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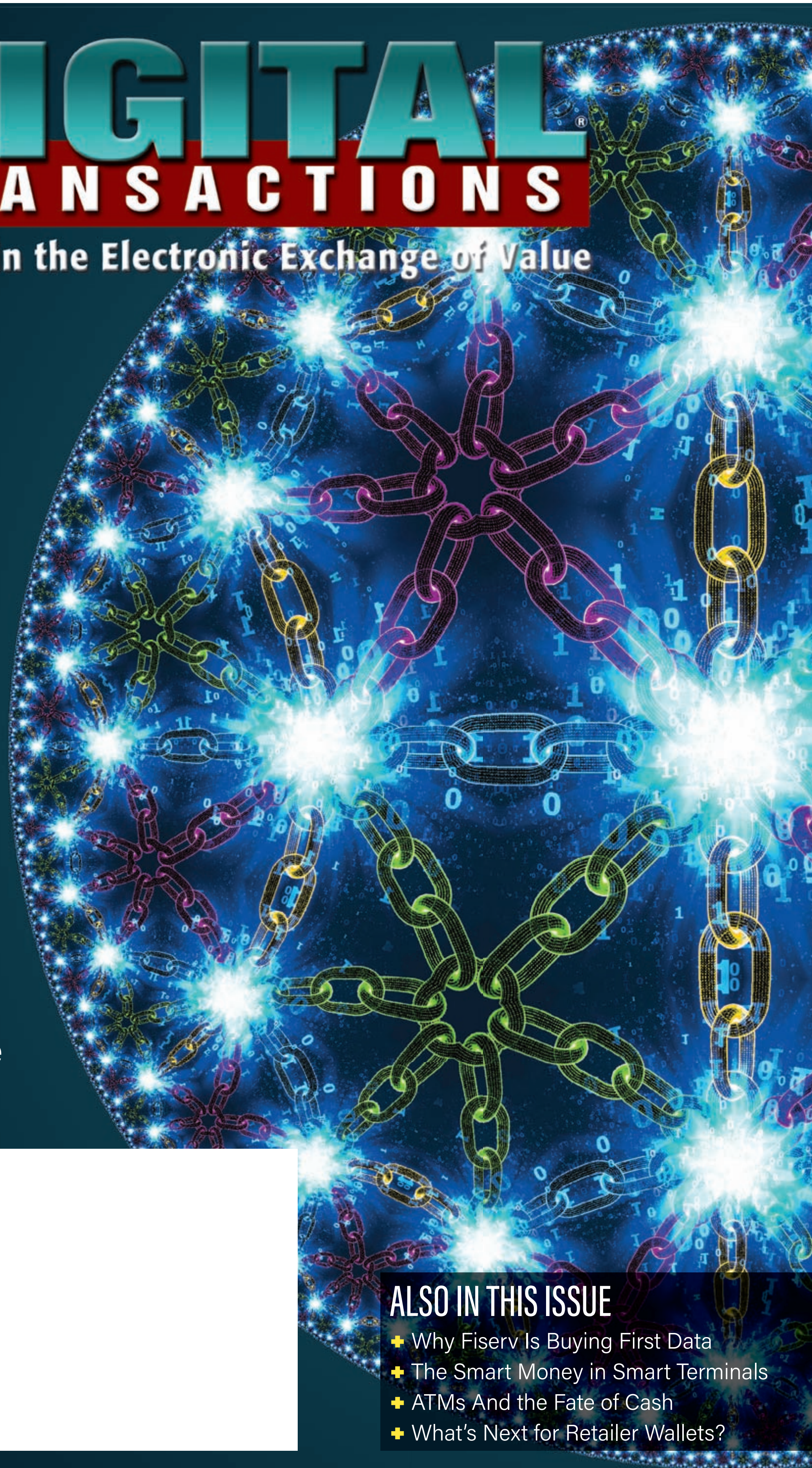
DIGITAL TRANSACTIONS®

Trends in the Electronic Exchange of Value



THE NEW REALISM ABOUT BLOCKCHAIN

Unbridled enthusiasm for distributed ledgers has given way to a more sober assessment of the technology's probable role in payments.

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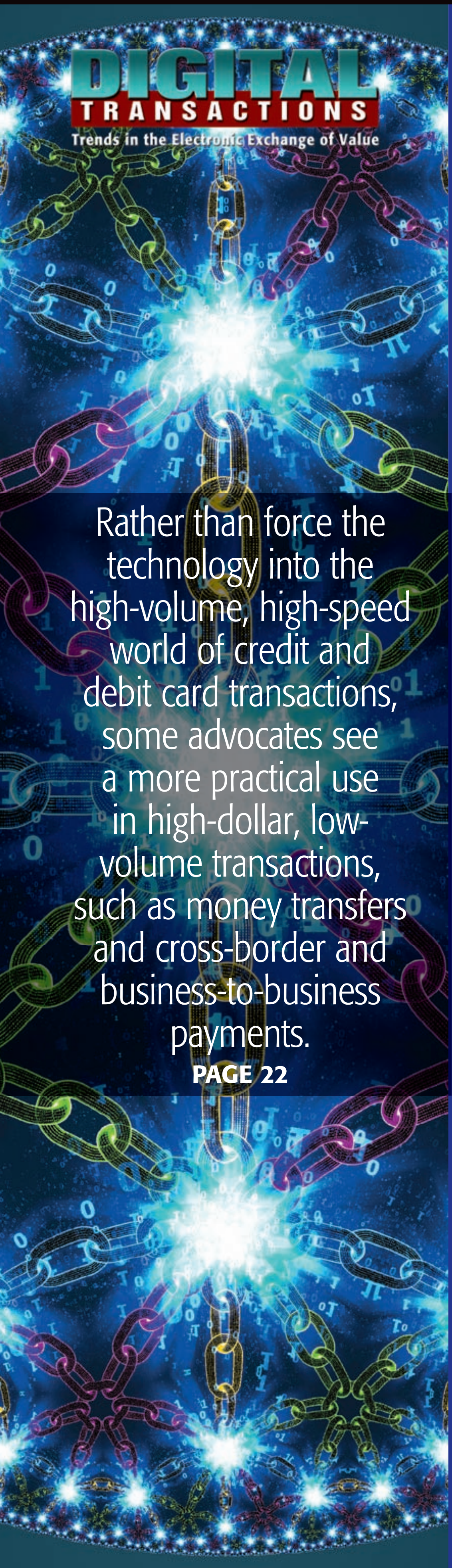

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On Realism

It was only a matter of time before the payments industry, some of which had succumbed over the years to a flight of fancy over blockchain technology, returned to earth. To be fair, this episode never reached the level of hysteria, nor were enthusiasts entirely wrong in their expectations. The error was more one of character than of degree.

Distributed ledgers will one day deliver some significant benefits both inside and outside of the payments business. But, as our story on page 22 shows, this day will arrive later than most enthusiasts expect and will likely yield fewer advances than many of them think it will.

Nor should this come as a surprise. The same has been true of most innovations believed to be transformative. It is easy, perhaps too easy, to blame inflated expectations on the human tendency to believe, and spread, hype. Hype is typically associated with ideas that were never built on anything but hot air from the start. Such ideas depend on hype for momentum, as they have little else to rely on for propulsion.

But blockchain isn't hot air, and enthusiasm for it isn't hype. This is a mathematically sophisticated system that can yield significant benefits in areas involving, for example, self-executing contracts, chains of ownership, and yes, payments. We called our story "The New Realism About Blockchain" because it points out, not how blockchain is a failure, but how expectations for it have been premature.

Critics like to point out, for example, how Visa can process tens of thousands of transactions per second while blockchain supporting Bitcoin can manage just seven. This is a fair point. But it is not dispositive in arguing that blockchain is a failure. It really means blockchain needs more innovation, and probably more time. Techniques like the fledgling Lightning Network, for example, may yet improve transaction capacity and speed by diverting volume in ways that relieve congestion.

This is what we mean by "realism." To adopt a realistic point of view of something is not to dismiss or denounce it. It is, by contrast, a pose that accepts and respects an idea by investing it only with expectations that are reasonable, given its capacities and limitations.

We are a publication that follows and reports on digital-payments innovation, so it would be perverse were we to ignore something like blockchain, or dismiss it out of hand. What we are trying to do with this month's cover story, by contrast, is to pay respect to the idea by recognizing clearly what it can reasonably do, and pointing out where users and experts feel it falls short.

We hope our readers will profit by the result.

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Trends in the Electronic Exchange of Value

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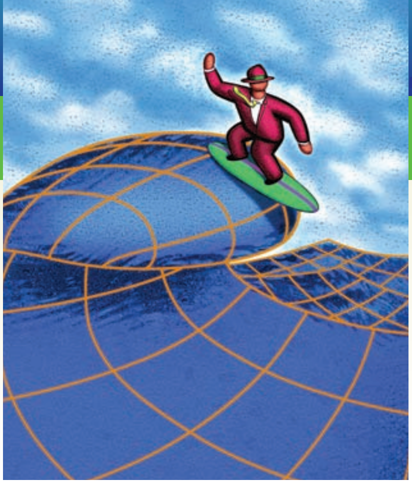


The Mega-Merger Nobody Expected

In a stunning announcement that surprised many observers last month, Fiserv Inc. struck a deal to acquire First Data Corp. with what the parties say will be the biggest ever such transaction in the payments and financial-technology businesses.

The all-stock deal, expected to close in the third quarter, values First Data at $22 billion and will bring to Brookfield, Wis.-based Fiserv major assets in merchant acquiring, including the fast-growing Clover smart-terminal unit.

It will also bolster both companies' connections with financial institutions and expand Fiserv's PIN-debit business by adding First Data's Star network.

With the combination, the expanded Fiserv will boast annual revenue of some $15 billion but will also inherit a significant albatross—approximately $17 billion in debt Atlanta-based First Data has struggled pay down over a number of years.

Fiserv's plan is to refinance the debt load as soon as the deal closes and then begin paying it off with free cash flow from the combined operations, said Fiserv chief executive and president Jeffery Yabuki in a conference call held jointly with First Data CEO and chairman Frank Bisignano on the morning the merger was announced.

Yabuki cautioned that the investment community has allowed First Data's debt load to overshadow the importance of its payments assets. "We'll still have that $17 billion in debt for a little while but it'll be at a lower cost," he said. "What we saw [in First Data] was a lot of debt but also major investments in the [payments] market. When we saw that, we said, 'Wow.' This is a misunderstood investment. It's a lot of debt, but it's a lot more EBITDA." EBITDA is an accounting term referring to earnings before interest, taxes, depreciation, and amortization.

With the merger, Fiserv will generate some $4 billion annually in free cash flow by the third year of the merger, Yabuki estimated.

Yabuki will serve as chief executive and chairman of the united entity, while Bisignano will fill the role of president and chief operating officer and will be a member of the board of directors.

For his part, Bisignano cited two overarching benefits of the merger.

Fiserv Compared to First Data

Fiserv		FDC
$5.5 billion	Revenue[1]	$8.6 billion
24,000	Head Count	22,000
$1.8 billion	Operating Income	$2.4 billion
$1.2 billion	Free Cash Flow	$1.5 billion

Note: As of the 12 months ended 9/30/18 1. Adjusted

Source: The companies

"For years, we have had aspirations to deliver a compelling core processing platform," and the combination with Fiserv fulfills that ambition, he said. The second benefit involves what Bisignano referred to as an immediate process of "deleveraging" First Data's balance sheet.

With Fiserv's assets in payments businesses like electronic billing, the merger will also allow First Data to market what Bisignano called "the largest and broadest merchant-services platform in the world," which will now extend to some 20,000 bank branches served by Fiserv.

To spur new businesses, Yabuki said the combined company will commit $500 million over the next five years "to enable new sources of growth," without being specific.

