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Financial IT
Innovations in Technology

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ISSN 2050-9855

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Andrew Hutchings,
Editor-In-Chief

WHAT WILL BE WHAT?

What are the main changes to look for in financial services over the coming three years?

We deliberately try to base each edition of Financial IT on a particular theme or topic, and one that runs through the vast majority of the articles that we include.

This enables us to produce a series of actionable commercial insights that relate to the present reality of how IT intersects with financial services.

A central feature of this edition is the inaugural publication of Financial IT's 2016/2017 Pathfinder Ranking. We are looking to produce a definitive ranking of the 50 most promising new FinTech companies. Nominations have been sought from Financial IT's community of readers and subscribers.

At a first glance, the discussion of the 2016/2017 Pathfinder Ranking highlights the diversity of the various companies that have been identified.

Most of the companies are small. They are also typically based in the English-speaking world or in international business centres.

Overlapping themes

However, the key feature that the companies have in common is that it is not easy or helpful to be categoric about the Pathfinders' main areas of interest. There are large overlaps between the various areas of FinTech as we would see them here at Financial IT. Blockchain often plays a key role in security/ KYC solutions: Artificial Intelligence (AI) is often a key element of mobile banking solutions, and so on.

The blurring of themes and trends runs through many of the other articles that we have included in this edition. Doug Clare and Frank Holzenthal, senior executives at FICO and FICO TONBELLER respectively, consider several of the major trends in banking. In an interview with Ana Costa e Silva, a Senior Data Scientist at TIBCO, we assess the rise of AI and machine learning at a time of growing regulatory requirements. Other articles look at the impact of technology on payments in Latin America and micro-credit in South Asia.

In this edition of Financial IT, Comarch's Maciej Wolański looks beyond financial services and explains how the concept of a connected motor car is poised for a major revival. He argues that there could be major implications for investment banking.

And PSD2...

Our previous edition of Financial IT was devoted largely to the implications of the European Union's second Payments Services Directive (PSD2), which is due to be introduced in January next year.

The magnitude of the topic is such that we would never be able to deal properly with the implications of PSD2 for financial services companies and FinTechs in just one edition of Financial IT.

In this edition, Zafin COO Nancy Langer explains how, in a PSD2 world, competitive advantage for banks will come from effective analysis of data, and not just possession of it.

The topics of other articles in this edition of Financial IT highlight the complexity of the issues that are raised by PSD2: The PSD2 final Regulatory Technical Standards -10 things that you need to know; Securing the success of PSD2 (a consideration of what it means for banks' security systems); Why is a PSD2 'compliant-only' strategy a threat?; and Why the European Banking Authority may be wrong about screen-scraping.

It is likely that PSD2 will be a key topic for contributors to Financial IT in the coming months. Already, though, the material that we have gathered for this edition and the edition immediately preceding it combine to form a comprehensive examination of a large and complicated subject.

However, PSD2 is not the only major change with which financial services companies will have to deal in the coming three years. Many of the FinTech companies who best understand the numerous changes feature in our 2016/2017 Pathfinder Ranking of Who will be Who? It is no coincidence that the rest of this edition of Financial IT addresses the related question of What will be What?

Finally, we wish everyone a highly successful Money 20/20 Europe conference.

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DoCS

Nancy Langer,
President and Chief Operating Officer, Zafin

READY OR NOT: PSD2 IS COMING

As the arrival of the revised Payment Services Directive (PSD2) rapidly approaches, large banks must prepare for the reality that lies ahead. The playing field is set to level out at a speed like never before and with the competition literally one click away, larger banks will have to become truly digital companies in order to compete. They can no longer rely on having data as a competitive advantage; instead they must wise up and use the data themselves or prepare to lose out.

Analysing data is hardly a new concept in the banking world. However, many banks are sitting on masses of latent data that is not being leveraged. We are living in a mobile-first world where the relationship between real life and online is increasingly blurred. This has resulted in an empowered consumer that expects service above and beyond traditional banking.

Banks must analyze and action not only data they can access but also data they do not own. What is being said on social media for example? What is the weather like today – will this affect customer behaviour? Aggregating and performing real-time analysis on these additional data carry their own challenges. As PSD2 approaches, employing a data strategy will be a must.

Pricing = Product

We know that customer demands have changed but often bank infrastructure has not. The employment of data allows for intelligent interactions personalised to customers' needs and behaviours without the vast amount of time needed for face-to-face or phone conversations. This keeps both bank and customers happy, ensures a strong relationship is maintained, and turns loyal customers into stronger advocates.

As competition increases, it will be important to prioritise pricing up there with product itself. Banks of different sizes and ages are able to do this to varying degrees. A newer bank that is free of age-old infrastructure is better equipped to perform these tasks, whereas an older bank may struggle due to their legacy systems.

In order to optimise revenue, banks must lift all the product and pricing information they already have from the core, consolidate it and then use that information to deliver personally targeted pricing and products that build a stronger relationship with the end user.

They must shake off tradition and expand their thinking beyond traditional business models. Customers are looking for more than a system; they are looking for a personalised service. With most services now being handed to consumers on a silver platter, why not financial? Banks must enable their customers rather than expecting them to take action themselves. It will be important to offer them insights into their own behaviour and use this as an opportunity to cross-sell services customers may not have even realised they needed.

Opportunity beckons

PSD2 is an excellent opportunity for more traditional banks to reform. To remain relevant, they must make themselves the hub of the expanded ecosystem of customer information by forming Account Information Service Provider subsidiaries (AISPs). AISPs will "see" (to some degree) all client flows across financial institutions and will therefore be better able to offer customized product offerings to their clients. Given they already have massive captive client lists, they have an advantage over third party payment service providers in the race to this holy grail of client data.

Banks should also be focusing on a variety of behavioural and demographic data to help them recognize and anticipate their clients' needs. Every interaction with a customer is a touch point and all of this information should be utilised to improve customer experience.

Finally, banks must also upgrade the performance of their client-facing technology. Responsive systems, omni-channel capabilities, and intuitive interfaces can have a huge impact on customer loyalty.

The data required to offer a next-generation banking experience is already in every bank's hands, but it will soon be in the hands of all. It therefore behoves banks to up their data analytics game and proactively improve their understanding of (and ability to cater to) specific client needs.

PSD2 beckons and make no mistake: in its wake will be winners and losers. Successful banks will utilize, analyse, and act upon the data they have, and the data that the new regulation will yield. Whether it's the right product, the right pricing or even the right time of day to serve your customer, those that act now will be in the winners' circle post PSD2.

ZAFIN

Valuable relationships are good for the client and good for the bank

Financial institutions are under pressure to deliver on multiple fronts. A better client experience. Compliance with complex regulations. More efficient operations. Sustainable growth. Legacy system constraints. The answer lies in a fundamental shift from a product-centric approach to a client-centric one.

Reward your clients for their entire banking relationship with a simple, transparent banking experience, while personalizing products to the segment of one.

Incentivize deeper, more loyal and more profitable client relationships.

Create a more nimble and flexible product management function, reducing time to market for new products from six to nine months to as little as two weeks.

Let your core banking system do what it does best, while creating a futureproof technology foundation for your digital banking strategies.

Right product. Right client. Right time. Right channel. Right price.

About Philipp Bock:

Philipp Bock is the founder and CEO of allpago, which was established in 2010. allpago develops and provides the leading payment solutions for the Latin American region enabling global digital companies and other payment providers to process all local payment methods, which make up over 70% of the Latin American eCommerce volume.

The company serves BMW, Getty Images, McAfee, Salesforce, Symantec, Teamviewer and leading providers such as ACI, Paysafe, PayPal and Wirecard in Latin America.

GOING THE LAST MILE INTO LATIN AMERICA

Life before allpago

Before allpago, my life was much more relaxed. I was restructuring a company in Brazil, which was challenging but much more comfortable. Life is certainly more exciting now.

As a child

As a child I wanted to work as a garbage collector because I liked the idea of jumping on and off the back of the truck. Then I wanted to be a pilot, because my father worked for Lufthansa and was always travelling. I think I've always liked the idea of moving forward and never standing still.

At one point all I dreamed about was building Lego. As a teenager in Brazil, I was more interested in hanging out at the beach, bodyboarding and playing soccer.

Source of inspiration

My father was always a big source of inspiration. He taught me the benefits of being curious about things. My other big heroes were Formula One drivers, people like Alain Prost and Nigel Mansell. I think that that was because of the speed they moved at and the success they had. I've always liked winners.

Study at the Technical University (TU) of Berlin

I've always been fascinated by technology. When we were living back in Europe I got into building and customising desktop computers to make some money. The Technical University provided the opportunity to study industrial engineering with management, so I got to combine the technical and business sides of things.

Paths to FinTech

My first exposure to the fintech industry was working as an intern at Salomon Smith Barney in London, where I supported the M&A team involved in buying and selling technology companies. I also worked at the venture capital firm that went on to become e.ventures, where I helped develop a framework for evaluating companies and business plans. I came across some really interesting fintech businesses there.

From big idea to successful tech start-up

allpago originated from a conversation I had with an old roommate who called me when I was working in Brazil and asked it I could help find a way of processing Boleto Bancario payments – from a popular local cash-based voucher system - so they could be remitted in Europe.

We figured out how to do that, founded the company and started incubating Brazilian internet companies to pay the bills while we knocked on the doors of banks and acquirers to expand our coverage. When we figured out how to make it work in Brazil, we started looking at other countries in Latin America, too, as we saw that there was not one single payment provider serving merchants, banks and global payment partners across the entire region.

Challenges

It was very hard work getting allpago up and running, especially addressing the highly complex technical challenges associated with connecting into banks' payment processes. Many Brazilian banks didn't see ecommerce as a major priority then, as it only made up a fraction of their revenues. Therefore, it took a lot of time, research and relationship building to get that coverage by convincing our financial services partners.

That was challenging, but the most difficult part during the setup phase of the company was keeping people motivated for nearly two years at a point when we weren't ready to sign up customers and there wasn't much money coming in.

The LATAM market readiness

At first the local banks and acquirers were concerned that we were a competitive threat and that we'd eat some of their lunch. It took time for them to realize that they needed us to connect and do business with international ecommerce merchants.

We were also early on the merchant side. Many of the major players were consolidating payment providers and putting resources into developing capabilities in-house in their core markets in the United States and EMEA.

Being early had its challenges, but it also meant we were the first people doing what we've done, which created many more opportunities too. We should always aim to be two years ahead of the mainstream.

Some Advice

Don't over-analyze. If I'd studied the market more and figured out just how hard it was going to be I may not have done this. Identify a specific niche and concentrate on that. Do your own thing, something that no one else is doing.

Don't raise too much money at the beginning. In fintech you can end up getting involved in some very complex areas and heavy regulation that money doesn't necessarily fix. You need to do a lot of learning on the job.

Finally, be resilient. As an entrepreneur, especially in fintech, you have to enjoy the pressure, you need to be a little bit perverse and be willing to experience the kind of pain levels other people won't, specifically in this heterogenic market where each country is totally different.

Creator, Innovator or Disruptor

We are creators and innovators: we operate in some highly complex markets and make things work that didn't before. If you want to find out just how complex things can be in our line of work then go to Brazil, try to do what we do and you'll soon discover just how innovative we need to be. Disruptors are people that break things, such as established standards and monopolies: we don't fall into that category.

Multilingual

Being able to speak multiple languages is vital for my job, I wouldn't be able to run the company without them. Communicating with people is about much more than passing on objective information, there are subtleties, emotion and all the subjective information you are looking for and passing on too.

I think this is particularly important when working in Latin countries, where a lot of the progress you can make comes down to building strong working and social relationships with those you do business with.

A good start-up manager needs to be

You need to be resilient, have lots of energy and a very positive attitude. At times it will feel like people are putting barriers in your way and everyone is working against you, so you need to see challenges as opportunities and things you can solve. You also need to be open to criticism and able to keep driving forward all the time.

Key factors affecting success of start-up

Start-up success comes down to things like being focused, having a unique selling point, a clear value proposition and being in the right place at the right time. The most important factor, ultimately, is the team. You need a team that is committed to the cause and willing to work together.

Future Plans

allpago is focused on convincing more international e-commerce merchants of the opportunities that exist in Latin America, and that we have the expertise, the network and the technology that can help them capitalize on them.

We are opening our payment interface up to partners, so that global banks, credit card companies and payment providers can use our platform as their 'last mile' into Latin America and extend the benefits of our extensive local reach and knowledge to their customers too.

We are also focused on geographic expansion. We cover 80% of e-commerce users in Latin America already and plan to grow that to closer to 90% in the near future by moving into new markets and working with more niche payment providers.

Goals

Future goals for allpago include geographic expansion to cover the five most important e-commerce markets in Latin America and 87% of online shoppers. We'll then work with our clients to decide where we go next after that.

We are building out our infrastructure, adding coverage and unique features, to work more closely with institutional players, big banks and global payment providers, who can use allpago as their 'last mile' into Latin America. This means repositioning allpago as a payment technology infrastructure provider, and not only a payment solution provider.

In 10 years' time

That's a very good question. I see myself with my wife and children spending the summer in Europe and the rest of the year in Latin America. allpago will be working with the biggest e-commerce merchants, banks, credit card companies and payment providers in the world and I'll still be tackling the biggest challenges I can find.

My "life credo" is

Turn challenges into opportunities, for that makes you grow. Always find the positives, new opportunities and fresh starts in every challenge that comes your way.

allpago accept payments in Latin America

JUST A WEB BROWSER WITH TIRES? BANKING ON THE CONNECTED CAR

Marked with a trail of countless false starts, the idea of a connected car is poised for a major revival. Financial services will be affected too.

About 16 years ago, delivering his keynote speech at Convergence 2000, a Detroit-based event devoted to transportation electronics, Sun Microsystems CEO Scott McNealy touched upon how the automobile is being continuously equipped with a broadband connection to cyberspace.

The latter, converged with your car, McNealy said, opens the door to a whole new array of navigation, entertainment or diagnostic systems. And fundamentally changes the way your Ford or Fiat will soon be perceived. "A car is nothing more than a Java technology-enabled browser with tires," argued Sun's CEO.

Fast forward to today, and one can hardly shake off the impression that history has made a full circle. Soon, a vast number of newly produced autos are to be accessing the web the minute you turn the key.

As early as in 2013 a report by the Spanish telecommunications company Telefonica, prepared in cooperation with leading car manufacturers, described this tendency as the biggest transformation of the automotive industry in a hundred years, estimating that by 2020, 90 perc. of passenger cars rolling off production lines will have the function of being online.

