noticed the Rakuten logo on the Warriors' basketball jerseys. Rakuten is a heavily funded fintech company that has developed a competitive loyalty program with the ability to accumulate points and get cash back on purchases.

Points can be used on any Rakuten-sponsored merchandise, incentivized with daily deals and personalized offers. Blockchain technology supports its proprietary,

rewards. The merchant benefits, too, because the Poynt device integrates with legacy ECR systems and other peripherals. Very slick!

Gabro has developed a flight-rewards redemption program that enables the use of rewards points across multiple participating partners in complementary industries. Gabro's digital wallet conveniently converts customers' unused loyalty points to cryptocurrency to allow for the instant redemption of points and discount coupons for items like airline tickets and hotel rooms. Gabro uses blockchain technology for the movement and redemption of cryptocurrency in the form of rewards.

understanding their shopping behavior, and providing advice.

Aggregators are disrupting the traditional way merchants and banks navigate access to data and are introducing new rules of engagement. Financial institutions are signing multilateral agreements with multiple data aggregators and developing unique ways to share the data. Rules-based engines help to make recommendations on offers based on user type and target purchases to identify and award points.

Financial institutions are also working with fintech companies to create customer-centric solutions. Application programming interfaces (APIs) play an essential role in accessing data at multiple sources in multiple repositories, so that reward programs can be personalized and customized. Modular APIs are the building blocks upon which special offers are designed.

Data analytics providers are adding more state-of-the-art technology to make information even richer. New analytical tools are supporting analysis of shopping habits at the individual customer level.

Tel Aviv-based Personetics is a fintech software company that uses artificial intelligence to analyze customer-transaction data in real time. It then uses this analysis to deliver personalized financial-management information. Another fintech company, Tableau, produces interactive data visualization.

As noted earlier, fintechs are using blockchain technology for points/currency conversion. A blockchain-based distributed computing platform and operating system (like Ethereum) supports a trustless, secure, and proven mechanism to issue loyalty tokens and to convert tokens and/or cryptocurrency to local currency.

Blockchain also provides a new way of structuring information so it can be shared across multiple verticals. This permission-based and secure technology improves efficiency when dealing with multiple parties by defining the rules of engagement for data sharing among themselves.

Another point in common among these fintechs is that they all use tokenization for added security as well as a medium for exchange. The fungibility of rewards points is key. Rewards customers want to send and receive loyalty tokens with their friends, so the tokens must be able to be redeemed like cash.

The payments industry is moving in the direction of tokenizing encrypted data at rest and in transit and are doing this with cloud-based vaultless solutions that render transaction activity out of scope for PCI compliance. Tokenization is also being used to monetize spending conversions from points to fiat and/or local currencies.

Companies like Magensa, a MagTek subsidiary, are building these types of tokenization-security solutions that keep both payment and rewards data from being compromised.

All the fintech rewards programs require seamless integration across multiple channels. Rewards programs may be emerging more rapidly in the digital channel where loyalty-application vendors are fighting for space on the digital wallet. But consumers also want to be able to redeem rewards at the point of purchase.

CLOSER TO PAYMENTS

So POS providers are developing solutions that seamlessly integrate legacy hardware and third-party applications, enabling the reward programs to get closer to the payments process. APIs are helping to bridge the gap by enabling legacy applications to interact and send data from multiple sources.

Fintech companies are ushering in a new way of constructing rewards programs, filling the gaps created by legacy infrastructure. They bring business and technological innovation that transforms traditional rewards programs into

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ones that are highly customized and personalized.

Additionally, fintech-like capabilities are emerging from specialty players in digital wallets, aggregation, tokenization, cryptocurrency, APIs, data analytics, rules-based engines, and cloud-based infrastructure. The net result is rewards programs that are easier to use, achieve faster adoption, have broader reach, and support redemption at any distribution channel in the physical or online space. 🌐

THE NETWORKS' SHOPPING SPREE

With fintechs nipping at their heels, the payment card networks are buying up companies big and small in a range of industries. How far will the networks venture beyond their core business—and at what price?

BY JIM DALY

MERGERS AND ACQUISITIONS TEND TO COME IN FITS AND STARTS, and lately M&A activity involving the payment card networks clearly is on the upswing. Between them, Mastercard Inc., Visa Inc., and American Express Co. by early August had announced or closed more than a dozen acquisitions in 2019.

These deals, a few large but most small, enhance the networks' presence in everything from real-time payments and electronic bill pay to cross-border and business-to-business payments, purchase financing, risk control, and travel services (chart, page 26).

Visa and Mastercard, the bank card networks, have been especially active this year, while Discover Financial Services, the fourth-largest U.S.-based network, hasn't announced any deals involving its Payment Services unit.

The biggest deal of the year came Aug. 6 when Mastercard announced its largest acquisition ever—€2.85 billion ($3.19 billion) for the account-to-account businesses of Nets Group, a Denmark-based processor that operates in the Nordic countries and other European markets. With Nets, Mastercard expects to augment its real-time payment capabilities should the deal close as expected in 2020's first half.

Some of the acquisitions, indeed. enhance the card networks' core card-related business with new services revenues. But others take them well beyond card payments, opening up potentially new lines of business and keeping the networks relevant as financial-technology companies seem to announce new payment services almost daily.

With some observers questioning whether banks can retain their leading role in payments in this new environment, Visa and Mastercard are striving to evolve to better serve the needs of financial institutions. Banks, after all, are their main customers.

