



# Fintech hub poised for next stage

**SFFxSWITCH** to cement Singapore as global fintech hub as deal sizes and sustainable finance increase and new digital banks emerge

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## Singapore's next stage as a fintech hub

**T**he Edge Singapore is honoured to be the official media partner of the Singapore FinTech Festival for the third consecutive year. SFF2018 was already the world's largest fintech festival; SFFxSWITCH 2019 (Singapore Week of Innovation and Technology) promises to be bigger and better. It will showcase use cases of exciting new technology such as blockchain/distributed ledger technology, artificial intelligence (AI) and new forms of data analytics.

In the past 55 years, Singapore has transformed from a colonial backwater into a shipping, transhipment and air hub, and a financial centre. In our Cover Story, Jacqueline Loh, deputy managing director of Monetary Authority of Singapore (MAS), outlines its next phase as a fintech hub.

SFFxSWITCH with its MATCH (Meet ASEAN's Talents and Champions) platform and Deal Fridays will bring new investments into Singapore, boosting the city state's position as an asset management hub. As a fintech hub, Singapore will continue to encourage innovation and new technologies including blockchain to improve financial services, making trade finance and cross-border payments faster and cheaper.

This year, SFFxSWITCH, to be held from Nov 11 to 15, is organised by MAS, Enterprise Singapore and National Research Foundation Singapore in collaboration with The Association of Banks Singapore and SingEx. In an interview, Enterprise Singapore assistant CEO Edwin Chow describes how his organisation nurtures start-ups.

Sustainability is one of the themes of SFFxSWITCH 2019. Two of our stories highlight fintech's role in addressing two of the most pressing concerns of our time: climate change and sustainability. Mikkel Larsen, chief sustainability officer of **DBS Group Holdings**, explains how fintech can be used for good in sustainable digital finance. On the other hand, the work needed to reach a common global standard to measure sustainability in finance is challenging.

In a separate interview Julia Walker, head of market development, risk, for Asia-Pacific at Refinitiv, and co-author of *Sustainable Development Goals: Harnessing Business to Achieve the SDGs through Finance, Technology and Law Reform*, says fintech can help direct capital into sustainable finance.

**Race to be Singapore's next digital banks**

Singapore banks have already created standalone digital banks — digibank by DBS and TMRW by **United Overseas Bank** (UOB).

With applications for two digital full bank licences and three digital wholesale bank licences to be awarded in mid-2020 now open, digital banks and digital banking were actively discussed by our interviewees. One point of discussion was the difference between digital banking and a digital bank. The former is part of an omni-channel strategy in which customers use a banking app as one of the products and services offered by a bank. A digital bank, meanwhile, is a mono-channel in which the bank uses data to engage customers as its primary goal and business model.

**NEC Corp**'s director of digital integration division, Daiichi Iwata, says digital banking will be different from traditional banking, as it is "based on a deeper understanding of people and businesses, with data to provide services on demand. Banking is about understanding people and businesses, and technology is about providing better insights and more information for banks and financial institutions".

Lim Chung Chun, chairman and CEO of iFAST, says in an interview that iFAST, via a consortium, is keen to apply for a digital wholesale bank licence in Singapore. He says iFAST will submit its application "just before" the deadline, as the company is currently preparing the relevant paperwork.

In the second quarter of last year, iFAST announced that its wholly-owned subsidiary iFAST Hong Kong had submitted an application to the Hong Kong Monetary Authority for a virtual banking licence but was not shortlisted for the next phase.

Other digital bank aspirants in Singapore are **Singapore Telecommunications**, Grab Holdings, **Razer**, Validus Capital, **Oversea-Chinese Banking Corp**, Vertex Ventures and **Keppel Corp**. They are reported to be interested in applying for the new digital bank licences either on their own or as part of a consortium. On the other hand, local cross-border start-up Nuim (formerly Instarem) has withdrawn from the race.

The last word on digital bank licences goes to Susan Hwee, head of group technology and operations at 85-year-old UOB: "Barriers to entry for technology are very low. Beyond technology, we have to understand banking

and regulations. Banking is about trust, and making money in banking is about risk management; and you have to be profitable to sustain a return to shareholders, which is very important."

