

PAYMENTS AT THE EDGE™

Executive thought-leadership on where payments can go that it isn't today, and how the ecosystem needs to change to enable those new payment developments.

A 2016 PYMNTS.COM REPORT

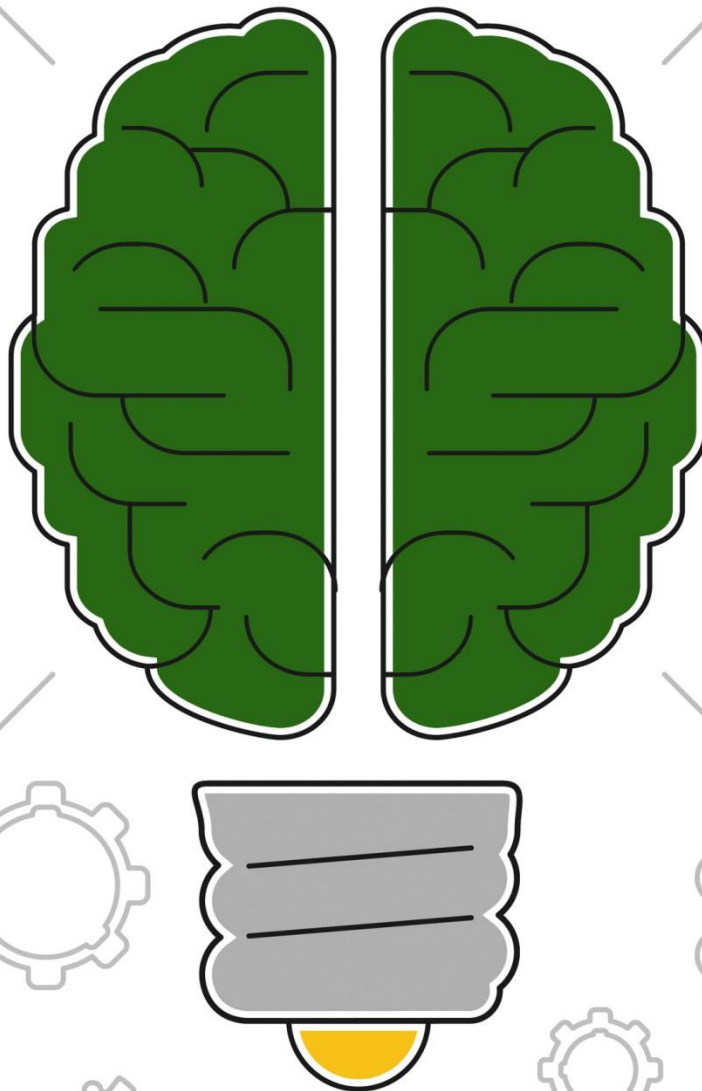




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INTRODUCTION

What opportunities will we find when we take payments to the edge? Payments never used to be a hot topic of conversation. At cocktail parties, not that long ago, when people working in payments responded to the quintessential “where do you work and what do you do” question, most were probably met with a lot of polite head nodding. Plastic cards served an important purpose, and everyone at the party probably had one (or more) and even used them, but most people didn’t necessarily associate “payments” with anything all that exciting or innovative. **Not any more.** Payments executives are the cool kids at the party now – the innovators who are using mobile phones and the internet and apps and technology to transform how business happens today – and where.

Thanks to their efforts, payments is no longer only initiated by a plastic card and a swipe at the point of sale in a brick and mortar retailer. Now, payments is initiated by buy buttons on a merchant’s online checkout pages and a raft of third party social media sites. Payments is happening inside of apps on mobile phones and between people and businesses inside of mobile and online banking sites. And, payments is happening thru any number of connected devices that are creating entirely new businesses and unlocking any number of new commerce opportunities in the process.

These innovators are taking payments to the edge – and beyond – and redefining payments and the commerce ecosystem that it powers. We asked a few of these innovators about their plans take payments to the edge in 2016 and beyond. While each has their own perspective on where they see “the edges” and how they’ll harness the opportunities they’ll find there, they all agree on one thing: we’ve just scratched the surface of payments’ potential. We couldn’t agree more.

We think that we’ll all find lots of interesting new use cases when we take payments to the edge. And the prospect of taking that journey will inspire lots of innovators to think big about how to bring those opportunities to life. Eighteen of those payments pioneers are highlighted here. Seven hundred of them will be assembled here in Boston on March 16-17 at [Innovation Project 2016](#), including the CEOs of many of the companies that have been pushing payments to the edge for many years.

What opportunities do you think we’ll find when we push payments to the edge? Let us know what you think. And, [join us](#) in March where the conversation will push all that we know about payments to the edge – and even beyond.



ACCENTURE'S

DIRECTOR OF DIGITAL TRANSFORMATION, SAFWAN ZAHEER



We're in the midst of one of the largest transformations in banking history. Today, a coffee company runs one of the most successful mobile payments systems in the world. Large retailers are offering loans directly to consumers. Internet firms are wrapping financial products around their core services. Lending is going social and disruption is everywhere.

Banks are up against a new reality in which fast-changing consumer behavior and financial technology (FinTech) are roiling traditional ways of doing business.

But when it comes to digital, many banks are headed down the wrong path. Their focus on launching mobile apps that support existing products, streamlining online channels to reduce time and friction for consumers, and dabbling with existing technology infrastructure will deliver short-term benefits at best.

Instead, to propel their digital transformation strategy, banks need to design products that are easier to use and leverage data in a more sophisticated way.

HERE'S HOW:

Focus on pre- and post-payment experiences...

Personalize banking products and design them so as to reduce friction. Satisfy consumer tenets of "know me" "value me," "give me what I want," and "inform me," across the pre- and post-payment journey.

For instance, when consumers buy a home, banks can facilitate access to publicly available school ratings and neighborhood crime rates, and schedule a home inspection. Post-closing, banks can automate monthly payments and alert consumers whenever there is an interest rate adjustment or other change to the loan. The goal is to create an experience that's wrapped around the bank loan product.