"Banks have payment needs that go beyond cards," says Michael Miebach, chief product and innovation officer at Mastercard. "We want to be a relevant partner—being that one-stop payments partner."

'CARDABLE' OPPORTUNITIES

Jared Drieling, senior director of business intelligence at The Strawhecker Group, an Omaha, Neb.-based merchant-acquiring consultancy, sees some commonality in the wide range of the recent acquisitions.

"It's interesting that they involve financial technology in every corner of the payment system," he says.

Mastercard's $929-million acquisition of London-based Vocalink Holdings Ltd. in May 2017 could be considered the first big bust-out from the networks' core card franchise. Vocalink is an automated clearing house and real-time payments provider whose technology underlies the real-time payments service from The Clearing House Payments Co., a processor owned by 25 large U.S. banks. Now Mastercard

expects Nets to add to its real-time payments offerings.

Mastercard archrival Visa is pursuing a parallel path. In late June, Visa announced it had a deal to buy the token and smart-ticketing businesses of Rambus Inc., a Silicon Valley chip and software provider.

The tokenizing of payment card account numbers—replacing those numbers with strings of digits useless to fraudsters—is already a major service offered by both Visa and Mastercard. But the Rambus technology enables Visa to tokenize non-card payments, a potentially huge market.

The recent acquisitions also embed the card networks further in business-to-business payments, where they already have a growing presence through their issuers' corporate and small-business cards.

Robert Napoli, an analyst at Chicago-based William Blair & Co. who follows payments companies, says in a recent report that the "cardable" global opportunity in B2B exceeds $20 trillion, while the accounts-payable and receivables market exceeds $80 trillion.

"Visa has about $1 trillion of B2B payments volume via its corporate, travel, and virtual cards," the report says. "Visa is primarily focused on the small to mid-size businesses for most of the core B2B initiatives, but can add value for cross-border payments for large enterprises. B2B payments are about 11% of total payment volume but growing above the corporate average."

HIGH-ROLLER CLUB

All this opportunity may be mouthwatering for the networks, but there are risks.

	What the Acquisition Brings to the Buyer	Purchase Price
Visa		
Payworks	Point-of-sale software	n.a.
Verifi	Dispute-resolution technology	n.a.
Rambus	Tokenization technology for non-card payments	$75.0 million
Earthport	Cross-border payments	$320.4 million
Mastercard		
Nets Group	Real-time and business-to-business payments	$3.19 billion
Transfast	Cross-border payments	n.a.
Transactis	Bill payments	n.a.
Ethoca	Fraud-mitigation services	n.a.
Vyze	POS financing	n.a.
American Express		
Acompay	B2B payment automation	n.a.
Resy	Digital reservation and management platform for restaurants	n.a.
LoungeBuddy	Digital platform for airport lounge locations and access	n.a.
Pocket Concierge	Restaurant-reservation service in Japan	n.a.

Source: Visa, Mastercard, American Express, Digital Transactions News

"Neither Visa nor Mastercard have been terribly successful beyond the core," says consultant and former GE Capital and Visa executive Eric Grover, principal of Minden, Nev.-based Intrepid Ventures. The core, however, "is god-awful good," he notes.

As examples of weak performance "beyond the core," Grover points to electronic bill payment, a market both networks were eyeing "decades ago," he says. But along came Pete Kight, founder of the CheckFree bill-pay service, which became "enormously successful," says Grover.

Fiserv Inc., a leading provider of core-processing systems for banks and now the new owner of card processor First Data Corp., acquired CheckFree in 2007. After that, "both Visa and Mastercard threw in the towel," Grover says.

In a newer market, the networks' electronic wallets never achieved great success, Grover assesses. And, despite gains, both companies still are trying to crack the hard shell around medical payments.

"You can go back 25, 30 years ago and both of them were talking about this enormous health-care opportunity," he says.

But hope springs eternal. Highly profitable Visa and Mastercard are sitting on piles of cash and cash equivalents: $7.91 billion for Visa

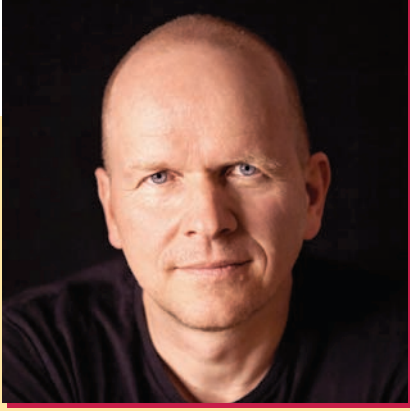and $5.69 billion for Mastercard as of June 30, according to their most recent financial reports. They're not hesitating to use some of that cash to go shopping.

In a regulatory filing, Mastercard reports having entered into commitments in 2019's first half to buy businesses for total consideration of $1.2 billion, most of that in cash. All of those deals had closed by late July, and they didn't include the pending Nets acquisition.

"Keep in mind Visa and Mastercard are so large that $1 billion of acquisitions only represents one-third of 1% of their market capitalization," analyst Gil Luria, director of institutional research at D.A. Davidson & Co. in Portland, Ore., says by email. "With that in mind, Visa and Mastercard are always looking for interesting payment technologies and payment businesses that they expand by leveraging their scope and scale."

Even with Nets included, the recent network acquisitions don't come close to the size of 2019's recently completed mega-deals among payment processors. Fidelity National Information Services Inc. (FIS) acquired Worldpay Inc. for $43 billion and Fiserv acquired First Data for $22 billion.