**Fintech for good**

Financial inclusion through fintech is one of the great opportunities emerging from innovation. Financial inclusion drives development and economic growth. To this end, the API Exchange, or APIX (API stands for application programming interface), was launched in SFF2018. The platform brings together banks and fintechs, and allows them to conduct experiments in a sandbox. ASEAN's smaller rural banks can access fintech solutions to drive digital transformation and financial inclusion.

So far, APIX has signed up 70 banks and 150 fintech start-ups across 19 countries. MAS chief fintech officer Sopnendu Mohanty explains how APIX works, as well as its challenges and opportunities.

For Japan's Sumitomo Mitsui Banking Corp, its underlying aim of pushing for innovation is to build trust among its partners and with its customers, says Desmond Lee, Head of IT, Planning Department, Asia Pacific division. For the bank, innovation is an ongoing effort, adds Masayuki Nagatomo, SMBC's Head of Asia Innovation Centre.

Prudential is a glowing example of using technology for good, by encouraging people to live healthier lives. In 2017, it adopted its "3Ps" strategy of prevention, protection and postponement for its customers. Under "prevention", customers are given "simple nudges", encouraging them to eat better and adopt a healthier diet. "Protection" serves customers with existing healthcare conditions while "postponement" encourages immediate treatment to delay the severity and degradation of illnesses. The insurer continues to use cutting edge technology such as AI and data analytics with strategic partners to help customers meet their 3P goals.

Four years since the first SFF, fintech has become a central part of our lives. It is used in healthtech, insuretech, banking, wealth management, sustainability and climate change; it improves financial inclusion and development in ASEAN, and boosts Singapore's hub status. The journey continues. ■

# Prudential aims to reinvent the insurance game with technology

BY AMALA BALAKRISHNER

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Insurance company Prudential's corporate mission is simple: Keep on innovating to help everyone live well.

So, when it comes to catering to the changing needs of older Singaporeans, the insurer's chief commercial officer Goh Theng Kiat tells *The Edge Singapore* the company plans to take that creed to heart by helping "customers live better and manage [their] healthcare costs".

Gone are the days of insurers collecting premiums and paying for treatment when a person falls ill.

"We are looking at the way the insurance business is conducted quite differently", Goh explains, referring to how the company now looks at its customers' wellness holistically.

Data released by the United Nations (UN) in 2017 shows that the number of Singaporeans aged 65 and older is likely to hit 26.6% by 2035, more than double that in 2015.

With this in mind, Goh says Prudential aims to use technology to help its customers live and age better.

Since 2017, the company has adopted a "3 Ps" strategy of prevention, protection and postponement, catering to the disparate healthcare needs of its customers. Under prevention, Goh says customers are given "simple nudges" encouraging them to eat better and adopt a healthier diet. Protection, on the other hand, serves customers with existing healthcare conditions while postponement encourages immediate treatment to "delay the severity and degradation of illnesses".

"Tech has been very helpful in this regard", Goh says, adding that Prudential has been working on strategic partnerships to help its customers meet this 3P goal. In May, the insurer announced a collaboration with UK-based health technology and services company Tictrac to assess customers' eating habits. Tictrac provides personalised wellness services to consumers, engaging them on their lifestyle goals and helping them lead healthier, longer lives. "This gives them a holistic view on how they are progressing towards their health and wellness goals", he adds.

Prudential also signed a regional partnership with UK-based Babylon Health in August 2018. That union gives Prudential access to a suite of artificial intelligence (AI)-powered health services, including personal health assessment and treatment information, empowering users to proactively manage their health.

These initiatives serve to address Singaporeans' concerns on healthcare costs as evidenced in Prudential Global Group's *Healthy for 100? Healthy Care in Singapore* report compiled by the Economist Intelligence Unit.

Here, nearly half or 49% of 203 doctors surveyed expected Singaporeans to face more than one chronic disease as they live longer. These include dementia, heart problems, osteoporosis, diabetes and cancer.

The report also noted the importance of enforcing preventive care at a younger age. For instance, only 45% of respondents felt that Singaporeans between 25 and 45 were proactive in preventing diabetes. This contrasts with the 66% between 45 and 65 and



**Goh: We are looking to contain the rising costs of healthcare that come with a longer life expectancy, and so the flexible policies are intended to give customers the leeway based on the healthcare expenses they have or expect to have**

69% for those aged 65 and above, a sign that people become more proactive in looking after their health as they age.