Is there any room for banking here? Absolutely. "Connected cars will rewrite the rules for how and where banks interact with their customers and change the way people manage and spend their money", argues the American Banker.

SOME USE CASES FOR VOICE-BASED IN-CAR SYSTEMS IN FINANCE

PRIVATE BANKING

Briefings for relationship managers on their way to clients

Finance-focused personal assistants could be used by personal advisors or other bank employees to get up to speed with clients' detailed profiles right before an important meeting. This would be similar to a standard 360-degree client view – enriched with client sentiment or personal characteristics – only delivered with voice, not vision. There is also a play for the advisors to use a voice-controlled in-car system as kind of a thought board when driving back from the meeting.

Market and portfolio updates for investors

Total portfolio balance, best and worst performers as of today, currency allocation...affluent bank clients could be given a quick overview of the value, structure and profits of all their investments – by asking simple questions like: "how's my portfolio doing?" or "let me see my alerts". This would be complemented by access to market information, quotations, and analyses.

RETAIL BANKING

Quick balance-checking for individual account holders

Retail bank clients would be able to check their account statuses in a flash, keep track of their household budgets and stay informed about unplanned expenses or events like approaching credit card repayment date. The assistant could also lead its user along the path of financial choices, e.g. with suggestions of spending limits – to be set later on via mobile once the user steps out of the car.

CORPORATE BANKING

Mass transaction authorizations for CFOs

Several hundred transfers to complete in a few moments? There might be an (in-car) app for that. A large company's CFO could cope with such a task in the absolute privacy of their car by giving short instructions to an intelligent helper dwelling on the dashboard. The app could also deliver information on balances, deposits and loans of any given company as requested by its manager on their way to work.

Stay tuned for Comarch's June report on connected cars to learn about their use cases in the financial world that go beyond voice-controlled interfaces.

COMARCH

About Maciej Wolański:

Maciej Wolański is the head of R&D at Comarch's Financial Services division. An expert in Fintech and innovation, Maciej is responsible for developing and testing new ideas, technologies and business models.

Ten times as fast

What's different today from the last turn of centuries is that contemporary wheels pack considerably more powerful chips under their hoods. "Today's car has the computing power of 20 personal computers, features 100 million lines of programming code, and processes up to 25 gigabytes of data an hour," reads a McKinsey study from three years back.

Add connectivity to the mix, and you end up with an ultimate extension of a mobile device, with a plethora of infotainment options.

As various studies show, there are currently more than 200 companies working on projects related to connected cars, from Verizon and Toyota through to Apple and Hitachi – a phenomenon that the American Automobile Association (AAA) has recently characterized as "an arms race".

It may not be such an overblown comparison after all. Keeping up with consumer expectations, the connected car market is estimated to grow ten times as fast as the overall car market – which means good old automobile itself is in fact turning into a somewhat eerie machine envisioned by Scott McNealy.

A dashboard that talks

61 perc. of today's drivers believe it's essential this machine has the same operating dashboard as their phone, according to a global Accenture survey.

This is where voice recognition comes into play. The latter, says research company IHS Markit, will be incorporated in 55 perc. of all cars manufactured in 2019, the reason being automakers are keen to find safer forms of car-driver interaction.

Voice-controlled assistants employing artificial intelligence are hailed as the next big thing – a new, improved interface for a myriad of devices and infrastructures, from cars to homes. Mostly because they allow users to absorb just as much information as they need at a given moment, the importance of which can't be overstated enough in the era of data overload.

"Interactions will move away from touchscreens and will increasingly make use of voice, ambient technology, biometrics, movement and gestures," write Gartner analysts, predicting that by 2020 "zero UIs" will spread throughout 2 billion devices and IoT endpoints.

Flexing muscles

To make it happen, carmakers and tech companies don't let the grass grow under their feet for sure.

Last year, Ford has brought to market the newest version of its in-car entertainment system (SYNC 3) that lets the driver state some of their wishes out loud: 'I need a coffee,' 'I need petrol,' and 'I need to park', which results in the car finding routes to appropriate places of interest. The next update of SYNC 3 is to include integration with Alexa and 23-language pack.

The latest edition of Consumer Electronics Show (CES) brought the announcement of a new connected vehicle platform, made by Microsoft and aimed at helping automakers introduce a selection of web-based services – from asking Cortana for directions up to "predictive maintenance" (preventing failures by monitoring the car 24/7). Renault-Nissan is reported to be the first automaker to utilize the platform end-to-end by 2020.

Some banks jump on the bandwagon too. Two years ago the Spanish CaixaBank has created an in-car app for making balance enquiries and transfers, as well as locating nearby branches and ATMs. The app is voice-controlled.

What is the reason for turning a car's head unit into a conversational, "invisible" interface telling us about balances or quotations during day-to-day commute?

For us, it's time – and lots of it – that just slips through the cracks. Some statistics (Harvard Health Watch) go as far as to estimate that Americans spend 600 hours a year commuting in the car, which, given the average lifespan is about 7 perc. of their lives.

Now, if we had a virtual assistant to help us keep track of our finances in the privacy of our cars, we could not only use these hundreds of hours more productively, but also buy ourselves more time to spend on what we love most when we're no longer driving.

OUR TAKE ON HOW CONNECTED CARS MIGHT CHANGE THE FACE OF INVESTMENT BANKING

Inordinate amount of time spent on driving could be used more productively – by turning cars into intelligent helpers giving us updates and reports on our everyday matters. Especially if we need to keep our finger on the pulse – as it is in the case of investments.

That's what Myra allows you to do. A brainchild of Comarch R&D engineers, she's a voice-controlled interface whose job is to let investors keep track of all their wealth right from their dashboards – and without ever taking their eyes off the road.

Basically, what you can ask her to do is read you some news, check on how your portfolio is doing, present you with selected market data or bring you up to speed on alerts you might not have had time to see before.

We brought her to life with "mobile job nomads" in mind – as a report from Arthur D. Little puts it – or commuters who are constantly on their way to customers, business partners and temporary projects.

Read more here or request a demo by writing to maciej.wolanski@comarch.com

Where the rubber meets the road

Still, voice recognition is far from being perfect. According to a recent US-based survey made by market research company JD Power, the technology is linked to one-third of all infotainment glitches, remaining among the top five "difficult-to-use" cockpit solutions: together with inaccurate navigation systems or laggy Bluetooth connectivity.

The crux of the problem is that vehicles are subjected to a harsh environment. Wind, road or engine noise, not to mention passenger talk, can effectively distort voice queries.

In 2014, to determine whether driving can be affected here, a study by the Utah University and AAA evaluated the user-friendliness of changing radio stations and dialing done with voice-activated systems found in six vehicles of six different makes.

Researchers devised a five-category scale where 1 stood for mild distraction, and 5 - a maximum one. Values of 2 and higher were construed as potentially dangerous while driving.

In the study, Toyota's Entune system garnered the lowest distraction ranking, at 1,7, while MyLink by Chevrolet, with the rating of 3,7, scored the highest.

In a separate analysis of Apple Siri and Microsoft Cortana, the researchers determined that their hands and eyes-free use falls into a 3 to 4 distraction category.

Safety first

The raging consumer thirst for a car that's always online poses a significant challenge for automakers: what they produce must be both safe and chock-full of technological novelties to be accessible while driving.

So if we ever want to talk to our cars – and expect them to scour the web in the process to feed us data – we should make them safe to talk to.

This is easier said than done, but one might go about it two ways. First is building distraction-free voice personal assistants (VPAs).

Second is giving cars a little more independence when it comes to driving itself. Adaptive cruise control, front crash avoidance, pedestrian detection…these features could potentially prevent a collision caused by distracted driving. Case in point: ten automotive manufacturers, from Audi to Tesla, announced last year that they will make automatic emergency braking (AEB) a standard feature across their vehicle lineup by 2022.

In the first case, when it comes to money matters, a conversational in-car agent should come in the form of a reliable companion who knows your personal, financial, or behavioral profiles, being able not only to adjust to various needs and objectives of yours, but also anticipate them.

So the only thing left for you to do – most of the times – is to approve its indented action. And drive on.

You can learn more about banking from a connected car in an upcoming report on the subject, to be issued by Comarch in June.


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THE EBA IS WRONG ABOUT SCREEN SCRAPING – AND IT'S GOING TO HURT EUROPEAN FINTECH!

On 23 February, the European Banking Authority (EBA) announced its intention to outlaw ”screen scraping” in one of their Regulatory Technical Standards (RTS) complementing the revised Payment Services Directive (PSD2), set to come into force in January 2018. Screen scraping sounds sinister. In fact, it simply refers to the practice of automating any internet browsing interaction, in this case with a bank, using their existing, direct customer user interface (online banking) with the customer's permission. Therefore, let me rather call it “permitted automated direct access”, which describes it better and is less derogative.

The EBA suggests that banks can deny this type of “direct access” through their front door, if they are providing another “indirect access” possibility via a new to be developed API at their back door. Customers, the argument goes, are being trained to enter their online banking credentials into third-party websites and banks do not have an adequate oversight of who is accessing their customers' data.

Infantilising the consumer

The problem here is that we're engaging with perception rather than dealing with substance. Consumers who share their login credentials with a PSD2-licensed fintech company are making an informed decision. They have complete control – and oversight – over who accesses that data. And that's the crucial point: the consumer is in control, not the bank and not the fintech. And that's exactly as it should be.

Of course, consumers must be protected against malicious “phishing attempts”, which is what the PSD2 security elements mentioned below are all about, but that applies to bank and fintech websites in the same way and also independently of using front or back doors.

Sharing login details between reputable financial services companies, subject to a competent financial regulator (for instance, the FCA in the UK or the BaFin in Germany) is perfectly secure. Such companies are regularly audited and must, by law, take all necessary technical, legal, and procedural steps to protect consumer data. This absolutely includes login details, but also includes the actual financial data itself. If they make a mistake, they are liable for providing restitution – so you can bet your bottom dollar that they are serious about not making mistakes.

As a matter of fact, the new General Data Protection Regulation (GDPR) stipulates that consumers shall be enabled to access all their data, retrieve it and share it – or not – depending on their explicit consent. The only feasible technology for achieving this is the permitted automated direct access of the consumer's data via the very same interface they are using manually – and this does not just apply to banks, but also insurances, telecoms, social media sites and any other company storing data on behalf of their customers.

What's more, European data-protection laws also demand proportionality in how data is collected and used. The customer's consent only covers data strictly necessary to the job with which the he or she has tasked the company. In the US, there has been some concern that screen scraping might give financial-service companies ongoing access, allowing them to harvest a broad range of data from customer accounts. In Europe, this just isn't possible.

To the contrary, PSD2 stipulates the use of Strong Customer Authentication (SCA) to disable the potential misuse of static login data by requiring a second factor, e.g. a one-time password, to authorise any particular transaction. It also stipulates that licensed fintechs have to properly identify themselves to the banks. The rumour that this would not be possible with direct access is simply not true – fake news! The certificate approach suggested by the RTS can be used equally well for direct or indirect access.

The danger in getting this wrong

Globally, fintech – particularly in the payments industry – is at a crucial stage in its development. E/M-commerce is booming. Volumes are expected to grow exponentially over the next few years. This is driving a rapidly growing demand for innovative online payment and financial products. So far, Europe has been one of the main beneficiaries of this development.

Two key planks of this success have been European fintech's ability to innovate and its ability to provide a good customer experience. The ban on permitted direct access to customer data puts both at risk. If fintechs must always go through the bank's back door API, they are essentially beholden to the banks, which could then "control the innovation" – that's like letting the fox guard the henhouse. If the development of a bank's API lags behind changes to the way its accounts are structured or the way its online banking works, then EU fintechs – and ultimately consumers – will be at a disadvantage.

At the same time, permitted direct access is the easiest and quickest way for a consumer to get started with a new financial provider. The vast majority of them are using this type of access today – including banks by the way! By forcing the consumer to take a more complicated route to sharing his or her data, the EBA would bring existing competition to a halt and make the customer experience less seamless. This will hurt not just such new providers, but also the conversion rates of many merchants.

The only way to motivate banks providing and sustaining an equally good – or even better – indirect (API) access than what they offer their customers directly is the following: leave the decision about which one to use to the consumer and their chosen fintech. Leaving it to the banks instead and then hoping for a level playing field by regulating and trying to enforce things like "functionality", "availability" and "performance" levels of APIs will just create endless arguments and disputes between the parties, make the courts even busier and turn lawyers – not consumers – into the real beneficiaries of PSD2.

Driving competition into Financial Services by banning direct access is like promoting electrical cars without allowing them on to public streets. Imagine where telecoms, electricity and railways competition would be today if incumbents had been allowed to keep their access infrastructure exclusively for themselves and lay new wires, powerlines and rail tracks for their competitors to use! Banks can always be a big step ahead if competition is forced to use their (API) back entrance instead of their shiny (online banking) front door.

Some banks will want to provide great APIs to attract many fintechs around them and create a whole ecosystem, similar to what Apple and Google achieved with their app stores. Some others – probably the majority I would guess – will prefer to do nothing and save their money and scarce tech resources for more burning problems. The remaining banks in-between will do the minimum to comply and the maximum to hinder the new competition knocking at their front or back door.

The new competitors will want to use APIs if they are good, because it's easier than automating the direct access, but they will not want to use them if they are not so good, because it would lead to not so good services to their customers, which by the way are also the customers of that bank – not to be forgotten!

In November 2016, the European Commission established a Financial Technology Task Force, with the aim of helping fintech in the EU reach its full potential. 2017, we were told, was going to be the "year of fintech" in the EU. Potentially hamstringing EU fintechs with an anti-competitive rule is an odd way of showing it.

What should we be doing?

To really protect consumers, the EU needs to help them understand how to choose the right providers when buying financial services and to safeguard against the use of malicious ones. National authorities should rigorously enforce existing laws on data protection and information security, making an example of any company which fails to meet proper standards either in the collection or use of data. This would do what the misguided EBA ban on "screen scraping" aims to do, but cannot, without harming the growing EU fintech sector.

"Permitted automated direct access" should be recognized as one of the most important enablers for innovation and competition in general, and not just in the financial services industry. Therefore, governments, regulators and competition authorities should embrace it and focus on keeping it secure and efficient, rather than throwing it out with the bathwater.

To be fair, the European Parliament recognizes this already judging by a *letter*[1] they wrote in October 2016. Amazing that the EBA chose to do the opposite, and I can only hope that the parliament will insist and prevail!