Still pending is the proposed $21.5 billion buyout of Total System Services Inc. (TSYS) by Global Payments Inc. ("How the Global-TSYS Deal Is Different," July).

But Visa at least has been in that high-roller club before. In mid-2016, Visa Inc. shelled out $23 billion to acquire its London-based franchise Visa Europe.

'A NETWORK OF NETWORKS'

What the relatively small recent deals do is support the networks' card-based franchises while once again letting them dip their toes into non-card waters. With the pending acquisition of the Nets account-to-account businesses, Mastercard is now calling itself a "multirail payments company."

"The acquisition for Mastercard does boost non-card-area focuses," says Drieling in an e-mail to *Digital Transactions.*

Vocalink provided Mastercard with modular real-time payment services best suited for large markets, according to Miebach.

"Nets on the other hand … is perfect for smaller markets, emerging markets," he says. "It gives us two different solutions for two different types of markets." The Nets user experience provides billers with easy access to payment technology as well as information related to the payments so "they don't have to do the heavy lifting," he adds.

Nets said in a press release that the sale to Mastercard will "unlock the potential" for the account-to-account services to grow globally as Nets concentrates on its payment services in Europe for merchants and processing services for banks. The deal does not include Nets' so-called "e-ID" and digitization services.

Visa, meanwhile, is looking to its $75-million acquisition of the Rambus technology as one way to leverage its security services for cards into non-card payments.

"This tokenization acquisition will enable Visa to extend the security and convenience of tokenization to all types of transactions, including the ability to support domestic card networks, account-based and real-time payment systems," Visa chief executive Alfred Kelly told analysts during the company's quarterly earnings call in July.

"Before this acquisition, Visa could turn a 16-digit Visa credential into a token, but now we can tokenize a bank account, a domestic card-network credential, or a ticket," Kelly continued. Visa did not make an executive available to comment for this story.

Competition among the card networks for promising technology is strong, and in some ways the recent deals mirror each other. Visa was rumored to have been interested in Nets, and the networks butted heads early this year in cross-border payments.

In May, Visa closed on its $320.4 million acquisition of London-based cross-border B2B payments processor Earthport PLC. Visa upped its original offer for Earthport by 23% after Mastercard unexpectedly topped it by 12%.

Before bringing Earthport into its fold, Visa could reach about half of the bank accounts in the 88 countries Earthport serves through channels such as its Visa Direct near-real-time service and its ATM network, Kelly said on the call.

"With Earthport, we've become a network of networks, and have extended our reach to over 99% of bank accounts in the 88 countries, including the top 50 markets," he said.

Instead of trying to one-up Visa again, Mastercard in March announced plans to buy New York City-based Transfast Remittance LLC from a private-equity firm. Transfast provides B2B and person-to-person payment services through a network linking more than 125 countries and offers direct integrations with more than 300 banks and other financial institutions.

Miebach expects Transfast's technology to help smooth out cross-border payments, a niche in which he says transactions too often are "entirely unpredictable."

Another recent Mastercard acquisition—that of Austin, Texas-based Vyze Inc.—gets the network into an area that's seen a lot of activity by fintechs such as Klarna and Affirm: software and systems to provision point-of-sale financing of purchases.

In a press release, Mastercard said the Vyze acquisition, which links merchants with multiple credit providers, makes Mastercard "a more strategic partner to both lenders and merchants."

Plus, Mastercard is delving deeper into bill payments with its May deal to acquire New York City-based bill-pay platform provider Transactis Inc., whose technology enables small businesses and organizations—such as schools and property owners that mostly deal with paper bills and checks—to support online bill pay. Transactis's distributors or partners include a number of banks and payments companies, including Worldpay (now part of FIS), PNC Bank, and Capital One.

The Transactis announcement came a bit over half a year after Mastercard unveiled a system dubbed Bill Pay Exchange that will allow consumers to view bills and then transfer funds to the billers within seconds through bank and credit-union apps.

RISKY BUSINESS

Risk control, meanwhile, is an area where the networks traditionally have supported merchant acquirers and card issuers with various services. To enhance its offerings, Mastercard announced in March that it was buying Toronto-based Ethoca Inc., a fraud-mitigation firm, for an undisclosed amount.

Founded in 2005, Ethoca works with more than 5,000 merchants and 4,000 financial institutions. Mastercard said it intends to expand Ethoca's capabilities and combine the company with its current security, data insights, and artificial-intelligence services.

Closely related to risk control is dispute resolution, which Visa is trying to enhance with its June deal to acquire Ethoca rival Verifi Inc., a 14-year-old, Los Angeles-based provider of tools that allow merchants, acquirers, and issuers to resolve chargebacks. Visa said it will integrate Verifi's technology with risk-management capabilities from CyberSource and Cardinal-Commerce, companies the card network acquired in 2010 and 2017, respectively.

Less than a month after June's Verifi announcement, Visa said it had acquired Payworks GmbH, a Munich, Germany-based developer of cloud-based point-of-sale payment-gateway software. Visa intends to

integrate Payworks's technology with CyberSource, and offer the combined service to merchants and acquirers.

The offering will support in-store, online, and in-app transactions and provide a single integration to allow Visa clients to accept POS payments through a range of terminal types, according to Visa. The payment network had first invested in Payworks in February 2018.

THE 'LINE IN THE SAND'

Not only do some of the recent Visa and Mastercard acquisitions take the networks beyond card waters, but some potentially make them competitors to acquirers as suppliers of payment-related services for merchants, according to The Strawhecker Group's Drieling.