## Rethinking insurance

Apart from playing an integral role in every phase of its customers' healthcare needs, Prudential is going a step further with its innovative financial solutions. For one, it has been rewarding customers with the private hospital rider in its PRUExtra Premier policy with a 20% premium if they do not make any claims in a year. So far, Goh says over 80% of Prudential's customers on this plan have benefited.

With better health also comes longer life expectancy. As such, the most recent policy rolled out by the insurer in September sees it extending its group insurance to corporate clients aged up to 100. "This is a huge difference from traditional group policies," says Goh, who notes that such policies usually cover employees up to the age of 75 and include covers for hospitalisation, surgeries, and outpatient as well as dental services.

Longer life coverage also means a slew of newer policies such as the PRUActive Retirement and PRUActive Saver policies, which serve to protect customers for more years. For example, PRUActive Retirement provides Singaporeans with a "stable nest egg upon retirement" through its higher retirement income, while PRUActive Saver allows customers to fix their policy term at any number of years between 10 and 30 years and pay premiums over a period ranging between five and 30 years. The minimum amount of annual premium payable ranges between \$1,200 and \$5,000, depending on the length of the premium payment term.

With savings policies being fixed traditionally at 10, 15, 20, 25 or 30 years, Goh believes that the flexibility of PRUActive Saver enables customers to customise their savings plans according to their own needs and expenses. "We are looking to contain the rising costs of healthcare that come with a longer life expectancy, and so the policies are intended to give customers the flexibility based on the healthcare expenses they have or expect to have," he says.

## Improving customer-centricity

While Goh believes that such flexible policies will give Prudential an edge over its competitors, he also concedes that these features alone are insufficient in reaching out to customers in the long term. "We are not just defined by our products," he says, adding that "a good product has to be complemented by effective customer engagement". And for this, the insurer is working with tech partners to improve the way in which it interacts with its customers.

"[We are looking to improve holistically]: customer's [understanding] of what's available, [policy] purchase experience and servicing or post sales [enquiries]", Goh explains. For starters, the company's close to 5,000 financial advisers are "digitally enabled to help them better engage customers and work smarter".

Even so, Goh notes that customers prefer having face-to-face interactions with an adviser to air their concerns and decide on the best policy. The company uses PRUForce, a customer relationship management solution it co-developed with software company Salesforce, to help advisers manage their prospects' information and keep track of their interactions. PRUForce

is linked to PRUOne Express, Prudential's point-of-sale tool that allows customers to get their policy illustration seamlessly within seconds of a sale.

Launched in September, it allows customers to get their policy illustration seamlessly within seconds of a sale.

In line with this, Prudential has been trialling a digital-based underwriting solution to approve policies more quickly since April. Depending on the type of policy, approvals typically take a day to a week. The new trial, however, performs real-time risk assessment so policy applications can be made in minutes while policies are issued in two hours. All this is done swiftly with customers answering a series of questions tailored to their profiles. They will know almost immediately whether their application for insurance cover is successful or if it requires further review.

Goh believes this expedited process will make the buying and selling experience hassle-free for both consumers and advisers. For now, the digital underwriting feature is only available for PruTriple Protect, a critical illness plan that provides protection against multiple illnesses. Over 6,500 PruTriple Protect applications have been made through this platform since January, and now the rules-based engine and analytics platform developed by UK-based tech firm UnderwriteMe is to be extended to Prudential's complete suite of savings, investment, protection and medical plans by 2020.

And to address customers' ad hoc queries and enhance its post-sales service delivery, in 2017, the insurer rolled out AskPRU — a chatbox to help advisers respond to customers' queries about their policies, anytime and anywhere. According to Prudential, since the introduction, there has been a 40% decline in its contact centre volume.

## Tech-ing the way forward

Leveraging the latest technology remains key for Prudential. To that end, the firm invests £400 million (\$704 million) in technology across its 12 Asian markets annually. Goh says the company is also always on the lookout for the right talent, with digital experience from various sectors.

As such, Prudential also makes heavy investment in its human capital. For example, it is looking to improve the productivity and capabilities of its staff by sending them for courses such as those by SkillsFuture, so they are up to date with the latest trends in the technology sphere.

