

# #REIMAGINE BANKING

10 Strategic and Technology Trends for Banking in 2018



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The breakneck speed of technological change continues to drive new possibilities. If Google's DeepMind AI beating top players at a complex board game "Go" in 2017 was any indication of how far we have come, clearly 2018 is set to mark the beginning of staggering things to come.

In banking, 2017 saw remarkable progress around the adoption of emerging technologies such as Artificial Intelligence (AI), blockchain, the Internet of Things, and the maturity of related underlying technologies of cloud and analytics. Several banks launched bots to help customers transact, and resolve their service enquiries. RPA continued to drive efficiencies with extensive application in repetitive tasks. The use of AI solutions for fraud management and risk management also demonstrated compelling benefits. And blockchain clearly stepped out of the lab and into production with leading banks such as Emirates NBD and ICICI Bank harnessing blockchain networks for their remittance transactions across the world's largest remittances corridor.

But the unprecedented pace of development is not just a result of new technologies driving efficiency for greater business outcomes. The technological revolution is fundamentally altering the way we live, work, and conduct business. In 2017, new innovative business models emerged, and ecosystems came into sharper focus. Technology giants, and start-ups continued to disrupt the industry with unique solutions, considerably evolving customer expectations in the process. In China,

digital start-ups rose to 25% share of the unsecured lending market, up from 1% in 2013. In the UK, several new challenger banks entered the market, including ClearBank, the country's first purpose-built clearing bank in 250 years. Rather than compete, traditional banks saw an opportunity to collaborate with the new entrants and leverage each other's strengths. Progressive banks such as DBS Singapore experimented with the platform business model and forayed into the e-commerce space with online buyer-to-seller car marketplace, to address the primary requirements of their consumers.

Although fraught with geopolitical and macroeconomic uncertainties, and the influx of new competition, the financial services industry made significant headway towards transforming into a digital business in 2017.

In 2018, we believe the confluence of environmental factors, technology evolution and forces of digitization will further accelerate change. The pace of change will be even more rapid and the scope more disruptive. This creative disruption in the industry presents banks with the unique opportunity to reimagine banking. To capitalize on it, banks need to be in lockstep with the developments and trends in the industry. What you see here is a compilation of ten such trends that we believe will shape the industry in 2018.

We hope you find them valuable in crafting your strategy for 2018, and enjoy reading about them as much as we did putting them together for you.

# TOP 5 STRATEGIC TRENDS

## SHIFTING NATURE OF BANKING BALANCE SHEETS



The EU referendum in 2016, the geopolitical environment in certain countries, and trade agreement decisions such as the U.S. pulling out of the Trans-Pacific-Partnership (TPP) have impacted the global economic climate. These developments had ripple effects in the financial services industry. Macroeconomic factors have not been reassuring either, with global economic growth turning slightly positive only recently in 2017. The twin forces of digitization and competition have also had a bearing on the industry's ROE, languishing at 8%-10% levels. Bank margins are under further threat from agile players such as financial technology (FinTech) providers and new entrants, especially in areas of limited regulatory oversight.

The retail banking and payments space has witnessed the maximum disruption from FinTechs and digital players. For instance by end of 2017, nearly 80% of mobile payments in China were processed by non-bank payment platforms like Alipay and WeChat Pay. A money market fund set up by Alibaba as a repository for leftover cash from online spending emerged as the world's biggest, with over \$175bn under management. However, amidst this disruption, the corporate banking business has been somewhat more protected. With global economy showing some signs of recovery, albeit slow, infrastructure spending and economic activity are expected to increase heading into 2018. Technology powered consortium-led corporate banking solutions such as enterprise payments, trade finance and syndicated lending can help banks gain ground. While these solutions are not new, banks can now offer these with near real-time transactions thanks to technologies such as blockchain and open APIs. An optimal mix of fixed and differential pricing for these offerings can help banks recoup some of the losses suffered in retail business.

Furthermore, regulations such as Basel III that require banks to meet higher capital requirements and increased liquidity limits are further impacting the ROE. New regulations like

GDPR are also posing implementation challenges for banks in certain processes such as secure customer onboarding, and aligning data storage with the new guidelines. The open banking initiatives, such as PSD2, are likely to open multiple new fronts for competitive battle.

To keep pace with evolving expectations, banks are sharpening their ecosystem strategy and moving towards the platform business model. In its latest annual report global assessing banks, the consulting firm McKinsey noted that the core businesses of financing and lending that pivot off the bank's balance sheet generated 53 per cent of industry revenues, but only 35 per cent of profits, with an ROE of 4.4 per cent. On the contrary, the distribution business produces 47% of revenues and 65% of profits with an ROE of 20%. Consequently, banks are becoming aggregators of third-party products and services, as well as enabling their services on third-party distribution channels. In 2018, we believe, there will be a greater push towards platform business models and ecosystems will come into sharper focus. This will increase the fee-based revenue as a percentage of total revenue for banks. Another development will be the shift in the nature of transactions. With the increasing number of channels that customers can perform transactions on, there will be a surge in the volume of transactions as average value of transactions plummets further.

In these changing times, banks that emerge as winners will be those that embrace change, innovate constantly, and have and relentless focus on the customer. Banks thus need to develop a culture of innovation and collaboration, empower their employees, and realign their organizations for the future.

Our coverage of business trends this year, focuses on the key aforementioned trends of platform business model, cultural readiness of banks, future workforce, reimagined customer journeys, and pervasive security.



## STRATEGIC TREND 1

# CUSTOMER JOURNEY #REIMAGINED – FROM CUSTOMER CENTRIC TO CUSTOMER SPECIFIC

A year ago, we predicted that customer experience would determine the winners and laggards among banks in 2017. In 2018, it is the turn of a reimagined customer journey to determine which banks survive and which will fall by the wayside.

What is this journey that we are speaking of?

Over decades, banking businesses transitioned from a product-centric approach to a customer-centric approach, and then to a customer-specific model. Their goals also changed from maximizing customer lifetime value to maximizing value at every life stage. In 2018, banks will pursue a more nuanced goal – understanding the individual journeys of customers at the same life stage, and partnering them through that cycle. To do that, they must gear up for the following:

More channels of engagement, including bank-owned, partner-owned and third party channels, all working to make banking as invisible as possible. AI-based channels like chatbots and smart assistants will become more prevalent, as will entities such as AISPs (Account Information Service Providers) and PISPs (Payment Initiation Service Providers) when the Payment Services Directive 2 comes into force. Already, some of these touch points are having a say in which bank or gateway will finally carry the customer's financial transaction. Besides contending with the influence of channels that they do not own, banks also need to prepare for a scenario where the bulk of transactions and enquiries will originate in such channels. As more and more third parties use bank APIs to build applications or sell bank products on their distribution channel, the points

of origination of transactions could be myriad. Moreover, in the future the point of origination could range from an application to a home connected speaker, an autonomous car or any connected device. The focus of banks will be to build customer journeys for contextual banking services to the customers at the moment of truth, whether it is on their existing traditional channels, new channels or on third party partner owned channels.