He points to POS financing, such as that provided by Vyze and to be enabled by application programming interfaces being developed by Visa, as a type of service networks haven't provided directly before—and one that is blurring the once-distinct boundary between acquirers and networks.

"Where is that line in the sand?" he asks.

Meanwhile, AmEx has also been active on the M&A front this year, though its deals haven't gotten as much attention as those by the bank card networks.

In late July, AmEx announced it had a deal to buy the acompay B2B payment-automation platform from Acom Solutions Inc. AmEx said the platform helps businesses make supplier payments, manage their spending, and improve cash flow.

"American Express recognizes customers are increasingly looking for turnkey, automated solutions to pay their suppliers, and acquisitions like acompay help alleviate common pain points associated with the accounting process for businesses," Dean Henry, executive vice president of global business financing and supplier payments," says by email.

AmEx already has been in non-card payment services, particularly in the B2B realm, and is ready to expand further, says Henry.

"B2B payments is a market where we see a lot of opportunity for growth, not only for American Express but also for our commercial customers ... many of our B2B solutions are non-card payment systems and we continue to look for opportunities to work with innovative companies in the non-card payment space."

In a deal that bolsters its traditional travel-and-entertainment and loyalty base, AmEx in May announced it had acquired reservation-platform provider Resy Network Inc. Founded in 2014, New York City-based Resy offers software for restaurants that includes table management, customer-relationship management, and booking, as well as a consumer-facing restaurant reservation mobile app and Web site.

Resy works with approximately 4,000 restaurants in 154 U.S. cities and 10 countries, seating more than 2.6 million diners a week, AmEx said.

The Resy deal will support AmEx's growing list of "digital-first" benefits and services for its cardholders, and drive volume for its restaurant merchants, Chris Cracchiolo, senior vice president of global loyalty and benefits, says by email.

Resy builds on some of AmEx's other recent acquisitions "whose technologies and teams, combined with the backing of American Express, are enabling the development of new digital capabilities that further enhance our cardmembers' lives in the areas they care about most," he says.

Two of those recent acquisitions include LoungeBuddy, a digital platform for finding and accessing airport lounges, and Pocket Concierge, a restaurant-reservation service in Japan. Last year AmEx bought Mezi, developer of an app for planning and booking trips.

While most of the networks' acquisitions this year have augmented their core, card-based businesses, the companies clearly are adding services in adjacent markets—and who knows how far they'll venture.

"It's hard to exist just on providing payment processing today," says Drieling. DT

With additional reporting by John Stewart

THE NEW REALITY IN REAL-TIME PAYMENTS

Now that the Fed's so-called public option is no longer a matter of speculation, the race is on to dominate a crucial payments market. But in real-time transactions, will the race go to the swift?

BY **JOHN STEWART**

AFTER 10 MONTHS OF PLAYING IT COY, the Federal Reserve early last month finally jumped into real-time payments with both feet. But while the central bank is now unquestionably the 500-pound gorilla in this all-important game, it won't really figure as a player until at least 2023.

In the meantime, the big private-sector provider, New York City's The Clearing House Payments Co., could sew up critical swaths of market share with its own service, which has been up and running since November 2017. That is, unless the prospect of the Fed's product freezes the market.

Confused trying to handicap this race? You're not alone. But one thing is clear: creating a nationwide, interoperable network that connects all or most financial institutions will be a long, complex, expensive business. Already, TCH figures it has spent $1 billion developing its Real Time Payments service. RTP now reaches 51% of the country's demand-deposit accounts, according to Steve Ledford, senior vice president of products and strategy at TCH.

Nor can planners figure on building the service on existing rails. "This is not ACH. This is not wire transfer. This is a different animal," Ledford says.

On this point, even bankers who cheer the Fed's real-time effort, called FedNow, take a similarly sober-minded view. "This is very complicated," says Bob Steen, chairman and chief executive of Bridge Community Bank, Mechanicsville, Iowa. "It's going to be hard. We just have to keep our eye on the ball."

'VAST RESOURCES'

Just how hard is reflected in the Fed's timing estimate. For some

AND THEN THERE'S LIBRA

Facebook Inc. and its proposed Libra cryptocurrency took a beating this summer on Capitol Hill, but the outlook for the new coin—and its Calibra wallet—may be more nuanced than that reception would seem to indicate.

The skepticism toward Libra was bipartisan, with Senators and Representatives of both major parties raking Calibra chief David Marcus over the coals in separate hearings in July. But what the ordeal really meant was that Libra could be a serious player not just in cryptocurrency but, even more crucially, in real-time payments.

Politicians in both hearings pointed to Facebook's questionable record regarding privacy and security, while House Financial Services Committee chairwoman Maxine Waters and other committee Democrats have already prepared legislation to stop Libra development until all questions are answered.

But regardless of Marcus's defense of Libra in both forums, and the heated rhetoric it drew from Senators and Congressmen, some observers say Facebook could be playing a long game with Libra and its wallet app.

One key to this view lies with the Libra Association, the international consortium of 28 companies that is expected to take over governance of Libra after this year, basing its operations in Geneva, Switzerland. Facebook will be one of the 28, along with payments companies Mastercard Inc., PayPal Holdings Inc., PayU, and Visa Inc.

This means there aren't likely to be any moves any time soon to establish Libra or its wallet as a commercial proposition, these observers say.