Through the insurer's strategic partnerships with the Singapore FinTech Association and the Infocomm Media Development Authority, solutions are co-developed to address areas such as improving customer engagement.

For its SME customers, the insurer launched PRUWorks, its digital platform providing convenient access to insurance, employee benefits and business solutions based on the size, needs and budget of corporate clients. The insurer has also tied up with organisations such as ClassPass, the subscription-service for fitness classes, in line with its motto of encouraging customer wellness.

In short, Prudential's myriad of offerings look to groom advisers and create better policies that contribute to its cause of helping customers live well. ■

# iFAST eyes digital bank licence as it continues to challenge status quo

BY **JEFFREY TAN**

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In 2000, iFAST Corp started as an online unit trust distribution platform to disrupt the unit trust industry. By leveraging the internet, the company's popular fundsupermart.com was able to charge a cheaper service fee of 2.5%, compared with the banks' 5%. Moreover, the platform enabled the company to provide information on the different unit trust products in the market, thus allowing investors to make better investment decisions.

Since then, iFAST has transformed itself into a wealth management fintech company, expanding its suite of financial and investment products to include stocks, bonds and exchange-traded funds. And now, the company is aiming to apply for a digital bank licence in Singapore.

Since Aug 29, the Monetary Authority of Singapore has begun accepting applications for new digital bank licences and will do so until Dec 31. The licences will be given out to non-bank players to engage the underserved segments of the Singapore market, that is, those not served by the traditional and incumbent banks.

MAS is offering up to two digital full bank (DFB) licences and up to three digital wholesale bank (DWB) licences. The holder of a DFB licence is allowed to take deposits and provide a wide range of financial services to the retail and non-retail customer segment. On the other hand, the holder of a DWB licence will be allowed to serve only the small and medium-sized enterprise and other non-retail segments.

MAS is expected to announce the list of successful applicants in mid-2020. Subject to meeting certain requirements, such as putting in place risk management systems and processes, the digital banks are expected to start operations in mid-2021.

Lim Chung Chun, chairman and CEO of iFAST, says the company, via a consortium, is now keen to apply for a DWB licence instead of a DFB licence. This comes after he indicated in a late August interview with Money FM 89.3 that the company was aiming to apply for the DFB licence. Lim says the change in plans is to better align with the company's strategy.

"As we further study the business model that we are keen to pursue as a potential digital bank, we find that we will be able to do most of what we want to do using the DWB licence. It will therefore be more capital-efficient to use the DWB [licence] instead of the DFB [licence]," he tells *The Edge Singapore* in a recent interview.

## Second digital bank application

For now, Lim declines to disclose the identities of the company's partners in the consortium except to say that they are foreign companies. He adds that iFAST will submit its application "just before" the deadline, as the company is currently "preparing" the relevant paperwork.

If iFAST submits its application for the DWB licence, it will be the second time that the company has applied for a digital bank licence. In 2Q2018, iFAST announced that its wholly-owned subsidiary, iFAST Hong Kong, had submitted an application to the Hong Kong Monetary Authority (HKMA) for a virtual banking licence there.



**Lim: Sometimes, you need a new group of players to come in and challenge the status quo. That is why, increasingly, there are more countries heading in this direction of offering [digital-only bank] licences to non-traditional players.**

In 4Q2018, however, the company informed the market that iFAST HK had failed to be shortlisted to progress to the next phase of applications.

Despite the failure, iFAST had previously said it would continue to pursue the virtual bank licence application in Hong Kong. And that is still the case for the company. Lim says iFAST is still interested on getting the virtual banking licence in Hong Kong, as it will be complementary to the services offered by the company across different markets. He adds that iFAST may have another chance of obtaining the licence, as HKMA had stated in May that it would closely monitor the new virtual banks upon the commencement of their operations. This may imply that the Hong Kong regulator will be assessing the "overall situation" before deciding on issuing future batches of virtual banking licences, he says.

Lim notes that the failed application in Hong Kong has taught the company to try a different strategy to increase its chances of obtaining a local DWB licence. "One of the considerations that we have in the Singapore application is to put in the application as a consortium, instead of just on our own. We will therefore be tapping the different strengths of each consortium member. We will, however, still be taking the lead," says Lim.