The announcement has stunned most observers, leaving some optimistic while stirring skepticism in others. "This combination creates an intriguing new entity in payments with the capacity to change the game for any and all banks and merchants other than the great big guys," says Steve Mott, principal at Stamford, Conn.-based consultancy BetterBuyDesign, by email.

"It substantially changes the balance of power in the industry and will have huge implications, if the deal is approved, for several of the key product futures including PIN debit, faster payments, and digital commerce, among others," Mott adds.

"The trick will be making this a strategic-marketing thrust and not just a cost-cutting exercise," he says. "If it's the former it could really energize the industry in a productive way."

Others are less sanguine. "Surprise is the first word that comes out. Skepticism is probably the second word. It's a big deal between two companies I never thought would come together," says Lawrence Berlin, senior vice president at First Analysis Securities Corp., Chicago, where he covers Fiserv and monitors First Data.

> "We said, 'Wow.' This is a misunderstood investment. It's a lot of debt, but it's a lot more EBITDA."
> —**Jeffery Yabuki,** chief executive and president, Fiserv

Berlin cautions that managing First Data's big debt load will be a more significant encumbrance than the two companies are saying publicly. "It's a lot," he says, adding that "Fiserv has a little over $5 billion [of debt] on their own. Bottom line, it's going to be a ton of work to make this thing work."

Still, Berlin sees "synergies" for the combination in person-to-person payments and in PIN debit, particularly with the combination of Star with Fiserv's Accel network. "You can see there's synergy, there's overlap," he says.

The terms of the deal call for First Data shareholders to receive a fixed exchange ratio of 0.303 Fiserv shares for each share of First Data common stock, representing a share price of $22.74 based on the Jan. 15 closing price. This is a premium of 29% to the five-day volume weighted average as of that day, the companies said. This formula will result in Fiserv shareholders owning 57.5% of the new company, leaving First Data shareholders with 42.5%.

The transaction is subject to customary regulatory approvals and the approval of shareholders.

—John Stewart

Remember TSYS's Vital Brand? It's Now a POS Product Suite

Payment processor Total System Services Inc. (TSYS) last month unveiled a line of point-of-sale terminals and services for small and mid-size businesses, and took its Vital brand out of a 13-year retirement as the name for the new product suite.

The cloud-based Vital POS has three major components: Vital Mobile, an EMV card reader for a merchant's smart phone or tablet; Vital Plus, a replacement for countertop POS terminals and electronic cash registers, and Vital Select, a full-featured POS system for businesses with one or more physical locations.

In addition to their payment functions, all three products include back-office features such as analytics and reporting, inventory management, tax accounting, time-clock and employee-management functions, pricing and discount controls, and other features, according to TSYS. Pricing was not immediately available.

"We currently have nearly 800,000 merchants in our portfolio, and each of these three products is designed for

Vital in action: An old processing name returns as the brand for a smart terminal line.

(Photos: TSYS)

the specific needs of different sizes of businesses," said a TSYS spokesperson by email.

Columbus, Ga.-based TSYS, one of the nation's biggest merchant acquirers, now has a system that competes directly with the likes of First Data Corp.'s Clover, Square Inc., and Poynt, all of which offer small and medium-size merchants business-management software apps in addition to POS hardware.

"Vital POS offers everything one would expect from a Square or Clover, but surpasses them with extraordinary back-office and business-management capabilities offered for a very affordable monthly fee," the spokesperson says. "Another key selling point of Vital POS is that it is based on a unified platform. This provides business owners with a single, unified experience across all of our products."

Vital uses technology TSYS obtained last June when it shelled out $13.4 million in cash to acquire Jacksonville, Fla.-based iMobile3, a provider of POS products and an app marketplace for mobile phones and tablets.

Vital Processing Services was the name of a 50-50 joint merchant-acquiring venture TSYS and Visa formed in 1995, with Visa providing the front-end services and TSYS doing the back-end tasks. TSYS bought out Visa's share in 2005, including rights to the Vital brand, and renamed the business TSYS Acquiring Solutions in April 2006.

"Vital is an extremely powerful brand that reflects and embodies the value and importance of the product set we are now delivering ... the Vital name also resonates very well in the industry," the spokesperson says.

—Jim Daly

What an Acquisitive Paya Is Looking for—And What It Isn't

Paya Inc. last month acquired First Billing Services, a Dayton, Ohio-based billing processor for municipalities, utilities, and multifamily housing units.

The deal, which Paya chief executive Jeff Hack says was consummated minutes before midnight on New Year's Eve, represents the Atlanta-based payments provider's second in as many months and continues what Hack says is the company's mission to fill in "white spaces' in its portfolio of services. Terms were not disclosed.

Formed in 2011, First Billing brings to Paya a base of more than 600 municipal and other government clients serving more than 2.5 million consumers. The potential for expansion in this market is appealing for a payments provider like Paya, Hack says.

"The penetration rate is low but rising at a high rate," he says. "Municipalities are a less-penetrated segment. There's not hundreds and hundreds of people tripping over each other to serve them, so it's very attractive."

The acquisition also furthers a strategy at Paya to recruit resources that can integrate software and payment processing in markets not typically served by rival merchant acquirers, says Hack, who took over at the company in November after a career that has included long stretches at JPMorgan Chase & Co. and First Data Corp.

"We have merchant agreements today that don't have the word 'merchant' in them," he says. "We believe it's a competitive advantage going to market with partners and offering a deeply integrated software solution."

In this sense, the First Billing deal follows the same logic that undergirded Paya's acquisition Nov. 1 of another Ohio-based company, Stewardship Technology Inc. That deal brought to Paya a processor with

strengths in nonprofits, particularly houses of worship.

First Billing, whose services include processing for automated clearing house and check transactions as well as credit and debit cards, has benefited from a trend among local governments toward electronic billing and payment.

> "We have merchant agreements today that don't have the word 'merchant' in them."
>
> **—Jeff Hack,** chief executive, Paya

In this market, "electronic payment adoption is growing rapidly," Hack says, but he adds that "staying out of PCI scope" is also critical to these clients. "This is why it makes sense to be partnering with someone like FBS." PCI refers to the Payment Card Industry data-security rules for card transactions.

With backing from Chicago-based private-equity giant GTCR LLC, Paya is far from finished in its effort to build out its capability to fill those white spaces with acquisitions that can merge software and processing capabilities in underserved markets.

"A payments-centric space that has low penetration of cards creates opportunity for us," Hack says. GTCR paid $260 million in 2017 to acquire the company, formerly known as Sage Payment Solutions, from the United Kingdom-based accounting-software firm Sage Group plc. Sage Payment rebranded as Paya a little over a year ago.

But potential deals are not all equal. In fact, very few that Paya evaluates are likely to come to fruition. "We see lots and lots of inbound interest," says Hack. "The funnel is incredibly wide. What makes it through the funnel is incredibly rare."

—John Stewart

Postpone the Requiem for ATMs

With the onset of digital wallets, observers of the payments scene might expect consumer demand for cash to wither, and with it the population of ATMs. It turns out the ATM count worldwide did hit its zenith last year, according to research released last month, but the reason is a bit more complicated.

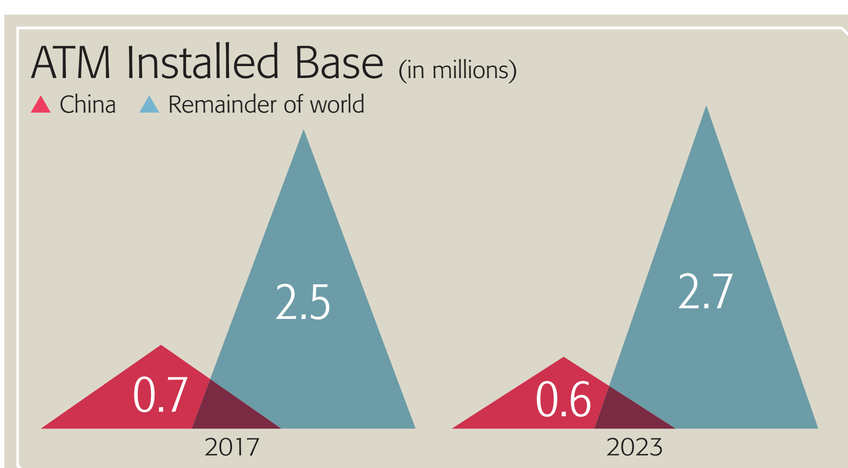
The total number of machines around the world peaked in 2017 at 3.28 million and then started a slow decline that will see it fall to 3.23 million by the end of 2023, according to RBR Research, a London-based firm. And while the reason is related to a downdraft in consumer cash usage, that downdraft is most dramatically going on in just one very large country—China.

The installed base in China is expected to drop from 700,000 to 600,000 through 2023, RBR says, for the most part because of wildly successful mobile-payments services like Alipay and WeChat Pay.

The two schemes together accounted for $15.5 trillion in spending in that country last year, more than 77 times the $200 billion they racked up only in 2013. Alipay alone saw its user base increase six-fold to 600 million over the same time span.

Since China is home to "by far" the world's largest installed base of ATMs, according to RBR, that turn to digital cash is having an impact. "China's burgeoning middle class has embraced digital payments enthusiastically, and as demand for cash falls, the number of ATMs in the country is expected to continue dropping," RBR says in a news release.

China isn't the only region where this is happening. RBR also sees it in some of the countries in Western Europe



Source: RBR

as the spread of payment cards and the ongoing closure of bank branches take their toll on ATM deployments.

Nevertheless, these declines will be more than offset by rising installations in other parts of Asia, as well as in the Middle East, Africa, and Latin America, RBR says.

The research firm cites moves in some of these regions toward financial inclusion and a general effort to bring electronic banking to rural areas. Overall, the world total outside of China will grow to 2.7 million machines, up from 2.5 million in 2017, the firm projects.

In the United States, an industry push to modernize the installed base of ATMs will spur deployment and usage, industry sources expect. (For more on the impact of declining cash usage on ATMs, see “Can ATMs Stay Relevant?” page 18).

“With the interest we are seeing in the Consortium for Next-Gen ATMs, growth here is expected to continue,” says David Tente, executive director for the U.S. and the Americas at ATMIA, an industry trade group. The ATMIA-sponsored consortium is promoting a blueprint that was reached last year to advance ATM technology.

The upshot is: don’t expect a declining demand for cash access to lead to the end of the ATM any time soon. “Convenient access to cash remains a priority for a great many customers around the world, and ATMs will continue to be a key cash delivery channel in the years to come,” says Rowan Berridge in a statement.

Berridge led the research effort for RBR’s report, “Global ATM Market and Forecasts to 2023.”

—John Stewart

Dashboard Commerce: Phillips 66 Links With Honda ...

Phillips 66 Co., which has long been a leading player among petroleum companies in digital payments, has taken a step into in-car commerce in a tie-up with Honda Motor Co. Inc. that will allow customers to find the nearest station, claim a pump, and pay for gas from the infotainment system in their cars.

The new arrangement, under development with Honda Developer Studio, is expected to work at stations flagged under the Houston-based petroleum company’s three brands, which in the United States include 76 and Conoco as well as Phillips 66. Some 7,550 independently owned outlets in 48 states sell the company’s products.

The company also said it will continue rolling out its My Phillips 66 mobile app, which launched last year and works in-store as well as at the pump with both Apple Inc. and Google devices. Google is a unit of Alphabet Inc.

The app integrates Mastercard Inc.'s Masterpass wallet. In 2016, Phillips 66 was an early player to announce it would accept JPMorgan Chase & Co.'s Chase Pay mobile wallet.

The company's latest move is part of a larger trend toward bringing payments capability to the most recent generation of infotainment systems installed in automobiles ("Hitting the Accelerator," January).

Honda has been an early exponent of this trend. Two years ago, the automaker worked with Visa Inc., pump maker Gilbarco Veeder Root, and parking-meter manufacturer IPS Group Inc. to demonstrate a mobile app that allowed drivers to pay for parking and fuel.