Properly nurtured and regulated, European fintech will continue to be a success story: an engine of growth and a job creator, at exactly the time such things are sorely needed. This isn't the time to put that at risk, particularly not for the sake of excessive legislation that won't achieve its stated aim.

Ralf Ohlhausen,
Business Development Director, PPRO Group

PPRO
the payment professionals

WHAT WILL THE FUTURE OF BANKING LOOK LIKE?

If anything is certain to be wrong, it's a precise prediction of the future of banking. Technology, regulations and customer needs are all changing too fast for any crystal ball.

By adjusting our scope, however, we can get a glimpse of the trends that will shape the next year. Rather than a broad view, we're focused here on a few trends based on our work with banks around the world.

Caveats over — here are five predictions for the (near-term) future of banking:

Cybersecurity will get a big dose of AI

Starting with Apple TouchID, biometric identification has become mainstream. However, while it has been hailed as a safe alternative to passwords, biometric security data presents explosive potential in hackers' hands. While changing your password is always an option, you can't change your fingerprints, so recovering from compromised biometric intel is very challenging.

In light of the vulnerability of biometrics to theft or forgery, FICO predicts banks will embrace behavioural analytics and self-learning AI. These models, which form the backbone of the fraud detection and prevention space in financial payments, look at the behaviour of individual users and machines for abnormalities, regardless of how the breach occurred. Unfortunately, phishing attacks continue to successfully compromise organisations, so banks must look to other real-time AI models that quantify changes in behaviour for a different and difficult-to-forge authentication technique.

Analytics will be weaponized in the fight against money laundering

Analytics help banks prioritise the threats that require the fastest response. Currently, predominantly only Tier 1 banks are employing analytics across anti-money laundering (AML), know your customer (KYC) and tax compliance. Consequently, many banks are overwhelmed by the number of security alerts they receive, and cannot prioritise their responses.

Banks are also facing increased pressure from regulators to use analytics to better understand their customers. In a recent IDC report[1], Bill Fearnley, research director, IDC Financial Insights, says: "Regulators and government agencies are working hard to cut off funds supporting terrorism and reduce financial crime and tax avoidance. To help in those efforts, regulators are requiring firms to improve their KYC programs with more detailed data and advanced analytics. Firms should be investing in new sources of data and data aggregation tools to help improve KYC compliance, onboarding and customer risk profile monitoring."

About Doug Clare:

Doug Clare is Vice President of product management, leading the FICO® Analytic Cloud initiative and FICO's cyber security initiative. He has been with FICO for more than 25 years, and has deep expertise in helping banks and other businesses manage fraud, risk and the customer experience. Doug has a bachelor's degree in international relations from the University of Minnesota, Twin Cities.

[1] Business Strategy: The Use of Advanced Analytics in the Know-Your-Customer Process (Sep 2016, Doc # US40137316)

Cloud technology will enable banks to offer a digital customer experience

The banking industry is one of the most regulated in the world. While political upheaval may make the future of regulation appear murky, banks must continue to strike a balance between compliance and providing a customer experience fit for the 21st Century.

Cloud technology presents an answer to this problem, and contrary to popular belief, banks don't have to compromise on security to embrace it. Adopting a secure, hybrid cloud architecture makes it possible to meet the toughest accreditation standards and innovate their offering to customers.

That's because cloud-based products multiply the potential IT and business savings gained by deploying originations solutions, by enabling companies to shift IT resources and data centre space to other business areas. New cloud solutions are being created all the time to further driving banking innovation. For example, FICO recently launched a new origination solution to help small banks and credit unions offer the same fast auto-approval for loans as more nimble, online lenders. This creates a level playing field, allowing small banks to compete on their experience rather than technology.

Consumers will demand more transparency on bank security

The rise and rise of connected devices have heightened customer concerns about their cyber safety, and that has big implications for banks.

In the coming months, consumers will demand more information about the security of the organisations they do business with — just as businesses are demanding more information about their supplier and partner networks' security. And just as banks promote 'seals of approval' for accomplishments like being environmentally friendly, consumer-facing businesses will look for ways to promote their security posture as a differentiator to reassure wary customers.

Banks will be held accountable for the systems they rely on to protect important data, and that's where analytics comes in. Embracing analytics to gather relevant security data in real-time includes integrating active threat intelligence to glean maximum benefits from security data insights. The entire financial services ecosystem will need easy, standardized ways of measuring and communicating risk that executives can share with customers and partners. Soon, just as most consumers have a credit score, so banks and other enterprises will have their own 'cyber scores'.

Regulators will catch up with fintechs

For fintech firms, the free-and-easy life is about to change. The Office of the Comptroller of Currency (OCC) in the US, for example, has granted banking licenses to fintechs for the first time.

By granting banking licenses to fintechs, regulators are taking a very different stance than they have previously—when, for example, Wal-Mart abandoned its 2007 banking plans after "a firestorm of criticism from lawmakers, banking industry officials and watchdog groups."

Getting a banking license is a privilege, but the flip-side of that is regulation involves a significant investment of both time and money. Regulation represents the cost of protecting and bettering society, which is an important part of building trust in the financial ecosystem. To gain real legitimacy, fintechs will need to start holding themselves accountable to the regulations that ensure fair and equitable treatment for customers, and safeguard the safety and soundness of a country's financial infrastructure.

Full steam ahead

Consumers expect the same speed, flexibility and availability from banks as they do from other businesses. These demands have heralded the rise of digital challenger banks such as Monzo and Atom, and traditional banks will have to examine their own offerings to make sure they stay upwind of this movement.

However, pursuing these ambitions without prioritising security would be unwise. Research demonstrates that cyber-attacks and security breaches continue to rise, and consumer awareness of these threats will make them hold banks under even closer scrutiny.

Banks should see the demands placed on them by compliance and fraud as opportunities to embrace advanced analytics and AI-based solutions. That's what FICO predicts the future holds for banking.

About Frank Holzenthal:

Frank Holzenthal is Managing Director for FICO TONBELLER, a division of FICO specialising in financial crime compliance solutions. He joined TONBELLER in 2001 as head of the product development team for Zeidon®. In 2003, he became Product Manager of Anti-Financial Crime Solutions – responsible for developing solutions for risk assessment, anti-money laundering, watch list management, fraud detection and market abuse. Frank has substantial experience with the implementation of enterprise-wide AML systems.

Financial IT Q&A with Ana Costa e Silva,
Senior Data Scientist EMEA, TIBCO Software

AI/ML IN FINANCIAL TECHNOLOGY

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Financial IT: At a time when regulatory requirements are increasing, where do the opportunities lie for artificial intelligence in banking?

Ana Costa e Silva: With increased regulatory requirements, banks are now under greater pressure than ever to meet their compliance goals. However, with increased collaboration with software companies, a number of innovative technology solutions are being introduced including those to tackle fraud, with Artificial Intelligence providing much promise.

Artificial intelligence and machine learning are already making successful inroads in tackling one of our era's less positive growth areas: fraud. Recent advancement in technology has enabled game-changing differences in how machine-learning algorithms have evolved and are now being applied. The impact of this on future regulatory technology solutions, for example, will be colossal.

Traditionally, human-generated rule sets were the most prevalent approach and do still continue to be in practice today at the lowest levels of fraud prevention. But, with a landscape of greater regulation, combined with the quantum leap in computing power, plus the availability of big data over the last five years, this has now disrupted how data is being used to identify and prevent fraud.

Today, machine learning uses artificially intelligent computer systems to autonomously learn, predict, act and explain without being explicitly programmed. For example, standard rules tend to take the form of "if KPI X exceeds a particular threshold then send a warning". With machine learning you simply enter KPI X into the model and let it then provide the heavy lifting of computing the out of pattern analysis in order to identify as yet unknown threats. Basically machine learning takes those standard rules and makes them a hell of a lot smarter.

Financial IT: Are artificial intelligence and machine learning therefore shaping the next generation of technology solutions tasked with tackling fraud?

Ana Costa e Silva: The complex and ever evolving methods deployed by today's more tech-savvy fraudsters generate patterns that can only really be successfully interpreted by software that utilises machine learning combined with real time application. While the activity of fraudsters is forcing the market to look to innovative ways to halt their efforts, AI and ML are stepping in to provide an ever more robust solution.

Of course the major challenge with identifying fraudulent activities, such as money laundering, is that they rarely manifest as the activity of a single entity, or even in a reliably recognisable form, as they are constantly evolving. This means that successful detection requires behavioural pattern analysis of transactions occurring over time and involving a set of not obviously related entities.

The best form of defence here is to utilise statistical analysis and machine learning, data visualisation and the ability to react in real time or, best of all, the combination of all three. Historically the application of machine learning to AML proved challenging due to the limited availability of labelled datasets. Jump forward to the present day though and the increased use of analytics and data visualisation have become essential weapons when combating all types of fraud.

Financial IT: Will this new breed of AI/ML solutions effectively replace existing solutions across the financial services sector?

Ana Costa e Silva: AI/ML will inevitably be a part of financial crime fighting solutions, evolving existing solutions. Ultimately, there still needs to be expert knowledge and deep insight of a given field, together with metrics that capture ever-changing customer and fraudster behaviour. The most advanced banks are already using some ML, but the challenge is still how to incorporate it into day to day operations in a transparent way across the organisation.

Financial IT: While artificial intelligence offers great promise, what are the potential downsides?

Ana Costa e Silva: With more complexity, there is always a risk that systems could end up being slower. Potentially, this could be compounded by a lack of human intervention. This is why we at TIBCO also refer to AI in the context of Augmented Intelligence, referring to those tools that essentially 'help' humans sift through large amounts of information to find insights. Those insights help humans find new clues, lead them to ask deeper questions, and apply their creativity to solve hard problems. It's the alchemy of computer and human that leads to analytical power, not the dominance of one over the other.

THE PSD2 FINAL RTS: 10 THINGS YOU NEED TO KNOW

The European Banking Authority (EBA) has published its 'final' draft Regulatory Technical Standards (RTS) on Strong Customer Authentication (SCA) and secure communication under PSD2. PSD2 and particularly the SCA aspect has the potential to dramatically change not just the payments sector but the wider banking market and has been the subject of heated discussions and aggressive lobbying.

The market has therefore been waiting with bated breath to view and digest the finalised standards. The final RTS provides clarity on a number of ambiguities contained in the draft version and covers a great deal of ground. However, like a Christopher Nolan movie it still leaves you hanging with unanswered questions at the end.

With the document standing at more than 150 pages it can be difficult to identify the major points and key changes from the draft version. To help, here's a distillation of the paper, covering ten points we believe the market needs to heed:

Banks to define their own interfaces

The RTS does not provide definitions of the interfaces needed. Luckily some industry groups (e.g. Berlin Group) have come together to define common standards, and the European Retail Payments Board (ERPB) has convened working groups to facilitate this process. It's up to the banks to define their own interfaces, but at least they will have some de-facto standards to base them on.

APIs, not screen scraping

Rationale 32 says that "screen scraping will no longer be allowed", but something that looks a lot like screen scraping is still allowed. TPPs using this interface must digitally sign the messages to identify themselves, which is at least a step forward; however, other security holes associated with screen-scaping remain. Note that if a bank provides a "dedicated" (API) interface, TPPs must use it.

Payment security up to the banks

It is up to the bank to authenticate their customer. Recital 14 now says that "PIS Providers have the right to rely on the authentication procedures provided" by the bank, there is no right in the opposite direction. Therefore, PISPs (Payments Initiative Service Providers) must pass control to the bank to authenticate the customer – the PISP can't apply its own authentication, then tell the bank to "just do it".

Authentication codes

Article 4.1 says that "The authentication code shall be accepted only once". This is fine for a single payment initiation, but the RTS allows TPPs to initiate a series of payments, and to retrieve account information, with SCA applied only the first time. Presumably the original authorisation code must be presented for all subsequent accesses, but this is not compatible with the "only once" provision in 4.1.

For payment transactions, the authentication code has to be dynamically linked to the transaction details. There's a possible gap because the amount and payee are dynamically linked, but not the payment reference. In cases where the reference determines the beneficiary, such as credit card payments, this could become a security vulnerability.

Exemptions from Strong Customer Authentication

This is the area of the RTS that has changed most, and has become more practical. Changes include:

- For contactless card payments, the single transaction value is raised to €50, and the option to count five consecutive non-SCA transactions has been added to provide balance to the previous impractical requirement to just accumulate payment values.
- A vital exemption is added for unattended transport and parking terminals has helpfully been included
- No SCA is required for payments to trusted beneficiaries. Comment 79 also clarifies "The exemption for trusted beneficiaries only applies to payment transactions made on an

About Tom Hay:

Tom Hay, Head of Payments at Icon Solutions

Tom Hay, Icon's Head of Payments, is an IT architect specialising in large scale real time payment systems. He has deep experience with financial institutions moving to next generation payment systems. He draws on two decades of payments experience as Head of Architecture with one of Europe's largest clearing houses, and as CTO of a successful VC-backed company selling real-time payments products to international markets.

online account by the payer. The PISP cannot create a list of trusted beneficiaries."

- The low value payment exemption is raised from €10 to €30, with a cumulative value of €100 or a cumulative count of 5, aligned to the contactless exemption

Real Time Fraud Detection and Prevention

Whereas the previous draft mandated real time fraud detection to prevent, detect and block fraudulent payments, the final draft allows for a more nuanced risk analysis approach, with high risk transactions being blocked for suspected fraud, and low risk transactions potentially bypassing SCA. There is also a specific approach with clearer reporting and processing procedures.

Sensitive payment data

The final draft still says that ASPSPs (account servicing payment service providers), effectively banks, must provide AIS with the same information from designated payment accounts and associated payment transactions made available to the payment service user when directly accessing the information, "provided that this information does not include display of sensitive payment data". "Sensitive" is still not defined, leaving it to the bank to decide what to redact.

Use of eIDAS authorities

The EBA has put aside its doubts and firmly mandated the use of Digital Certificates (or "qualified certificates for electronic seals or website authentication", as the regulation would have it) issued under Regulation 910/2014, aka eIDAS. Given the extended timeline for enforcement of the RTS – November 2018 being the earliest date, with serious discussion of April 2019 – there is still time for organizations to step up and put the required infrastructure in place to move eIDAS from dream to reality.

Card Not Present requires Strong Customer Authentication

Unless a card transaction falls under one of the exemptions, it must go through SCA. Vendors have rushed out solutions such as Dynamic CVV, where the CVV on the card changes regularly. Using this as one of the SCA components proves possession, which along with knowledge satisfies the 'two-factor' requirement. It looks like 3d-Secure 2.0 will be sufficient to allow SCA exemptions to be applied, but if the transaction is not exempt, it's up to the issuer to drive the SCA process.