So, why is iFAST keen to enter the digital

banking space? According to Lim, all financial transactions have to go through a bank. So, having a banking business will offer synergistic benefits to the company's wealth management platform in Asia. After all, the banking industry is the "foundation" of the broader financial industry.

"Before you manage your wealth through investments, you need a bank account. When clients pay money to us, they have to go through a bank," he says. "If we are able to play a role in the digital banking space, that can actually help our overall wealth management business quite substantially."

As at Sept 30, iFAST had assets under administration of \$9.44 billion. The company aims to grow its AUA to \$100 billion by end-2028. For Singapore, its key market currently, the company has set a 10-year target of \$35 billion. For 3QFY2019 ended Sept 30, the company reported a record net revenue of \$16.85 million, but earnings fell 5.5% y-o-y to \$2.5 million, owing to higher investments in IT capabilities.

Assuming iFAST is successful in applying for a DWB licence, Lim says the company will continue to position itself as a wealth management fintech player instead of a digital bank. "[The licence] is about how the players are able to use it to enhance their business model. Our core business will still be wealth management and it will continue

to be our key strength. The digital bank will expand our capabilities in financial services so that we can do better," he says.

## Disrupting the banks

Still, iFAST's entry into digital banking could offer the company new opportunities with first-mover advantage. According to Lim, the banking industry will undergo "major changes" in the near term. He predicts that many digital banks will emerge within the next three to five years. And this will be the trend not only in Singapore but also in the UK, Hong Kong and other countries, he says.

One reason for the emergence of digital banks is that the banking industry has long stagnated, making it ripe for disruption. Lim claims that the incumbent banks have grown lazy and complacent as a result of no real competition. In fact, the high barriers to entry into the banking industry as a result of regulation only discourages competition. "Traditionally, if you are not already a bank somewhere in the world, you can't be a bank," he says. "So, if you have an industry operating that way, [the players] will all think in a similar manner. There is a tendency to [have few innovations], as they are happy with the amount of deposits."

With the entry of digital banks, however, real innovation could follow, including easier and more efficient bank account opening processes and cross-border transactions. Lim recalls that when his daughter began her tertiary studies in the UK, he understood the pain of opening an overseas bank account. Apart from the usual paperwork, his daughter had to undergo an interview as part of the due diligence process. She also opened an account with the Singapore branch of the UK bank, to facilitate an easier transfer of money to her UK account. But the linking of both accounts was similarly a "difficult process", he recounts.

"Sometimes, you need a new group of players to come in and challenge the status quo. That is why, increasingly, there are more countries heading in this direction of offering [digital-only bank] licences to non-traditional players," Lim says.

## Improving IT capabilities

As a fintech player in the wealth management space, Lim says it is crucial for iFAST to have an in-house IT team. This is because outsourcing its IT functions will only slow down the company's pace of execution. And as technology and finance continue to converge, it is increasingly important to have sufficient IT resources. "Traditionally, financial services were an area in which people saw IT as playing more of a supporting role. But IT has to be increasingly seen as playing a core role for the fintech and financial services companies," he says.

In the light of that, iFAST has continually improved its IT capabilities by hiring more IT personnel. As at the time of writing, about one-third of the company's workforce of 600 comprised IT personnel. "In the last few years, we have consciously improved our overall capabilities in IT. We are at a stage where we have a good amount of resources. If we are successful in our application for the DWB licence, there will be further investment in this area," Lim says. ■

# SMBC's innovation efforts underpin wider, bigger goal of building trust

BY CHAN CHAO PEH

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The financial services industry, like others, is caught up with the need to innovate to stay ahead. Sumitomo Mitsui Banking Corp (SMBC), one of the largest banks in Japan, has invested in technology in its push to innovate, but it is careful not to equate technology with innovation. Innovation as an activity transcends technology.

"It is about how the whole process comes together, how we can think about new sets of services that can be offered in the marketplace," says Desmond Lee, SMBC's Head of IT, Planning Department, Asia-Pacific division, in an interview with *The Edge Singapore*.

As technology advances and processes improve, there is a growing trend of different parties coming together to form an ecosystem and offer a suite of services to customers. "This is the main driving force we are seeing in the industry, and the main driver in the way banks innovate as well," says Lee.

SMBC has been rather adventurous — going as far as to set up innovation centres in Silicon Valley, where the world's best minds in technology and business meet.