"We understand consumers want to fuel up, pay, and quickly be on their way," said John Barbour, manager of payments and card services at Phillips 66, in a statement related to the partnership with Honda.

Honda Developer Studio is situated within a unit called Honda R&D Innovations Inc., which is based in Mountain View, Calif., and concentrates on self-driving technology as well as in-car payments.

—John Stewart

... As Visa Teams Up With SiriusXM

Visa Inc. and SiriusXM Connected Vehicles Services Inc. said in January they plan to offer the SiriusXM e-wallet to auto manufacturers that deploy SiriusXM's connected-vehicle services.

SiriusXM Connected Vehicles Services is a subsidiary of New York City-based satellite-radio services provider Sirius XM Holdings Inc. Multiple automotive brands offer SiriusXM systems in their vehicles.

The SiriusXM wallet will allow drivers and passengers with Visa accounts to shop and pay for coffee, find and pre-pay for gas, locate and pay for parking, purchase movie tickets, pay tolls, and more, according to Visa. "Users will activate and authenticate payment with their Visa account using biometric authentication, like voice and touchscreen commands, to eliminate driver distractions during the transaction," Visa said in a news release.

The wallet runs on Visa and SiriusXM application programming interfaces as well as the Visa Token Service for data security. Tokenization substitutes card account numbers with digital strings of data useless to fraudsters.

"Our work with Visa is a significant step in establishing the next generation of vehicle-to-everything connectivity, transforming the vehicle into a 'hub' that provides for real-time, convenient transactional services to drivers and passengers," John Jasper, senior vice president at SiriusXM Connected Vehicle Services, said in the release.

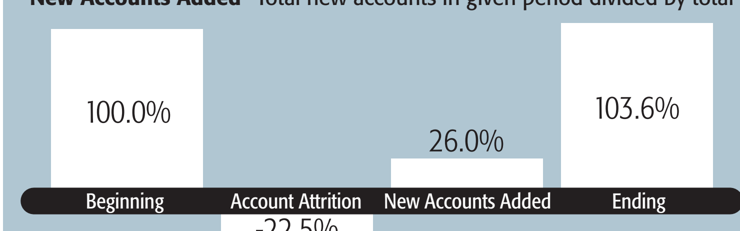
Visa and SiriusXM announced their pair-up at the Consumer Telematics Show, an automotive-industry conference in Las Vegas. DT

—Jim Daly

MONTHLY MERCHANT METRIC

Q3 2018 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.



Note: This is sourced from The Strawhecker Group's merchant data warehouse of over three million merchants in the U.S. market. The ability to understand this data is important as SMB merchants and the payments providers that serve them are key drivers of the economy.

All data is for SMB merchants defined as merchants with less than $5 million in annual card volume.

Source: The Strawhecker Group All information as available.

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Crypto And the Tax Man

Gideon Samid • *Gideon@BitMint.com*

It's ten years since Bitcoin made its big splash. More than a thousand coins now follow in its footsteps. Digital coins are still a tiny fraction of worldwide money movement, but the hype is on.

Very serious financial experts and economists predict a rosy future for this new technology. Many share a strong conviction that money is on an irreversible course towards digitization, a trend that is about to change payment, commerce, global sharing, and culture itself. But what path will it take, and how fast will this happen?

One possible pathway is rooted in irony. The original popularity of Bitcoin was due to the fear of Spanish and Italian account holders toward their own governments. They saw the European Union confiscating savings accounts in Cyprus, and regarded Bitcoin as a means to keep money out of government reach.

Bitcoin is a brilliant (albeit flawed) combination of well-known cryptographic ideas and some bold novelties. The most prominent are: (i) the public ledger listing all traded coins, and (ii) random allocation of out-of-the-blue-generated digital coins. These two novelties can be turned around and used by the very governments that Bitcoin was designed to evade.

The public ledger, and randomized allocation, may revolutionize the world of taxation. Taxes are an enigma, mostly based on income. A multibillion dollar industry is busy with accounting acrobatics to reclassify income as something else. The government is battling its citizens in a never-ending tax war.

And lo and behold, digital money may replace the income-tax paradigm with a wealth-based, cheat-resistant, fair alternative. Given the importance of taxation, this paradigm change may induce governments to welcome and embrace the new technology of money.

Remember the public ledger? It is a public list of all the digital coins in circulation. Bitcoin trade is based on the idea that this ledger is efficiently distributed and known throughout the trading universe. Suppose now that the World Bank declares that Bitcoin holders will be taxed 5% each year to pay for worldwide refugees, climate change, and natural disasters.

To do this, the bank will have to collect 5% of the trading coins. Seems like a daunting task. The owners of those publicly displayed coins are cryptographically masked.

Indeed, but the identity of the coins themselves is clearly marked. So all that is needed is a fair way to take over 5% of the Bitcoins on the public ledger. To do that, the World Bank can use the other Bitcoin novelty: randomness.

Bitcoin poses, every 10 minutes, a puzzle that amounts to randomized trial and error. This is ingenious. If the puzzle were solvable by intellect, the smartest trader would get all the new coins. So randomness projects fairness (though Bitcoin prefers those who wrestle randomness with heavy computing power). By applying a high-quality randomizer, the World Bank can hit 5% of the outstanding coins, and announce them as "taxed," that is, taken over by the bank.

The bank can take over the randomly marked coins without having any idea who it is taking them from. It does not matter. And, since all the trading Bitcoins are listed, their owners cannot hide them in the mattress or in the Cayman Islands. And, being random, every outstanding coin stands the same chance to be "hit."

Which means that Bitcoin traders will pay taxes in direct proportion to their holdings. This is a fair, wealth-based tax, and cheat-resistant at that. Public-ledger technology will instantly spread the word: these coins have been taken over as tax. The World Bank being a global institution, representing all 188 United Nations states and supported by global Internet organizations, it would be impossible to resist the coin confiscation.

I have used Bitcoin to explain this concept. Wealth-based taxation is much better applied to national currencies in digitized form, where the coins don't vary in value, and the trade itself is fully managed by the respective central bank.

We recommend this concept be applied to government-issued fiat coins, as we do with BitMint, which combines this cheat-resistant fair taxation with the emerging concept of universal income, circulating taxes from the top to the bottom of the financial pyramid. The advantage of instant and fair taxation will be very pronounced for local communities issuing and taxing community dollars.

The impact on taxation will serve as an irresistible inducement for governments to embrace digital currencies. ■

Get Smart

John Stewart

So-called smart devices are invading the point of sale at an increasing pace. They bring undoubted advantages, but also a few complications.

Judging by the number of times Fiserv Inc. chief executive Jeffery Yabuki and First Data Corp. CEO Frank Bisignano mentioned Clover last month during their joint announcement of Fiserv's proposed acquisition of First Data, you would think there's little more to First Data than the line of sleek, smart point-of-sale devices Clover sells.

Of course there is much more, but if the $22 billion all-stock deal closes on schedule in the third quarter, Fiserv will at a stroke join a rapidly growing smart POS market that didn't exist a few years ago and now bids to reshape the way consumers pay and merchants track their business.

So-called smart devices—little computers that sit on countertops with Internet connections and cloud-based libraries of software—are now the focus not just of traditional terminal makers like Ingenico and Verifone but also of major processors like Total System Services Inc. (TSYS) and the aforementioned First Data.

Sales of the devices have accelerated at a breakneck pace. Shipment totals are hard to come by. But where a provider might have installed them in 3% to 4% of its clients' locations a couple of years ago, that proportion is now more like 20% "for those who are better at it," notes Alfred "Chip" Kahn, who runs Boomtown Inc., a Tiburon, Calif.-based company that helps merchants and resellers iron out POS issues.

He doesn't see that trend slowing down any time soon. "I don't see why it wouldn't be 50% in a couple of years," he says.

'Scaling Pretty Nicely'

It's already taking on outsize importance for Boomtown. The company has 190,000 merchant locations on software called Relay that allows the company to help proprietors with terminal problems. Of these, Kahn estimates 25,000 are using smart terminals.

Startups that have been created specifically to supply smart terminals also report rapid growth. Palo Alto, Calif.-based Poynt Co., for example, only began shipping devices less than two years ago but has already shipped more than 200,000, according to founder Osama Bedier, a former PayPal and Google executive.

Founded more than four years ago, the company now works with 15 acquirers around the world to distribute its double-facing (customer as well as cashier) terminals. "It took us our first year to scale, and now we're expanding to multiple countries," he says. "Things are scaling pretty nicely."

Meanwhile, Clover is seeing $70 billion in annual processing volume, a number that's growing at a 46% annual rate. That's up from zero five years ago.

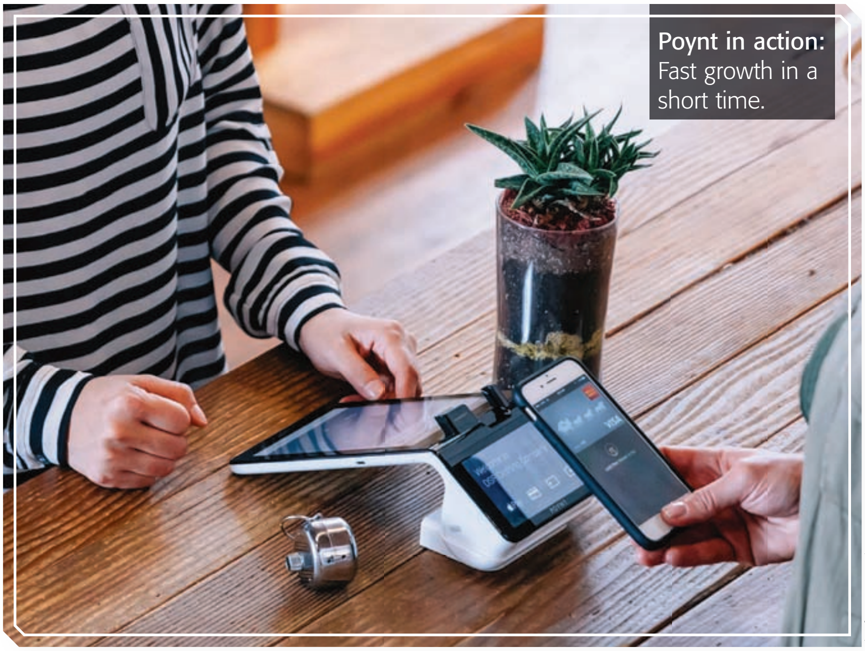
"We see strong demand from all sectors," says Mark Schulze, a co-founder. Now, it's keeping upwards of 500 developers so busy on apps that "the line between a Clover developer and an ISV [integrated software vendor] is rapidly blurring," he says.

Democratizing Payment

Fast growth hasn't come because the devices are cheap. They can sell for prices up to $500 apiece. Some sophisticated systems, like Square Inc.'s Square Register, list for $1,000, though the company's recently launched Square Terminal sells for $399.

But the devices appeal to merchants of various sizes and in various industries because they can solve business problems fast, run loyalty programs, and integrate updates, all with a very small footprint at the counter. And their large screens make it easy to see the solutions the machines are coming up with.

With typical payment terminals, "you see these beige-gray boxes where you can barely read the screen," says Thomas Templeton, a member of



(Photo: Poynt)

Square's Hardware Team who helped design Square Terminal. "We saw an opportunity to redesign the product and make it more user-friendly."

Even aesthetic considerations matter. "We put a lot emphasis on how do we bring beautiful design," says Templeton.

The rise of the smart terminal hasn't gone unnoticed at the two traditional giants in the countertop-terminal business, Ingenico Group and Verifone Holdings Inc.

"We've been looking at this class of product for quite some time," says Mark Bunney, director of go-to-market strategy for Ingenico, which last year announced its Axium smart terminal, a device that relies on ISVs for apps and can operate as either a mobile or stationary terminal.