Trusted Execution Environments for multi-purpose devices

The previous draft specified that multi-purpose devices (mobile phones and the like) had to use a Trusted Execution Environment (TEE) for security. TEE is a well-defined, tried and tested standard, but it seems the EBA has caved into pressure from organizations lobbying for non-standard (and in some cases less secure) solutions. The RTS now mandates a 'Secure Execution Environment' which has no current industry definition, so mobile security effectively becomes a free for all again. Caveat emptor!

What next?

The RTS has yet to be adopted by the European Commission, so there is still an opportunity for lobbying by Member States and industry groups and organizations. Be that as it may, it's clear that no further significant clarifications will be forthcoming from the EBA. It's now up to banks, TPPs and other payment service providers to get on with implementation, guided by national authorities, industry groups, compliance officers and technology experts. The "access to account" services specified in PSD2 Articles 65-67 have to be available from Jan 2018, and even though the security and communications standards in the RTS do not become mandatory until the end of the "transitional" period, there's sufficient clarity to start moving in that direction prior to the mandate.

If you would like more information on the matter, please access our *'Fast Track to PSD2'* whitepaper.

SECURING THE SUCCESS OF PSD2

The revised EU Payment Services Directive (PSD2) will be enforced from January 2018, with obligation to have implemented the required mandates by November. This will mark the start of a game-changing year for banks, financial service providers and consumers. However, there are a number of security challenges which need to be overcome before implementation, writes Rory Gray, PSD2 Initiative Director at Intercede. Financial service providers must therefore ensure they are clued up and have the right protocols in place in time for the imminent deadline.

Introducing PSD2

PSD2 includes a host of measures designed to reduce the banking industry's monopoly on consumer account information and open up competition by allowing third parties to access a consumer's financial data and payments history. It aims to make the digital payments space more secure by increasing consumer protection against fraud. The legislation enforces compliance with a number of security measures including the use of 'strong customer authentication' (SCA), when making payments online.

PSD2 will bring numerous benefits to consumers by providing greater choice and new services. For example, authorised third parties – such as social media companies – will be allowed access to a consumer's banking data so that they can offer new applications to help manage this information. This could include a personal or corporate financial dashboard app, which collates data from multiple accounts and allows a consumer or business to move and manage their finances easily and transparently.

Whilst this represents a boon to consumers, the newly-granted freedom does introduce security challenges. PSD2 SCA outlines measures to combat these challenges, but at present there is still some confusion in the industry as to what these entail. Businesses are now literally 'on the clock' to ensure they are not only aware of the new regulations, but are also compliant.

Opening up risk

Opening up access to third parties and altering methods of digital payments is inherently risky. Companies across the industry must therefore enforce robust security strategies to reduce the risk of cybercrime and ensure service users' data – and money – remain safe. To quote the regulations, businesses must protect transactions and data "to the maximum extent possible in order to avoid fraud".

PSD2 introduces a number of changes to online payments. These include permitting online merchants to deduct payment from a consumer's account via an open API. It will also grant other third parties involved in payment processing or those providing financial services to gain unprecedented access to a consumer's banking and purchase data – with the consumer's consent, of course. Proving that this consent has been given is at the heart of strong customer authentication.

Poor management of consumer information, lax security checks on third parties, and inadequate tools employed to safeguard data all contribute to the complex security issues surrounding PSD2. With November 2018 coming around faster than may be perceived, the time to act is now.

In May 2018, the General Data Protection Regulation (GDPR) will come into force. This details new requirements relating to the secure management of data, and companies which breach these rules will be subject to fines far greater than those imposed under current law. Whereas malpractice today may land a company with a fine of up to £500,000, from May next year this could increase to a potential *€20 million*, or 4% of annual turnover. Coupled with PSD2, the need for action is therefore demanding.

Strong customer authentication

PSD2 does, of course, include security requirements which must be met by payment service providers (PSPs). These include establishing a framework to manage risk as well as implementing measures to protect consumers' financial and banking data. 'Strong customer authentication' methods must be put in place by PSPs when a consumer accesses their account online or makes an electronic payment. In these situations, a consumer must therefore provide two or more factors: something you know, something you have, and something you are. The 'something you have' may be a smartphone or a token which produces a one-time password (OTP), the 'something you know' will be a password or PIN, and the 'something you are' could be a unique biometric reading like a fingerprint or iris scan.

This sounds great, in theory. In reality, there is still some confusion surrounding the term 'strong customer authentication' and the associated phrases 'two-factor authentication' (2FA) and 'multi-factor authentication'. With only a matter of months left for companies to adopt the required security strategies in time for PSD2, any confusion is too much confusion.

Death of the password

What the industry can safely agree on is that the most current and commonplace security measure – the provision of usernames and passwords – fails to provide adequate levels of protection. There are a number of alternative methods of authentication, all offering a more robust barrier to fraud and infringements.

OTPs which can be delivered via SMS or handheld device, for example, add an additional layer of security by requiring that the person accessing the account or financial details be in possession of the necessary physical object. However, passwords sent via SMS raise security concerns. Rather than being sent to a specific phone or SIM they are sent to a phone number, which can easily be misappropriated by a criminal. Or, if a consumer is using the Apple iMessage system, an SMS can be forwarded from this application to any device registered to the account. If hacked, passwords could easily be re-directed to an attacker's own device.

Tokens which provide a time-limited OTP are widely used by banks. Yet this technology falls short in its inability to 'sign' transactions. Further, a copy of the token's secret key is often held on a server, which could be vulnerable to hackers. Even if a PSP's platform or application is authentic and secure, if the device is insecure then the chain of digital trust is broken, and the transaction is jeopardised.

Similarly, while biometrics are more secure than the username/password combination, even this seemingly robust identification method has its pitfalls. Copies of our fingerprints are left almost everywhere we go, and groups have demonstrated that it is possible to create artificial fingerprints that can fool biometric reading technology. A quick Google of the subject even throws up step-by-step 'how to' instructions!

Smart(phone) security

Are any security methods really secure? Fortunately, yes, and they are not as complex and convoluted as many consumers imagine. In fact, the most flexible and secure 2FA and MFA solutions are also the most convenient for the consumer. The latest in smartphone technology means that a new approach can be taken to security, based on cryptography, in which a consumer's device holds the only copy of a unique, private key. Unlike an OTP, this can be used to 'sign' a transaction, which is then verified by the other party using the corresponding public key.

Smartphone technology can also make biometrics a viable authentication method. A consumer's biometric reading can be captured by a device and safely stored in a trusted execution environment (TEE) within the phone. This is a secure area in the phone's processor where data can be safely stored, processed and protected in an isolated and impenetrable environment.

PSD2 will bring benefits to financial organisations and consumers, provided the correct security solutions and strategies are put in place. If this is actioned, rather than remembering multiple passwords and login details for different online accounts, or carrying around numerous OTP tokens, a consumer will merely need their smartphone to access the kind of services PSD2 will enable. TEEs, as well as similar trusted modules in desktop computers and laptops, can be used to authenticate consumers, allowing them to securely – and easily – access and manage their data.

Act now

With the PSD2 deadline approaching, time is of the essence. Bolstering security by overhauling legacy systems is a complex and costly process, which many financial organisations simply will not have the resources and time to implement. Instead, these service providers should adopt proven products and services for secure authentication, to enable them to comply with PSD2 requirements, avoid hefty fines, and ensure the security of consumer data.

Rory Gray,
PSD2 Initiative Director at Intercede.

intercede

WHY PSD2 COMPLIANT ONLY STRATEGY IS A THREAT?

As the 2018 approaches and hence the Payment Service Directive 2 (PSD2) mandates are set to take effect, the discussion around its implementation becomes ubiquitous. The term "compliant-only" has already become an "offensive" term among Fintech experts, where banks are *normally classified* within the three different categories according to their speed/response to the directive. That is true, unfortunately, that the majority of banks are still unaware of the implications of PSD2, nor that they realize how to act. And sadly true, that a vast majority is willing to comply with bare minimum requirements. Interestingly, that the word "client" occurs in those discussions not as often as the phrases "new revenue sources" or "defensive strategy". But that is the word absolutely critical to viability of every single financial institution. Banks have long perceived customers for granted but third-party providers (TPPs) are already changing the status quo. Is there a way for banks to fulfill the "service" gap currently filled by Fintech players and Tech giants by themselves?

The answer is Yes. What should be done first of all? Banks should put the customer at heart of their strategy and everything will become crystal clear. Instead of asking a question how can my bank launch an API and defend itself with minimum cost, the right question would be: "How can my bank allow merchants to start accepting payments within one day instead of one week?"

PSD2 is a brilliant initiative but it cannot turn a bank from product- to customer-centric institution. Banks should act beyond the scope of regulatory requirement using it as an impetus to embrace changes. Let us look closely on the specific steps banks can undertake to stay relevant to their customers amid PSD2 & Open Banking environment.

Three business models for Open banking environment

The numerous strategies can be *utilised*. But we will limit our discussion with a consideration of three options, all of which follow the common thread of customer-centricity, innovation and time-to-market. A "fast-mover" financial institution must be able to comply with the following:

1. Innovate at a rapid pace, creating compelling services and products
2. Aggregate multiple APIs from a range of financial institutions
3. Create an ecosystem of partnerships with TPPs

Innovate: Banks have a choice of extending their API development beyond the minimum requirements by solving the "innovate or die" dilemma. Customers are already enjoying the services provided by third parties which can innovate at a faster pace. It is crucial to ensure that the banking IT system is able to embrace the speed of the customers' quickly evolving needs.

Aggregate: Another option is an API aggregation model where a bank is able to assemble multiple APIs via extended integration. That would allow banks to reach a broader set of merchants offering them access to a wide range of banks at one point.

Create ecosystem: The future of banking is collaborative and lies in creation of the new ecosystem of partnerships between banks and TPPs. Banks can add third-party capabilities to their core offerings via APIs, creating innovative solutions faster and driving down their cost.

Although PSD2's mandates are set to take effect in 2018 banks don't have much time to wait watching. Those banks can reap benefits that can understand a digital consumer behaviour and rethink their existing IT infrastructure. The institution which is not changing itself cannot adapt to customer's evolving needs and hence stay relevant. We are aware of how critical is to have a secure technology partner on the way to digital transformation and are ready to accompany banks on every single stage of their journey.

About SDK.finance

SDK.finance offers digital banking software solution (100+ APIs) that links the functionality of the core systems with upscale FinTech tools. The state-of-the art solution enables banks & financial institutions to stay agile and secure the strong positions amid rapid digitization. The solution integrates seamlessly into existing infrastructure and enables banks to reduce costs 10 times, increase speed to market & and efficiency. It enables developers of banks and other financial institutions to operate with Client Profiles management, Business process management, Accounts, E-wallets, Invoices, Payments, Recurring payments, P2P money transfers, Prepaid & Mass Payments. A number of back-offices for different business actors like CFO, Compliance & Anti-fraud are available from the box.

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HOW FINTECH INNOVATION IS TACKLING THE CREDIT CHALLENGE IN HIGH GROWTH MARKETS

The lack of widespread access to credit is a key characteristic of emerging, high growth markets across the globe. Without access, it is almost impossible for businesses and consumers to connect in these markets and economic growth is stifled.

Fortunately, innovative payment models are starting to create positive change in markets like India and Africa. Aided by increasing customer demand and supportive regulatory environments, fintech is changing the way credit operates in these markets and opening up new opportunities for growth.

The credit challenge

According to World Bank figures, two billion adults worldwide are unbanked and some of the lowest rates of financial penetration are in high growth markets such as India and Africa. For many people in these regions, credit data does not exist.

Businesses relying on traditional payment verification models simply cannot interact with wide sections of the population. Consequently, millions of people are excluded from the everyday – and life changing – opportunities that require this data. Renting or buying a house, owning a phone, even pursuing an education can become off-limits. Economic growth is held back and opportunities for improvement are few and far between.

A global view

Why are high growth, emerging markets often outperforming established markets when it comes to the distribution and adoption of new payment technology, such as mobile apps and innovative finance models?

In more established markets legacy infrastructure can actually hinder payments innovation in a way that high growth, emerging markets don't face. The fact that electronic payments have been a mainstay for some time is the very reason that payments innovation is often stifled. Legacy infrastructure and entrenched consumer behaviour mean more innovative solutions to payments problems can be overlooked and new and innovative payment technologies don't have an easy path to maturity.

Unencumbered by these same legacy challenges, high growth markets are able to more easily adopt mobile-first, digital solutions. We can see this happening in India, where the country's intense smartphone growth is fueling the rapid adoption of digital payments. With 220 million users, India is now the second largest smartphone market in the world.

As smartphones become ubiquitous, consumers naturally seek a similar level of ease and access when it comes to other areas, including payments.

Favourable regulatory environment

The possibilities opened up by technology in these regions are often supported by regulators who see opportunities to support economic growth. And, with reports claiming that a 10% increase in digitisation of the economy could increase GDP per capita growth rates by 40% there is a strong argument to support innovation in these markets.

This attitude is evident in the RBI's November demonetisation announcement, which laid out the mandate for the removal of as much as 86 per cent of bank notes from the Indian market. At PayU, we saw our daily transaction volume skyrocket by 80 per cent immediately after the announcement was made. It then settled to a 25 per cent increase compared with pre-demonetisation – still a significant number. While the move was a surprise to most Indians it almost immediately changed the way people viewed and used digital payments platforms.

The credit evolution

The culmination of all these factors – consumer demand, tech innovation and a supportive regulatory environment – is playing a role in the evolution of credit in high growth markets.

With the rise in smartphones, ecommerce and online transactions in high growth markets comes the corresponding rise in data availability. And, as the amount of data increases new techniques are being used to build credit intelligence from data. For example, we are seeing AI/ machine learning incorporated into payments models, enabling underwriting which uses thousands of variables all changing in real time.

As businesses become more comfortable and able to use a variety of methods to build data profiles for consumers, more and more people can access credit. Options that enable customers to pay later, pay in instalments or only use credit when needed provide the opportunity for more people to access the payment services they need in a way that suits them best.

Not only this, but the credit offerings themselves are also changing to reflect the people and lifestyles unique to certain markets. Adjustable credit cycles combined with regulatory changes and better data security are helping payments businesses – and the merchants they service – mitigate the credit risks commonly associated with high growth markets.