ACCENTURE'S DIRECTOR OF DIGITAL TRANSFORMATION, SAFWAN ZAHEER

Embrace new technologies...

Embrace FinTech such as cloud and platforms that enable smooth integration of consumer data obtained from various products and channels. For example, loyalty program data that flows through a car pricing application can be used to deliver a relevant auto loan program.

Banks can also use data to learn more about consumers so they can be targeted for appropriate products. So, for example, knowing which consumers pay parking garage fees from a Lexus vs. a Honda can help banks understand what types of credit card offer those drivers prefer.

Design a digital blueprint...

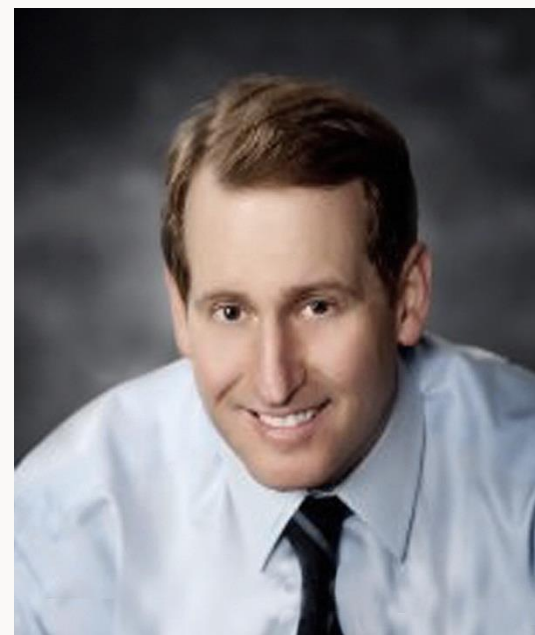
Design a blueprint that defines a vision and operating model. The blueprint will outline the future state technology foundation, product pipeline and governance structure that can help establish a bank as a digital leader.

Looking ahead, digital transformation will be driven by consumers and enabled by FinTech. Plotting a strategy is key, but it's only a start. To be successful, banks must follow a well-designed path of execution and innovation.



ACI'S

DIRECTOR AND PRACTICE LEAD, RETAIL BANKING AND CONSUMER PAYMENTS, AMERICAS, IAN RUBIN



The last few years in the payments universe have been nothing less than remarkable for those who have toiled in the back office or have worked in the figurative backstage of banking as other business

initiatives have garnered the applause and attention in the spotlight. Omnichannel banking! Customer loyalty programs! Prepaid cards!

While each of these important banking initiatives has been feted for being innovative, the many operations and processes that remain the engines for banking and commerce – including wire transfer, image processing, proof and transit – have worked diligently and without much fanfare. Highly valued, mission critical, but not adored. Then mobility happened. Then immediate payments happened. And, yes, then Uber happened.

For many industry participants, the payments business has evolved from an afterthought to a strategic initiative, and from a competitive necessity to a competitive advantage. Venture capital and investment dollars are flowing to payments businesses and high-caliber employees are following suit.

ACI will continue to take payments to the edge and beyond. We will continue to work with banks, merchants, networks and startups across our 80-country footprint to leverage the power of payments to help transform their businesses:

1. As payment types transcend traditional retail and wholesale banking businesses, ACI will work closely with our clients across silos to form cross-bank strategic units.
2. As Uber, Airbnb and other platform-based businesses prosper by directly connecting supply with demand, ACI's solutions will enable those business models by encouraging and facilitating direct relationships and by eliminating payment friction from banking and commerce.



ACI'S DIRECTOR AND PRACTICE LEAD, RETAIL BANKING AND CONSUMER PAYMENTS, AMERICAS, IAN RUBIN

ACI won't achieve these aspirations by working alone or in a vacuum.

The evolution of payments strategies has illustrated the importance of collaboration and of crossing traditional lines of business. Innovative solution providers will parallel the efforts of our clients by thoughtfully acquiring and partnering with others to develop ecosystems that will dramatically reduce time to market.

Successful vendors will cross internal lines of business to form cross-disciplinary customer support and product development teams. ACI is actively involved in this evolution, as are many of our progressive customers.

The payments industry has come a long way over the past several years, and we expect this level of innovation and strategic importance to continue to grow. And those channels and products that used to hog the spotlight to themselves? By necessity, they will continue to be strategically relevant, but they will have to share the spotlight.

As a wise colleague once told me:

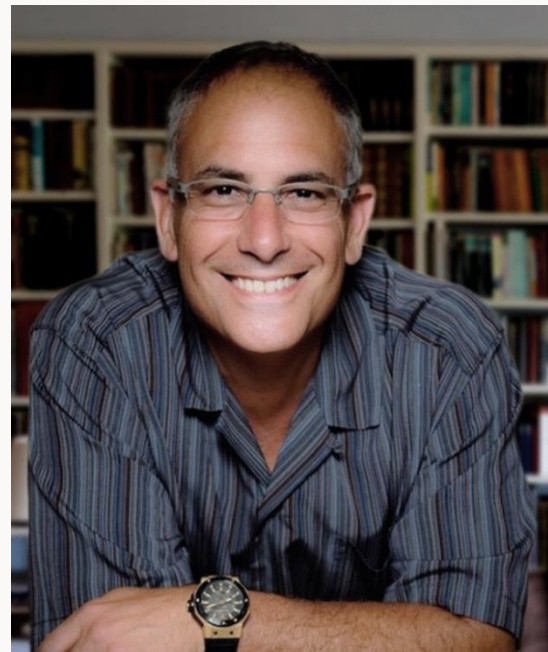
"Delivery channels may come and go, but payments are forever."



BLUESNAP'S

CEO, RALPH DANGELMAIER

The growth of eCommerce is staggering. While eCommerce was only at .6% of total retail sales in 1999, today eCommerce is estimated at roughly 7% of total retail sales. This past Cyber Monday beat forecasts with a record \$3.07B in sales and a whopping 26% from mobile. But what if these sales were 40% higher? As the drive to mobile and cross-border purchases accelerate, there are real problems inhibiting sales during checkout – we call this “The Conversion Problem”. Left unaddressed, this problem can represent as much as a 40% loss of top line revenues. Each of the elements of the problem must be thoughtfully addressed to get on the right path to better conversions.