As channels evolve, so will the interacting parties on either side. A long time ago, both the customer and the touch point wore a physical form. With the arrival of ATM, Internet and Mobile Banking, the touch point turned virtual. Going forward, everything will be virtual, as intelligent assistants start to deal with banks on their owners' behalf. This is yet another change in the customer journey that banks should prepare for.

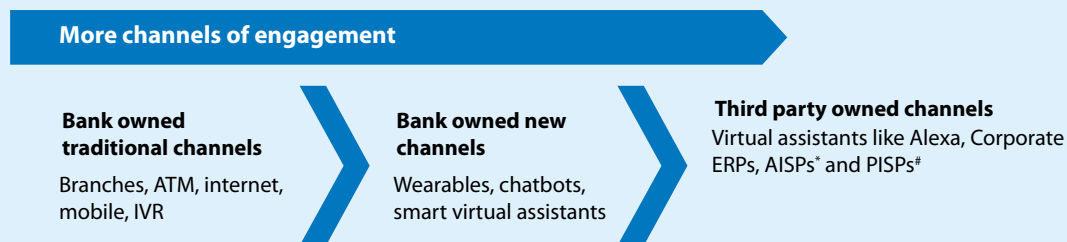
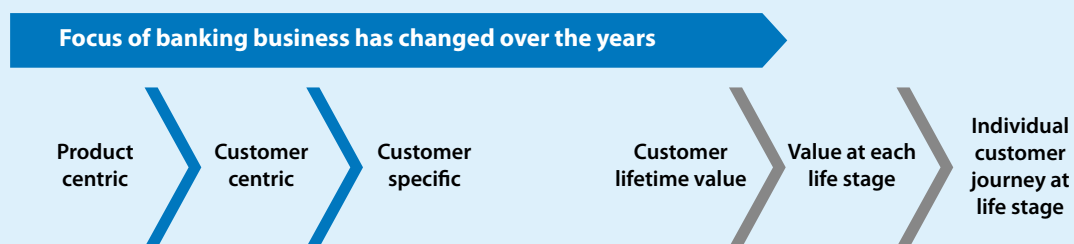
Reimagining customer journeys will be as important for corporate banking business, as it is for the retail business. Just as banks need to understand retail customers' life stage and journey better, they need to focus on understanding the corporate customers' business better.

Corporate and small business customers will embark on new journeys. The challenge before banks will be to stay relevant to those journeys by providing immersive experiences to customers at the moment of truth. Where customers are at the first or second moment of truth, there is an additional challenge to collapse that distance to zero to arrive at the zero moment of truth. At that point of closest connect, bank staff should be empowered to engage customers with the right messages.

One way to make the experience immersive is by offering APIs to integrate customer ERP systems with the banks' own systems to enable seamless access to banking services from within the customers' business processes. Some banks are going a step further, into their small business customers' supply chain, to offer tailored solutions to manage accounts, invoicing, receivables and payables on their own (the banks') platforms. There is also a case for banks to leverage their massive data resources and AI/ advanced analytics to devise a business and credit forecasting service for their business customers.

Progressive banks will abandon incremental change to pull out all the stops, using all the modern technologies at their disposal, right from analytics to AI to augmented reality to IoT, to be ready for these scenarios. The offering of banking services through Alexa, Amazon's smart virtual assistant, is just a preview of things to come. In 2018, expect to see more of this and much more as banks reimagine the customer journey riding the digital wave of confluence of technologies.

## Reimagining the customer journey



Focus of banks will be to provide contextual banking services to the customers at the moment of truth across these channels

## Focus on reimagining retail and corporate customer journeys



**Retail customers:** Understand the lifestage and journey better



**Corporate customers:** Understand the business better

**Leveraging massive data resources and riding on the confluence of technologies**

\* Account Information Service Providers

# Payment Initiation Service Providers

## STRATEGIC TREND 2

# BUSINESS #REIMAGINED - FROM PLATFORMS FOR BUSINESS TO THE BUSINESS OF PLATFORMS

Is “platform” the new metaphor for outstanding business success?

The world’s top 15 public platform businesses account for \$2.6 trillion in market capitalization. Playing catch-up are about 140 unicorn companies, currently valued at more than \$500 billion.

In 2018, we see banks riding this trend to shift faster from a pipeline business to a platform model. This will play out as follows:

- Under the platform model, banks will no longer stick to manufacturing and distributing their own products and services through their own channels. Rather, they will expand their portfolio with complementary products sourced from partners, such as insurance companies; products co-created with fintech firms – the ICICI Bank-Paytm collaboration in lending is an example; non-financial products ranging from movie tickets to cars; and even competing (and superior) products from third parties.
- Next, with open banking becoming reality and bringing transparency to the market, banks will have no choice but to present the best product and service options, regardless of ownership, to their customers on their own platform. Some banks will also look to go beyond banking and play a larger role in the life of their customers. This means banks will go from being monolithic institutions selling products designed in-house and distributed through owned channels, to acting as aggregators selling a host of financial and non-financial offerings in a single marketplace. Here, it is worth citing the example of Emirates NBD, which in May 2017 launched an online retail platform called Skyshopper, which gathered together a variety of products – from fashion to grocery – from several other sites. Another great example is DBS Bank, which launched an online car marketplace – the first by a bank in Singapore – where

people could sell and buy cars, and also secure a DBS loan to finance the purchase.

- Thirdly, banks will bring third party channels on par with their own. So in addition to distributing via their network of branches, mobile channels, agents, kiosks, wearables, smart virtual assistants etc., they will use APIs to sell through third party apps, fintech companies, other partners, and even other banks.

From the above, it is clear that banks will do more than simply borrow the platform model from another business such as transportation or hospitality. As the first point explained, they will design and develop some products, and for the rest, tap the resources of the ecosystem.

Even for the purpose of delivery and distribution to the last mile – whether it is through devices, kiosks, points of sale or channels yet to emerge – the platform banks of 2018 will leverage their connections in the ecosystem to distribute through the channels that their customers like the most.

The next expectation for 2018 is that having evolved a platform model, banks will hope to earn new revenues from it. Hence we believe they will not stop at exposing APIs, but will actually try to monetize them. German digital bank Fidor and communication service provider O2 are already doing this: Fidor offers full stack of banking services needed to run a digital bank. O2 has launched a mobile only bank built on Fidor’s platform. With O2 banking customers can quickly enroll and transact or get an instant loan. The communication service provider acts as an intermediary between the borrower and Fidor Bank, which gets to make the loan. Revenue sources for the bank include shared revenue from O2’s business growth, transaction related revenue and net interest.

In the New Year there will be many such partnerships.



## Platform businesses are hugely successful

Top 15 public 'platform' companies represent \$2.6 trillion in market cap<sup>1</sup>

Over 140 platform driven 'unicorns', with \$500 billion total valuation<sup>1</sup>

## In 2018, more banks will shift from a pipeline to a platform business

Own products on their own distribution channels

- ▶ Self created products such as deposits and loans
- ▶ Bank channels - Branch, Online, Mobile, Social, Kiosk, AI Assistants, Wearables etc.