Masayuki Nagatomo, SMBC's Head of Asia Innovation Centre, points out that the bank, with its long history and leading position in the banking industry in Japan and Asia, is no stranger to the business of innovation.

However, there is always room to do more and better. "We still have a lot of space to be more effective in our operations by utilising IT and new technologies. We want to continually improve in these areas, by focusing on innovative activities, and explore better efficiency in business," says Nagatomo in the same interview.

## Working hand in hand

As one of the largest financial institutions in the world, SMBC clearly has plenty of in-house expertise in various fields. However, with the rapid changes in technology, the bank is aware that it can be more effective if it forms partnerships with external parties.

According to Nagatomo, SMBC has a core group of customers to whom it offers traditional commercial banking services. However, it is starting to work with new fintech start-ups as well, so that it can get new ideas and a fresh perspective and deliver a new service experience to those who are receptive.

According to Lee, working with new partners means certain changes in the way SMBC works internally. "The thought process and engineering processes are very different from traditional wholesale banks like ours. We need to obtain a much broader horizontal perspective, be it from the point of view of consumers or business partners, and define together the outcomes we are trying to achieve," he says.

In order for SMBC to work more efficiently and productively with external parties, the different departments of the bank have to reach across functions and collaborate. No longer can one business unit go to the IT department and ask for technological support that it thinks it needs to have.



**Nagatomo (left, with Lee): We still have a lot of space to be more effective in our operations by utilising IT and new technologies**

"Several business units, each providing different services, have to work together with IT and the bank's innovation centre, and collaborate with our partners, and we all work hand in hand," says Lee.

## Marco Polo

One prime example is the use of blockchain technology. On Oct 18, SMBC announced that it had completed a proof of concept deployment of a blockchain-based trade finance platform, dubbed Marco Polo — after the 13th-century Italian merchant and explorer. SMBC had collaborated with **Mitsui & Co**, one of the largest trading houses in Japan.

The platform was developed by international blockchain consortium R3 and TradeIX. The parties involved in the proof of concept include Mitsui's client, **Indorama Ventures**, and **Bangkok Bank**. Purchase orders, invoices, shipping and logistics tracking and so on were all updated and shared with all parties involved.

Lee adds that the use of new technologies such as blockchain is not merely aimed at achieving cost savings. Rather, the bigger aim is to enhance trust. "We don't really look at innovation from a dollar-and-cent perspective; we look at overall efficiency gain."

It is well known that the underlying process for trade financing is laborious. Stacks of documents have to be read, marked and passed manually from one partner to another, or from one department to another. By using distributed ledger technology to process trade financing, risks — of paperwork going missing, records being tampered with and data entered wrongly — can be better controlled, says Lee.

He adds that the biggest benefit is not that the bank can claim it is using a new technology. Rather, it is that trust among the players in the fragmented business and trading ecosystem can be enhanced. And in turn, they will help SMBC grow in a more sustainable manner over the long term.

"Trust from the customers and the business partners and trust within the ecosystem — this is of utmost importance. By using blockchain technology, trust can be built. And this is the main aim of our efforts in innovation. We want to continue to use technology to build and enhance trust," he says.

## Digital bank licence?

This past year, the Singapore financial services industry has been keyed up after industry regulator Monetary Authority of Singapore announced in August plans to issue licences for digital banks in 2020. A number of companies, including those in and outside the financial services industry, have indicated their interest in bidding for one of the licences.

Is SMBC keen to team up with other partners to bid for a licence too? The bank's current presence in Singapore is focused more on corporate banking. A digital bank licence is seen as a way for SMBC to make an inroad into the retail banking market segment. "We are still looking for opportunities in the Singapore market. We are still having discussions and in the exploration phase," says Nagatomo.

Lee adds that SMBC has a very strong retail footprint in its home market of Japan. There is plenty of expertise and experience SMBC can bring to the table if it tries to grow its presence in the retail space. Singapore, as the regional headquarters of SMBC, can also function as a springboard for the bank to develop the retail market in neighbouring countries. "We are looking at how we can tap that opportunity in the region," Lee says.

## Jenius in Indonesia

In any case, SMBC has made its mark in driving innovation in the region. SMBC has an Indonesian subsidiary, PT Bank BTPN, which was founded in 1958 to help handle the pensions of retired soldiers. Since then, it has grown and developed to serve the wider Indonesian consumer and commercial market. It has almost 700 branches across the country.