CHECKOUT FRICTION

Extra Steps and Fields: Reducing the number of fields from 6-3 can increase conversions on average 66%.

Coupons: 8% of shoppers will abandon if they can't find a coupon.

Language and Currency: Lack of local language/currency can stop 75% of international shoppers.

Payment Types: 59% of shoppers will abandon if they can't pay with their preferred payment type.

PAYMENT PROCESSING DECLINES

Acquiring Banks: Connections to multiple banks is key to higher conversions. The ability to route a transaction to the best acquiring bank can help the average merchant increase conversions up to 17%.

Aggressive Fraud Rules: Make sure you have proactively managed fraud rules so you can avoid false positives by staying current with the latest fraud patterns.

Currency Mismatch: Processing transactions in local currency can increase conversions up to 10%.

Retries and Failovers: With multiple connections to acquiring banks you can see an uplift of 3% with failovers.



BLUESNAP'S CEO, RALPH DANGELMAIER

We help merchants take control of the payments that power their eCommerce business. The Powered Buy Platform includes a global payment gateway paired with value-added services all thoughtfully designed based on the philosophy that a frictionless checkout experience with maximized payment conversions is critical to growing your ecommerce business.

LET'S TAKE A CLOSER LOOK AT THE POWERED BUY PLATFORM:

The Payment Gateway delivers flexible integration options, global payments, intelligent payment routing, and payment analytics. The capabilities together are a powerful stack merchants utilize to meet their goals and to monitor progress.

Value-added services such as eCommerce tools, subscription billing, and fraud prevention & security. These features allow a merchant to progressively expand their eCommerce operations.

Each of these features comes together in the Powered Buy Platform™ to deliver an optimized frictionless checkout experience with maximized payment conversions. The sum of the capabilities can deliver up to a 40% improvement in payment conversions (and thereby sales!).

As a global payments technology company, BlueSnap believes every eCommerce site should provide a seamless online experience and the ability to purchase easily, quickly, and securely. Because merchants spend countless hours bringing their products to market, they deserve the technology, tools, and support to create an exceptional buying experience and convert more shoppers to buyers globally.



ENTRUST DATACARD'S

VICE PRESIDENT, FINANCIAL VERTICAL, RAY WIZBOWSKI



The payments ecosystem continues to evolve away from cash-based transactions. The most significant driver of this change in recent years has been the enablement of mobile payments. While adoption of this payment method has been slow, it has already begun to reshape consumers' expectations for how they "should" be able to pay.

We are now entering the era of anytime, anywhere digital payments. The idea of cash-only transactions is not only archaic, but consumers' expectations will lead them to vendors who embrace flexible digital payments.

What is needed for this to take place? What will enable this flexibility? First, the point of sale (POS) terminals will have to be enabled to take contact and contactless payments. With the move to EMV in the U.S., there continues to be a migration to new POS devices. There has also been a significant number of mobile POS (mPOS) players who have entered the market to bridge the cost and complexity gap for merchants. Ensuring the ability for consumers to use new payments technology, like mobile, is the only way we will see widespread adoptions.

Banks also play a key role in moving consumers to digital-based payments. As payment credential issuers, their role in education and support of new payment methods will be critical to pushing the digital payment ecosystem forward. One of the ways issuers can do this is by giving consumers the choice of how they would like to transact. For many consumers, they like the security of a payment card. In the last couple years, we have seen a dramatic growth in instantly issued debit and now credit card products at the bank branch. Banks have benefited from increased customer satisfaction and increased revenue due to the instantly issued card.

In addition to the familiarity of having a card, banks can enable issuance of the same credit or debit product into a mobile device or wearable which allows consumers to have greater flexibility on how they transact with that payment credential. This secure issuance into a digital device aligns with consumers' expectations of anytime, anywhere payment. In order for this to work, a token service provider needs to be engaged, but in many cases this has already been established for mobile payment. What is important is to give consumers choice and the ability to have options that ensure they can complete a payment transaction.



FIS'

CHIEF PRODUCT OFFICER, PRODUCT MANAGEMENT, NORTH AMERICAN RETAIL PAYMENTS, ROBERT LEGTERS



It isn't as much where payments will go, payments exists in some form everywhere, it is just handled differently. The Transformation is how it will evolve.

So PO systems being replaced by Virtual Payables solutions for Commercial and B2B payments is and will continue to explode. More cash displacement solutions will develop in the alternative financial services market allowing inclusion of those consumers into the digital ecosystem with payment tools, mobile solutions etc.

More scalable and efficient alternatives in both places are needed that require investment from the issuers and processors to empower that growth and accelerate it into a sustainable model.

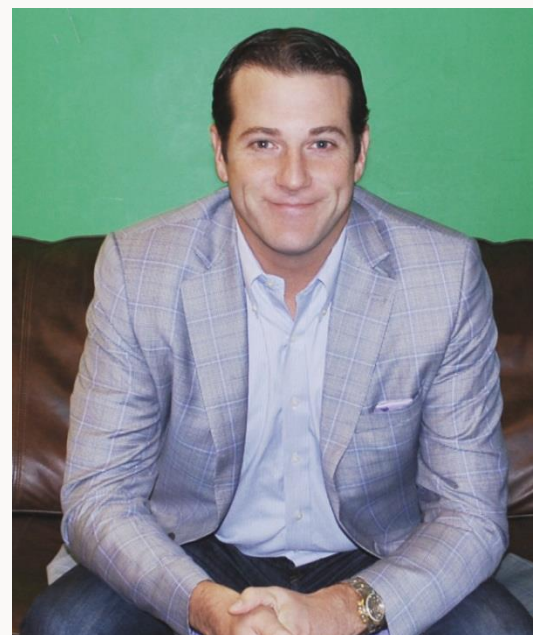
Massive increase in efficiency, complete business and consumer lifecycle support will be available at that point and of course a more personalized and customized solution offering by consumer and business will be possible at that point.