An aggregator of financial and non-financial services from partners and competitors

- ▶ Complementary partner products such as insurance such as insurance
- ▶ Non-financial products such as movie tickets, car sales
- ▶ Competing 3rd party products

## Banks will look to earn new revenues from platform models

### Top 3 preferred monetization models



Revenue sharing



Fee per API transaction



API call fees

## STRATEGIC TREND 3

# SECURITY #REIMAGINED – IT'S EVERYBODY'S BUSINESS

2017 witnessed one of the worst cyber security breaches of all time when U.S. credit agency Equifax lost sensitive data, including Social Security Numbers, that could impact as many as 143 million people. So there is absolutely no doubt that security will take center stage in most enterprises in the New Year.

Specifically, we expect banks to deal with the following security trends in 2018:

Amidst growing digitization, concerns about protecting customer information and interest are intensifying. In addition to existing laws, such as SOPA (Stop Online Piracy Act) and PIPA (PROTECT IP Act), banks will have to contend with new regulations protecting investor interest (MiFID II) and individuals' data (GDPR), which will come into force this year. An important part of that will be to make banking systems compliant with the new rules, and in the case of new investments, make security an integral part of the architecture design itself.

With more technologies coming up and then coming together, both the quantum and sophistication of cyber-attacks will increase. The data breach at Uber – said to have impacted 57 million customers and drivers – was mounted through the world's largest open source developer community and a hugely popular cloud computing service. That the Internet of Things is another source of vulnerability was proved beyond doubt by the Mirai botnet attack, perpetrated by about 100,000 infected IoT devices. What's more, even fraudsters are keeping pace with technology evolution, and are increasingly using sophisticated Artificial Intelligence to breach firewalls. A single-pointed, analytics-based security application is inadequate protection against such multifaceted threats, which can only be combated by a solution combining the power of AI, machine learning,

analytics and big data with biometric devices and other anti fraud technologies. 2018, the year of AI versus AI, will witness the coming together of various technologies, including mature biometrics that will combine voice, facial and retinal scan to protect banks and other enterprises against cybercrime.

Moreover, with larger hordes of external users and devices accessing organizational systems, banks would need to change their human-centric, reactive security philosophy to a proactive, machine-led approach where systems monitor user behavior to decide who should be allowed access and automatically adapt the level of security to the level of attack. Also, as mentioned earlier, they should build security into application architecture, instead of layering it on later.

2018 is also the year when banking ecosystems will multiply and unprecedented amounts of data will be shared within and between ecosystems. Once the entire banking organization becomes entrenched in the business of sharing data, the business of protection cannot be vested in a single department or authority. Hence in the years to come, security will be everybody's responsibility in the bank.

One of the banking trends we predict for 2018 is the emergence of a parallel short term/ part time workforce, which – like Uber drivers or Airbnb property owners – will enter and exit the banking human resource pool at will. These workers will need to be "secured" even more than regular, permanent employees, but without compromising the ease with which they can enter the system, do their job, and go. Here, the approach to security should be driven not by role, but rather by the pattern of behavior, to prevent any unsavory activity.

As banks manage and respond to these trends in 2018, they might want to bear a couple of things in mind. The first is to

devise security measures, which protect, but do not introduce friction in user experience. The second is to be open to any opportunity to capitalize on this strength by offering identity

management and related services to clients. Will 2018 be the year banks turn security into a competitive advantage? We will know soon enough.



### More regulations to protect customer information and interest

**Existing regulations**  
SOPA\* and PIPA\*\*

**New regulations**  
MiFID II# and individuals' data GDPR##



### 2018 will be the year of AI versus AI



Fraudsters will use AI to breach firewalls



Banks will use AI and mature biometrics to protect their data



### Banking ecosystems will multiply



Unprecedented amounts of data sharing



Security becomes everybody's responsibility

\* Stop Online Piracy Act

\*\* PROTECT IP Act

# Markets in Financial Instruments Directive

## General Data Protection Regulation

## STRATEGIC TREND 4

# WORKFORCE REIMAGINED - FROM THE RIGHT TALENT FOR STRATEGY TO THE RIGHT STRATEGY FOR TALENT

With automation increasingly taking over routine and repetitive manual jobs in banks across functions, where does that leave the banking professional? A view that is gaining ground is that emerging digital technologies will create a demand for new professional skills, and increase reliance on innately human capabilities such as critical thinking, empathy and problem solving. We go a step further to say that without this skill set, and the cultural and organizational transformation to go with it, banks will not be able to fully leverage the other developments that will unfold in 2018.

What are the trends marking this transformation of the banking workforce? Our viewpoint is as follows:

- Banks' multigenerational human resources will tilt towards youth, with the millennials set to account for 72 percent of the global workforce by 2025. As bankers and banking customers become younger, new-age skills such as customer experience design, product design based on customer empathy and journeys, data science, and knowledge of AI will be in huge demand. Scrum masters, agility coaches, machine learning engineers and full stack architects will be an essential part of the talent pool. With the boundaries between business and technology breaking down in banking operations, the same will happen at the individual employee level to create multidisciplinary talent with an appreciation of both domains. (Axis Bank's twin tracking program to nurture both traditional banking and new age skills among employees to create "digital bankers" is a great example). This lean multidisciplinary workforce will run banking operations supported by, or in collaboration with, an "automation workforce".
- Progressive banks have already moved on this front to empower their employees to work in multidisciplinary teams by using Agile principles at scale across IT and

product management. ING Netherlands is one among them. The Bank's delivery team is composed of different sub-groups – at the lowest level is a multidisciplinary team with a common goal; next is the line organization comprising groups of people with similar expertise who work with different multidisciplinary teams; third comes a grouping of these groups itself; finally, there is a broad interest group which is open to all. By ensuring alignment between various working groups, ING has managed to empower its multidisciplinary teams and nurture an environment, which supports innovation.

- Design, development and delivery of products and services needs to be extended to the workforce. There should be a constant feedback loop to incorporate suggestions for improvement into product design.
- Unfortunately, on current form, banks will find it challenging to attract the right talent for this new kind of workforce. Recent research into the workplace choices of IT and engineering professionals found that there were no banks in the top 25, and only 2 in the next 25. Another study said that purpose-driven organizations had more satisfied employees. Therefore, in 2018, banks will need to effectively articulate their purpose, to tap into the progressive millennial talent that is inclined towards impacting a change and associating with a purpose.

In addition to hiring the right talent, the new banking organization will need to accelerate learning and development to retain the right talent for business. Building a customer centric organization to be at Zero Distance to what our clients want and need, is the Infosys way of developing talent that thinks like the customer in product, process and solution. Banks can apply these principles to ensure that their frontline staff is always in tune with clients.

- Besides a multidisciplinary workforce, 2018 will also witness the emergence of a hybrid talent pool where there will be full-time employees and part-time/ short-term recruits who will flow in and out of the system, and will need to be trained, on-boarded and absorbed on a case-to-case basis. A one-training-fits-all approach, such as the one mandating 20 hours of computer-based training for permanent employees, will not work here given the diversity of education and experience of part-time workers. Rather, training must focus on building existing skills and aligning them with the business using methods and delivery formats that are easy for the candidates to use. Think of platform businesses, such as Uber and Airbnb, which “employ” people with regular day jobs to work for them in their free time, as per their free will. Learning will also go the same way to offer more and more quick/ short-

term, application and device agnostic courses in place of educational programs of long duration. While online programs have been around for a while, they were rather inaccessible because they required significant commitment of time and money. Now, entities such as Udacity and Coursera have not only enabled “quick bursts” of learning through short programs, but also made them very affordable by deeply discounting them during Black Friday sales and other events. As banks embrace the platform model to feature a wider variety of offerings and channels, they may take the same approach to their workforce, to employ not only those with “full-fledged” banking qualifications but also others who have acquired specialist knowledge via short-term courses.