We are seeing policy changes that support the digital or online verification of customer identity, helping simplify and speed up credit approval processes without compromising on security or diligence requirements. Merchants' ability to ship products and manage inventory transparently, free from the risk of customer default, is another example of how technology is changing the credit landscape in high growth markets.

Another key credit challenge that technology can help to solve in high growth markets is the ability to offer a wide range of payment options. In many high growth markets, alternative payments – which refer to payments made using something other than a credit card like cash, coupons, bank transfers, prepaid cards etc. – still represent as many as two-thirds of all payments. This means that although regulatory and legacy system barriers don't exist, offering a frictionless customer experience remains operationally challenging and cost intensive.

However, as innovative payments models are beginning to make it easier for more consumers to access credit and for more businesses to reach these potential customers, economies are continuing to grow. This is increasing the attractiveness of these markets to VCs and other funds looking to take full advantage of the opportunities available. The appetite of these credit fund players to find and finance increasingly innovative payment models will herald the key to continued consumer and wider economic growth.

The introduction of modern payment models is opening access to services such as credit and ecommerce in high growth markets. This change, motivated by increasing customer demand and favourable regulation, is supporting economic growth across the globe. As economies continue to prosper, so too do the number of international businesses and brands able to tap into these markets and enjoy the opportunities on offer.

Raj Kamal,
PayU's Global Head of Strategy

PayU

June 20-21 2017 | Singapore

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"Asia's Blockchain startups may gain share in the global market after fintech funding surged to \$10.5 billion in the first nine months of 2016, more than double the \$4.3 billion for full-year 2015."

Bloomberg Intelligence, January 2017

TOP 50 FINANCIAL IT PATHFINDER RANKING 2016/2017

April-May Issue 2017

TOP 50 FINANCIAL IT 2016/2017 PATHFINDER RANKING

WHO WILL BE WHO IN THE FINTECH WORLD?

Financial IT launches its **2016/2017 Pathfinder Ranking**

Mobile banking and payments appears to be the main focus of the numerous (mainly small) FinTech companies that have raised funds – from a surprisingly diverse variety of backers – over the last three years.

Welcome to the Financial IT 2016/2017 Pathfinder Ranking

What is happening in the world of FinTech is one thing. What will happen is another. To gain a clearer insight into how the FinTech universe will appear in three years time, we are developing the Financial IT 2016/2017 Pathfinder Ranking, a definitive listing of the 50 most promising new startup companies.

Nominations have come from Financial IT's community of readers, FinTech providers and subscribers. Given the pace of change, we have only accepted nominations for startup companies that came into existence in 2013 or later. Our Expert Panel, consisting of industry veterans, venture capitalists (VCs) and Financial IT's senior editors and research analysts, will draw up the Financial IT 2016/2017 Pathfinder Ranking on the basis of the information gathered.

We consider the following criteria:

- Uniqueness of the FinTech solution to a particular challenge
- Differentiating factors/Innovation points
- Stage of Development (early stage, bootstrapped, funded (Seed, A, B, C Rounds), IPO/Exit stage) - Coverage (geographic diversity and size of the market that is being addressed)
- Team, Background, etc. We will draw up a preliminary shortlist, and then engage with the companies on it before we produce the final Financial IT Pathfinder Ranking.

For now, though, we have ranked the 70 companies nominated on the basis of the average score for four main criteria and the quantity of funds raised. We have recognized 50 most promising fintech startups from the list and named them **TOP 50**. Those companies that didn't receive the high scores and remained below the line were nominated as **Rising Stars**.

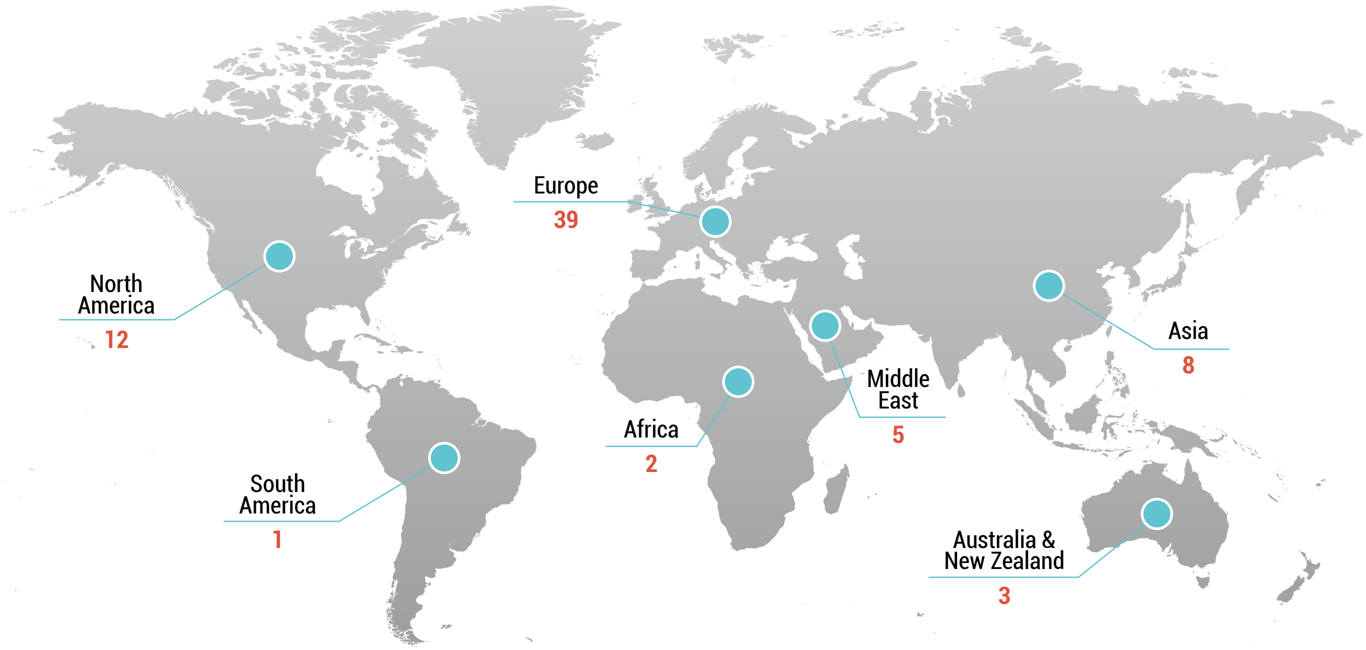
Over time, we hope that the Financial IT 2016/2017 Pathfinder Ranking will be revised and extended, so that it is seen as a crucial work of reference for the industry. Even at this early stage in the process, a number of clear insights are evident.

Key Takeaways:

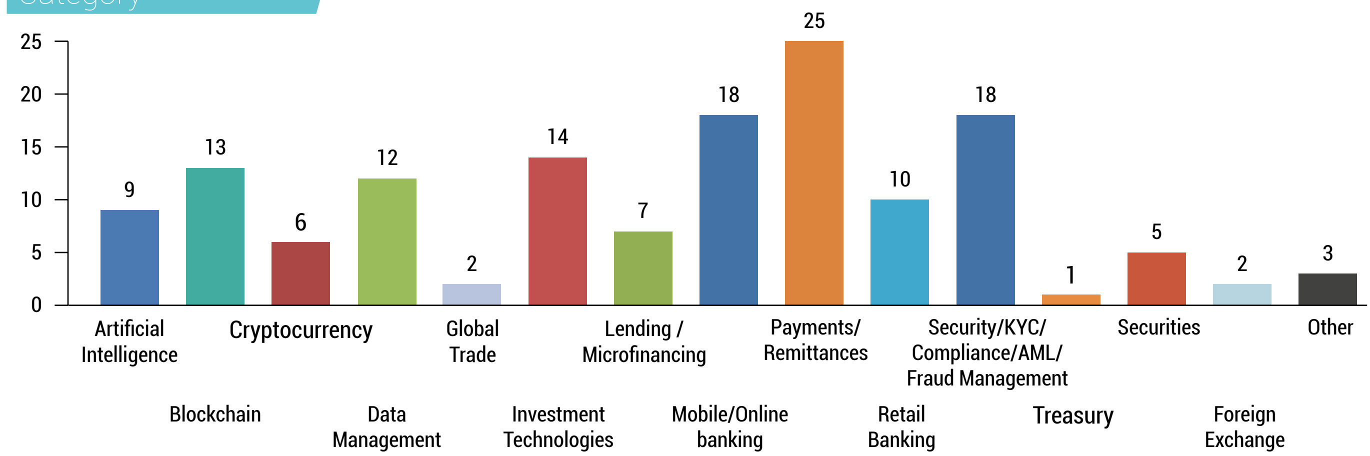
- Most of the nominated Pathfinders are relatively small companies, with only 10 of the 70 having raised more than US$10mn. Most have no more than a few dozen employees and associates.
- Funding sources are varied.
- Although the Pathfinders come from a variety of countries, a disproportionately large number are based in the United States or the UK.
- It is not helpful to be categoric about the main area of interest of each of the Pathfinders. This is because there is often an overlap between the major elements of FinTech as Financial IT would see them. Blockchain often plays a key role in security/ KYC solutions: Artificial Intelligence (AI) is often a key element of mobile banking solutions, and so on.
- Nevertheless about one fifth of the Pathfinders have indicated that mobile banking and payments are their most important areas of focus.
- About one seventh of the Pathfinders have indicated that AI is their most important area.
- Similar numbers are focusing primarily on each of blockchain, data management/ core banking and investment/wealth management technology.
- Smaller numbers of the Pathfinders are focusing mainly on (micro)-lending, KYC/ security and other areas.

If you wish to nominate the company in our Pathfinder Ranking please send us your email request to surveys@financialit.net or call us at +44 (0) 208 819 32 53

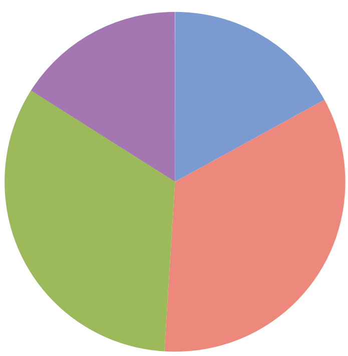
Geographic Location



Category

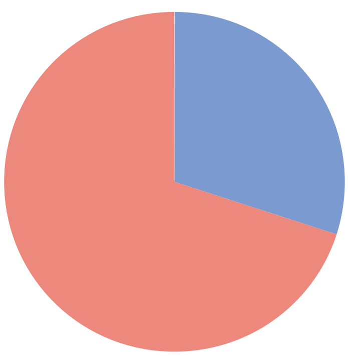


Year of inception



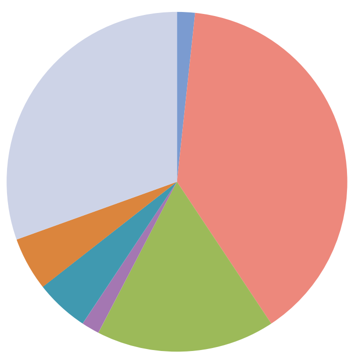
2013	17%	2015	33%
2014	34%	2016	16%

Stage of Development



Early Stage/Bootstrap	30%
Funded	70%

Money raised from



Venture capital & self-funded	2%	Investors	2%
		Incubator	5%
Venture capital	39%	Crowdfunding	5%
Self-funded	17%	Angel investors	31%

TOP 50 MOST PROMISING STARTUPS 2016/2017

Rank №	Company	Industry Area	Inception	Headquarter	Founder(s)	Team Size	Stage of Development	Money Raised From
1	Atom Bank	Mobile/Online Banking	2014	United Kingdom	Anthony Thomson, Mark Mullen	240	First year of business (fully launched October 2016)	Angel Investors
2	Nubank	Mobile/Online Banking, Payments/Remittances	2014	Brazil	David Vélez, Cristina Junqueira, Edward Wible	370	Funded (Seed, A, B, C Rounds)	Bank Credit and Venture Capital
3	Lemonade	Artificial Intelligence, Insurance	2015	United States	Daniel Schreiber, Shai Wininger	25-50	Funded (Seed, A, B, C Rounds)	Venture Capital
4	Monzo	Mobile/Online Banking	2015	United Kingdom	Tom Blomfield, Paul Rippon, Jonas Huckestein, Gary Dolman, Jason Bates	25-50	Funded (Seed, A, B, C Rounds)	Venture Capital
5	Beam Wallet	Payments/Remittances, Mobile Payments	2013	United Arab Emirates	Serdar Nurmammedov, Shezan Amiji, Nadim Khoury	25-50	Funded (Seed, A, B, C Rounds)	Angel Investor
6	SETL	Blockchain, Payments/ Remittances	2015	United Kingdom	Peter Randall, Anthony Culligan, Nicholas Pennington, Francois Barthelemy	10-24	Funded (Seed, A, B, C Rounds)	Angel Investor
7	NYMBUS, Inc	Data Management, Core Banking	2015	United States	Scott Killoh, Alexander Lopatine	150	Funded (Seed, A, B, C Rounds)	Venture Capital
8	Token	Data Management, Mobile/Online Banking, Payments/Remittances, Retail Banking	2015	United States	Steve Kirsch, Yobie Benjamin	10-24	Early Stage/Bootstrap	Angel Investor
9	Yoyo Wallet	Payment & Loyalty App	2015	United Kingdom	Alain Falys, Michael Rolph, Dave Nicolson	25-50	Funded (Seed, A, B, C Rounds)	Angel Investor
10	Grow Financial Inc.	Data Management, Lending / Microfinancing, Mobile/Online Banking, Retail Banking, Security/ KYC/Compliance/AML/ Fraud Management	2013	Canada	Kevin Sandhu	25-50	Early Stage/Bootstrap	Angel Investor
11	Point	Real Estate Investment	2015	United States	Eddie Lim, Eoin Matthews, Alex Rampell	10-24	Funded (Seed, A, B, C Rounds)	Venture Capital
12	ComplyAdvantage	Artificial Intelligence, Data Management, Payments/Remittances, Security/KYC/Compliance/ AML/Fraud Management	2014	United Kingdom	Charlie Delingpole	over 50	Funded (Seed, A, B, C Rounds)	Venture Capital
13	Data Republic	Data Management	2014	Australia	Paul McCarney, Danny Gilligan	10-24	Early Stage/Bootstrap	Venture Capital and Self-funded
14	Smartkarma	Investment Technologies	2014	Singapore	Raghav Kapoor, Lee Mitchell, Jon Foster	25-50	Funded (Seed, A, B, C Rounds)	Venture Capital
15	Elliptic	Blockchain, Cryptocurrency, Security/ KYC/Compliance/AML/ Fraud Management	2013	United Kingdom	James Smith, Tom Robinson, Adam Joyce	10-24	Funded (Seed, A, B, C Rounds)	Venture Capital