"It will take years to establish the Association's governance documents and more years to identify the initial payment use cases the platform will support and the regulatory constraints that the platform must address specific to those use cases," points out Tim Sloane, vice president of payments innovation at Maynard, Mass.-based Mercator Advisory Group. Sloane has been closely following Facebook's crypto strategy.

Furthermore, there will likely be an even longer wait for the wallet. "Calibra can't enter the market until Libra is up and running," Sloane says. "When it

is, then Calibra needs to align with all of the [regulatory] agencies. This still leaves significant wiggle room as few of these agencies have regulations in place that recognize the unique nature of crypto."

Other payments analysts point out that such patience could pay off. When Libra finally delivers on its promise, it could have a powerful—and immediate—impact because of its backers' plan to tie its value to existing fiat currencies.

"Tying it to a hard asset like gold would have been bolder, but also more threatening to central banks," notes Eric Grover, principal at Intrepid Ventures, a Minden, Nev.-based financial-services consultancy. "In contrast, Bitcoin is backed by nothing more than the hope there's a greater fool willing to buy it for more."

Indeed, Grover argues a heavy regulatory hand could defeat one outcome the currency's designers may or may not intend. "Libra threatens and stresses existing systems. No bad thing," he argues. "A credible, lightly regulated, new global currency and payment system would force existing currencies and payment systems to perform better."

Light regulation, though, isn't likely. Calibra has filed for state money-transmitter licenses, according to Mercator. And Marcus told the Senate Committee on Banking, Housing, and Urban Affairs that Facebook is working to comply with a wide swath of agencies, including the U.S. Treasury Department's Financial Crimes Enforcement Network and Office of Foreign Assets Control, as well as the Federal Trade Commission.

And even if Facebook is patient, it will continue to draw skepticism about its venture into cryptocurrency and, by extension, faster payments.

Sloane, for example, points to the simple matter of the Association's intended headquarters city. "How a Geneva-based operation squares with the statement, 'I believe that if America does not lead innovation in the digital-currency and payments area, others will' is beyond me," he says, noting a sentence in Marcus's prepared statement for the House committee he faced in July.

observers, 2023 is a long way off. Will banks wait that long while competitors are signing up for TCH? On the other hand, will banks that might have gone with TCH hold back, waiting for the Fed solution?

What's clear is that banks have a lot of thinking to do. "It's not the case that banks will be able to magically receive transactions from the Fed," notes Sarah Grotta, an analyst at Mercator Advisory Group, Maynard, Mass. "There's work that will have to be done. And banks that joined [TCH's] RTP will have to build tools to connect to the Fed."

As if the plumbing the pipes for real-time settlement weren't challenge enough, the politics of the effort are ever-present. Small banks like Bridge, and a lot of

merchants, welcome FedNow at least in part because they want a public-sector rival for TCH, which is controlled by 25 of the nation's biggest banks.

Without the Fed's intervention, merchants fear the way will be open to another Visa-Mastercard behemoth. Some small and mid-size financial institutions are alarmed about the pricing an unrestrained private entity controlled by big banks could ultimately extract.

Others just want a public utility and figure that only the Fed has the

funds to create one. "I'm not going to spend 10 seconds fussing about the big banks," says Steen. "They have vast resources."

'NUMEROUS CONCERNS'

For his part, Ledford says TCH has made itself as welcoming as possible for small-fry institutions. It operates on a cost-recovery plan and levies none of the monthly fees or minimum volume requirements that could freeze out even some mid-size banks.

By late summer, 15 banks had gone live on RTP, and several community institutions, like Colorado's First Bank ($18.6 billion in assets), Cape Cod Five Cents Savings Bank ($3 billion), and another Massachusetts bank, Avidia ($1.6 billion), had signed up.

In fact, TCH may have received an assist from the Fed. Far from freezing financial institutions in place, the regulator's decision to build a real-time service may have spurred some to link up with RTP.

"We're seeing more of a split," says Ledford. "Before the Fed announcement [in August], there were a lot of banks and credit unions saying they wanted to see what the Fed would do before making a decision. That was freezing the market."

But, he goes on, "Now that the Fed has announced, we are hearing from financial institutions saying they can't wait, and they are moving forward with RTP. Others are still waiting, but it's not clear how long they will wait."

Whenever the Fed's system finally goes live, however, it will face competition from more than TCH. The big card networks, for example, long ago perfected a push-payment service that allows clients to send funds immediately to anyone with a debit card. Now, with the advent of the so-called gig economy, Visa and Mastercard are eyeing even bigger opportunities in real-time payouts to ride-share drivers, delivery impresarios, and anyone else with a bank account.

And even Facebook Inc.'s Libra initiative (box, page 32), should it be allowed to launch in the face of seemingly implacable hostility from politicians and regulators,

could compete for the real-time market. Like other cryptocurrencies, Libra, with backing from 28 major companies, is designed to function like digital cash.

"Just the fact that a project like Libra can be conceived and companies are there to do that, that's a dynamic here," says Patricia Hewitt, principal at PG Research & Advisory Services.

The Fed took notice while it was fleshing out its plan for FedNow. "Facebook's Libra project raises numerous concerns," noted Fed Governor Lael Brainard on Aug. 5 while announcing the Fed's decision.

'UNIQUELY POSITIONED'

In 2015, the Fed convened a task force on faster payments that included representatives from a wide swath of the private payments economy. The group worked diligently for two years while the Fed religiously stuck to its facilitator role.