Expect the changing banking workforce to take shape in 2018.



## STRATEGIC TREND 5

# ORGANIZATION #REIMAGINED - CULTURAL READINESS FILLS THE GAP BETWEEN BUSINESS AND TECHNOLOGY READINESS

Ecosystems not vertical integration, high value exchange not owned assets, and scale with speed not return on assets will form the bedrock of success in the age of the platform business. This massive shift from a pipeline business model to a platform business model combined with digital disruption by new technologies is transforming banking, not just in the way banks maximize customer value, but also in the way they operate and run. The challenge before banking organizations is thus to ensure their employees recognize the shift, relate to the bank's renewed vision and appreciate the bearing it may have on their role in the bigger scheme of things. Banks must not only acknowledge the fear of change, and support employees through it, but also help employees constantly unlearn and relearn for the new banking universe. In 2018, organization transformation for a culture that embraces change, innovation, customer-centricity, and lifelong learning will be a top priority for banks.

In 2017, we stated that banks in the digital age would do well to transform their culture to one that is in total alignment with the customer. One year on, the importance of this cannot be stressed enough. At the heart of this customer centric organization are multidisciplinary teams that cut across functional silos. These comprise designers and product evangelists who can empathize with customer needs and design products around it, data scientists who can glean business insights from vast structured & unstructured datasets, and AI experts who can build machine learning algorithms for improved success rate in customer service. Progressive banks are instituting programs to train their employees to view customer journeys, to enable them to see realities differently, and to help them connect the dots for creative solutions to deliver value to their customers as well as the end consumer.

In a culture where continuous learning is a way of life, to upskill and cross-skill their employees, banks are discarding the traditional class-room training programs in favor of unconventional ways. For example, DBS Singapore hires people with the required skills and capabilities and pairs top performers with the new hires to quickly multiply these capabilities across the organization. Axis Bank in India has launched Axis Bank Academies partnering with renowned institutes like INSEAD, CRISIL, ISOFE, encouraging its employees to identify areas of specialization that will help them become future ready as digital bankers. In 2018, banks will also look to train employees on relevant analytical skills to fill the gap between business and technology. Data and insights for every employee to facilitate informed decisions will form the foundation of a truly data-driven bank.

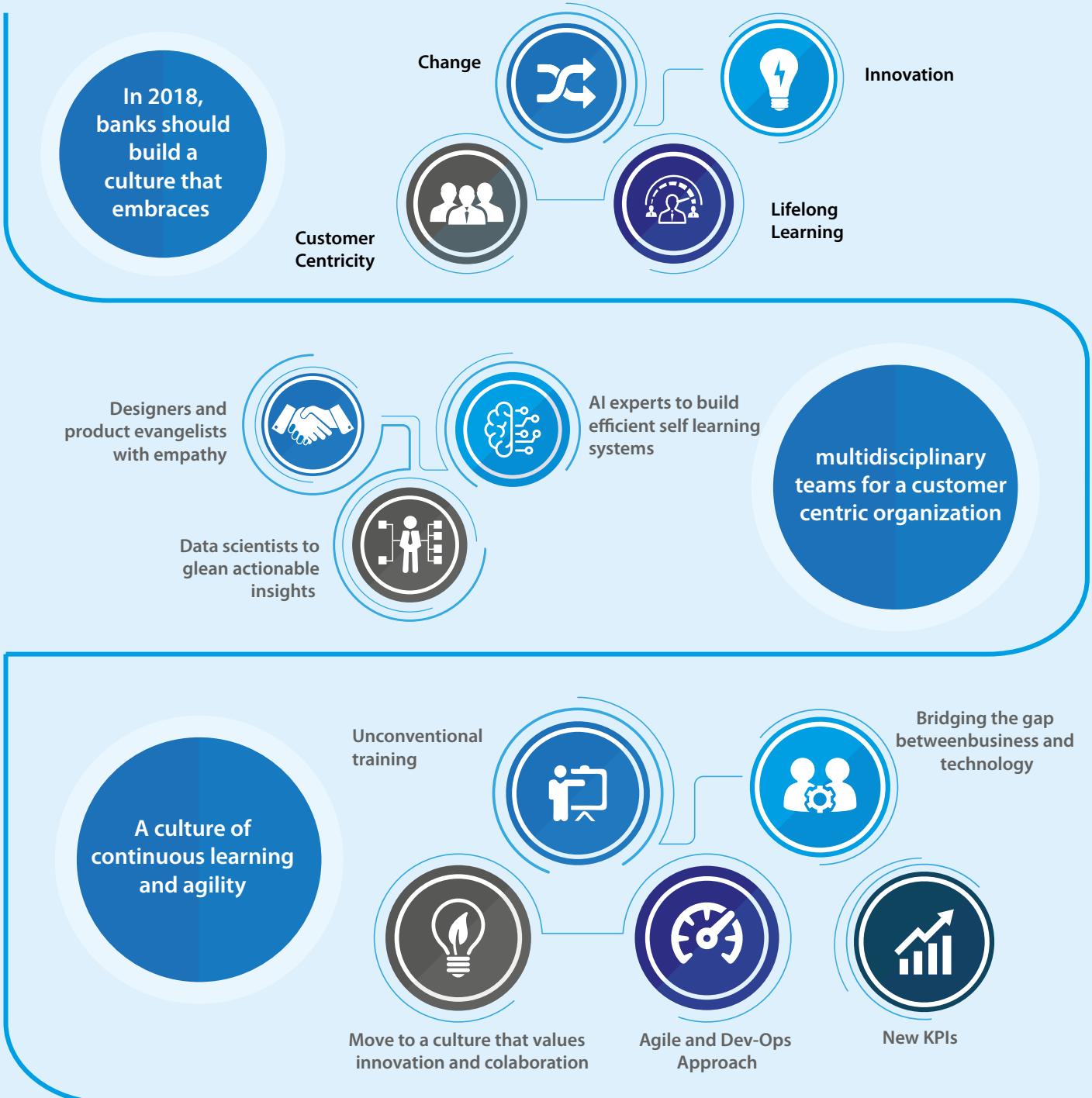
Banks have traditionally been known to avoid risks, but to keep up with the pace of innovation in the age of open APIs, platforms and 'digital', banks must move from a risk averse culture to one that values innovation and collaboration. This is a culture that supports experimentation wholeheartedly and rewards not only success but also failure. The intrapreneurial culture of DBS is a case in point. With hackathons to encourage greater collaboration with start-ups, digital skilling programs, and workshops for human centered design and agile methodology, the bank is building a digital mindset amongst its employees and is building a culture to enable every employee to contribute to digital innovation without the fear of failure. The bank also has an incubation program for employee start-ups. In our interaction with banks, we are increasingly witnessing a move towards Agile and Dev-Ops for greater alignment and collaboration between development and operations, shorter sprints and constant feedback loop in an IT development cycle. Banks are going

one step further to elevate Agile from an IT practice to a corporate process for enhanced cultural agility.