FLYWIRE'S

CEO, MIKE MASSARO

I spend a good deal of time thinking about what makes for a cutting-edge payment company. Of course, you need great people and a great idea – along with strong technology. But increasingly, I have come to believe that creating a culture of innovation – always striving for new ways of thinking and new ways of doing things – is the real key. By finding the right people, and creating a culture rooted in innovation, I believe you can drive the outcome to impressive heights.



Flywire started out as a simple idea. The company was created 5 years ago to **help international students pay their tuition when studying abroad**. Today Flywire serves international students from over 200 countries and territories, attending 800+ educational institutions around the globe. Students save time and money (we offer FX conversion rates that are oftentimes superior to the big banks'); educators save precious payment and billing reconciliation time. The solution works for all.

What has made Flywire into a potentially great company has been our continuing to question the status quo. In theory, anyone can do what we do. In practice, what we do is incredibly hard. Every solution we've developed reflects our jumping in "head first" to understand the needs of our clients (educators) and our consumers (our student payors). Our solution gets high marks from all.

Whenever the answer starts out as "no" our product people and our development teams figure out ways to make the answer "yes." I'm not just saying this. We never, ever stop trying to find new ways to solve problems. One great example, now that we are the leader in the higher education space, is our decision to take our platform into the complex medical tourism arena. Once again, we're facing new questions and new obstacles, but we'll never stop until we figure things out. We'll be in the market shortly with our initial slate of medical institutions who believe we are onto something great.

Beyond medical tourism? Who knows – perhaps we'll one day be the "Paypal" of large-ticket cross-border payments. Could another company do what we do? Of course, but it sure is hard to create a Culture of Yes. It's my job to keep raising the bar and (almost) never accept "no" as the answer. And of course, to empower every single member of our team to strive for new heights.



FORTER'S

CEO, MICHAEL REITBLAT



Forter's mission is to deliver fraud-free eCommerce using a disruptive new era approach to preventing fraud. Our Decision as a Service solution is entirely automated and based on machine learning, which in itself represents a huge leap forward from traditional solutions' reliance on rigid rules and time-consuming manual reviews. But to really understand how Forter is taking payments to the edge, you have to understand how our next

generation system enables the innovations crucial to ensuring that payments are able to meet customers' needs and expectations.

Innovation is constant; merchants have to run to keep up. A few short years ago, two-day shipping was a differentiator. Today, there's Amazon Prime Now. Retailers can't rest on their laurels; they must push themselves to improve all aspects of the customer experience.

Where is the payments industry headed — or where should it be headed? The future should be borderless, frictionless and fraud-free. Borderless means becoming truly international, and not merely paying lip service to the idea. Frictionless means a smooth, fast, enjoyable checkout experience to create more sales and happier customers who never know they were examined for fraud. Fraud-free retailers never need to factor fraud into their calculations, but can make the bold decisions best for growth.

HOW DOES FORTER ACHIEVE THESE THREE GOALS?

Borderless: We cover transactions from anywhere in the world, in any currency, whether eCommerce, m-commerce or phone orders. We treat each order on its own merits, never blacklisting countries. In fact, merchants with Forter have begun advertising in countries they previously avoided, knowing that Forter's system can handle international traffic without an increase in "false positives" (good orders mistakenly rejected as fraudulent).



FORTER'S CEO, MICHAEL REITBLAT

Frictionless: With Forter's system, customers aren't even aware they were examined. With instant approve/decline decisions for every single transaction, there are no more scores, no more delays in confirmation or fulfillment, no more requests for extra information that interrupt and annoy consumers.

And we treat all consumers as **"innocent until proven guilty"** instead of being risk-averse like legacy systems, so false positives are practically nil. Full automation means no more manual reviews, so retailers can scale and good customers are never slowed down.

Fraud-free: We offer a full fraud chargeback guarantee for all orders approved by our system. If the system gets it wrong, we take the hit. This lifts the burden of fraud from retailers so fraud no longer affects their business planning or goals. Fraud will never entirely disappear, but with Forter merchants can be free of its restrictive weight.

All this requires a change in mindset across the industry.

It's time for everyone connected to payments to realize that however good their organization, they can't do it all.

Fraud is something best left to experts at the technological cutting edge, who engage in constant research to stay ahead of the curve — and the fraudsters.



I2C'S

FOUNDER AND CEO, AMIR WAIN

Consumer expectations are vastly different than they were just a few years ago. The mobile, social, interconnected world of today is transformative and has changed the way we expect things to work. Consumers expect flexibility, relevance and personalization across all points of interaction. They now want to be at the center of an integrated commerce experience that aligns with how they go about their lives.



Payments are at the heart of commerce and are critical as one thinks about curating new commerce experiences. The problem is that traditional payment processing systems built decades ago are designed as general ledgers to post high volume of debits and credits to an account.

The ledger-based system architecture cannot meet the needs of the human-centric commerce experience demanded by the consumer of today.

A modern payments platform has to support this reality — architected so that people and their commerce experience are the focus.

Next-generation payments platforms must be able to recognize, leverage, and act in real time on relevant contextual information to make consumer's commerce journey meaningful and engaging.

i2c is meeting this need by focusing on the journey and not just the payment event. We have developed a “**Human Centered Data Architecture**” capable of accounting for more than just dollars and cents. It harnesses rich contextual data such as spending environment and consumer preferences in real time and works seamlessly in a secure and scalable manner.

A payment experience that's designed around how consumers move through their purchasing journey benefits everyone, providing value to both the consumer and the payment brand well before a payment transaction ever starts.



I2C'S FOUNDER AND CEO, AMIR WAIN

For example, an entertainment brand reinforcing loyalty can send a fan who uses a payment as an entry ticket to a sporting event or show a mobile message that times a special merchandise offer during intermission, payable with the brand's mobile app. Eligible discounts are applied automatically and the fan is able to register for complementary products and services. In this scenario, the value of the payment starts earlier in the process, plays a more prominent role in the consumer experience and goes beyond simply making a purchase.

Consumer brands and enterprises are focused on the customer experience. Our solution helps curate customer experiences and embeds configurable payment functionality into an overall business and product process. We see a huge opportunity to make the payment a logical part of the experience instead of simply occurring at the end of a transaction.