What Ingenico is seeing, says Bunney, is a trend toward cash-register and processor sophistication combined in a small box with a big screen. And even small merchants, he says, are keen to get this.

"We've been seeing that for a number of years," he says. "They need something more. The smart terminal democratizes payment. Now, mom and pop can have as much power as a Tier One merchant."

It also hasn't escaped Ingenico's notice that the smart-device segment of the terminal business is "the fastest-growing," says Bunney. Axium is set to begin shipping before June.

For its part, Verifone has introduced its Carbon line of devices to meet much the same market demand. The company declined to speak to *Digital Transactions* for this story.

The Coming Shakeout

Some of the providers point out that the swiftly developing demand for these devices also stems from a need to combat what Erick Kobres, chief technology officer at Revel Systems, a San Francisco-based maker, calls a "digital channel shift" that especially threatens restaurants, a key market.

The shift involves delivery services that take over "branding" from the eatery, so that the user is "no longer a Joe's Pizza customer, they're an Uber Eats customer," Kobres says. "It's ratcheting up every year, and tech integration has not kept up with that."

Extending the restaurant's brand is important for Revel, which gets 60% of its sales from the segment. "It's what we're working on," he says, though he admits "there are a lot of variables—we don't have it settled yet."

Revel isn't the only player that doesn't yet have all the answers. Despite the industry's rapid development, observers are wondering how long it can support so many players. The big question, they say, is not when a shakeout among providers will happen, but how soon.

"Terminals are going to be around for decades, but the winnowing of the smart terminals" will happen much sooner, says Rod Hometh, a former Ingenico executive who is now a partner with the payments-advisory service RPY Innovations. "I'd put that at less than five years."

The complicating factor for providers, Hometh argues, is the requirement to certify devices with the card networks, an expensive and lengthy process that could be a crushing burden for a new player operating on thin capital or without alliances with established processors. "If you try to go it alone, you don't have a chance," Hometh warns.

'The Hardest Part'

The relatively quick popularity of smart terminals has attracted merchant-processing companies that have either started up their own device operations or signed agreements to work with

> 'The smart terminal democratizes payment. Now, mom and pop can have as much power as a Tier One merchant.'

existing ones. But this development also shelters fledgling device operations under the aegis of much larger organizations with more resources and more industry connections.

The most recent example of this trend emerged early this year when TSYS dusted off a brand name it hadn't used in 13 years and applied it to a spanking-new line of smart terminals.

The Vital line depends on technology Total picked up last year when it laid out $13.4 million in cash to buy iMobile3, a Jacksonville, Fla.-based vendor of POS products and an app marketplace for mobile phones and tablets. Total had last used the Vital name in 2006 for a processing venture it rechristened TSYS Acquiring Solutions.

"Vital wasn't created from whole cloth," observes Hometh. "TSYS is assembling the right pieces and parts with iMobile3 and Cayan." The latter "piece" refers to a processing-technology company TSYS acquired in January 2018.

But TSYS is hardly alone. Last month, the big processor Worldpay Inc. announced a tie-up with Revel that will include a wider selection of software and a single point of contact for support. In November, Elavon, a processing subsidiary of U.S. Bancorp, announced it had taken a minority stake in Poynt.

Years earlier, First Data snatched up Clover. And payments providers like North American Bancard and Shift4 Payments LLC have introduced their own lines of smart devices rather than rely on startup suppliers.

Poynt's Bedier admits certifications, and the struggle to keep pricing affordable as costs pile up, are major hurdles that can take years to surmount. "Getting 18 different certifications was the hardest part," he says. "Three years in, we had [them]."

Clover: at 6 years old, the grand-daddy of smart devices.

(Photo: Clover)

'Folks Need Help'

Other complications hover on the horizon of this business. Boomtown's Kahn, for example, says the devices are not quite as easy to use and maintain as their makers claim.

"They're not complicated to set up, but Silicon Valley oversimplifies how easy it is," he says. "Folks need help. It's not just plug it in and it works."

Recalling those 25,000 merchant locations with smart terminals that Boomtown supports on its Relay software, Kahn says that while they represent 13% of the total terminal base on Relay, they account for almost as many service tickets as the total of the other 87%.

Not all of the problems have to do with the terminals themselves. One-third, Kahn says, concern Internet connectivity, particularly WiFi links. "It's a lot of external issues as opposed to the complexity of the product," he says.

Some of the smart-device players have offset complications like this with offerings that have strong appeal for merchants and tend to tie them closer to the product. Business finance, for example, is a popular product.

Square has offered its Square Capital loans for years, and Revel's recent deal with Worldpay will allow it to offer merchants funding support through Worldpay's FastAccess Funding service. This option allows clients to settle their batch and get same-day access to their money.

'Tons of Ideas'

Still, the problems of smart devices have to be seen in the light of the advantages the technology offers, advocates argue. In this regard, the technology has few more ardent evangelists than Square's Templeton.

"Terminals at the point of sale will continue to get smarter and more powerful," he promises. "We have tons of ideas we want to add for our sellers. It's just going to get better and better over time."

Best of all, he promises, Square sellers won't have to buy new hardware. Instead, he says, "You'll just get a software update." DT

> 'Terminals at the point of sale will continue to get smarter and more powerful.'

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Can ATMs Stay Relevant?

Jim Daly

As cash goes, so go ATMs. Cash so far has managed to ward off its many electronic enemies, but it's playing defense in the payments version of The Hundred Years' War. What does it all mean for ATM deployers and manufacturers?

The leading payment card networks have targeted cash since their inception more than a half-century ago, and "Death to Cash" is a catchphrase that inspires fintech armies seeking to spread their new electronic-payment inventions across the land.

While most payments executives and banking regulators agree cash likely has a permanent place in payments, an increasingly heard opinion may be summed up in a recent speech by Australia's top central banker, Philip Lowe, governor of the Reserve Bank of Australia.

"For some decades, people have been speculating that we might one day go cashless—that we would no longer be using banknotes for regular payments and that almost all payments would be electronic," Lowe said at a November payments conference in Sydney. "So far, this speculation has been exactly that—speculation. But it looks like a turning point has been reached. It is now easier than it has been to conceive of a world in which banknotes are used for relatively few payments, that cash becomes a niche payment instrument."

But a niche role for cash in U.S. payments would be bad news for ATM manufacturers as well as the deployers of the country's approximately 470,000 ATMs, that figure coming from British research firm RBR. About 191,000 of the machines are owned by financial institutions and the rest by retailers, ATM independent sales organizations, and non-bank networks such as Cardtronics plc.

Recent research presents conflicting data about Americans' usage of cash. In December, the Federal Reserve released the latest annual update to its triennial payments study that last examined the 2012-15 period. The update found ATM withdrawal transactions at large banks declined by 2.8% from 2016 to 2017 (chart, page 19).

Also in December, the Washington, D.C.-based Pew Research Center released results of an online-shopping and e-commerce study that found 24% of U.S. adults make no cash purchases during a typical week. Further, 39% of respondents said they didn't worry if they didn't have cash with them, since there are many other ways to pay for things.

"Physical currency has existed since the dawn of the modern economy, but its role is waning as new modes of payment have emerged," wrote the Pew researchers.

More hopeful findings for the ATM industry come from the Federal Reserve Bank of San Francisco, which in November released findings from the Federal Reserve's Diary of Consumer Payment Choice. The diary project had a nationally representative sample of 2,800 consumers track their payments in October 2017.

The study report says "cash continues to be the most frequently used payment instrument," representing 30% of all transactions (down slightly from 31% in 2016 and 33% in 2015) and 55% of transactions under $10. And while online shopping continues to grow, 77% of payments were made in-person, with cash accounting for 39% of the volume.

Consumers continue to use cash mainly for smaller transactions, with cash being used for 55% of payments under $10 and for 32% of payments between $10 and $24.99.

The survey also found surprising concurrence in cash usage among older and younger consumers. Respondents 18 to 25 years of age and those 45 and older use cash approximately 34% of the time to pay for transactions.

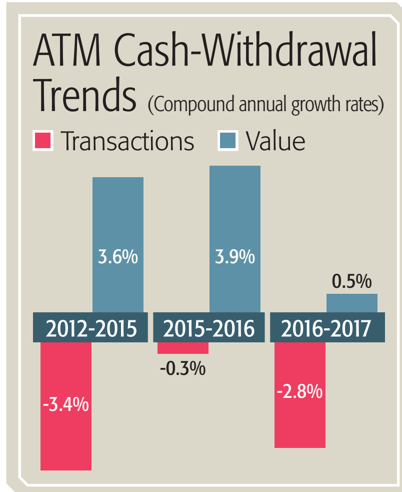
"As retailers and payment providers compete to deliver new ways to shop and pay, data from the 2017 Diary of Consumer Payment Choice shows that consumers continue to demand and pay with cash about as frequently as in previous years and that their usage is relatively similar across age groups," the San Francisco Fed researchers concluded.

"In particular, cash remains a popular payment method for small-value transactions. Furthermore, when considering preferences, cash remains a preferred secondary payment choice regardless of what payment instrument consumers prefer to use primarily."

'Look at the Nuances'

What does all this mean for the ATM industry, especially since ATM shipments peaked in 2015 (chart, page 21) and average replacement cycles have been extended from 7.5 years to 10 years, according to D.A. Davidson & Co. The investment firm in January issued research reports on the big U.S.-based ATM manufacturers, NCR Corp. and Diebold Nixdorf Inc.

Houston-based Cardtronics, which operates in 10 countries and says it is



Source: Federal Reserve Payments Study 2018 Annual Supplement

the world's largest ATM owner, cites the annual Health of Cash study that it sponsors. The latest survey, done by an independent research firm, found that 73% of consumers "used cash regularly despite more payment methods being available," according to a December Cardtronics blog post.

"Seven out of 10 consumers is a super-healthy and powerful statement on the use of cash," says Brian Bailey, executive vice president and general manager, North America, for Cardtronics.

David N. Tente, executive director for the U.S. and Americas at the Sioux Falls, S.D.-based ATM Industry Association, notes that despite the cash-withdrawal transaction declines found in the Fed research, "people are taking out more money."

The Fed's latest payment-study update says the value of ATM withdrawals increased 3.6% from 2012 to 2015, 3.9% from 2015 to 2016, and 0.5% from 2016 to 2017.

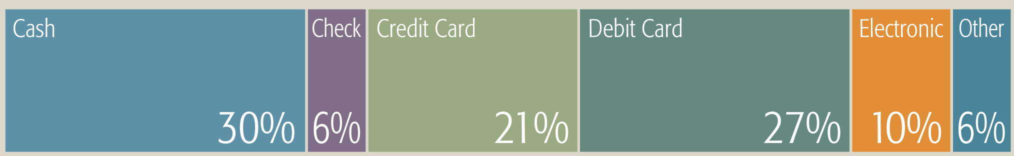
Both Tente and ATM consultant Sam M. Ditzion, president and chief executive of Boston-based Tremont Capital Group, point out that the Fed's supplement showing cash-withdrawal transaction declines in

2017 includes data only from large financial institutions, not community banks and credit unions.

"Statistically I don't disagree with those headlines," Ditzion says. "If you look at the nuances, however, things get interesting."

He notes that while wealthy Americans are very card- or mobile-payment oriented, lower-income groups are less so.

Consumers' Payment Instrument Usage, 2017



Notes: Electronic includes automated withdrawals and ACH transactions. Other includes prepaid and mobile.

Source: Federal Reserve Diary of Consumer Payment Choice

"If you start to segment out demographic groups, there are only some that are not willing to use cash," says Ditzion. "There's only a small number. For average Americans, [payment-usage] change is very slow."

'A Huge Growth Platform'

The negative or neutral perceptions of ATM-industry prospects accounted for some of the battering Cardtronics's stock took in much of 2018, with its shares dropping in the double-digits in some months.