Lastly, in 2018 banks will revisit their KPIs to instill the new culture of learning, collaboration and innovation. There will be an increased emphasis on non-monetary factors such as customer experience, digital trust and innovation. With a yardstick to keep it, and coupling it with rewards and remuneration, banks can successfully bridge the gap between technology and business readiness for the new world or re-imagined banking.

Banking organization of the future will be very different from what it has traditionally been. Progressive banks want to operate like the leading platform companies and digital organizations of the world that thrive on diverse ecosystems. To that end, banks will increasingly diversify their human capital, adopt cross-industry processes and transform into cross-cultural organizations. 2018 marks the beginning of this transformative trend.

## Digital disruption and changing business modules are transforming banking



# TOP 5 TECHNOLOGY TRENDS

EVOLVING REFERENCE DIGITAL  
ARCHITECTURE





Banking's aspiration to integrate itself into the lives of customers cannot be accomplished in a day. But with modern technologies, that end state of a truly digital bank underpinning every service is starting to look a lot less like of a distant dream.

In 2018, banks will look to partner with technology vendors that can see them through their transformation journey with proven experience and capability across the five layers of the digital architecture - information architecture that supports hyper-personalization anytime, anywhere on any device; componentized application architecture with embedded analytics to self-heal and automate; technology architecture that leverages open source components and cloud; security architecture which is adaptive and pervasive; and integration architecture for seamless, standard-based open API environment.

Saddled with significant legacy systems, banks are looking to modernize and scale smaller components of the architecture progressively, as opposed to a big bang modernization. Progressive modernization has been a common conversation in banking and IT circles, but now banks are looking to advance their transformation journey to reach their reference

digital architecture with agile and scalable approaches such as adoption of microservices based design.

The reference digital architecture will serve as the go-to guide, irrespective of the starting point in the journey or the approach.

As banks look to move forward towards their reference digital architecture, they need to be cognizant towards key technology trends that will impact the reference architecture. Our coverage of technology trends this year looks at such five key technology trends.

In 2018, banks will have a more nuanced understanding of Artificial Intelligence and its components, and the technology will find application beyond the already established use cases. Cloud will begin to be seen as a business enabler and the apprehension around public cloud will begin to wither. Blockchain based ecosystems will emerge for areas such as trade finance, remittances, digital identity management, clearing and settlement, among others. The proliferation of APIs will further fuel the sharing economy. And the number of transactions will only multiply in a world of connected devices unlocking value from a host of new sources of data.



# ECOSYSTEMS #REIMAGINED – THE RISE OF THE API ECONOMY

After months of getting ready and preparing to comply with the new rules, the year of Open Banking is finally here. Europe sets out into the new year with the enforcement of PSD2, at the core of which is the requirement for banks to facilitate secure customer data access to third-party providers. This puts APIs right at the center of the Open Banking dream, as simple interfaces that can facilitate data exchange. Regulations the world over are fostering and encouraging API-led innovation. Even in regions where it is not a regulatory requirement yet, banks and financial services providers are proactively taking the plunge into the API economy.

Banks that have already launched their API stores, have somewhere between 5 to 50 APIs. For example, RBL Developer Portal owned about 40 APIs some of which were publicly available, and Citibank Developer Community reported to have 49 APIs. In 2018, we expect a lot more banks launching their API stores.

As banks look to cultivate rich ecosystems and platforms, we predict this trend to grow stronger and more diverse in nature. This year, APIs will increase in breadth as well as depth i.e. not only will we see more APIs allowing digital firms, FinTechs and other developers to build real world applications but also more APIs with production data. Most banks currently have APIs running in sandbox environment with dummy data. Heading into 2018, this will change as banks will have made sufficient progress to develop the necessary governance mechanism to take their APIs live with production data.

The rise of APIs has heralded creative disruption in the financial services industry, of which the payments space has seen the maximum action and shows no signs of slowing down. Leading communication chat services are now gearing up to enter the space. In India, Whatsapp has approached

SBI, HDFC and ICICI bank for a proof of concept<sup>3</sup>, and it's only a matter of time before Whatsapp payment API is extended to a wider ecosystem. Similarly, Google is also integrating payment APIs in Chrome browser<sup>4</sup>. These developments will lead to an exponential increase in the number of transactions taking place on mobile devices, and a growing challenge before banks and financial service providers in 2018 will be to scale their systems to be able to address the huge transaction volumes of the API economy. What's more, in the new year we will see API innovation going beyond payments, wallets, and P2P transfers to areas such as corporate lending, corporate deposits, mortgages and loans.

In 2018, banks will further increase their collaboration with non-banking partners in that they will not just be a provider of APIs, but also a consumer of APIs from other ecosystem players. The next generation of banking experience will not only be the result of an engaged developer community creating applications using bank APIs, but also banks using external APIs to enhance their offerings and expand their reach. We will also witness a growing trend towards combination of the right APIs to create applications relevant to the customer.

And finally, the shift from sandbox to production environment will lead to monetization becoming an important agenda. In 2018, business models around APIs will come into sharper focus. A Bengaluru based start-up MoneyTap in a revenue sharing agreement with RBL Bank uses the bank's APIs to offer loans to India's young urban lower middle income group lacking credible credit history that banks and financial institutions demand. The company's product called 'credit line' is a flexible borrowing option that allows customers to choose their plan and EMI. The free app evaluates a user's credit and loan amount the user is eligible for in less than 10 minutes. The customer is charged a small fee at the time of

approval, usual interest fees and processing fees every time the customer borrows. More such models will take shape in 2018 and beyond.

And clearly with shrinking margins and unprecedented competition, 'participate or peril' is the writing on the wall for banks and financial institutions.

The year 2018 will officially usher banking in the API economy.

## Rise of the API Economy

### A lot more banks will launch their API stores in 2018



## Rise of APIs has heralded creative disruption in the financial services industry



Payment continues to lead the pace of disruptive action

WhatsApp has approached State Bank of India, ICICI and HDFC bank for WhatsApp Pay feature

Google is integrating payment APIs in Chrome browser



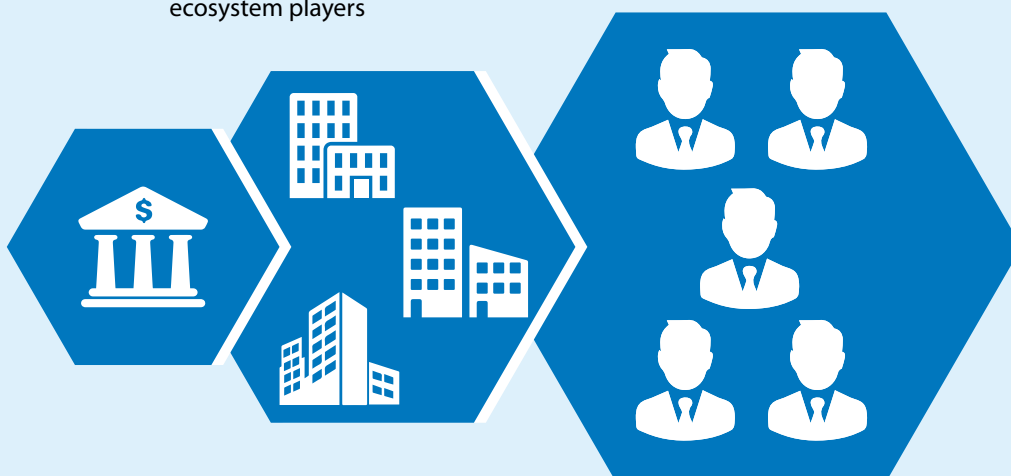
Innovations in other banking functions

API innovation to impact areas such as corporate lending, corporate deposits, mortgages and loans in 2018