But last October, the regulator said it was considering an active role in building a real-time gross settlement system, and solicited comments. It got 350, of which 90% were

positive, leading to the announcement in August. Only one Fed governor, vice chairman Randal Quarles, dissented. Later in the month, Fed-Now had a leader: Kenneth Montgomery, first vice president at the Federal Reserve Bank of Boston.

To be sure, building the system will be a momentous job for the Fed, rivaled in its history perhaps only by the automated clearing

Montgomery: The Fed's man to lead FedNow.

house network 40 years ago and the Check21 project of a decade ago. But some of the project's leaders see an almost moral responsibility undergirding FedNow. For all the talk about TCH, Visa, Libra, and other existing and potential real-time providers, Brainard made one imperative crystal clear: ubiquity.

Said she on that August day: "We are not making this decision lightly. It's our responsibility ... No private-sector provider has ever achieved 100% reach. The Fed has already invested in connections with nearly every bank across the country. We are uniquely positioned."

It'll be a few years, but FedNow will ultimately demonstrate how solid that "uniquely positioned" advantage really is. Ⓓⓣ

A SELL-BY DATE FOR PASSWORDS

Technical advances in identification and authentication are finally establishing an alternative to the alarmingly insecure username-password combo.

BY **RALF GLADIS**

Ralf Gladis is a founding director at Computop, a global payment-service provider based in Bamberg, Germany.

OWING TO THE INCREASING AMOUNT OF DIGITIZATION in all areas of life, secure identification and authentication are becoming more and more important. Particularly, the transfer of sensitive data such as payment transactions must be performed with as little risk as possible to protect retailers and consumers against the theft and misuse of valuable information.

While personal ID cards are recognized as a reliable identification medium in the analog world, the uncharted digital territory feels almost like the Wild West. In this world, the established combination of user name and password is comparatively insecure.

For clarity's sake, let's first talk a bit about identification and authentication. Many people use both terms synonymously, but they describe two different processes.

A TEDIOUS ANNOYANCE

Identification is when a person proves their identity to an authority or entity to which they were previously unknown. This occurs, for example, via conventional registration with an email address and password, which is sufficient for many services.

For more sensitive applications, such as payment transactions or banking, on the other hand, there are more sophisticated identification processes, such as Postident and WebID. These use significantly more complex methods to check whether a person corresponds to the identity he or she claims to have.

Authentication, on the other hand, involves recognition. After users have identified themselves and registered, they must then log in. For

this and all subsequent uses, they must be authenticated. The usual pairing of user name and password entered during the registration are typically used for this purpose.

However, this method has been the focus of criticism for years. In contrast to other processes, it is relatively insecure—particularly when the user's email address serves as the user name as well. It is often known by a large group of people, thus weakening the level of security. In addition, many customers consider password management to be a tedious annoyance.

As a result, instead of using complex letter and number combinations (ideally a different one for each portal), they often use an easily memorable code based on birth dates or family names, often comprising just a few characters. This type of weak password protection is easy to crack, thus presenting a high security risk.

While many companies, alliances, and even the government are working on solutions for secure identification and authentication, a standardized and generally accepted system has yet to be established. There are initiatives that exist or are emerging to try to ensure secure

digital identification and authentication. Let's explore these.

GUARANTEED AUTHENTICITY

For 20 years, technology has allowed identification and authentication to be encoded asymmetrically via a private and a public key. The secure infrastructure described below, which is used for this purpose, relies on a certification authority (CA). The CA verifies public keys and issues digital certificates for them.

The key pair is usually generated on the device or smart card of the user. The private key always stays with the user, while the public counterpart, which has been signed by the CA, is submitted to the service for which the user is registering.

For the authentication, the service provider then sends the user a calculation, which they can solve only if they possess the private key. Only the service with the matching public counterpart is able to check the solution.

The central security element of the public/private key infrastructure is therefore the private key. The security provider issues it only in a protected environment. This may be, for example, a protected

hardware sector in an iPhone. It signs the public key with a certificate authority.

As with the SSL certificate of a Web site, the certificate is verifiable for any outsider and is generally issued for the email address of the user. The authenticity, confidentiality, and integrity of messages are thus guaranteed. If the issuer of the certificate has checked and verified the identity of the user, the user can use it to sign documents.

With regard to hardware solutions for authentication, the point of sale is unique. The card terminal contains the certificate issued by a PKI, which is operated by the payment-service provider (PSP).

The PCI-P2PE security standard of the credit card industry guarantees that credit card data is transferred from the card terminal to the endpoint in an encrypted form, that is, directly from the POS to the payment-service provider.

This provider then decrypts the information in accordance with the PCI standards and transfers it to the acquiring bank. Retailers that integrate P2PE terminals encapsulate the payment data and significantly reduce effort for the PCI certification.

THE FIDO SOLUTION

To reduce reliance on passwords, the FIDO Alliance is working on establishing public and license-free industry standards for global online authentication. The nonprofit organization was founded in 2012 by Agnitio, Infineon, Lenovo, Nok Nok Labs, PayPal, and Validity Sensors. It has so far published the standards U2F (Universal Second Factor)

and UAF (Universal Authentication Framework).

The first standard is a specified hardware and software combination for two-factor authentication, and the latter is a network protocol for password-free authentication. Once a product is certified according to FIDO standards, the provider can mark it with the trademark-protected FIDO-certified logo.