"The stock got walloped throughout the year," says analyst Gary Prestopino, a managing director at Chicago-based Barrington Research Associates Inc. "It got way undervalued." Still, Cardtronics's share price managed to finish the year up 40%.

Cardtronics is recovering from the loss of its biggest retailer client, 7-Eleven Inc., which has switched management of its 7,000-plus ATMs to an affiliate of its Japanese parent company. Some of its other 2018 woes stemmed from possible regulatory actions in the United Kingdom, a key market for the company, that threatened its fee income. But the situation didn't play out as badly as feared.

Now Cardtronics is focusing on strengthening its partnerships with retailers and financial institutions, and expanding its fast-growing Allpoint surcharge-free network. Cardtronics operates 230,000 ATMs in total, including 76,000 that it owns.

Cardtronics reported a 6% year-over-year increase in cash-withdrawal transactions in 2018's third quarter among U.S. ATMs it operated for a least a year. Fourth-quarter figures were unavailable at press time.

Bailey credits much of that growth to the popularity of Allpoint, which enables consumers to use an ATM their bank doesn't own without paying a fee to the owner. Allpoint has about 55,000 ATMs worldwide, including 40,000 in the U.S. In surcharge-free networks, the network owner and bank and credit-union participants work out alternative revenue arrangements.

"The same-store [transaction] increase we've seen is on the back of surcharge-free," Bailey says. "Surcharge-free has been a huge growth platform for our company."

In a December investor presentation, Cardtronics said Allpoint's participants include 1,100 banks, credit unions, and prepaid card issuers, and seven of the top 10 U.S. retailers. Partners include Costco, CVS, Walgreens, Target, and Safeway.

Cardtronics gets 45% of its ATM operating revenues from cash-withdrawal surcharges, 32% from interchange (card issuers pay interchange to ATM transaction acquirers), 14% from bank-branding and surcharge-free agreements, and 9% from managed services and other sources.

The company is looking to expand its stable of financial institutions that put their brands on Cardtronics-owned ATMs, enabling customers of those institutions to make surcharge-free cash withdrawals.

As of Sept. 30, approximately 20,000 company-owned ATMs were under branding contracts with some 500 financial institutions. Some of the newest include Citibank, Fifth Third, and First Tennessee, according to Bailey. Cardtronics' pitch is that ATM branding enables a bank to extend its physical presence without building an expensive branch.

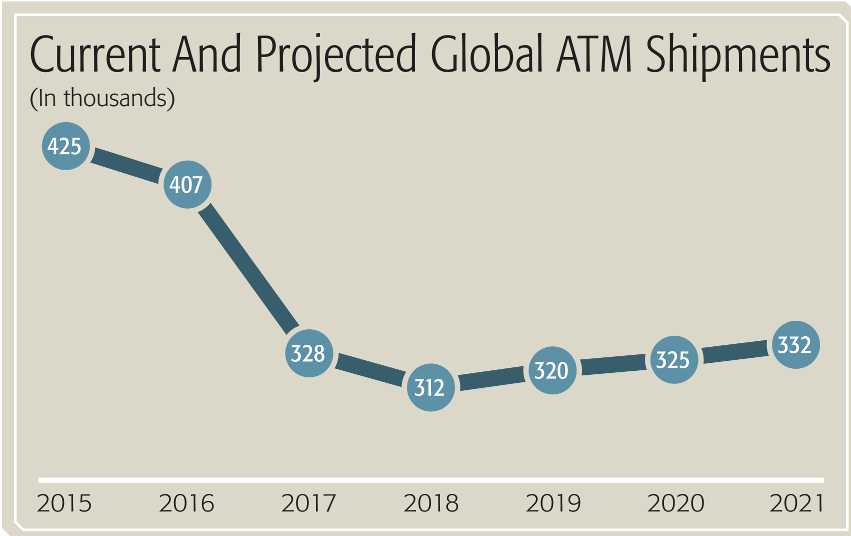
"We're actively partnering with financial institutions ... as branch consolidation and transformation accelerates," says Bailey.

Next up for Cardtronics, besides further development of its retailer and bank relationships, is "mobile cash access" for Allpoint, according to Bailey. He declines to give details early, but says "that's something that can unlock a whole new available market for us."

'A Critical Linchpin'

Meanwhile, the outlook for ATM manufacturers Diebold Nixdorf and NCR seems to be improving. In January, Great Falls, Mont.-based D.A. Davidson upgraded its recommendation on both companies' shares from "neutral" to "buy."

D.A. Davidson analyst Matt J. Summerville noted in research reports on the two firms that after three years of declines, the ATM industry



Source: RBR, D.A. Davidson estimates

is poised for a "modest recovery" in shipments this year. Citing RBR figures, he said the global industry suffered an "unprecedented" shipment decline from 407,000 units in 2016 to 328,000 in 2017 (chart).

About half of that slump stemmed from lower orders in China, according to D.A. Davidson. In addition, some U.S. ATM owners delayed replacements ahead of Microsoft Corp.'s 2020 sunsetting of support for the Windows 7 operating system, widely used in ATMs. The successor system will be Windows 10.

Other factors pushing shipments down were banks' re-direction of capital spending toward other channels such as mobile, and "a heightened level of headline narratives regarding a broader migration towards cashless societies," Summerville wrote.

After evaluating Diebold and NCR, however, "we came away feeling that the ATM remains a critical linchpin for customer engagement as part of a broader omni-channel, retail-banking strategy," according to Summerville.

Both Diebold Nixdorf and NCR are working diligently to grow their software and services businesses in the face of slower ATM and point-of-sale hardware sales. But ATMs remain key for financial institutions, according to Scott Anderson, global software engagement manager at North Canton, Ohio-based Diebold Nixdorf.

"The physical touchpoint is still very important," he says.

Diebold's software initiatives stem in part from financial institutions' desire to add more functions to ATMs, including account opening, product originations, and other services typically obtained in a branch, according to Anderson.

"It's about making the box, the ATM, more than a cash point," he says. "It's about the intersection of the physical and digital worlds." He adds that cardless cash access, in which a consumer carries out an ATM withdrawal using a smart phone, "is something that has more and more momentum" among Diebold's customers.

Some countries that have been especially active in promoting digital financial services, including the Nordics and the Netherlands, have found that they really can't eliminate "the long tail of cash" says Anderson. "There's always going to be that need to have currency in the hands."

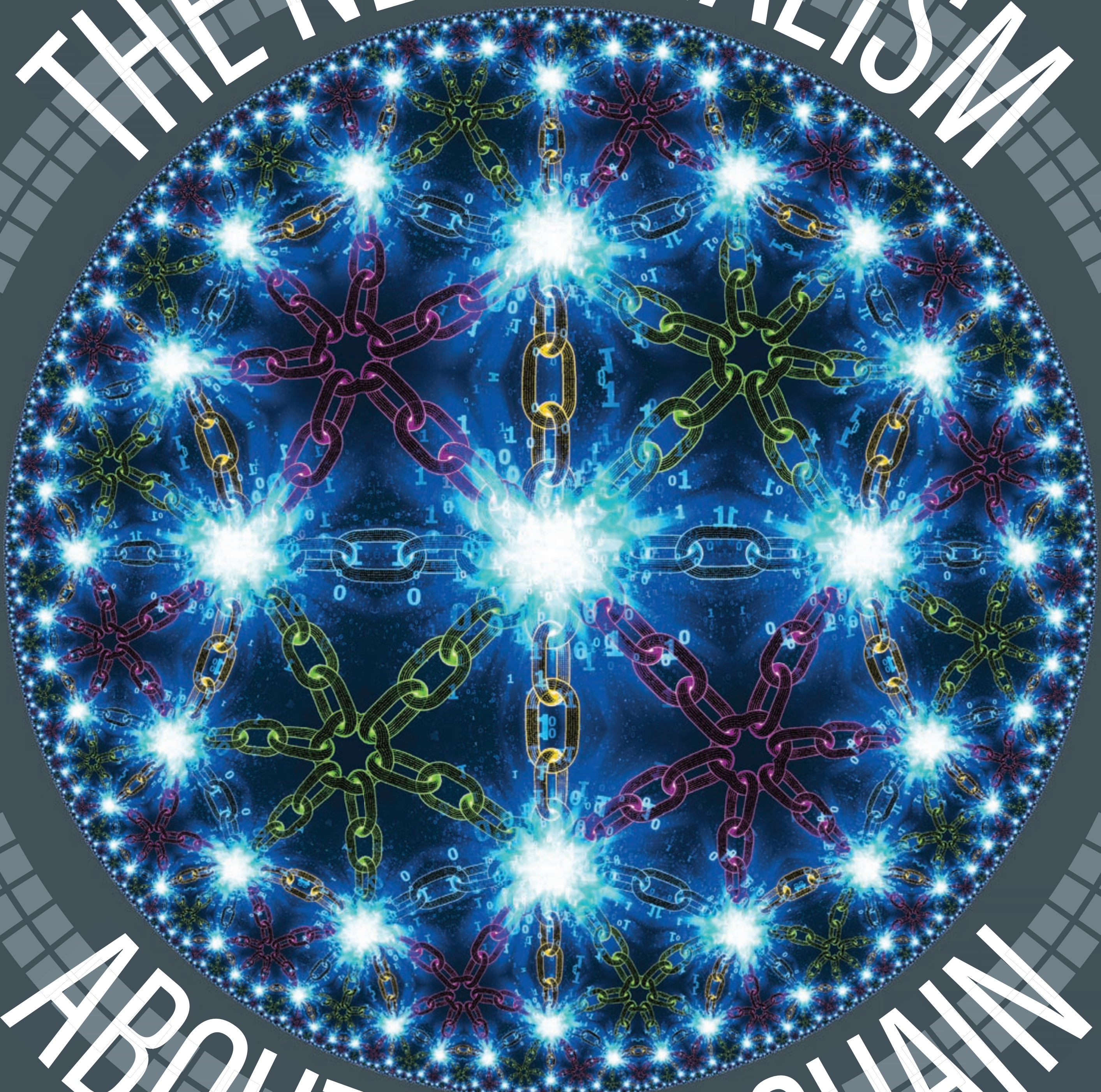
NCR and another big ATM manufacturer, Nautilus Hyosung America, did not respond to requests for comment.

A Continuing Role

Cash in the early 21st Century is moving over to accommodate new payment forms, just as it did when checks, credit cards, debit cards, prepaid cards, online payments, and, most recently, mobile payments came along. But nothing's knocked it off the bench yet, which assures a continuing role for ATMs.

"Cash as a whole is still growing and keeping pace with GDP, even here in the U.S.," says ATMIA's Tente. "We don't see any threat at all to cash." DT

THE NEW REALISM ABOUT BLOCKCHAIN



Unbridled enthusiasm for distributed ledgers has given way to a more sober assessment of the technology's probable role in payments.

BY PETER LUCAS

A few years ago, evangelists for blockchain confidently predicted its widespread adoption to facilitate faster, more secure, and economical payment transactions.

The type of transaction didn't matter. Whether it was stock trades, the sale and transfer of real estate, purchasing concert tickets, real-time payments, or the grand prize of them all—credit and debit card transactions—some payment executives envisioned blockchain as a transformational technology.

What raised hopes is that blockchain allows money or assets to move directly between two trading partners, thereby eliminating the need for a central intermediary to oversee the transaction. In theory, that would drive up efficiency and drive down transaction cost.

Another caveat is that data within the blockchain provides an immutable, up-to-the-minute public record of any transaction at any point in time, making it impossible to double spend an asset. That knocks out the potential for fraud. Further, with a decentralized ledger, there is no central point of origin for transaction data. Multiple super nodes or miners continuously update transactions. This absence of a central point of origin makes it tougher for hackers to attack the data within blockchain.