## Banks will further increase their collaboration with non-banking partners

Banks become providers and consumers of APIs from other ecosystem players

Benefitting from increased reach



## TECHNOLOGY TREND 2

# VALUE #REIMAGINED – CLOUD FOR COST

# EFFICIENCY TO CLOUD FOR BUSINESS

# ENABLEMENT

After a decade of disruption, today cloud computing is a critical component of every enterprise's IT strategy. However, in the financial services industry, its implementation has largely been limited to the fringes of the bank, and perceived merits limited to cost efficiencies. According to IDC Financial Insights, banks can potentially save up to \$15 billion from cloud adoption by 2019. Although the cost benefits remain undisputed, in 2018 banks will start to look beyond, and see cloud as an enabler of business rather than a driver for cost reduction.

Up until now, large banks have been moving their peripheral systems, like HR, procurement and receivables, on to cloud. But, we now see a trend where banks are more open to moving their core systems onto cloud. The reasons for this trend in 2018 will be twofold - maturity of cloud environment and change in the regulator's approach towards cloud. Maturity of the cloud environment is because of the global technology giants such as Google, Amazon, Facebook and Alibaba (GAFA) that have built proprietary cloud assets, and offer database, infrastructure and application services, all on the cloud. The pace of development and adoption will only accelerate in 2018. From the good old consumer-centric Gmail, to enterprise grade database and server class devices of today, these technology leaders are effecting a unique osmosis of consumerization of the enterprise, and vice versa. Amazon launched its cloud based voice service earlier this year. Alibaba, primarily a retail giant, owns a cloud, an AI engine, and its own data centers. Even traditional enterprise IT giants such as Oracle, IBM and Microsoft offer their infrastructure and database, 'as-a-service' on the Cloud.

These players have spearheaded the evangelization of cloud so far, but a welcome change is helping push the envelope now. Traditionally hesitant regulators are reducing barriers

and are coming out with guidelines to help entities make their cloud adoption journey less painful. Many cloud service providers are working with regulatory bodies across the world to help move the needle on cloud adoption among their member organizations. Today, AWS has more than 70 data centers compliant with regulations in 18 geographic regions.

Leading cloud service providers not only provide services lock, stock and barrel (IaaS, PaaS, SaaS, BPaaS, ...), but over the years have built the capability to provide service standards equivalent to those of on-premise infrastructure, with high performance, 24x7 availability, and the flexibility of moving workloads between clouds. The level of sophistication of cloud services today, also allows banks to go for a private cloud environment within a public cloud, alleviating concerns around security while providing the cost benefits of public cloud. In 2018, more banks will be comfortable with the public cloud. With proof of security of data on their application infrastructure, banks are looking to experiment with new public and private cloud arrangements. Progressive banks are looking at definitive targets to advance their public cloud initiatives and build more cloud native applications. DBS Singapore is a case in point. The bank plans to move up to 50% of its compute workload to the cloud by 2018.

What's more is that banks and financial institutions can accelerate their innovation efforts with the flexibility of public cloud, an approach championed by technology giants such as GAFA, to rapidly introduce new features, and scale. By moving their sandbox environment to public cloud, banks can ensure seamless integration with FinTechs and third party APIs in the digital ecosystem. In addition to integration, banks also want to replicate the success that some of the new digital companies have seen with cloud, in terms of flexibility to scale and growing the fee based revenues

through platforms and APIs. All the more reason for banks to look at cloud as a revenue lever than a cost lever in 2018 and beyond.

Clearly, the case for next stage of cloud adoption in banking

is made, and the question is not if a bank is moving business to the cloud, but 'how much'. The level of cloud adoption is emerging as a leading indicator of a bank's EBITDA, with direct correlation to not only people cost and overall cost efficiency, but also revenue growth.

## In 2018, cloud will be an enabler of business than just a cost driver

### More banks embrace the public cloud



DBS Bank plans to move up to 50% of its compute workload to the cloud by 2018



Capital One Bank to reduce # of datacenters from 8 to 3 with public cloud by 2018

### Cloud for core systems, and not just peripheral system

#### Maturity of cloud environment

GAFAs\* have matured their enterprise cloud offerings

#### Change in regulators' approach

In reducing barriers and giving guidelines to ease adoption

#### Nexus of these drivers

Cloud service providers & regulators working together

### Cloud will be important for digital ecosystems



Seamless integration with FinTechs & 3rd party APIs



Replicate the success with flexibility to scale



Grow the fee based revenues

\* Google, Amazon, Facebook and Alibaba

# NETWORKS #REIMAGINED – BLOCKCHAIN FOR BANKING AND BEYOND

In December 2016, we predicted that enterprises would take Blockchain out of the lab and into production in 2017; twelve months later, we can safely say that that prediction has come true.

PwC's 2017 Global Digital IQ Survey says that 9 percent of financial services firms are substantially invested in blockchain. Research from Infosys Finacle and LTP concludes that the industry expects commercial blockchain adoption between 2018 and 2020, while Accenture predicts mainstreaming by 2025.

Analysts may differ on the details, but all agree that the technology is set for rapid growth in the next 5 to 10 years. Heading into 2018, these are the key trends in blockchain:

A big development will be the maturing of existing ecosystems and emergence of a number of new ones, buoyed by the results of pilot projects. For example, after Emirates NBD and ICICI Bank put their international remittance transactions on a blockchain network, turnaround time was down to less than 30 seconds. The ecosystems that will emerge in 2018 will be richly diverse; there will be global, regional, local and even intra-group ecosystems which will range from purely "bank and bank" partnerships to large networks comprising financial and non-financial entities, such as suppliers, regulators, trade associations, entities that are closely associated with banks, such as clearing and settlement houses and brokerages, and shipping and logistics companies. This will lead to even transactions in physical goods joining financial transactions on the blockchain network. More ecosystems will mature revolutionizing the existing processes across different banking segments and lines of business.

Once the ecosystems are set up, they can be extended very easily to new members and even new purposes. For instance,

the Emirates NBD - ICICI Bank network can easily admit a new bank without the effort and expense of establishing a correspondent banking arrangement and dedicated host-to-host integration, by simply adding a new node on the blockchain, in a matter of minutes. And an ecosystem such as Finacle Trade Connect, originally set up to carry trade finance transactions, documentary credit etc., could well support syndicated lending or sector-specific commercial banking services in the future.