As with the PKI solution, FIDO uses a pair comprising a public and a private key. However, the duo is not created by a central entity and transferred via a secure container, but rather generated and stored on the device, for example, a smart phone. Specifically, it takes place in the FIDO authenticator, a protected software area in the phone. It supports various methods for user verification, which takes place every time the key is used, for example, via biometric methods such as iris or fingerprint scans.

Almost all operating-system manufacturers offer suitable interfaces. Google integrates this from Android M onward and Apple from iPhone 5s onward. Microsoft uses it for Windows Hello, launched in 2015. In all cases, the respective system manages the key pairs in a secure area of the phone's hardware known as the trusted execution environment (TEE).

For Web services, FIDO is a convenient and secure option for authentication, which can be integrated easily using a FIDO server. With Web authentication, the W3C consortium (a body for the standardization of technology on the Internet) has adopted an authentication standard for Web browsers with a FIDO connection. This

This market is currently experiencing a gold-rush atmosphere. Dozens of companies and startups are working on establishing themselves as central logins for Internet services.

is already being used in Microsoft Edge, Google Chrome, and Mozilla Firefox, and is currently being examined by Apple for Safari.

The standard enables password-free authentication in the browser. Users can log into Web sites using their fingerprint or via face recognition, and are thus no longer reliant on the comparatively insecure combination of user name and password. Microsoft, Google, and Apple can use the API for smart phones and tablets with a fingerprint sensor (e.g., Touch ID) or face recognition (Windows Hello, Face ID). The biometric user data therefore remains in a secure area of the device, where it never leaves.

When used for e-commerce, the standard lets retailers offer their customers a biometric login when registering for the first time. As a result, users no longer have to worry about data theft if a hacker targets the database, since there are no saved passwords to be stolen. This also increases convenience, as they can easily make purchases with just their fingerprint.

Key players in this model are identity brokers. They hold no identities themselves and thus do

not carry out any authentications. Instead, they are aggregators that combine various small identity providers into one unit. They also provide services that build on digital identities.

This market is currently experiencing a gold-rush atmosphere. Dozens of companies and startups are working on establishing themselves as central logins for Internet services. These identity brokers advertise to end customers as well as retailers and service providers. It seems unlikely that one of these players will win the race alone.

SETTING THE COURSE

Standards such as FIDO set the course for future business and government communication without passwords. Google, Huawei, Intel, Lenovo, Microsoft, Samsung, and others are working on aspects of functionality and convenience. In e-commerce, biometric authentication improves both convenience for consumers and security; e.g., when avoiding account takeovers.

However, market developments show one thing clearly: the reign of passwords is coming to an end. **DT**

Getting loyalty right doesn't need to be an exercise in frustration.

endpoint

RETHINKING CONSUMER ENGAGEMENT

More and more, retailers are learning that the key to powerful loyalty programs lies in payments.

BY **CHRISTOPHER KRONENTHAL**

Christopher Kronenthal is president and chief technology officer at FreedomPay, Philadelphia.

TECHNOLOGY HAS EVOLVED beyond comprehension over the years, and so customer behavior is changing. The consumer is ever-more demanding, and no more so than in the services industry. It's getting harder to retain customers, grab their attention, and keep them loyal to your brand.

When we look at loyalty from a business perspective, we know that acquiring a new customer can be anywhere from five to 25 times more costly than retaining an existing one. In addition, increasing retention rates by as little as 5% can increase company profits by anywhere from 25% to 95%.

That's not including the fact that members of loyalty programs tend to spend on average between 12% and 18% more annually than non-program members. And in some industries, loyalty schemes can make up as much as 20% of a company's profits.

A new way to start engaging consumers is by changing the emphasis from just tactics to supporting technology. However, most of the IT infrastructure that manages loyalty programs has been around for decades. These aged platforms are unlikely to be able to support the customer-centric, highly personalized loyalty schemes that today's consumers demand.

In retail, there has been a clear shift from traditional services to more customer-focused "experiential" models, which explains why consumer loyalty has moved to the forefront of strategic business roadmaps. However, market feedback has indicated that the majority of "catch-all" schemes do not meet the expectations that come with the current digital age.

IMPERFECT DATA STORM

This is caused by several factors. Customer data is fragmented because the different parts of the business that provide data are unable to "talk" to each other. So the wealth of the data is largely inaccessible to merchants and can't be used to develop a loyalty strategy across the entire business.

In addition, the customer experience is splintered by using multiple channels and applications that are often run by different teams—not to mention different companies—with differing priorities.

These factors have created an imperfect data storm, which arguably makes it even harder, if not impossible, for loyalty to deliver consistent positive interactions.

Current loyalty platforms still rely heavily on triggers, which add a layer of friction for the consumer and can result in poor redemption rates. A customer's desire to engage rapidly disappears when she is

IN THIS MEGA MERGER LANDSCAPE, IS YOUR ISO WITH A PROCESSOR OR A PARTNER? WHAT TO ASK AND WHY IT MATTERS

By: John Newton, Vice President of Sales, Strategic Partner Channel, First American

Mega mergers have created enormous financial technology companies with scope and reach that far exceed the needs of a traditional ISO channel. As a result, ISOs are now just one of many drivers of new merchant acquisition and profit to the processor.

This leaves ISOs with many lingering questions, including the newly merged entity's commitment to the channel, how the merger will impact service levels, long-term philosophy and direction, and how the merger will affect the ISO's ability to compete.

The complexity and scale of these mergers will inevitably cause change to the business operations, support and solutions currently available – some may be positive while others may not. And it may take some time for the impact to be felt.