Rank №	Company	Industry Area	Inception	Headquarter	Founder(s)	Team Size	Stage of Development	Money Raised From
16	Mesitis Pte Ltd	Wealth Management	2013	Singapore	Tanmai Sharma	25-50	Funded (Seed, A, B, C Rounds)	Angel Investor
17	Trunomi	Retail Banking, Security/ KYC/Compliance/AML/ Fraud Management	2013	United States	Stuart Lacey	10-24	Funded (Seed, A, B, C Rounds)	Venture Capital
18	Prive Services Limited	Wealth and asset management	2013	Hong Kong	Charles Wong, Julian Schillinger	25-50	Early Stage/Bootstrap	Self-funded
19	Beehive	Lending / Microfinancing	2014	United Arab Emirates	Craig Moore	10-24	Funded (Seed, A, B, C Rounds)	Crowdfunding
20	Ovamba Solutions ("Ovamba")	Artificial Intelligence, Data Management, Global Trade, Investment Technologies, Security/ KYC/Compliance/AML/ Fraud Management, Funding	2013	United States	Marvin Cole, Viola Llewellyn	10-24	Funded (Seed, A, B, C Rounds)	Investors
21	Qumram	Security/KYC/Compliance/ AML/Fraud Management, Customer experience analytics	2013	Switzerland	Simon Scheurer, Mathias Wegmueller	25-50	Early Stage/Bootstrap	Angel Investor and Venture Capital
22	Coinify ApS	Blockchain, Cryptocurrency, Payments/Remittances, Security/KYC/Compliance/ AML/Fraud Management, Foreign Exchange	2014	Denmark	Lasse Birk Olesen, Mark Højgaard	10-24	Funded (Seed, A, B, C Rounds)	Angel Investor and Venture Capital
23	B-Secur	Payments/Remittances, Securities	2015	Northern Ireland	Colin Anderson	10-24	Funded (Seed, A, B, C Rounds)	Venture Capital
24	PensionBee	Investment Technologies, Mobile/Online Banking	2014	United Kingdom	Romi Savova, Jonathan Lister	10-24	Funded (Seed, A, B, C Rounds)	Angel Investor
25	Quantstore	Investment Technologies, Mobile/Online Banking, Retail Banking, Wealth Management	2015	United Kingdom	Peter van Kleef, Dr. Frank Neumann, Christoph Daub	10-24	Funded (Seed, A, B, C Rounds)	Self-funded
26	Pushfor	Data Management, Security/KYC/Compliance/ AML/Fraud Management, Secure Content Sharing, Digital Engagement Models	2013	United Kingdom	John Safa	10-24	Funded (Seed, A, B, C Rounds)	Venture Capital
27	ThisIsMe	Security/KYC/Compliance/ AML/Fraud Management	2014	South Africa	David Thomas, Juan Furmie	10-24	Funded (Seed, A, B, C Rounds)	Angel Investor
28	Earny	Consumer Service Automation	2016	United States	Ilian Zerbib, Oded Vakrat, Dori Yona	10-24	Funded (Seed, A, B, C Rounds)	Venture Capital
29	Twisto	Lending / Microfinancing, Mobile/Online Banking, Payments/Remittances	2013	Czech Republic	Michal Smida, Lukas Janousek,Lukas Hurych, Viktor Stiskala	1-9	Funded (Seed, A, B, C Rounds)	Venture Capital
30	Qonto (Olinda SAS)	Retail Banking	2016	France	Alexandre Prot, Steve Anavi	10-24	Funded (Seed, A, B, C Rounds)	Angel Investor
31	Valoot	Payments/Remittances	2016	Hong Kong	Ovidiu Olea	1-9	Early Stage/Bootstrap	Self-funded
32	Veridu	Cryptocurrency, Payments/Remittances, Security/KYC/Compliance/ AML/Fraud Management	2014	United Kingdom	Rasmus Groth, Flavio Batista, Ian Green	10-24	Funded (Seed, A, B, C Rounds)	Angel Investor

Rank №	Company	Industry Area	Inception	Headquarter	Founder(s)	Team Size	Stage of Development	Money Raised From
33	Splittable	Payments/Remittances, PropTech/FinTech	2014	United Kingdom	Nick Katz, Vasanth Subramanian	10-24	Funded (Seed, A, B, C Rounds)	Venture Capital
34	Equitise	Investment Technologies	2014	Australia	Chris Gilbert, Jonny Wilkinson, Panche Gjorgevski	10-24	Funded (Seed, A, B, C Rounds)	Venture Capital
35	Thinknum	Data Management, Investment Technologies, Securities	2014	United States	Gregory Ugwi, Justin Zhen	10-24	Funded (Seed, A, B, C Rounds)	Venture Capital
36	Plutus.it	Blockchain, Cryptocurrency, Global Trade, Mobile/Online Banking, Payments/ Remittances	2015	United Kingdom	Danial Daychopan, Jasper Tay	10-24	Funded (Seed, A, B, C Rounds)	Crowdfunding
37	Cendit	Mobile/Online Banking, Payments/Remittances, Security/KYC/Compliance/ AML/Fraud Management	2015	United Kingdom	Mark Seddon	1-9	Early Stage/Bootstrap	Self-funded
38	Finimize	Automated advice (algorithms)	2015	United Kingdom	Max Rofagha, Scott Tindle	1-9	Funded (Seed, A, B, C Rounds)	Venture Capital
39	Spotcap Global Services	Lending / Microfinancing	2014	Germany	Jens Woloszczak	90	Funded (Seed, A, B, C Rounds)	Venture Capital
40	Bambu	Artificial Intelligence, Investment Technologies	2016	Singapore	Ned Phillips	10-24	Funded (Seed, A, B, C Rounds)	Angel Investor
41	KyoLAB Limited	Artificial Intelligence, Blockchain, Data Management, Security/ KYC/Compliance/AML/ Fraud Management	2016	United Kingdom	Jan-Michael Gorecki	1-9	Early Stage/Bootstrap	Self-funded
42	Enterprise bot	Artificial Intelligence, Retail Banking	2016	United Kingdom	Pranay Jain, Ravina Mutha	1-9	Early Stage/Bootstrap	Incubator
43	BlockEx	Blockchain, Investment Technologies, Security/ KYC/Compliance/AML/ Fraud Management, Treasury, Securities	2015	United Kingdom	Adam Leonard, Aleks Nowak	10-24	Early Stage/Bootstrap	Self-funded
44	bunq	Mobile/Online Banking	2014	Amsterdam	Ali Niknam	over 50	Funded (Seed, A, B, C Rounds)	Self-funded
45	Ways2Wealth	Artificial Intelligence, Investment Technologies	2016	Switzerland	Mirko Ulbrich	1-9	Early Stage/Bootstrap	Self-funded
46	Configo	Mobile/Online Banking, Retail Banking	2015	Israel	Yosi Dahan, Natan Abramov	1-9	Early Stage/Bootstrap	Self-funded
47	SecurionPay	Payments/Remittances	2014	Switzerland	Lucas Jankowiak	10-24	Funded (Seed, A, B, C Rounds)	Angel Investor
48	BankEx	Artificial Intelligence, Blockchain, Lending / Microfinancing, Security/ KYC/Compliance/AML/ Fraud Management	2016	Russia	Igor Khmel	1-9	Early Stage/Bootstrap	Incubator
49	Smartly Pte Ltd	Data Management, Investment Technologies, Retail Banking, Security/ KYC/Compliance/AML/ Fraud Management	2015	Singapore	Keir Veskivali, Artur Luhaaar	1-9	Funded (Seed, A, B, C Rounds)	Venture Capital
50	Everledger	Blockchain	2015	United Kingdom	Leanne Kemp	10-24	Funded (Seed, A, B, C Rounds)	Angel Investors

RISING STARS IN THE PATHFINDER RANKING 2016/2017

Company	Industry Area	Inception	Headquarter	Founder(s)	Team Size	Stage of Development	Money Raised From
Market EarlyBird	Investment Technologies	2013	United Kingdom	Danny Watkins	1-9	Funded (Seed, A, B, C Rounds)	Angel Investor
Abra	Blockchain, Cryptocurrency, Payments/Remittances	2014	United States	Pete Kelly, Bill Barhydt	25-50	Funded (Seed, A, B, C Rounds)	Venture Capital
Cashaa	Blockchain, Cryptocurrency, Payments/Remittances	2016	United Kingdom	Kumar Gaurav	1-9	Funded (Seed, A, B, C Rounds)	Self-funded
Mergims	Lending / Microfinancing, Mobile/ Online Banking, Payments/ Remittances	2015	Switzerland	Muhire Louis Antoine	1-9	Funded (Seed, A, B, C Rounds)	Venture Capital
Notakey	Security/KYC/Compliance/AML/ Fraud Management	2016	Latvia	Janis Kirsteins, Gints Kirsteins, Janis Graubins	1-9	Early Stage/Bootstrap	Angel Investor
Trriple	Lending / Microfinancing, Payments/Remittances	2014	United Arab Emirates	Abdul Salah, Kerem Turkmen, Lugman Abdi	1-9	Funded (Seed, A, B, C Rounds)	Crowdfunding
Veridate Financial	Data Management, Investment Technologies, Securities	2015	Hong Kong	Peter Hatz	1-9	Early Stage/Bootstrap	Incubator
Bridg	Mobile/Online Banking, Payments/ Remittances	2014	United Arab Emirates	Moussa Beidas, Nadim Jarudi	1-9	Early Stage/Bootstrap	Angel Investor
Credntia	Digital Identification Management	2014	United States	Cody Winton and Private Investor	1-9	Funded (Seed, A, B, C Rounds)	Self-funded and Angel Investor
SDK.finance	Mobile/Online Banking, Payments/ Remittances	2014	Czech Republic	Alex Malyshev, Pavlo Sedelov	10-24	Funded (Seed, A, B, C Rounds)	Self-funded
Cobalt DL	Blockchain, Foreign Exchange	2015	United Kingdom	Andy Coyne, Adrian Patten	10-24	Funded (Seed, A, B, C Rounds)	Angel Investor
PAYMAGNET	Payments/Remittances	2015	Slovakia	Martin Glettlet, Stephen A.Crystal Esq.	1-9	Early Stage/Bootstrap	Self-funded
Metamako	Data Management	2013	Australia	David Snowdon, Scott Newham and Charles Thomas	25-50	Funded (Seed, A, B, C Rounds)	Venture Capital
Yoti	Security/KYC/Compliance/AML/ Fraud Management	2014	United Kingdom	Robin Tombs, Noel Hayden, Duncan Francis	120	Early Stage/Bootstrap	Self-funded
Bluzelle	Blockchain, Payments/Remittances, Security/KYC/Compliance/AML/ Fraud Management	2014	Singapore	Pavel Bains, Neeraj Murarka	1-9	Funded (Seed, A, B, C Rounds)	Venture Capital
Wala	Mobile/Online Banking, Payments/ Remittances, Retail Banking	2015	South Africa	Tricia Martinez, Samer Saab	1-9	Early Stage/Bootstrap	Angel Investor
BlockApps, Inc	Blockchain	2015	United States	James Hormuzdiar, Kieren James-Lubin, Victor Wong	10-24	Funded (Seed, A, B, C Rounds)	Venture Capital
baningo GmbH	Retail Banking	2015	Vienna	Max Nedjelik, Harald Meinl, Michael Niessl	1-9	Funded (Seed, A, B, C Rounds)	Angel Investor
Card Switch	Artificial Intelligence, Mobile/ Online Banking, Payments/ Remittances, Securities, Cards Prevention tool	2016	Lebanon	Roger Abboud, Jad Bouhabib	1-9	Early Stage/Bootstrap	Self-funded
MONI Ltd.	Mobile/Online Banking, Payments/ Remittances	2014	United Kingdom	Jani Kajala, Martti Malmi, Lauri Sommarberg, Antti Pennanen	1-9	Funded (Seed, A, B, C Rounds)	Angel Investors

TOP 50 FINANCIAL IT 2016/2017 PATHFINDER RANKING — 1

Industry Award: Winner of Mobile Banking Disruptor TFG Excellence Awards 2017
website: www.atombank.co.uk

Atom is building the UK's first bank designed specifically for digital, offering easy and convenient banking, along with unique and engaging ways to manage money. Atom has been recognised in KPMG's 2016 Fintech 100, being in the Top 10 companies using technology to drive disruption globally within the financial services industry.

TOP 50 FINANCIAL IT 2016/2017 PATHFINDER RANKING — 2

Industry Award: Best B2C in Latin America 2016, by Latam Founders Network
website: www.nubank.com.br

Nubank is the leading digital finance company in Brazil. The company offers a mobile credit card platform with platinum Mastercard credit services. It also provides a mobile app, with which customers can manage their daily transactions, credit limit and expenses in real time. Nubank is committed to fighting complexity and empowering Brazilians to take control of their finances. Over 3 million people have already applied for Nubank's credit card since it was launched on September 2014.

TOP 50 FINANCIAL IT 2016/2017 PATHFINDER RANKING — 3

website: www.lemonade.com

Lemonade Insurance Company is a licensed insurance carrier, offering homeowners and renters insurance powered by artificial intelligence and behavioral economics. By replacing brokers and bureaucracy with bots and machine learning, Lemonade promises zero paperwork and instant everything. And as a Certified B-Corp, where underwriting profits go to nonprofits, Lemonade is remaking insurance as a social good, rather than a necessary evil.

TOP 50 FINANCIAL IT 2016/2017 PATHFINDER RANKING — 4

Industry Award: Winner of Fintech Company of the Year City A.M. Awards 2016
website: www.monzo.com

Monzo (previously Mondo) is a digital, mobile-only bank in the UK. Monzo offers a high-tech banking app and credit card. It gives users instant balance updates and offers to its clients a range of intelligent notifications such as tracking recurring payments and providing summaries of exactly where their money goes each month. Monzo's users have spent more than £20m in over 130 countries since its launch.

TOP 50 FINANCIAL IT 2016/2017 PATHFINDER RANKING — 5

Industry Award: Technology Innovation Leadership Award in Mobile Payment Services GIL 2015: Middle East, by Frost & Sullivan
website: www.beamwallet.com

Beam brings together marketing and loyalty with a unique and innovative payments system that allows retailers to target and have a conversation with their customers before, during and after the sale. Beam's use of BLE beacons allows the same system to be used for tap and go payments at cashiers, table service and fuel payments.