Cross-border payments, digital identity management, clearing and settlement, letter of credit process and syndication of loans will be the most preferred use cases for blockchain application according to our research with LTP. According to IDC, 20% of trade finance globally will incorporate blockchain/distributed ledger technology by 2020. Banks that have taken some of these use cases to production can expect to see benefits in terms of increased transparency, reduced complexity and process efficiencies

Our second big prediction for 2018 is a shift in regulatory attitude towards greater openness and a willingness to support blockchain ecosystems. We at Infosys are seeing a great deal of interest from quasi-regulatory entities such as IDRBT (Institute for Development & Research in Banking Technology) and Lanka Clear in the networks we helped establish. Globally, regulators from the Bank of England to the Monetary Authority of Singapore and the Hong Kong Monetary Authority, are evolving standards to help their banks join and benefit from these ecosystems.

Blockchain action in 2017 was driven mainly by large, progressive banks. In the coming year, it will enjoy wider participation – from the leaders and early adopters for sure, but also from fast followers. And with regulators getting into the act, 2018 will see blockchain becoming serious business.

## Blockchain is becoming serious business

**2018**

Industry expects commercial blockchain adoption between 2018 and 2020<sup>5</sup>



**2020, 80%**

of financial market to adopt Blockchain by 2020<sup>6</sup>



## Blockchain in 2017 was driven mainly by large, progressive banks



**Regional:** Emirates NBD and ICICI Bank put international remittance transactions on blockchain

**Intra group:** Commercial Bank, of Qatar with its subsidiaries piloted cross border transactions in India-GCC corridor

**Local:** 11 banks in India have partnered to be on a pilot trade finance network

## Predictions for #Blockchain In 2018 and beyond

The ecosystems that will emerge and mature in 2018 will be richly diverse

- ▶ Emergence of diverse networks
- ▶ Broader adoption of networks



Global, regional, local, intra-group ecosystems



Involving financial and non-financial entities



### Most preferred use cases:

Cross-border payments  
Letter of credit process  
Digital identity management  
Clearing and settlement  
Syndication of loans

### Wider participation from fast followers, regulators

Shift in regulatory attitude towards greater openness and a willingness to support blockchain ecosystems

## TECHNOLOGY TREND 4

# INTELLIGENCE #REIMAGINED –

# AI COMES OF AGE

In 2017, Google's DeepMind Artificial Intelligence famously proved how well it understood (and mimicked) human intelligence by repeatedly beating the world's top players of the hugely complex board game, "Go".

In 2018, it is the turn of human beings to return the favor.

This is the year that we will refine our understanding of AI technology and begin to appreciate its diverse components and capabilities, central to which are a data and analytics foundation, machine learning, deep learning, natural language processing and generation, and visual recognition. Having gained early experience in using AI, in 2018, enterprises will talk specifics when discussing their future plans.

When it comes to applied solutions of artificial intelligence, some will fare better than others. Robotic Process Automation, which is entering its fifth year and is therefore quite mature – one survey claims 34 percent adoption in financial services<sup>7</sup> – will continue to attract interest. So will machine learning and its subset, deep learning, which received 60 percent of AI investment in 2016<sup>8</sup>. Leaders in adoption, such as ICICI Bank with more than 200 business processes already automated today, will bring more under the coverage of robotic automation, while the fence sitters will finally hop on to join the early adopters and fast followers.

Natural language-based applications – chat bots, smart assistants etc. – will also find their way into banks that don't have them yet. There are two factors in their favor – progressive banks have given NLP and NLG the thumbs up, and vendors have built a substantial domain-specific knowledge base that gives latecomers more confidence

to adopt. In 2018, FinTechs in the AI space will also look to collaborate with banks more effectively for customer data, an asset they chiefly lack.

The flip side of AI maturity is the new concerns that will emerge along with new opportunities. Machine learning is widely used, but there is limited understanding of how it arrives at a result – a credit score, for example – or why it forecasts one thing and not the other. What complicates this is that the bank will not be able to validate the result for at least a year, the typical length of a credit cycle. So in 2018, along with embracing the potential of AI, banks must also beware of its pitfalls.

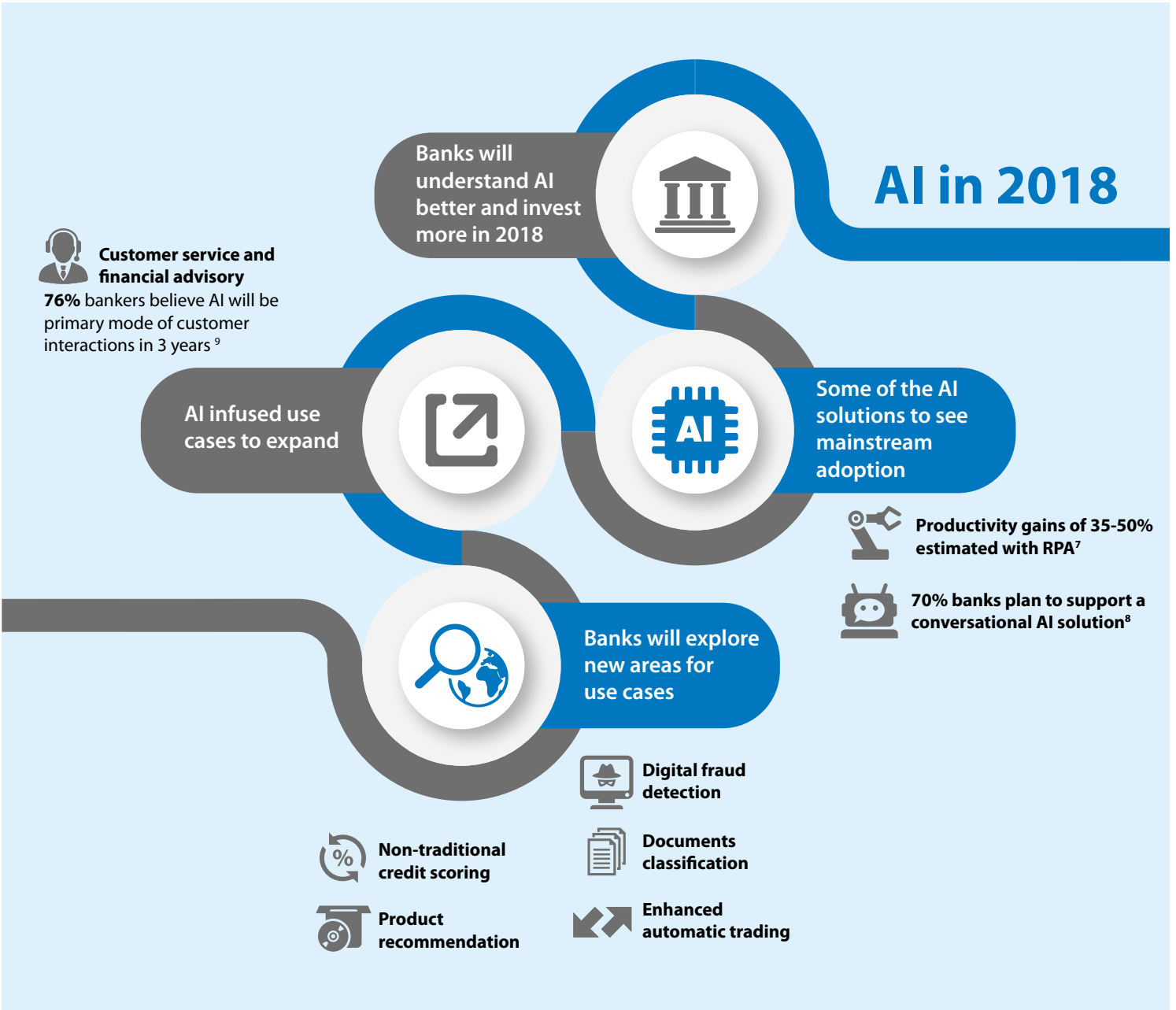
This is the year that use cases will multiply beyond the established applications in risk management, fraud prevention and customer service. For example, in the era of PSD2 and open banking, when banks will have unprecedented access to customer information, they could AI to accurately forecast future spends based on a customer's activity dating back several years. They could also process massive amounts of information to identify trends and their implications, such as the impact of retirement of Baby Boomers on the workforce, years in advance<sup>9</sup>. That being said, cyber security will still be the foremost use case for AI in banks in 2018.