With the consumer at the center, payments are a key part of the commerce experience, giving brands and financial institutions new ways to engage directly with customers, drive new revenue streams and build brand equity.



IDOLOGY'S

CEO, JOHN DANCU

According to IDology's third annual fraud report results, the volume of transactions originating on mobile devices is rising – 59% noted that mobile activity in the last 12 months has increased. Of those customers surveyed, 85% estimated that at least some portion of their products or services were coming through mobile devices - 6% said 100%, 3% said 76-99%, 7% said 51–75%, 17% said 26-50%, 23% said 11-25% and 29% said 1-10%. As a result, 58% stated that their level of investment dedicated to the mobile environment is expected to grow in the coming year – and beyond.



While mobile payments organizations and applications hitting the market have become more frequent, we expect this to continue to grow and for the industry to evolve. However, at the forefront of concerns when it comes to mobile payments is security. In our report, ANI spoofing, account takeover via porting, and device cloning topped the list of mobile fraud tactics. These are just a few of the ways in which criminals are able to exploit the many nuances that accompany mobile devices. So, in order to ensure not only mobile payment ease of use, but also security, the entire ecosystem must innovate.

This is where IDology has been able to help and enable companies to take mobile payments to the cutting edge of innovation. IDology's ExpectID Mobile solution enables us to establish, maintain and ultimately trust a user's persistent mobile identity. By combining mobile network operator (MNO) data, device attributes and identity data, ExpectID Mobile gives customers a deeper view into the change events (i.e. new phone, lost and stolen, SIM swaps, phone number ported, and more) that fraudsters often exploit to take over an account or purchase goods/services through a mobile device. Because this unique mobile identity is continually updated in real time, it can be easily verified, eliminating the need for one-time password resets while also improving the user experience. The persistence of the mobile identity also protects the end user from mobile attack vectors such as account takeovers, spoofing and more.

As more organizations move their products and services to the mobile environment, there is an increased need for mobile-specific identity verification and fraud prevention solutions. At IDology, we are helping companies take mobile payment security as well as ease of use to the edge – and beyond.



LUCOVA'S

BOARD MEMBER AND ADVISOR, DARREN BEHRENDT



Recently, as the excitement and expectation around the Internet of Things has grown, we have seen a trend in the mobile device no longer just being a means to engage directly with the user, but rather playing the role of a remote. Today, various functions of our vehicle can be controlled through our device. We can monitor our homes while we're away through our device, and we can "manage" our health through our device.

As the device becomes a dynamic tool to help us better connect with our physical environment, it creates opportunities for more meaningful interactions across the board. Take this one step further. Rather than constantly locking our eyes to our phones, or holding it in our hands to function as a remote, consider what can be done by removing it from sight entirely and having it sit in our pockets to simply act as a sensor?

If we apply this to the world of commerce, this perspective can open up unlimited possibilities. Imagine that we, as a customer, could control and maintain the list of brands we wished to engage with online and offline, instead of being bombarded with unwanted marketing, perhaps enabled by a like or unlike on their Facebook page.

This can then prompt our phone to connect with those brands' in-store devices seamlessly, allowing a "digital-introduction" when we arrive at their location.

The result? A personalized and relationship building experience every time. The barista welcomes my visit and suggests preparing my last order. The stylist may share with me a selection of products that fit my preferences. The retailer could complete my transaction without asking me to produce any type of payment device or tool and allow me to bypass the line entirely. The transaction then becomes obsolete.

This is already playing out in our everyday lives. Take Uber and Airbnb for example. In both cases, a user's engagement with their mobile device is to allow them to identify themselves onto the organization's networks, with the outcome then being a tailored experience delivered by the Uber driver or the Airbnb host.



LUCOVA'S BOARD MEMBER AND ADVISOR, DARREN BEHRENDT

The device in these examples is simply a sensor. Payment, which is often placed first and foremost in the physical environment, disappears into the background and becomes a non-event.

We are focused on how this dynamic is playing out in the retail space. Specifically, we are interested in the intersection of eCommerce and bricks and mortar. While many are concentrated on an impending battle brewing between the two, our premise is that if you can bridge the divide between them, then the synergies are infinite – revolutionary if you will.

By treating the mobile device as a sensor, the co-existence of eCommerce and the in-store become seamless and the human experience takes center stage, not technology, and definitely not the payment transaction.



MINERALTREE'S

FOUNDER AND CEO, BC KRISHNA

Instead, like the Mobius Strip that has no beginning or end, no inside or outside, B2B payment systems should seamlessly connect buyer and supplier – automating invoice processing, driving electronic payments and ensuring proper reconciliation with rich remittance detail. B2B payment systems should be egalitarian – with no assumptions made that favor a large buyer paying the small supplier or a large vendor supplying a small buyer.



Size is relative, and “large” (company size, payment amount, or payment volume) is best seen in context – what’s good for the goose had better be good for the gander.

With B2B payments, the beginning is often the end, and the outside in one context may well be the inside in another (cue the opening sequence of “Apocalypse Now!”).

In the past few years, there’s been considerable innovation in consumer payments and transparent, delightful payment experiences are plenty and accessible (Uber leads the way by completely eliminating the payment experience!). But the way businesses make payments?

That’s a silly, antiquated chore that does not appear to have progressed much from the original Black Car – the Ford Model T!

In this, the 21st century, most businesses STILL do things manually – receive paper invoices, walk them around the office for approval, ignore essential payment controls, and seemingly delight in the task of sending paper checks by planes, trains and automobiles to their vendors.

And they are mostly oblivious to the increasing threats of payment fraud – internal and external.

MineralTree takes the headache out of AP by automating invoice and payment processing for businesses.



MINERALTREE'S FOUNDER AND CEO, BC KRISHNA

Our solutions eliminate the manual entry of invoices, streamline invoice routing and approval, provide sophisticated controls to ensure proper payment authorization, and provide a range of payment choices to ensure that businesses have maximum control over outgoing cash flow. And guarantees against online fraud are built-in. While finance professionals may tolerate manual, paper-based, ad hoc processes to process invoices and fulfill vendor payments, they don't have to.