As a result, these market conditions provide a natural opportunity for ISOs to take the time to explore their options and make sure they have access to more than a processor. Instead, ISOs should seek a business technology partner that provides access to products and solutions that fit their needs.

When evaluating a prospective partnership, ISOs should focus on four key criteria:

- ▶ **Support:** How is the ISO channel supported?
- ▶ **Quality of Merchant Solutions & Products:** What merchant solutions do they offer, and are these table stakes quality or technology forward?
- ▶ **Business Philosophy:** What is their business philosophy? Is there a match?
- ▶ **Past Performance:** What does their track record look like? How have they worked with ISOs in the past? A key indicator of a successful ISO/provider relationship is portfolio growth.

Taking into account the four criteria above, you can accurately assess potential providers and begin laying the groundwork for a fruitful partnership.

SUPPORT

Before you begin any introductory partnership conversation, start with your non-negotiables; identify them and be unwilling to compromise on them. You can save yourself and your business a lot of unnecessary heartache by identifying upfront what you expect from a partner. Level set expectations from the outset and ensure your contract and service level requirements reinforce it.

QUALITY OF MERCHANT SOLUTIONS & PRODUCTS

Look at your go-to-market strategy and desires. What products, services and technology do you need, and what does the provider have available today? Do they have an integrated solutions strategy, APIs and the necessary support to leverage in today's rapidly evolving marketplace? Do the solutions fit your business needs and plans? Equally important, do the solutions fit the market and needs of the customers you are trying to serve?

What about future product needs? You want to have a clear understanding of the product roadmap, and their disposition on product collaboration. Having a partner in your corner that can help you create tailored, go to market solutions on a nimble timeframe can be a major game changer. You also want to ensure that the partner is willing and able to devote development resources toward significant opportunities you bring to the table.

BUSINESS PHILOSOPHY

What is this prospective partner truly good at providing? Ask yourself if your ISO's business model and growth strategy fit that model. If they do not align, you cannot expect to be successful. ISOs need to find a partner that has similar culture and business philosophies. If you want to be known for excellent service, align with a provider that runs its business this way.

PAST PERFORMANCE

It is equally important that the provider has a track record of successfully serving partnership channels. This is where the rubber meets the road. Do your due diligence and ask fellow ISOs about their experience with specific providers. Are calls returned on time? Are issues resolved promptly? Does the partnership help or hinder portfolio growth? The answers to these questions can help you make the right choice in selecting a true partner.

Bottom line, while it is important not to fear the M&A activity in today's market, it is prudent to use these market conditions to your advantage. Now is the time to assess your ISO's situation and ensure you have the right partner to usher in the rapidly changing technology landscape within payments.

Making the tough, but correct, decision now can pay dividends down the road.

FIRST AMERICAN
Technology Driven Payments

asked repeatedly to prove who she is, or needs to remember a membership card number every time she interacts with a business.

TOKEN BENEFITS

To start attracting today's customers, loyalty models need to be re-engineered to include payment-linked identification engines, which can help deliver the convenient and personalized experience that consumers want and, importantly, expect.

Various token options also exist, so merchants have a choice to provide the right solution for every conceivable payment scenario. For example, transactional tokens can be created for application programming interfaces (APIs), with APIs also being an option to update expired card data. Bulk token files can now be created for over a million accounts.

Analytical tokens also have the benefit of added transactional security, so when it comes to processing card data, you can allow for a hierarchical method of access and usage. That means that sensitive payment information is only accessible to certain members of staff.

Here are some areas of specific focus:

1. PERSONALIZED BENEFITS: Loyalty has to deliver real value that resonates with the customer's habits and lifestyle. People are increasingly willing to share their data to get genuinely personalized experiences, so companies need to start using the "exchange" ethos to their advantage. This will allow them to deliver more relevant promotions and upsell and cross-sell relevant products and services.

2. EMOTIONAL CONNECTION: Customer emotion and retention are directly linked, which is why the top five reasons customers give for feeling a connection with a brand are associated with caring. The established benefits of emotionally connected customers include reduced price sensitivity, more frequent visits to retailers, and spending that is almost 50% more than what consumers without an emotional bond spend.

3. "FOLLOW-ME" REWARDS: Flexibility of payment can be a driving factor in delivering customer loyalty. Consumers want to be able to earn, transport, and redeem rewards across different outlets and access loyalty through their mobile devices. If a company can offer this, they are likely to more deeply resonate with consumers, particularly millennials.

4. OMNICHANNEL EXPERIENCE: Consumers want speed and ease when accessing their loyalty schemes. A quarter of Americans (26%) abandon a loyalty program if it isn't supported by a smartphone app.

Retail organizations need to harness the latest technology to connect all customer-facing functions supported by an agnostic and powerful engine to deliver next-generation, real-time connected commerce and loyalty.

From a technical and marketing perspective, payment infrastructure is fast becoming a technology issue and the natural doorway to develop an enriched loyalty program. Payment platforms that are omnichannel and formed of global transaction networks enable businesses to capture and record transactional data rich in insight, including what, when, how, and where consumers buy.

It is not only a point solution but an engine that can turn simple transactions into powerful and profitable relationships. With the right technological architecture, loyalty can be undertaken as part of ongoing business operations, which can be used by organizations to deliver truly seamless customer-centric and profitable loyalty programs. **DT**

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FOR ANY BUSINESS TYPE.

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