Along with increasing their reliance on AI, banks will combine it with human intelligence resources – experience and expertise – to arrive at a point of "right" intelligence, from where they will offer the right product at the right price on the right channel at the right time to the right customer, while staying on the right side of the regulator.



Application of AI has matured and seen wide adoption in areas such as biometric authentication, fraud detection and customer service. However, there are several new areas where AI can have significant impact. In 2018, progressive banks will further explore how AI can be applied in these use cases, which may be new for banking but proven in other industries.

These are non-traditional credit scoring, documents classification, product recommendation and enhanced automatic trading among others. Indeed, AI will prove to be a huge differentiator for banks that understand the technology better and invest early.



## TECHNOLOGY TREND 5

# POSSIBILITIES #REIMAGINED - MORE THINGS TO BANK ON

Brick, click, tap and touch. Where do we go from here?

From branches and ATMs, to web properties and mobile assets, banking is consumed through a variety of touchpoints today. And these touchpoints are set to multiply with more and more connected devices in the future. In 2021, there will be 3.5 networked devices per person and the number of devices connected to IP networks will be three times as high as the global population<sup>1</sup>. Not only this, thanks to wearable technology that has already seen significant uptake in fitness trackers, there will be more variables added to the mix.

With connectivity and connected devices on an overdrive, banks are increasingly introducing solutions to blend banking in their customers' everyday lives. An example is Ally bank's mobile application 'Splurge' that sends the customer a warning to avoid making a purchase if monthly sundries exceed the budgeted.

But the hyper connected world of tomorrow will also have machines transacting on behalf of humans, and not just humans consuming services directly. In 2018, progressive banks will prepare for this future with services designed to talk to smart machines at the consumption end, i.e. at households, customer premises or customer assets. For example, a consumer may authorize a smart refrigerator to order grocery and charge the credit card, or configure a smart car to pay for fuel. Brett King, international futurist and founder of banking service Moven has gone on to predict an Uber model for driverless cars, where these cars will also collect payments.

The possibilities in the connected future are endless and the role of banks sizeable. The increase in channels and form

factors that banking is consumed on, will also multiply the sources of data for banks to provide contextual experiences. In 2018 banks will harness these data sources in a variety of consumer and industrial scenarios. For example, in trade finance an exporter of perishable goods need not worry about the inventory getting damaged due to weather or temperature, and hence the commercial value of the shipment going down. With real-time data from sensors, the exporter is equipped with information and insights to base his decision on and to potentially take appropriate action.

Banking on Things combined with digital identity management also presents powerful use cases for banks. Banks will look at introducing account or finance management services for vehicles to facilitate a holistic view of the running cost. A pertinent use case for integration of digital identity with banking-on-things could be a bank foreclosing the usage of an autonomous car by simply locking it in case the owner defaults loan payments. This is a classic case of smart machines empowered by insights and configured to take action.

In 2018, banks will need to make the journey through the three stages of the IoT information value chain, namely access, insights and action. Banks will need to start with access to data from a bank's leased equipment or a customer's mobile phone or motors, and data from external sources such as hospitals. Banks need to aggregate and analyze relevant business insight out of the massive amounts of IoT-generated data streams. For instance, the forecast of leasing equipment error rates, and consumers' driving habits and health. Based on these insights, it may be necessary to initiate an action. For instance, a smart payment initiated through a car-embedded wallet at a gas station, a digital identity title transfer for collaterals. To realize the expected

## Banking touchpoints set to multiply



3.5 networked devices per person in 2021<sup>10</sup>



Number of devices connected to IP networks to be thrice the population<sup>10</sup>

## Endless possibilities in the connected future



### Trends

More and more connected devices



### Implications for banks

More things to bank on



### Examples

Banking services availed on Alexa



Multiple sources of data and insights



Create new offerings and modify existing ones



Quality & location of shipment tracked realtime for trade finance



Machines will transact on behalf of humans, and consume services directly



Design services that talk to smart machines



A smart car configured to pay for fuel

impact and potential market for IoT, it is imperative that the provider ecosystem of infrastructure, hardware, and software work together to develop solutions. Adherence to integration and interoperability standards and use of open API architecture are crucial for meaningful integration with the ecosystem. Banks will need to move from getting access to IoT data generated by its internal devices, to customers' connected equipment and finally, the entire IoT ecosystem.

As data inputs multiply rapidly, progressive banks will find opportunities to make use of this data, to introduce new

products, modify existing products or reimagine existing products for better efficiencies. Progressive banks are working to improve the integration between their systems and data sets to make these possibilities happen. Banks would do well to remember that this connected future comes with a caveat. In the connected future of 'banking on things', banks will be privy to unprecedented volumes of data and information about their customers. Banks must adhere to the highest security standards, and also include security principles and considerations in the very development of these services.

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## Authors



**Chandramouli Kundagrami**  
Senior Industry Principle, Infosys Finacle



**Deepak N Hoshing**  
Head of Architecture, Infosys Finacle



**Ethan Wang**  
Product Manager, Infosys Finacle



**Puneet Chhahira**  
Global Head of Marketing and  
FinTech Engagement – Infosys Finacle



**Rajashekara V. Maiya**  
Head of Product Strategy, Infosys Finacle



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## About Infosys Finacle

Finacle is the industry-leading universal banking solution from EdgeVerve Systems, a wholly owned product subsidiary of Infosys. The solution helps financial institutions develop deeper connections with stakeholders, power continuous innovation, and accelerate growth in the digital world. Today, Finacle is the choice of banks across 94 countries, and serves over 848 million consumers – estimated to be nearly 16.5 percent of the world's adult banked population. Over a billion bank accounts are powered by Finacle globally.

Finacle solutions address core banking, online banking, mobile banking, payments, treasury, origination, liquidity management, Islamic banking, wealth management, and analytics needs of financial institutions worldwide. Assessment of the top 1000 banks in the world reveals that institutions powered by Finacle enjoy 50 % higher returns on assets, 30 % higher returns on capital, and 8.1 % points lesser costs to income than others.



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For more information, contact [finacle@edgeverve.com](mailto:finacle@edgeverve.com)

[www.finacle.com](http://www.finacle.com)

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