Most businesses are simply not aware of the cost of these manual processes, and the risks associated with them. Automating the Invoice-to-Pay process can save businesses time and money, reduce risks, and enable them to focus on the task of growing their businesses, and be the best in their peer group.

While the laggards will still want to sign paper checks with period ink and quill pens, there's generally no argument that the era of modern B2B payments is upon us. Today's invoice payment automation solutions are modern, affordable, cloud-based, and deliver against the promise of a rapid time-to-value.

MineralTree is part of the fabric of this era – enabling even the AP department to be part of the seamless, connected, efficient, edgeless universe of B2B payments.



NORTH AMERICAN BANCARD'S FOUNDER AND CEO, MARC GARDNER

Value. While price is still important and is part of value, price alone is no longer the decision-making factor when it comes to choosing a point-of-sale solution. North American Bancard (NAB) recognizes the need to provide merchants both price and value.

We define value as anything that aids in the merchant's growth and success, from enhanced software and hardware solutions to better internal efficiencies and beyond. In September 2014, we acquired EPX

because we saw the opportunity it created for both our organization and our merchants. Our conversion to EPX creates a vertical integration that allows us the control and flexibility required to best serve our merchants, sales partners, ISOs and financial institutions.

In addition to improving our organization, we're seeing, reacting to and anticipating the evolution of payments. Our focus is on providing complete and customized solutions. While we continue to offer traditional countertop terminals, we don't just sell a piece of equipment; we sell the hardware, software, reporting and support. We introduced PayAnywhere Mobile and PayAnywhere Storefront as an affordable, convenient, and more importantly, smart mobile POS solution.

In August 2015, we boosted the PayAnywhere offering by being the first to market with our NFC reader, expanding the payment methods a merchant could accept.

We think about what our merchants need to run their business – from credit card acceptance to reporting to marketing to new and existing customers – so they don't have to.

North American Bancard is committed to continuously getting better. By improving our own processes and technology, we'll be able to improve upon the value we can offer our merchants. The value that we provide will help take payments, our merchants, and ourselves to the edge and beyond.





PAYPAL'S

SVP, GLOBAL HEAD OF PRODUCT & ENGINEERING, BILL READY



For years, we've been talking about the rise of mobile, the fact that mobile is eating the world, and that the lines between the future of technology and the future of mobile are blurring. Today, next-gen commerce innovators from Uber to HotelTonight are using mobile to change the way we engage with centuries old industries. The spread of

mobile across developing and emerging markets is enabling more financial inclusion, and commerce and payments platforms are democratizing access to mobile tools that were once reserved for only the largest commerce players. Mobile is driving innovation, inclusion and democratization across industries and geographies, but mobile is only operating at a fraction of its potential.

Here's how mobile will evolve and what it will fuel in the next few years...

MOBILE BUYING WILL GROW AS A SHARE OF MOBILE BROWSING

Though mobile has been the next big thing for some time now, the reality is that we're only in the first innings. Today, mobile accounts for just 1% of all commerce and 10% of ecommerce.

But Forrester forecasts mobile commerce will hit \$142 billion in the US next year, representing more than one third of online transactions. And in the US, an increasing percent of sales will have a mobile cross-channel component, as consumers increasingly turn to mobile at some point throughout the purchase cycle.

So what is driving this increase?

Mobile conversions will grow because of increased trust and convenience, a rise in contextual commerce enabling people to buy in the moment, and growth in services that reduce friction on mobile.

These services include emerging digital wallets and tools like PayPal's One Touch™, which enable customers to checkout without needing to type in any usernames, passwords or payment information.



PAYPAL'S SVP, GLOBAL HEAD OF PRODUCT & ENGINEERING, BILL READY

MOBILE GROWTH IN THE PHYSICAL WORLD WILL CONTINUE TO GROW VIA RETAILER APPS

Mobile commerce adoption started online, moved in-app with mobile-first apps like Houzz and Yplan, and is now starting its initial moves in-store as retailers realize their customers expect to be able to browse, shop and buy on their phones in any context. But unlike online and in-app, where the payment piece was a major hurdle, the payment piece in-store has never been a painpoint for consumers.

Customer-first retailers like Starbucks, Macy's and Subway realize that to be able to engage with their customers on their mobile devices, they need to create apps that add services and functionality around the payment. As countless studies have shown this year, swiping a card isn't a painpoint for consumers as in-store mobile adoption has remained flat. Integrating value added services like loyalty points, coupons/offers and order ahead capabilities that enable consumers to skip the line does solve major consumer painpoints. As retailers put out apps that enable these services, we'll begin to see an increase in in-store mobile adoption.

Apps like that of Macy's, which include One Touch™, Starbucks, which seamlessly integrates loyalty points, and Subway, which with the help of Paydiant enables customers to pre-order their subs so they can skip the line, are driving mobile adoption in-store.

MOBILE PHONE ADOPTION GLOBALLY WILL DRIVE FINANCIAL INCLUSION

Mobile phones are increasingly becoming the remote controls with which we manage our lives.

By the end of 2016, Forrester forecasts that 4.8 billion people will use a mobile phone and smartphone subscribers will represent nearly half of the world's population. Importantly, much of this growth will be driven by an accelerated adoption in parts of Africa and Asia, where mobile will serve as an access point to services and industries that people were previously left out of.

In Kenya, for example, 8 in 10 people have access to a cell phone even though they may not have access to banks or bank accounts. In rural parts of India, farmers are limited in what they can buy based on how much cash they have on hand, and also face a range of risks associated with carrying cash. The spread of mobile globally will enable inclusion of those previously not part of the financial system.

Mobile will also drive financial inclusion across US cities where bank access is limited or where banks are removing branches and ATMs. With the rise of mobile phones, people who didn't have access to banks will now have the ability to collect and send money, transfer funds via P2P services and also easily send remittances across borders.