But since then, payment industry executives have come to a sobering conclusion: Despite the technology's potential to bolster the speed, security, and cost efficiency of processing payments, commercial use of blockchain remains in the distance.

'A FUNDAMENTAL PROBLEM'

The main stumbling block is blockchain's inability to scale to volume. Bitcoin, for which blockchain technology was created to serve as the public record of all the cryptocurrency's transactions, handles about seven transactions per second. By contrast, Visa Inc. says its network it can process 65,000 transactions per second.

The culprit lies in blockchain's architecture. Distributed ledgers require the consensus of multiple super nodes or miners that continuously update transactions on the blockchain to validate a transaction, a time-consuming process that limits network throughput.

"This is a fundamental problem with distributed ledgers that affects their ability to scale," says Nicko van Someren, chief security officer for Nanopay, a Toronto-based payment platform for real-time multicurrency payment solutions.

What the payments industry is discovering is that scalability issues are masked during trials because of the low volumes being tested. "But when attempts are made to scale volume, that's when issues arise," van Someren says.

Arlington, Va.-based Airlines Reporting Corp. (ARC), which annually settles more than $86 billion in transactions between airlines and travel agencies, learned that lesson the hard way during a blockchain trial.

"We wanted to learn what blockchain's potential was for use in transaction settlement internally," says Dickie Oliver, vice president and chief information officer for ARC. "After the trial, we feel it can't scale to manage the millions of records we handle each day, so we don't see it as a good fit at this time."

While ARC has decided against using blockchain internally for transaction processing, it is exploring its use to share data with customers. ARC recently completed a proof-of-concept trial with United Airlines Inc. to determine whether the technology can be used to facilitate reporting and settlement of United Airlines tickets with its settlement system (box, page 26).

Western Union is another player that has yet to see a business case for blockchain in mainstream payments. In mid-2018, Western Union chief executive Hikmet Ersek said that while the company began testing Ripple Labs Inc.'s xRapid network, which uses Ripple's XRP cryptocurrency, for payments six months earlier, the trial had yet to demonstrate a cost benefit.

San Francisco-based Ripple has promoted blockchain technology, which underlies xRapid and XRP, as a faster, cheaper way to move money.

Part of the problem with the trial, Eresk said, was that up to that point, Western

Union had seen just 10 transactions initiated with xRapid, too small a sample to determine its cost-effectiveness. Ripple has maintained that xRapid pilots have reduced user costs by 40% to 70%.

While Western Union was not planning to pull the plug on the trial prematurely, Ersek's remarks cast a cloud over the idea of blockchain for mainstream payments.

'THE NEXT STEP FORWARD'

Still, blockchain's struggles to move beyond the pilot stage have not completely cooled the payments industry's interest in it. Rather than force the technology into the high-volume, high-speed world of credit and debit card transactions, some advocates see a more practical use for the technology: high-dollar, low-volume transactions, such as money transfers and cross-border and business-to-business payments.

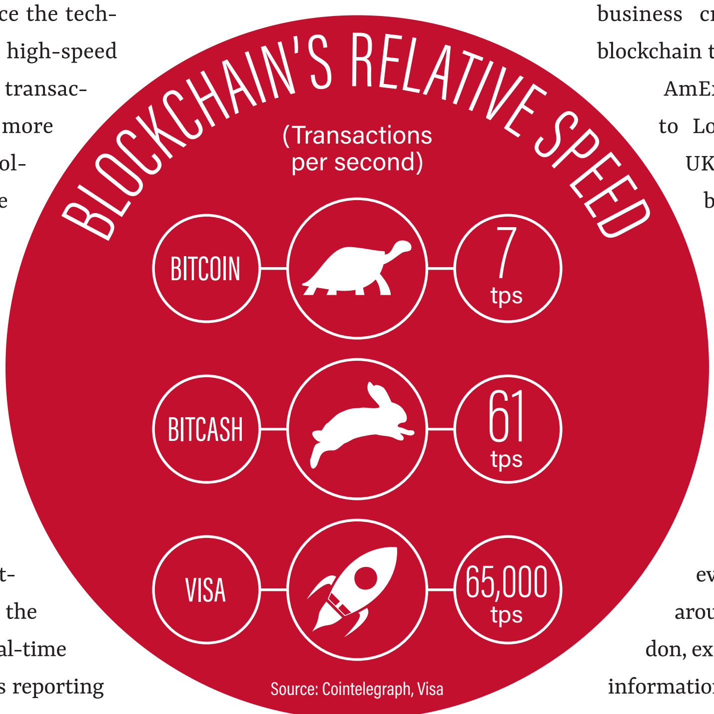
Besides having lower volume requirements, money transfers, cross-border and business-to-business payments can be run over private blockchain networks that operate outside the traditional rails of the banking system to provide real-time transactions and instantaneous reporting when a transaction is made.

Those benefits are strong selling points. Operating outside the banking system allows money to be transferred immediately all day, every day. By comparison, it can take hours or days to move money from a payor's bank account to a payee's account through traditional banking channels.

If a transaction cannot be readied before the bank's close of business, for example, it will not be initiated until the next business day, which could be a day or more if the next calendar day is a bank holiday or the weekend.

Financial institutions joining such private networks can move money between their customers' accounts any time, any day of the week. "Private blockchain networks provide an opportunity to initiate money transfers between known entities more cost efficiently and provide an immutable record of the transaction," says Sunil Hirani, founder of trueDigital, a New York City-based provider of a real-time digital-payment platform. "Our product is designed specifically for commercial users."

TrueDigital recently signed an agreement with Signature Bank, a New York City-based commercial bank, to transmit funds between other financial institutions over trueDigital's Signet platform. Hirani says several banks have already joined the network, without being more specific, and that his company is in talks with more banks about joining and expanding the money-transfer service beyond U.S. dollars.



Third parties aren't the only ones pursuing private blockchains for payments and money transfers. Visa is preparing to launch during the first quarter of 2019 its B2B Connect platform, a private, permission-based, blockchain-based service built to process business-to-business payments globally, faster and more securely.

In addition to piloting blockchain-related capabilities in several areas of its business, Visa has also dedicated a research team to explore how blockchain can be applied to its internal operations, clients, consumers, and partners.

"There are many possible use cases for blockchain and distributed-ledger technology, and we—along with many of our clients and partners—are looking at ways to harness its power," says Kevin Phalen, global head, business solutions at Visa.

Other card networks are jumping on the blockchain bandwagon, too. Since late 2017, American Express Co.'s FX International Payments division has been working with Ripple to enable business-to-business cross-border payments using blockchain technology.

AmEx customers are connected to London-based bank Santander UK, which facilitates the cross-border payments. AmEx says the use of blockchain speeds remittances from its customers in the United States to bank accounts in the United Kingdom.

"This collaboration with Ripple and Santander represents the next step forward on our blockchain journey, evolving the way we move money around the world," says Marc Gordon, executive vice president and chief information officer for AmEx.

Mastercard Inc., too, has launched a blockchain network for business-to-business and cross-border payments. While Mastercard provided no additional details about its use of, or future plans for, blockchain, the company did say it has been investing in blockchain, which includes filing patents, developing application programming interfaces, and making an investment in the Digital Currency Group, a New York-based venture-capital company focused on the cryptocurrency market.

"Blockchain has the potential to radically shift the way we exchange value," says a Mastercard spokesperson. "But to unlock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the benefits and full potential of blockchain, companies will need to collaborate, explore, experiment, and consider long-term implications."

THE TWO-LAYER APPROACH

Despite the pivot toward private ledgers, some third parties in the payments world are not giving up on migrating public blockchain ledgers to mainstream payments.

The Global Real-time Authorizations and Funds Transfers Project (GRAFT) is looking to develop a decentralized payment platform to facilitate commerce without central banks, payment card networks, or governments.

The decentralized network is open to participants fulfilling various functions, such as acting as super nodes to update the blockchain, and creating business and revenue opportunities for users.

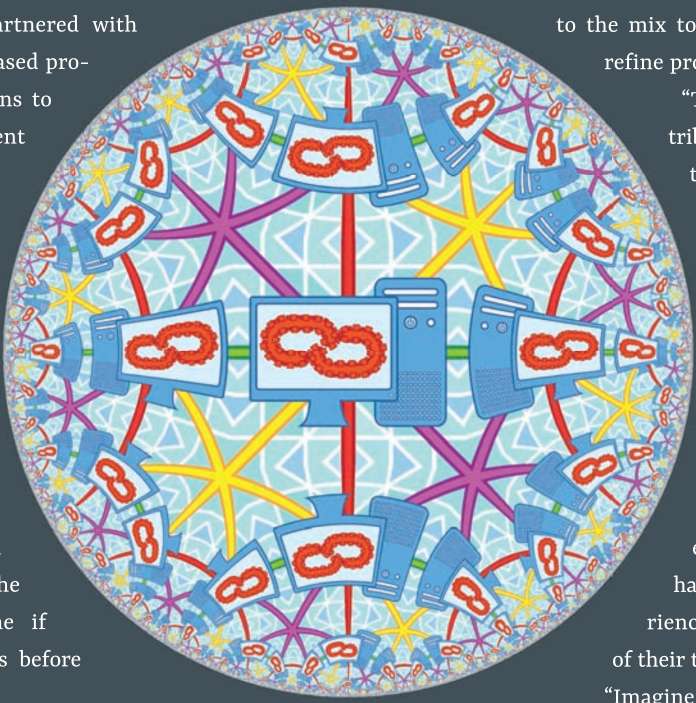
Network users are given incentives to carry out automated payment network functions, including real-time authorizations, exchanges, fault-tolerant gateways,

WILL BLOCKCHAIN TAKE FLIGHT FOR UNITED AIRLINES?

Airline Reporting Corp.'s decision not to move forward with blockchain for internal transaction processing has not completely dissuaded the company from exploring whether the technology can improve ways to share smart contracts with its client airlines.

Last month, ARC announced it had completed a proof-of-concept trial with United Airlines Inc. to facilitate the reporting and settlement of United Airlines tickets. For the trial, ARC partnered with Blockskye, a Boston area-based provider of blockchain solutions to the travel-and-entertainment industry.

"One of the things we wanted to see is if we could create an ARC-owned blockchain to share data for smart contracts with United," says Dickie Oliver, vice president and chief information officer for ARC. "With blockchain, all the parties involved in the contract can view the transaction and determine if there are any discrepancies before the contract is executed."



Smart contracts are computerized transaction protocols that automatically execute the terms of a contract. Since the contract is recorded on the blockchain, its terms are visible to all parties named in the contract through the blockchain.

United opted to use blockchain to facilitate the reporting and settlement of tickets because it thinks the technology can provide safe and reliable smart-contract transactions. "If it can help us make settlement safer, easier, and more seamless for our customers, then it's a win-win," says Tye Radcliffe, director of distribution for United.

The proof-of-concept trial demonstrated that transactions could flow between all of United's and ARC's various systems. The next steps will be to process actual ticket transactions, gradually add more travelers to the mix to determine scalability, and refine processes.

"The immutable and distributed nature of smart contracts, as well as the continued interest, research, and investment going into the technology, make it attractive for use in our own research and development," Radcliffe says. "Proof-of-concept is a small step, and one of many in our efforts to enable our customers to have a truly seamless experience throughout every step of their travel.

"Imagine a world where your calendar could potentially become an indicator of intent to travel," he continues. "[A world] where a traveler's airport and onboard experience is simple and less stressful, and when the traveler returns to her office, her air expenses are automatically accounted for and settled. No itinerary receipts to submit; just a simple, blockchain-enabled settlement, powered by ARC."

and merchant-service-provider services, according to the company.

"We see blockchain as a way to untether consumers from traditional payment systems by providing strong privacy and control of transactions through a decentralized ledger," says Dan Itkis, co-creator of the GRAFT Project.

In other words, with no central point of origin for the transaction data entered into the blockchain, there is no single point hackers can attack.