TOP 50 FINANCIAL IT 2016/2017 PATHFINDER RANKING — 6

website: www.setl.io

The SETL system is a multi-asset, multi-currency institutional payment and settlements infrastructure based on blockchain technology enables market participants to move cash and assets directly between each other, facilitating the immediate and final settlement of market transactions. The SETL system maintains a permissioned distributed ledger of ownership and transaction records, simplifying the process of matching, settlement, custody, registration and transaction reporting.

TOP 50 FINANCIAL IT 2016/2017 PATHFINDER RANKING — 7

Industry Award: 'Best Newcomer' in 2016 PYMNTS Innovator Awards

website: www.nymbus.com

NYMBUS, Inc. provides the most modern and advanced core processing platform built to date. The NYMBUS solution is a secure, cloud-based, full-stack product that includes all of the mission-critical functions financial institutions need to build their businesses. NYMBUS' revolutionary platform enables financial institutions to effectively respond to today's digital revolution with a holistic, pre-integrated solution that includes an entire core platform with all digital channels and payments to service their customers and members.

TOP 50 FINANCIAL IT 2016/2017 PATHFINDER RANKING — 8

Industry Award: 2016 GTS Global Innovator Competition as the 'Most disruptive company across all categories, globally'
website: www.token.io

Token's open banking platform helps banks quickly and cost effectively meet the PSD2 compliance requirements before the deadline, and generate new revenue. Further, it raises security and reduces fraud and disintermediation. Unlike in-house developed solutions, Token supports the same API across all banks. Banks that use Token will have access to the most third-parties' applications.

9 TOP 50 — TOP 50 FINANCIAL IT 2016/2017 PATHFINDER RANKING

website: www.yoyowallet.com

Yoyo Wallet provides a payment, loyalty and engagement platform, the front end of which is for consumer use. The back end allows retailers to get to know their customers. At a macro level, the company enables retailers to segment their customers and encourage them to utilise personal engagement within those and across three areas: maintaining sales today and in a future world; growing sales; and increasing margin.

10 TOP 50 — TOP 50 FINANCIAL IT 2016/2017 PATHFINDER RANKING

Industry Award: Deloitte Fast 50 Companies to Watch 2016

website: www.poweredbygrow.com

Grow Financial Inc. provides technological solutions for banks, credit unions, and other financial institutions. It offers a consumer small and medium-sized enterprise lending solution, digital mortgage solution, and a platform to access credit and cash flow analysis data. In addition, there is a real-time customer activation solution available, followed by a fraud prevention technology, real-time insights, and a solution to take a real-time snapshot of customer's finances. Grow Financial Inc. was formerly known as Grouplend Inc. and changed its name to Grow Financial Inc. in November 2015. The company was founded in 2014 and is based in Vancouver, Canada.

11 TOP 50 — TOP 50 FINANCIAL IT 2016/2017 PATHFINDER RANKING

Industry Award: Forbes Fintech 50 2016

website: www.point.com

Point helps homeowners unlock their home equity wealth by selling a fractional interest in their property to investors, allowing homeowners to tap into their wealth without borrowing and giving investors compelling uncorrelated returns in a $29 trillion asset class: owner-occupied US residential real estate. Point prices personal credit risk and property price/equity risk on a continuum that captures both independent and dependent dimensions to the "investability" of a given property and its owner.

12 TOP 50 — TOP 50 FINANCIAL IT 2016/2017 PATHFINDER RANKING

Industry Award: TechWorld's Nine RegTech Firms To Watch

website: www.complyadvantage.com

ComplyAdvantage uses artificial intelligence, machine learning and big data analytics combined with a tailored risk-based approach to help firms manage their compliance and risk obligations and prevent the occurrence of financial crime. Its dynamic proprietary database which covers Sanctions and Watchlists, Politically Exposed Persons (PEPs), and global Adverse Media, enables the firm to create structured profiles of high risk individuals or companies and their associates based on the very latest data.

TOP 50 FINANCIAL IT 2016/2017 PATHFINDER RANKING

13 TOP 50

website: www.datarepublic.com

Data Republic builds technology to make data exchange secure, simple and accessible for data professionals. Data Republic revolutionizes the data exchange process by delivering a legal structure which enables multiple companies to securely exchange data under one agreement, as well as the technology infrastructure for organizations to effectively manage security, requests for data and the permitted use of data assets.

TOP 50 FINANCIAL IT 2016/2017 PATHFINDER RANKING

14 TOP 50

Industry Award: The FOW Asia Award for Best New Technology – Trading and Execution

website: www.smartkarma.com

Smartkarma is an independent financial research platform that is radically changing the way market participants create, distribute and consume investment insights. As a trusted and unbiased information source, the platform provides differentiated research and transparency into the Asian markets that global institutional investors need to confidently drive their investment strategies.

TOP 50 FINANCIAL IT 2016/2017 PATHFINDER RANKING

15 TOP 50

Industry Award: The Banker Awards 2015 'Best Security Project'

website: www.elliptic.co

Elliptic is the leading authority on blockchain monitoring and investigations. The top US and European Bitcoin exchanges and payment processors have adopted Elliptic's compliance and fraud detection technology to assess risk on more than $1 billion in Bitcoin transactions every month. Elliptic has also provided law enforcement agencies in the US and Europe with actionable evidence on crimes involving international arms trafficking, drug sales, extortion, theft and money laundering.

TOP 50 FINANCIAL IT 2016/2017 PATHFINDER RANKING

16 TOP 50

Industry Award: Most Promising FinTech Startup – Asian Private Banker Technology Awards 2015

website: www.canopy.cloud

Mesitis is a financial technology company focused on developing solutions for the the private wealth market. Canopy is part of the Mesitis Group, let by a team of ex-banker and wealth professionals. Canopy is suitable for high net worth individuals (HNWI), their wealth managers and financial institutions. A typical high net worth investor has a minimum of 3-10 banking relationships and holds non-financial assets such as real estate, luxury yachts, art etc. Canopy empowers HWNIs to make informed investment decisions by providing a view of their portfolio across bank accounts and asset classes, coupled with up to date market prices.

trunomi

17 TOP 50 — TOP 50 FINANCIAL IT 2016/2017 PATHFINDER RANKING

Industry Award: 'Best Regtech Platform' Benzinga Fintech Awards 2017

website: www.trunomi.com

Trunomi revolutionizes personal data sharing for the financial industry; connecting financial service providers to their customers over a consent capture and permissioned data sharing platform. The technology enables customers to control and share their digital identity, personal data and documents with data rights management. Trunomi outputs a regulatory compliant immutable certificate, to prove consent for every data interaction. Banks can digitally onboard, Know Your Customer Better (KYCB), personalize services and monetize customer data; all in compliance with global data privacy regulations.

privé managers

18 TOP 50 — TOP 50 FINANCIAL IT 2016/2017 PATHFINDER RANKING

Industry Award: WealthTech50 Asian Private Banker

website: www.privemanagers.com

Privé Financial Limited is an innovative financial services company incorporated in Hong Kong.In 2013 Privé Financial has launched Prive Managers, a bionic advisory toolbox for wealth and asset managers, which is multi-asset, multi-currency and multi-lingual. The software is a comprehensive, completely integrated, wealth and asset management solution powered by a proprietary artificial intelligence driven genetic optimization engine

beehive
connecting for growth

19 TOP 50 — TOP 50 FINANCIAL IT 2016/2017 PATHFINDER RANKING

Industry Award: Gulf Capital Start up of the year 2015 & Entrepreneur of the year 2016

website: www.beehive.ae

Beehive is the first peer-to-peer lending platform in the UAE that addresses the SME funding gap. It has built a proprietary credit model, which overcomes challenges such as the lack of credit bureaus and a large transient population. Its multiple products include term loans, invoice financing and project finance. This is the worlds first independently certified sharia compliant platform.

OVAMBA
FUNDING AFRICAN BUSINESSES

20 TOP 50 — TOP 50 FINANCIAL IT 2016/2017 PATHFINDER RANKING

Industry Award: FinTech Africa 2016 - Financing and Lending category

website: www.ovamba.com

Ovamba provides micro, small and medium sized businesses in Africa and the GCC with short-term trade and growth capital with funding sourced from international investors in the US, UK and Japan. Technology is at the core of Ovamba's business. From its proprietary risk management system that compiles over 500 data points to determine a SMEs risk profile before disbursing an investors' funds to drones and GPS tracking to ensure goods warehoused and transported by Ovamba on behalf of a customer are secure. Ovamba's digital platform is creating a database of risk information not currently available on a notable scale in Africa's traditional banking sector as well as improving that database through a machine learning processes.

QUMRAM

21 TOP 50 — TOP 50 FINANCIAL IT 2016/2017 PATHFINDER RANKING

Industry Award: Private Banker International: Outstanding Digital Front End Solution 2016

website: www.qumram.com

Qumram provides a fully-compliant digital audit trail, recording every digital interaction (web, social, mobile), securely and transparently, in accordance with global regulatory requirements. Big data collected and retained for compliance purposes can be converted into smart data that delivers deep customer insights. Qumram enables clients to use the wealth of data to gain deep customer insight, and customer experience analytics, leveraging business value out of spend on compliance.

Coinify

22 TOP 50 — TOP 50 FINANCIAL IT 2016/2017 PATHFINDER RANKING

Industry Award: FM Award for 'Best Electronic Payment Solution'

website: www.coinify.com

The coinify.com platform unites blockchain currency payment processing for businesses (Merchants- B2B) and PSPs (Enterprise - B2B) with an exchange for individuals to buy and sell bitcoin (Trade - B2C). It enables the digital currency adoption by businesses and individuals through addressing volatility.

B Secur

23 TOP 50 — TOP 50 FINANCIAL IT 2016/2017 PATHFINDER RANKING

website: www.b-secur.com

B-Secur has developed a unique Electrocardiogram (ECG) biometric technology solution that is potentially more secure, convenient and cost effective than PINs / Passwords or 1st generation biometrics for user authentication. B-Secur utililses a person's unique heartbeat electrical wave processed by an algorithm to allow authentication of a person against a stored profile.

PensionBee

24 TOP 50 — TOP 50 FINANCIAL IT 2016/2017 PATHFINDER RANKING

Industry Award: Financial Times Innovation of the Year 2016

website: www.pensionbee.com

PensionBee is an online pension manager that helps customers find and combine their old pensions into a good value online plan. Customers have access to an online pension dashboard (The BeeHive) where they can track their new pension 24/7 and make one-off or regular contributions into their plan. Tax relief is added to new contributions.

Quantstore

25 TOP 50 — TOP 50 FINANCIAL IT 2016/2017 PATHFINDER RANKING

Industry Award: Wealth Briefing Awards 2016 Best Implementation of a Technical Solution and Most Innovative Client Solution

website: www.quantstore.com

Quantstore is a white-label FinTech platform ready to deploy for digital banks, asset/wealth managers, online brokers and insurers. It provides several ready made templates and can be utilised to deliver any conceivable FinTech theme, from robo advise to contextual investment themes. Quantstore offers its services under a SAAS (software as a service) variable cost model with low startup costs and extremely fast the to market for clients. Digital FinTech offerings can be delivered on the web, on tablets, mobiles or even wearables. Quantstore is a "one-stop-shop" for anyone who rapidly wants to launch robust, first-class FinTech apps and digital investment solutions for their clients, and can save clients up to 80% setup time and operational cost.

Pushfor

26 TOP 50 — TOP 50 FINANCIAL IT 2016/2017 PATHFINDER RANKING

website: www.pushfor.com

Pushfor is a secure content sharing platform that converts and projects content in high fidelity to any device. It has a patented smart approach to delivering content of any type or size - whereby the content is not sent to the device but 'pushed' in real time without the file leaving its source destination.

ThisIsMe

27 TOP 50 — TOP 50 FINANCIAL IT 2016/2017 PATHFINDER RANKING

Industry Award: Fintech Africa Top 100

website: www.thisisme.com

ThisIsMe proves that they are who they say they are, in real time. It enables businesses to reduce fraud, automate KYC checks, improve on-boarding & increase revenue while providing an on-demand, seamless customer experience.

Earny

28 TOP 50 — TOP 50 FINANCIAL IT 2016/2017 PATHFINDER RANKING

website: www.earny.co

Earny is a personal assistant who automatically gets money back on consumers' purchases, making sure that they don't overpay for an item. Users have received refunds ragging from $1 to $2000 on past purchases, without ever lifting a finger.

twisto

29 TOP 50 TOP 50 FINANCIAL IT 2016/2017 PATHFINDER RANKING

Industry Award: 'Most Innovative e-Payment Solution' MPE Awards Berlin 2016

website: www.twisto.cz

Twisto is on a mission to simplify daily payments, provide customers with flexible credit line and help them regain control over their finances with outstanding experience born in the mobile age. Twisto's payment app delivers a one click shopping experience, paying all daily expenses on behalf of customers.

qonto

30 TOP 50 TOP 50 FINANCIAL IT 2016/2017 PATHFINDER RANKING

Industry Award: Paris Fintech Forum Startup

website: www.qonto.eu

Qonto is the only neobank dedicated to small businesses. Qonto aims to become the next generation bank for entrepreneurs, SMEs and startups by providing an online service that will allow them to create an account in less than 5 minutes, instantly receive an IBAN and get started to manage the company's physical and digital business cards and perform their day to day operations.

VALOOT®

31 TOP 50 TOP 50 FINANCIAL IT 2016/2017 PATHFINDER RANKING

Industry Award: Fintech Finalist at the Next Money Event

website: www.valoot.com

Valoot provides multi currency pricing services for merchants at their physical point of sale. Valoot's solution gives consumers the transparency, the control and the information required to lock in a super favourable rate for their purchases abroad. The solution works for all card and digital payment types supported by the merchant, anywhere in the world.

veridu

32 TOP 50 TOP 50 FINANCIAL IT 2016/2017 PATHFINDER RANKING

website: www.veridu.com

Veridu provides global identity verification based on online activity. The company verifies the identity of users globally to prevent the risk of fraud and fraudulent behavior.

TOP 50 FINANCIAL IT 2016/2017 PATHFINDER RANKING — 33

website: www.splittable.co

Splittable is a web, iOS and Android app helping the world's growing population of young renters manage their shared expenses. Founded in the Open Data Institute in 2014, Splittable is backed by some of the leading technology investors in Europe. The company is run by young property enthusiasts with a collective passion for improving the lives of householders.