PAYPAL'S SVP, GLOBAL HEAD OF PRODUCT & ENGINEERING, BILL READY

DEMOCRATIZATION OF MOBILE APPS

Mobile Web usage still dominates that of mobile apps, but mobile app usage is growing quickly as consumers spend more time on a select few apps, like Facebook, Google and Venmo. Studies show that smartphone owners use an average of 24 apps per month, but that the vast majority of time is spent on just five apps. But this convergence is partially due to the fact that not all players have access to the mobile tools needed to build their own apps.

In the next few years, ecommerce and payment platforms like BigCommerce, Shopify and PayPal will help drive democratization of the tools needed to create apps so that smaller players who weren't previously part of the app economy can build apps to engage their customers.

The IoT and the on-demand economy will drive the need for an agnostic platform

The world is growing more connected via the Internet of Things and people now expect to be able to manage their lives via their mobile phones. Soon, people will expect their devices will manage their lives for them, without prompt. Technologies exist today that enable us to pay across apps with a single touch, but that's just the beginning. Our mobile devices already know enough about us to be able to facilitate a single transaction or even trigger a chain of transactions and experiences without prompt. With the help of machine learning, our devices will not only know our past activity, but also learn our habits, routines and begin to anticipate and predict our needs and preferences.

The connected IoT is already emerging, but in order to realize the full potential of a connected world, we need to put into place the foundational fabric on top of which the IoT will exist -- a foundation that is open and agnostic and that enables the connection of all devices, all operating systems and all payment types so that transactions can happen seamlessly.

MASS ADOPTION OF TOKENIZATION

Tokenization has been around for more than a decade, but it has only recently gained mass attention with the influx of new digital wallets. To date, the PayPal digital wallet alone has tokenized well over 1 billion instruments and Braintree has an additional 185 million tokenized cards. As consumer demand continues to drive the instant and on demand economy, contextual commerce experiences will arise everywhere -- from social media platforms to email -- and tokenization will be foundational to enable and support this. In the next year, tokenization will evolve to enable these new forms of commerce and will be applied and used in new and innovative ways.

Mobile has already done a lot to drive innovation, inclusion and democratization around the world, but we're still in early innings. In the next few years, we'll see mobile continue to rise in all of these areas and more.



PROXAMA'S

VP OF STRATEGY, DIGITAL PAYMENTS DIVISION, PAUL BUTTERWORTH



22 percent of U.S. Black Friday sales in 2015 were made through a smartphone. What's also happening more is the use of a smartphone to accept a payment. From mPOS devices offered at market stalls, to iPhone powered POS add-ons at the Apple Store; performing a payment to a mobile, connected, handheld device is growing fast.

There has been more than a **300 percent increase in mPOS activated merchants in the 12 months up to Q3 2015**, and this growth will continue to rise. mPOS isn't perfect though, the cost of card-accepting devices, the merchant onboarding costs and the low margins make it a tough game to make money on. Proxama is developing a solution that allows Near Field Communication (NFC) enabled Android phones to accept payments, without the need for an external device. Over the past decade Proxama has developed several prototypes of the technology, but now that contactless cards and NFC wallets are mainstream, the market is ready for this technology.

The solution has the ability to turn almost all NFC-enabled Android handsets into payment terminals, supporting transactions up to the contactless limit (when used with a traditional card) or high-value transactions when used with a mobile NFC wallet. To make this happen, however, requires a mindset change from the card schemes, just as the move to cloud-based payments did for mobile wallets. The security model must change to allow for devices that are inherently less secure than traditional POS terminals to accept a card payment transaction.

The good news is that the same security technologies being deployed for HCE cloud-based payments can be re-used - white box cryptography and TEE. Both technologies enable mobile handsets to be secured from attack, stopping fraudsters from compromising the application or stealing card details. The only thing stopping this revolution is the outdated "honor all card" rules, but there are big signs that these policies are falling away; you only have to look at the ability to use payment cards on Transport for London, that doesn't honor all cards — it's contactless only and is taking well over a million card transactions a day. So in the future we will see increased usage of cheap, secure, mobile, connected POS solutions supported off the common smartphone, bringing payment acceptance to a mass market.



SYNCHRONY FINANCIAL'S

SR VP, PAYMENTS TECHNOLOGY AND INNOVATION, SIH LEE



I still remember the very first time I used Uber. When I arrived at the destination, I didn't know what I was supposed to do. Do I ask the driver what was owed? How do I pay him? How do I tip him? The driver looked at me and gave me a smile with a nod, leading me to think that it might be OK to open the door and step out of his car. And I did so slowly and cautiously. It felt like I was getting away with something. But then I received a notification on my phone, and I realized what this was. It was a new experience. A very new payment experience, to be more precise. But the irony is that while I thought I just had a payment experience, in reality the actual motion of payment wasn't even there. The truth is that there wasn't a payment experience. I spent more time entering the destination and selecting a car on the app than paying for the ride.

That's where we are headed. The "last mile" issue of paying for our experiences will be solved by the ubiquitous presence of mobile devices. What the industry needs to solve for is the entire commerce experience, where we focus on providing a higher level of value during the shopping phase and making the act of payment almost non-existent. Focusing on understanding the consumers' needs, capturing them at the point of intent, and assisting with research and selection can create a shopping experience that can ultimately transform the payment, which is transactional by nature, to a relational experience. Most consumers remember their shopping experience – good or bad – more than they remember how they paid for the goods or services.

Whether you're swiping plastic, tapping a digital wallet, or paying with a facial gesture, the fundamental baseline requires seamless authentication and convenience. Both factors must co-exist in order to deliver the focus on shopping and not so much on the payment experience. This will lead consumers to believe in why they need a digital wallet, create more in-store payment scenarios, converge multiple channels for even more unique experiences, and ultimately eliminate the need for cash. To me, taking payments to the edge is about creating a life-changing commerce experience, transforming the payment from a transactional experience to a deeply personal and impressive relationship experience.



TNS'

EXECUTIVE VP AND MANAGING DIRECTOR, LISA SHIPLEY



The payments industry is approaching a significant juncture and those taking the helm as we move forward will probably not be the usual players. We are living in a time where technology is advancing at such a rapid rate that keeping pace with and reacting to this offers the greatest rewards for not only the payments industry, but across the financial world. Evolutionary change, particularly at the point of sale, will continue, but at a steady pace of adoption. It is revolutionary change that has and will continue to make the biggest impact and achieve swift mass adoption.