"Consumers are tired of having their information hacked through merchants, processors, and the credit bureaus, which are all key [data] aggregation points," Itkis says. "Decentralization gives control back to consumers." GRAFT Project is preparing to launch its beta phase by the end of March.

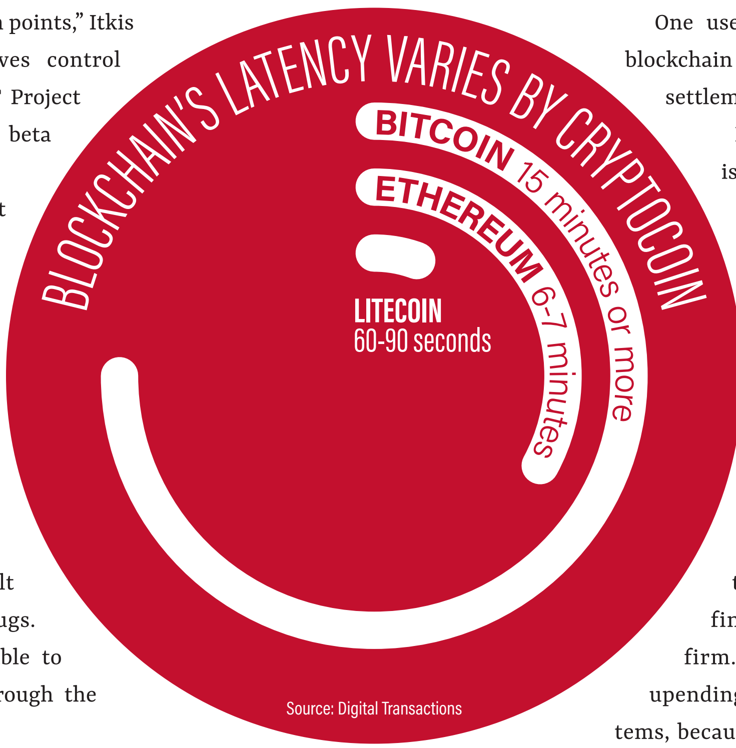
Initially, GRAFT Project sees an opportunity to target underbanked and high-risk merchants, such as online gaming Web sites that can't get traditional merchant-payment services or pay exceptionally high acceptance fees and e-commerce merchants that sell adult content and Class A drugs. These merchants will be able to accept cryptocurrencies through the GRAFT Project platform.

To complete a retail transaction, which consumers expect will take two seconds or less, GRAFT has developed a two-tier network where the tiers operate separately, but in parallel. The first tier authorizes transactions in seconds. The second tier records settlement, which can take 24 hours or more, depending on the type of currency used to make the purchase.

As part of the authorization process on the network's first tier, multiple super nodes concur on the value, time, and date of the transaction, and validate that there is no double spend of the cryptocurrency being used.

Once the transaction is complete, authorization data is layered onto the blockchain of the network's second tier to provide a complete, up-to-the-minute accounting of the transaction. The settlement layer of the network supports payouts to merchants in multiple currencies. "Our goal is to guarantee speed of transaction, and our [two-layer] approach supports that," Itkis says.

GRAFT's approach to improving transaction speeds is similar to that of the Lightning project, an add-on for Bitcoin transactions that processes high volumes of small-dollar transactions by taking them temporarily outside the blockchain.



Ultimately, Itkis believes that the data entered on GRAFT Project's blockchain can be used for merchant-loyalty programs, and ultimately allow merchants to issue rewards to consumers through the network.

'NOTHING MISSION-CRITICAL'

If nothing else, supporters of blockchain for mainstream payments believe that the only way to prove or disprove the technology's applicability is through continued testing.

"Scalability is an issue, but it's incumbent on the payments industry to understand blockchain's capabilities for payments, what use cases make sense, and its value proposition," says Esther Pigg, senior vice president, product strategy, banking and payments, for Jacksonville, Fla.-based financial-service technology providers Fidelity National Information Services Inc. (FIS). "There is a lot unknown about blockchain and we shouldn't dismiss its use in payments yet."

One use case FIS is looking at for blockchain is cross-border payments and settlement.

But for those who are bearish, blockchain remains a technology in search of a problem within the payments ecosystem.

"A lot of financial institutions and the card networks are dabbling in the technology, but there is nothing mission-critical," says Eric Grover, principal for Intrepid Ventures, a Minden, Nev.-based financial-services consulting firm. "I don't see blockchain upending the current payments systems, because it doesn't bring a compelling business case compared to what it is trying to displace."

Some skeptics think the best-case scenario for blockchain in payments is that elements of it, such as the immutable record of transactions, will be adopted and the rest left behind.

If that's what happens, it won't be the first time. "It's often the case with new technologies that only parts of it are useful for certain applications," says Nanopay's van Someren. "The peak of inflated expectations for blockchain has passed. It's time to demonstrate what, if any, productivity it has." DT

Retailer Wallets Load Up

Kevin Woodward

Benefitting from a built-in customer connection, retailer wallets adroitly tap into shoppers' purchasing habits in ways unavailable to the big tech wallets.

Retailer mobile wallets are proliferating in part because the consumer can get something that she can't with any of the tech-based apps. That is a high degree of personalization that not only includes payment preferences, but also the ability to earn loyalty points, receive special offers, and redeem rewards.

Consider the sheer volume of them now. The Starbucks Corp. wallet, which debuted in 2010, may get a lot of recognition because of its success, but other heavy hitters have joined the fray. Walmart Inc.'s Walmart Pay has been available since 2016, the same year CVS Pay from CVS Health Corp. and Kohl's Pay from Kohl's Corp. emerged.

A slew of others belong to this club, too. ExxonMobil Corp. launched its Speedpass+ app in 2016, along with many other fuel retailers. Fuel companies Phillips 66, Gulf Oil, Shell Oil, and BP each have their own apps, many of which have built-in loyalty-earning and offer-redemption capabilities.

While many retailers accommodate the tech-based wallets, such as Apple Pay, Google Pay, and Samsung Pay, their own marketing and development resources are devoted to furthering adoption of their own wallets.

That's because retailer wallets have a distinct advantage over the tech-based ones: shoppers often are more willing to share their shopping behavior in exchange for rewards and offers. While the tech-based wallets have added loyalty features, the depth of these integrations typically is not as detailed as it is with their retailer counterparts.

The 'Secret Sauce'

Anywhere from 10% to 15% of users of tech-based wallets actually use them for mobile payments, says Krista Tedder, director of payments at Javelin Strategy & Research, a Pleasanton, Calif.-based firm. But "retailer wallets have a higher usage rate, getting closer to 20%," Tedder says.

In one example, Walmart Pay is adding 10,000 new users per day and has nearly as many active users—31 million—as Apple Pay's 32 million, according to projections from Crone Consulting LLC, an independent research firm. An active user is a consumer who makes at least two transactions per month with the wallet.

"They are more successful than the casual observer knows, especially the casual observer in payments," says Richard Crone, founder of Crone Consulting. "The reason is it's been used to create a competitive advantage to retailers and retailers aren't going to share their secret sauce to their own peril."

That "secret sauce," he adds, is the customer-relationship management aspect of the merchant wallets. It's the connection between the consumer's shopping behavior and the retailer's marketing department. It's the ability to create messaging that engages and persuades the consumer.

"Rewards, offers, and loyalty promotions are extremely effective in motivating usage," Crone says. "A great example is the launch this year of petroleum fueling apps from BP, Shell, and 76 [ConocoPhillips]. These three and many others in the fuel category have launched their own branded mobile apps with mobile payments fully integrated with their existing loyalty programs. To drive adoption of the apps, they included supplemental discounts on fuel purchases using their branded apps."

Others have long offered that integration. Walgreen Co. enabled the ability to redeem its Balance Rewards loyalty points in 2015, which made it the first retailer to offer that capability, a year after Apple Pay debuted.

When Javelin researched why adoption of tech-based wallets hadn't been stronger, it found two primary causes. "The first is consumers," Tedder says. "When we asked them what they wanted in a mobile application, payments were near the bottom."

One reason for that is how well-trained consumers are already to pull out a card and swipe it on, or dip it in, a reader, Tedder says. "It's a frictionless behavior," she says. And, plenty of consumers don't see the value in using a mobile wallet, especially when using a card is easier.

The other factor limiting general-purpose mobile wallet use is that many consumers aren't sure where they can use one, Tedder says. "I can't say how many times I've asked a clerk if they take Google Pay and they don't know," she says.

And, while the card brands agreed on a radio-wave symbol to indicate contactless acceptance for cards and smart phones, many consumers are unsure where the reader is located on point-of-sale terminals.

Throw in general consumer anxiety about the security of mobile payments—some 38% in a recent PSCU survey said security concerns held them back from using mobile payments—and the situation worsens, Tedder says.

The 'Gold Standard'

So how do the retailer wallets get around these concerns? After all, many of them use technology like bar codes that may not be as new and interesting as encrypting card numbers and tokenization. The reason lies in the data connection.

"The gold standard of how to get customers to use mobile is Starbucks," Tedder says. "It's very easy." Starbucks creates games, or challenges, within its app to drive repeat behavior. One, labeled Star Streak, encourages users to collect up to 100 bonus stars (125 earns a free drink) by making a purchase on six consecutive days by the game's conclusion. Such challenges require the consumer to pay with their Starbucks app.

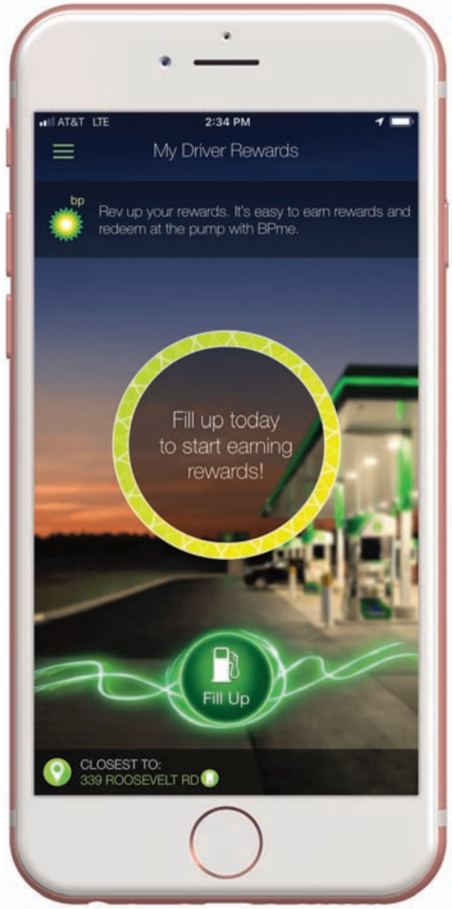
"Where I would normally not go back, they're sending me reminders to come in and get discounts and keep coming back," Tedder says. "Merchants have a unique advantage that Apple Pay, Samsung Pay, and Google Pay don't have in that they have a closed ecosystem. If I take Google Pay somewhere I don't know if I can pay."

The card brands have been hard at work trying to alleviate that situation. As the payments industry converted to EMV credit and debit cards, merchants installed new point-of-sale terminals, most of which have contactless payments capability built in. In September, Visa Inc. said 50% of its face-to-face transactions happened at contactless-enabled merchant locations as of June 30. It also said 95% of the POS terminals being shipped were contactless-capable.

While efforts to make smart-phone-based wallet acceptance ubiquitous have had success, they might have greater success if merchants actually activated the contactless technology in the terminals. Many of the retailer

'I can't say how many times I've asked a clerk if they take Google Pay and they don't know.'

—Krista Tedder, director of payments, Javelin Strategy & Research



The BPme app, in addition to payments, selects the pump when a consumer pulls in to fill up a vehicle.

wallets only work with bar codes, which don't require additional cashier training.

Retailers know this, and some take advantage of it when developing their apps.