TOP 50 FINANCIAL IT 2016/2017 PATHFINDER RANKING — 34

Industry Award: Forbes 30 Under 30 2016 for Venture Capital

website: www.equitise.com

Equitise is the Trans-Tasman equity crowdfunding platform, offering global companies a way of raising capital in Australia and New Zealand. Equitise provides an alternative investment ecosystem for all investors. The company makes investing in high growth companies accessible, efficient and safe for all investors, from retail investors and Family Offices through to Angel investors and professional investors.

TOP 50 FINANCIAL IT 2016/2017 PATHFINDER RANKING — 35

website: www.thinknum.com

Thinknum is the first company to index web data for over 6,000 companies globally and provides a platform for non-programmers to quickly generate insights using this data.

TOP 50 FINANCIAL IT 2016/2017 PATHFINDER RANKING — 36

Industry Award: VISA Contactless Intelligence Blockchain Category Top 3

website: www.plutus.it

Plutus' app is a gateway that connects the blockchain technology with pre-existing debit infrastructure to enable contactless payments with Bitcoin and Ethereum at millions of brick & mortar merchants all around the world. Plutus' app also rewards clients with tokens on the blockchain for any in-store purchases. These tokens are called Plutons, and can be distantly compared to cash-back points or frequent flyer programs.

TOP 50 FINANCIAL IT 2016/2017 PATHFINDER RANKING

37 TOP 50

website: www.cend.it

Cendit is a one stop money hub. Cendit offers the advantages of a cloud-based digital service with the stability and familiarity of everyday money movement.

TOP 50 FINANCIAL IT 2016/2017 PATHFINDER RANKING

38 TOP 50

website: www.finimize.com

Finimize is a digital IFA platform. It is free of charge, and only requires 3-minutes to get a financial plan. The solution provides daily engagement with end users via a daily digest newsletter with unheard-of user engagement levels.

TOP 50 FINANCIAL IT 2016/2017 PATHFINDER RANKING

39 TOP 50

Industry Award: #29 KPMG Fintech 100 2016

website: www.spotcap.com

Spotcap provides online credit lines and business loans to SMEs. While traditional lenders make credit decisions based on historical financials and old-fashioned credit scoring, Spotcap uses a unique, proprietary credit algorithm which provides deep insight into the financial condition of a business, enabling quick, sound decisions.

TOP 50 FINANCIAL IT 2016/2017 PATHFINDER RANKING

40 TOP 50

Industry Award: Finalist in Next Money Fintech Finals 2017

website: www.bambu.life

Bambu is a B2B Robo-Advisor firm offering financial and non-financial firms the ability to integrate and benefit from the shift in digital wealth. Bambu took it one step further and created unique solutions for each segment of the market; a White-Label platform tool for the affluent investors, Robo-in-a-box for retail investors and an Intelligent Advisor for high net worth investors.

KyoLAB

41 TOP 50

TOP 50 FINANCIAL IT 2016/2017 PATHFINDER RANKING

website: www.kyolab.com

Kyolab offers an archiving platform for popular mobile messaging to regulated financial services. It enables compliance and dispute resolution for WhatsApp, WeChat, SMS, Yahoo, Skype, and more.

Enterprise Bot

42 TOP 50

TOP 50 FINANCIAL IT 2016/2017 PATHFINDER RANKING

website: www.enterprisebot.org

The Enterprise bot provides a white label b2b chatbot that allows businesses to reply to their customers 80 times faster and 65 times cheaper than with their existing infrastructure.

BLOCK EX

43 TOP 50

TOP 50 FINANCIAL IT 2016/2017 PATHFINDER RANKING

website: www.blockex.com

BlockEx provides full blockchain infrastructure to financial institutions, governments and regulators and operates the world's fastest digital asset exchange. The BlockEx DAxP is an HFT ready exchange with asset issuance tools and an infrastructure framework for customized blockchain integrations.

bunq

44 TOP 50

TOP 50 FINANCIAL IT 2016/2017 PATHFINDER RANKING

website: www.bunq.com

Bunq is a fully licensed bank from the Netherlands. However, bunq is not an ordinary bank. Instead of making more money, the company wants to reinvent money itself with mobile technology. That's why it built the own banking system and innovative features from scratch. The company is currently working non-stop on futuristic payment methods and other innovations to make money and banking as easy, transparent, and fun as possible.

45 TOP 50 — TOP50 FINANCIAL IT 2016/2017 PATHFINDER RANKING

website: www.ways2wealth.com

Ways2wealth is in the financial advisory business, where knowledge is the key differentiator, change is continuous, and the quality of response and customer servicing efforts determines its success. Against this backdrop, Ways2wealth is at the forefront redefining, pioneering and setting the standard for the way financial intermediaries should function in the future. Its aim is to make investment decisions for its customer simpler and easily available, and be an integral part of the lifecycle.

configo

46 TOP 50 — TOP50 FINANCIAL IT 2016/2017 PATHFINDER RANKING

website: www.configo.io

Configo takes personalization very seriously. when it comes to mobile experiences. As the world continuously shifts to mobile, real time targeting and personalization will determine success. Configo enables financial institutions to create a customer centric live mobile experience that drives digital sales and engagement. Through a secured on-premise or cloud-based simple platform, financial institutions can easily shape mobile experiences with only the creativity they have at their hands, and with no need for coding.

SecurionPay

47 TOP 50 — TOP50 FINANCIAL IT 2016/2017 PATHFINDER RANKING

website: www.securionpay.com

SecurionPay was designed to deliver an exceptional user experience. It helps eCommerce and other business players to easily provide value, while giving their team end-to-end control over the entire shopping process. SecurionPay's payment gateway can be used in almost every scenario, from the easiest and fastest "quick buy" option to more sophisticated and complex payment flow, also on mobile.

BankEx

48 TOP 50 — TOP50 FINANCIAL IT 2016/2017 PATHFINDER RANKING

Industry Award: Finanlist of Barclays Tech Stars Tel Aviv

website: www.bankex.co

BankEx tokenizes illiquid banking assets and liabilities, improves their quality by adding AI-based analysis, and works with them as if on one big balance sheet. It increases assets utilization rate for banks and improves access to capital markets for illiquid financial products.

49 TOP 50

TOP 50 FINANCIAL IT 2016/2017 PATHFINDER RANKING

Industry Award: Pioneers in Robo-advisory Space in Southeast Asia for B2C Market

website: www.smartly.sg

Smartly is the combination of gamified education and investment advice. Add-ons include fractional share offerings. Smartly is characterized by the low cost of its services and its allowing people to start saving and investing with small amounts.

50 TOP 50

TOP 50 FINANCIAL IT 2016/2017 PATHFINDER RANKING

Industry Award: 'Innovator of the Year' Penrose Awards 2016

website: www.everledger.io

Everledger is a permanent, global digital ledger that tracks and protects diamonds and other valuable goods on their lifetime journey. Using blockchain and smart contract technology, Everledger provides B2B traders, insurance companies, financiers, consumers and law enforcers with an immutable history of an item's authenticity, existence and ownership.

RISING STAR

TOP 50 FINANCIAL IT 2016/2017 PATHFINDER RANKING

website: www.marketearlybird.com

EarlyBird focuses on the risks and opportunities of Twitter in regulated finance firms. EarlyBird is a layered product, with increasingly rich capabilities to sift, filter, sort and analyse Tweets. For example, one of the filters uses artificial intelligence to analyse the financial relevance of a Tweet based on its content, and on the reputation of the sender within relevant fields - economics, politics etc. Customers of EarlyBird include global banks and leading hedge funds.

RISING STAR

TOP 50 FINANCIAL IT 2016/2017 PATHFINDER RANKING

Industry Award: Launch Festival 2015 Best Overall Winner

website: www.goabra.com

Abra is the world's digital cash, peer to peer money transfer network. It offers a single app in 200 countries that enables a consumer to send money from any phone number to any other phone number, anywhere, in the world. Abra uses blockchain technology for secure money transfers and payments while protecting the value of deposits in local currency.

website: www.cashaa.com

Cashaa is a peer-to-peer marketplace for cryptocurrency traders and cash senders (its main focus), founded in July 2016. Prior to that, it had been operating on a trial basis in Indonesia since April 2016. Cashaa has been developed by Auxesis Group, India`s leading blockchain development company based at IIT Bombay. Auxesis is focused on fintech and blockchain projects across the globe.

Industry Award: SeedStar Rwanda Winner 2015

website: www.mergims.com

Mergims is an online bill payment aggregator for remittances. The mobile app and APIs enable African migrants to pay from abroad for their relatives' essential services and products in Africa at no cost. Megims supports "Prepayment" of more than airtime and electricity, but also critical services like hospital, medicines, schools or transportation.

Industry Award: Top Performing Startup at Kickstart Accelerator

website: www.notakey.com

Notakey is a customer identification solution. It is compatible with existing government solutions such as eID cards and allows sharing and verification of identity information across services.

Industry Award: The Most Promising New Tech Startup of 2015 GITEX

website: www.trriple.com

Trriple is a mobile wallet that can solve the pain points of payments and money transfers in the UAE. It can be used by anybody - even the people without an account or credit card.

veridate financial

RISING STAR — TOP 50 FINANCIAL IT 2016/2017 PATHFINDER RANKING

Industry Award: DBS Accelerator, FinTech Finals

website: www.veridatefinancial.com

Veridate Financial Limited (Veridate) is a Hong Kong company, established in 2015, to provide fund administration and back office services to private equity funds and hedge funds, and consolidated reporting services to family offices. Veridate's mission is the end-to-end automation of investor on-boarding, administration, accounting and reporting through the deployment of advanced financial technology.

Bridg

RISING STAR — TOP 50 FINANCIAL IT 2016/2017 PATHFINDER RANKING

Industry Award: Temenos Regional First Place Winner

website: www.bridgtheapp.com

Bridg is a mobile-first point of sale and customer wallet that enables offline transactions via a patented algorithm. Now, Bridg users can proceed with transactions even if there is no Internet access. Bridg uses mesh networking to find the devices in the area that might be connected and processes the payment through them in the background. Bridg makes mobile payments secure and convenient to use.

credntia
start using it today

RISING STAR — TOP 50 FINANCIAL IT 2016/2017 PATHFINDER RANKING

website: www.credntia.com

Credntia is a leading personal identity management system which provides an alternative to physical, plastic credentials. Empowering people to take control of who they are and how they present themselves in the world, Credntia provides access to consumers' most vital credentials digitally – from driver's licenses, to passports, to insurance cards – providing peace of mind knowing their credentials are safe, secure and always with them. The benefits of Credntia are enabled through its mobile application for both iOS and Android, and are free to download.

SDK.finance

RISING STAR — TOP 50 FINANCIAL IT 2016/2017 PATHFINDER RANKING

Industry Award: Best Fintech startups 2015 by CESAwards

website: www.sdk.finance

SDK.finance is a back-end-as-a-service solution which combines a multi-product Fintech platform and a flagship marketplace for Fintech APIs. It enables financial institutions, banks, and major merchants, to decrease capex by 90% and to launch financial products 5-10 times faster. Additionally, the first-of-its-kind marketplace of Fintech APIs brings together top-notch technology providers and existing best-in-class development tools to create unique Fintech products.

Cobalt

TOP 50 FINANCIAL IT 2016/2017 PATHFINDER RANKING — RISING STAR

website: www.cobaltdl.com

Cobalt DL delivers a private peer-to-peer network that harnesses the potential of distributed ledger technology to significantly reduce post-trade cost and risk for financial market participants. With no legacy infrastructure to protect, Cobalt DL is taking a fresh approach to post-trade technology.

pay magnet

TOP 50 FINANCIAL IT 2016/2017 PATHFINDER RANKING — RISING STAR

Industry Award: Top 20 Fintech USA by BBVA

website: www.paymagnet.com

PAYMAGNET allows merchants to accept any card payments using just an NFC-enabled smartphone, with no adapters needed. PAYMAGNET is the great alternative to POS systems. PAYMAGNET redefines the way people pay - on the go, on their own device.

METAMAKO

TOP 50 FINANCIAL IT 2016/2017 PATHFINDER RANKING — RISING STAR

Industry Award: Emerging Star in Global Fintech 100

website: www.metamako.com

Metamako is a technology company that specialises in solutions for latency sensitive businesses. Metamako pioneered switching combined with onboard FPGA in the most demanding high performance networks.

YOTI

TOP 50 FINANCIAL IT 2016/2017 PATHFINDER RANKING — RISING STAR

Industry Award: Cybersecurity Startup of the Year 2016

website: www.yoti.com

Using smartphone technology, Yoti’s in-house engineering team has transformed paper identity documents, such as passports and driving licences, into a digital ID. Yoti offers individuals a free digital identity; one they can use in a variety of situations - from sharing their identity details with other people on classifieds and dating websites, to proving their age at nightclubs, or passing identity checks for opening bank accounts. Over 40,000 people from 55 nationalities have pre-registered for the Yoti app.

Industry Award: Fintech Global 100 by H2 Ventures

website: www.bluzelle.com

Mobile wallets around the world are not connected to one another like banks are. Bluzelle uses its own blockchain technologies to be the SWIFT network for mobile wallets. This allows users of mobile wallets in different countries to send money to each other securely and authentically. The company brings interoperability to international mobile wallets.

Industry Award: 'Most Innovative Retail Banking in Africa' - Fintech Africa awards

website: www.getwala.com

Wala is the first zero-fee digital bank for Africa. It is driven by efficiency, price, experience and trust. Wala has created the first and only free digital bank account that lets customers deposit and withdraw money at ATMs and Agents.

website: www.blockapps.net

BlockApps provides the building blocks to develop blockchain applications quickly. BlockApps offers all of the benefits of the Ethereum blockchain platform, along with added scalability and modularity.

website: www.baningo.com

baningo.com creates an innovative and unique customer-bank-relationship. The company serves customers with a simple and consistent online access to banks and their advisors. For bank advisors baningo provides a completely new sales-pipeline.

TOP 50 FINANCIAL IT 2016/2017 PATHFINDER RANKING

RISING STAR

website: www.card-switch.com

Card Switch is a Fintech company with a clear mission: to eliminate cards fraud, to combat cash transactions, to enhance customers' trust and experience as well as to help drive cards business income. Via its flagship product, Card Switch allows end-user to be in control of the bank card operations with the ability to "Switch ON or OFF".

TOP 50 FINANCIAL IT 2016/2017 PATHFINDER RANKING

RISING STAR

website: www.moni.com

MONI is a micro-banking platform for the Millennials. MONI offers a prepaid card, so anyone can get one. Because the card owner decides how much money to put on it, he/she always stays in control.

essDocs