Looking at “payments at the edge” and considering the limitless possibilities of what new technology will allow us to achieve has never been more exciting.

I believe the next big wave of change will be initiated by a fully connected global population. At present, estimates suggest only a third of people around the world have access to the Internet, however, in just a short few years this coverage will extend to everyone. The launch of free Wi-Fi will open the door to a wealth of new players as well as consumers wanting easy, convenient payments.

We envisage the banking, telecommunications and merchant acquiring sectors will be most impacted and our think tanks at TNS are already conceiving, researching and designing strategies to address the projected ecosystem changes.

Peer-to-peer or person-to-person (P2P) payments should be viewed as a given. The demand is there and the technology is rapidly coming online to facilitate this. To benefit from this the payments ecosystem needs to become more open to collaboration and foster consortiums across a broad spectrum. At the moment, endpoints are accessed via narrow and parallel routes. We need to expand this design and facilitate cross-connects to address these requirements efficiently and cost-effectively.



TNS' EXECUTIVE VP AND MANAGING DIRECTOR, LISA SHIPLEY

A consortium-based network could also be leveraged to support machine-to-machine payments where convenience would deliver easier, quicker payments for consumers from ambient equipment.

Another key ecosystem adaptation should be a new approach to how the credit card industry gets paid, so that details such as interchange rates do not stifle or delay the payments industry's adoption of new technologies.

Bearing all of this in mind, I believe the direction in which we are moving is putting the traditional point of sale at risk. Innovations such as wearable payments and biometrics require substantial upgrades to terminals in-store, making them a more expensive option. The mobile phone as a facilitator of payments has much greater scope for success and I expect this will be the primary technology used to support P2P payments as we move forward.

The companies with the most to gain from the new payments world order will be those that are able to develop solutions to make the transition to a fully connected global population easier, but who do not lose sight of the overriding need to keep the ecosystem secure. I believe TNS is in a strong position to examine the security risks of new technologies and our one-to-many connectivity is already scalable and flexible.



VANTIV'S

VP STRATEGY AND BUSINESS DEVELOPMENT, YSBRANT MARCELIS



As a set of underlying rails that enable commerce, payments innovation should connect users, devices, businesses and technologies through functionality that is exponentially smarter and easier.

Innovation around smarter payments is centered on the application of data to drive enhanced analytics, improved fraud management and deeper engagement with the end user. This includes the inherent ability to connect users with all applications and devices in their environment to drive truly seamless transaction experiences. These use cases range from more relevant and secure “**buy buttons**” to automatically paying a parking meter when you park your card without using an app, dipping a card or paying cash.

Easier payments are centered on the ability to integrate, adapt and customize payment functionality to the specific needs of the consumer, developer and merchant.

For the consumer, the emphasis is on delivering remarkable, seamless experiences where payments are critical, omnipresent and yet invisible to commerce itself.

For the developer, it is not just being able to instantaneously integrate any type of payment functionality or instrument into any application or POS system. It is also the ability to customize the rails and economics surrounding those instruments.

For the merchant, it is about choice and the ability to enable transactions across channels with absolute transparency and simplicity.

While an array of market players are steadily moving to drive smarter and easier payment functionality, there are a core set of ecosystem drivers that can accelerate the impact of these trends.



VANTIV'S VP STRATEGY AND BUSINESS DEVELOPMENT, YSBRANT MARCELIS

First, new approaches to regulation and network rules can promote the ability to responsibly leverage data in broader ways, drive new economics, enable new business models and reduce the current costs associated with participation in the payments ecosystem. This is not limited to domestic schemes but extends to the ability to drive faster, easier and more flexible international acceptance.

Secondly, cross-industry partnerships and coalitions can help drive interoperability and adoption of new payment technologies at relevant scale across devices and channels.

Lastly, the willingness of existing payment entities to embrace new business models, meaningfully enter new capability areas and disrupt existing economics could lead to a fundamental shift in how the payments industry is defined.

Ultimately, the payments market will adopt these changes in order to meet the needs of an evermore rapidly evolving commerce ecosystem.

Whether incumbents will lead the charge or be disrupted by newcomers remains to be seen, but the next three years in payments are likely to see more investment, more consolidation, more hype and more reinvention.



VIEWPOST'S

FOUNDER AND CEO, MAX ELISCU

At Viewpost, we have always looked at B2B payments through a holistic lens. In order to solve today's payment problems we envisioned an open and secure ecosystem and set out to build it. We specifically focused on enabling businesses to easily send funds, inclusive of remittance information, directly from their bank accounts to those of their trading partners. It's an important distinction. Unlike what happens when a typical processor



takes possession of the payer's funds days in advance of the payment date, and then initiates payment when the funds are available, we have enabled direct payment from one account to another—across financial institutions. We also made our solution available to companies of all sizes, and operable with existing processes. By design, we removed barriers to adoption like cost, complexity and account maintenance. We connected businesses and their accounting systems to trading partners and banks, all in pursuit of faster payment without duplication of data entry or the administrative hassle we have all come to expect. Payments flow freely, on demand. To do all this, we partnered with the financial services sector, built integrations to the most commonly used accounting systems and developed simple onboarding experiences.

We are now seeing entirely new use cases emerge within our network. Large distributors are replacing paper invoices and payments with electronic variants, and funds are flowing directly into their bank accounts without delay, or cost.

Customers are paying with the swipe of a thumb, and remittance information is integrating directly into accounting systems, with no manual cash applications. Companies within industries where there's a high concentration of COD deliveries (food services, package shipping, alcohol, etc.), have eliminated paper, manual invoice delivery, check handling and cash applications, all for less than the cost of a stamp and envelope. We're also exploring use cases in the payroll industry. Currently, payroll firms take possession of employer funds, introducing credit risk while prematurely depriving their customers, and their customers' banks, of liquidity. It's a lose-lose scenario. Viewpost can solve for each of these pain points while improving the experience for everyone.