"These mobile-payment apps eliminated the separate step of first scanning a retailer loyalty card before dipping a payment card and providing your ZIP code or PIN," Crone says. "Now, in a single step the consumer opens the fuel retailer's app with biometric authentication such as Face ID or Touch ID, and it automatically activates the pump, applies the loyalty-program discount, and the consumer is given loyalty credit for the purchase."

Such deep integration is possible because of the close connection between the retailer and the consumer, he says. "The way to compete is to move to a CRM-based model where you know who the customer is," Crone says. That ensures services, such as order-ahead and pick-up-later, or scan-and-go technology, are available to consumers.

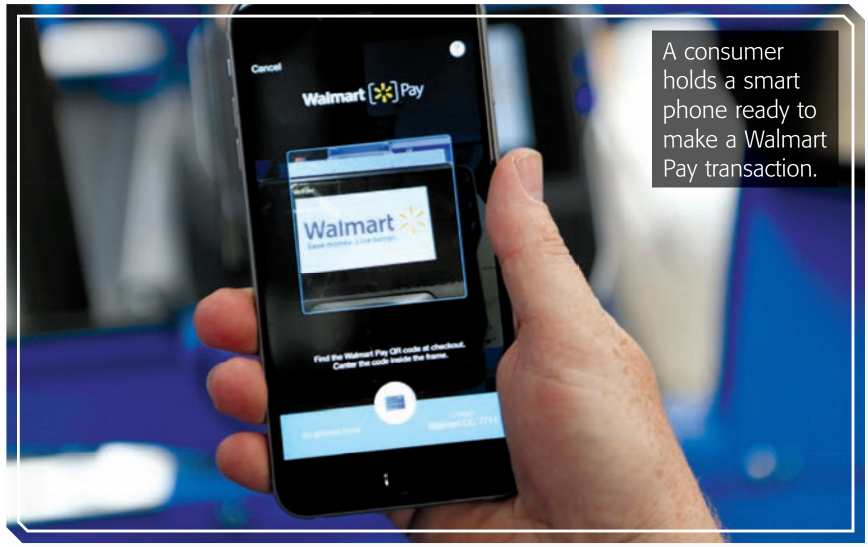
'Fighting Chance'

This is what makes retailer wallets stand out against the big budgets and clever technology of the tech wallets. "Those are features retailers must put in place to have a fighting chance to come against Amazon Go," Crone says.

He forecasts that mobile wallets will need to adapt to Amazon.com Inc.'s nascent brick-and-mortar presence to remain competitive. Amazon Go is the online giant's attempt to get in-store sales. Payment is done via the consumer's Amazon account in the Amazon app.

"Amazon Go will change the face of retail in every merchant category," Crone says. "Customers shopping at Amazon Go regularly have become dependent on the service and the merchandising is unique there. It is prepared foods—those SKUs that command the high volume and frequency in the grocery category."

More Amazon Go locations could pose problems for grocers, he says. "Grocery stores have always considered themselves as competing against quick-serve restaurants. Now, the average American household purchases more food from QSRs and in the prepared-food categories than they spend on food inside their own homes." Grocers with their own apps,



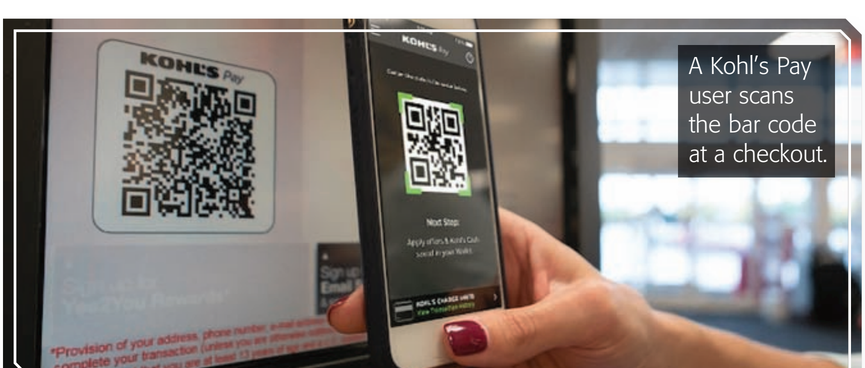
A consumer holds a smart phone ready to make a Walmart Pay transaction.

(Photo: Walmart)

or developing ones, will need to incorporate this social dynamic, he says

It's not an issue unique to grocers. Every retailer has to consider this consumer desire for convenience and making transactions easier. "The way to compete without having to reconfigure everything is buy-online, pickup-in-store. In that case, the retailer is not even making customers enter aisles, but the cost upsell has to start and be initiated in the retailer's app," Crone says.

How that gets done is by leveraging payments companies. Retailers that enable consumers to register with existing payments accounts, like ones they might have with PayPal Holdings Inc., benefit from getting not only the customer's name, but billing and shipping addresses. It can be the trigger to making the retailer's customer-relationship management system that much more effective, Crone says.



A Kohl's Pay user scans the bar code at a checkout.

(Photo: Kohl's)

"The real first move is payment registration," he says. "This is where the tech wallet and retailer wallet ally, if not enhancing each other. If the name of the game is CRM and to get CRM you need to register a payment credential, the retailer doesn't care where that comes from. However they can register the customer's payment credential, they'll do it."

'It's About the Experience'

The future will also feature the debut of more retailer wallets, especially those with payments capability, says Tedder.

That's because retailers want to direct consumers to favored payment methods as much as possible. Target Corp.'s wallet, for example, only lets users pay with one of the chain's proprietary cards.

Retailer wallets also may adopt faster-payments capability, if a speedy settlement service that's potentially less expensive than cards finds broader adoption, she says.

Ultimately, consumer adoption of mobile wallets comes down to engagement. "Each company has to look at what their business model currently is and how to modify it," Tedder says. "The more you can get the engagement, the better the experience and more likely they are to return. It's more about the experience than how do I pay for this." DT

Enthusiasm for swing-for-the-fences, exotic payments startups has waned.

The Fundamentals Still Apply

Want to start—or bet on—the next big thing in payments? Forget glitz and glamor and focus on startups that address pressing problems with substantial and realistic solutions, argues Eric Grover.

Eric Grover is principal at Intrepid Ventures, Minden, Nev. Reach him at eric.grover@intrepidventures.com.

Successful payments fintechs such as Adyen, Ant Financial, Klarna, Stripe, and Square have generated enormous excitement. With the arguable exception of Ant Financial, they all employ traditional business models, and enhance, and in places stress but don't disrupt, the existing payments ecosystem.

There have also been notable fintech disappointments. Hyped mobile-payments venture Powa Technologies went belly up. In 2014 Mozido's seductive mobile-commerce story was valued at $2.4 billion in a round in which Mastercard, Wellington Management, and Julian Robertson participated. Former Mastercard chief executive Bob Selander sat on its board. Now it's on a life-support from Brevet Capital. And the SEC is suing Mozido's founder, Michael Liberty, for defrauding investors. Ballyhooed Softcard and MCX both folded.

Nonetheless, capital continues to be put to work in fintech. In the first half of 2018, $58 billion was invested globally across 875 deals.

Enthusiasm for swing-for-the-fences, exotic payments startups, however, has waned. And the euphoria stemming from the belief that cryptocurrencies and distributed digital ledgers would upend the reigning payments ecosystem has ebbed. Ripple XRP at 33 cents, Bitcoin at $3,659.82, and Ethereum at $127.16 are down 88%, 79%, and 91%, respectively, from their January 2018 peaks.

Closer to terra firma, a handful of interesting early-stage payments ventures worth watching are Modo, Marqeta, Beyond, RS2 North America, and Veem. All address big opportunities or problems, and rely on proven business models.

None, however, proposes to fundamentally upend the current ecosystem. If one could genuinely disrupt the status quo, that could be huge. But regnant systems work well and enjoy enormous network effects.

Sleepy Oligopoly

Modo is a payments-and-value hub headed by payments savant Bruce Parker. The secret sauce is its transaction and intelligent-gateway ledger and its abiding interoperating philosophy.

Modo is being used by Fidelity National Information Services (FIS), Deutsche Bank, Klarna, Verifone, and Etihad Airlines to connect to and transact with a web of interconnecting traditional payment networks, alternative-payments systems, and proprietary rewards programs, taking the burden off of banks, merchants, and processors. In November, 2018 Modo closed a $13 million A round led by Deutsche Bank.

Marqeta is a self-described new-age card-issuer processor. Taking a page from Stripe, it styles itself as developer-friendly, intimating traditional processing behemoths aren't as agile or flexible and are, therefore, not best-suited for developing nontraditional payment-card applications.

Entry barriers in issuer processing, which is dominated by First Data, FIS, and Total Systems, are significant. There haven't been new entrants in decades. Building delivery systems requires time and resources. Even then, no large bank will outsource credit-card processing to a challenger unless and until it has scale clients.

The potential market is immense and growing. There are 1.3 trillion U.S.-issued general-purpose payment cards. Marqeta enables new use cases and, consequently, more virtual and physical cards, like debit cards for spending Square Cash. It isn't, however, fit for purpose for traditional credit-card programs end-to-end, yet.

Whether the upstart can move upmarket to challenge incumbents remains to be seen. At a minimum, Marqeta promises to give the sleepy issuer-processing oligopoly a jolt.

Stickier Merchants

Heartland Payment Systems founder and CEO and philanthropist Bob Carr launched merchant acquirer Beyond in 2017. The acquiring industry continues to consolidate. In 2016, Global Payments acquired Heartland.

But entry barriers and regulation are relatively modest. Small enhancements can be enormously valuable. While processing for gargantuan retailers like Walmart and Carrefour provides razor-thin margins, the opportunity to provide services on top of and around payments to SMEs is immense.

Carr brings his philosophy of owning the sales channel, transparent pricing, and supplying additional services around payments, making for stickier merchant relationships and more sustainable economics. Beyond acquired software enterprise PeachWorks to bolster its integrated-payments offer for restaurants.

RS2 is a card-management software and processing company headquartered in Malta. It's been around for decades, strongest in emerging markets. In 2018, it launched a North American venture headed by Daniela Mielke, a Visa, PayPal, and Worldpay veteran.

Historically, RS2 underperformed against its worldwide opportunity, partly because of its tumultuous early years. Charismatic entrepreneur and founder Reinhold Schaeffter got tangled up selling and buying back RS2, and the enterprise was starved of capital. Now it seems to have found its footing.

RS2 North America is focused on merchant processing for smaller acquirers for which speed and flexibility matter, but which may have misgivings buying processing from competing fully integrated acquirers.

There should also be opportunities to serve smaller credit-card issuers looking to better compete with giants like Citi and Capital One. That's a longer sell, and demonstrating regulatory compliance is a big deal. If RS2 gets traction, it should spur incumbents to better performance.

With globalization, cross-border retail, commercial, and money-transfer payments are growing at a robust clip. Delivery is more challenging, fees richer, competition less, and entry barriers higher, than in domestic markets.

Most cross-border commercial payments are made directly or indirectly through correspondent banks and the near-monopoly global interbank-payments network Swift, over which 3.5 billion payment messages were sent in 2018 through November, up 10.5% year-over-year.

Traditional Model

Focused on helping SMEs with cross-border payments, Veem started out publicly embracing blockchain. That, combined with a big market problem, was a good theme off which to raise venture capital. It has sensibly pivoted, however, broadening the payments systems employed, including Swift. Veem's business model is traditional, taking account, transaction and foreign-exchange fees.

A host of firms including Swift and correspondent banks, Payoneer, CurrencyCloud, Earthport (Visa), Western Union, Ripple, Flywire, Mastercard, and PayPal address cross-border payments. There won't be one or even several winners. Interoperability is vital. For Veem, channels to originate small merchants and compliance, at scale, are critical.

The fundamentals still apply. Payments ventures need to serve real needs and earn fees from someone. DT

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