Nagatomo visited Jakarta recently and after interactions with his local colleagues, he came back feeling impressed and excited. The staff at Bank BTPN are young and enthusiastic adopters and users of new technologies.

On top of providing the usual savings accounts and lending services, Bank BTPN has introduced new digital-based services for the young and tech-savvy population. In 2016, the bank launched "Jenius", a digital banking service targeting the middle class. Jenius now serves more than one million customers all over Indonesia.

One interesting feature of Jenius, according to Lee and Nagatomo, is helping customers plan their finances in a more engaging way. The account holders, via the app, can set their own life goals, and deposit funds in dedicated accounts to fulfil them. Such goals include buying their home and financing their children's education.

The bank has made it easy and convenient for new customers to open accounts. They can use their phone camera to take their picture and send it to the bank to check as part of the digitalised "know-your-customer" process. "The whole intent behind Jenius is to make it seamless," says Lee.

With its overarching reach, SMBC, unsurprisingly, will not stop at just growing the Indonesian consumer banking market through Bank BTPN. It aims to grow the small and medium-sized enterprise business at the bank as well. Smaller customers, such as individual smallholders, will benefit from microfinancing. As they grow to become bigger companies, the bank will be there too. "We grow with our customers," says Lee. ■

# UOB's digital future lies in serving Asean

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**A**s the Monetary Authority of Singapore offers five new digital banking licences, two Singapore-headquartered banks already have operational digital banks. In March this year, United Overseas Bank launched TMRW, a digital-only, branchless bank in Thailand. TMRW is a completely different offering from UOB Mighty, the bank's digital banking app launched in 2015.

TMRW is revolutionary. Yet, UOB's digital journey was more evolution than revolution, concomitant with its regionalisation strategy, which started as far back as 1999.

In 2010, CEO Wee Ee Cheong realised that UOB needed a common platform to meld together the banks it had acquired in the previous decade, ranging from Rada-nasin Bank and Bank of Asia in Thailand to Bank Buana in Indonesia and Overseas Union Bank in Singapore. More recently, UOB has expanded in Vietnam. It was the first local bank to be granted a foreign-owned subsidiary bank licence by the State Bank of Vietnam in 2017.

In August this year, UOB opened its second branch in Hanoi. In 2014, UOB was awarded a foreign bank licence by the Central Bank of Myanmar; it opened a full branch in 2015, but is precluded from retail banking.

In further regionalisation initiatives, UOB established its UOB FDI Advisory Unit to provide companies looking to set up regional operations in Asean with customised banking consultancy services. UOB works with government agencies, business associations and professional service providers to provide these seamless and integrated services.

The integrated regional nature of FDI Advisory made it more imperative to have a common platform across the bank's 500 offices and branches.

Wee was well aware that, despite UOB's local presences in Malaysia, Thailand, Indonesia and Vietnam, it could never have the same level of dominance in those markets as it has in Singapore. As a result, central to UOB's digital strategy is the digital infrastructure for a regional bank.

"Having acquired all these banks, our CEO's vision was to take us from being a collection of banks to becoming one regional Asean bank," says Susan Hwee, head of group technology and operations at UOB. She started to build the bank's common core banking platform based on the premise of a regional bank more than 10 years ago, realising it had to be modular and scaleable, with products and processes built around the needs of the customer. It is this platform that helped realise Wee's vision of building a seamless Asean bank.

In turn, the common platform helped in serving the expanding regional needs of its customers — both wholesale and retail. In the first six months of the year, UOB's wholesale banking income rose 8% y-o-y to \$3.1 billion, underpinned by 9% y-o-y growth in non-Singapore income, 8% y-o-y growth in non-real estate and hospitality income, and 12% y-o-y growth in non-loan income. On Nov 1, it announced in its 3QFY2019 results that around 40% of operating profit of \$1.3 billion was from the region.



**Hwee: The young in Asean are a huge market and we want to be able to serve a new generation of customers**

On UOB's Corporate Day in May this year, it announced a list of goals, including increasing its revenue mix outside of Singapore to around 50%. Even then, UOB is cognisant of the risks of expansion. In an earlier interview, UOB chief financial officer Lee Wai Fai says that, while its Asean footprint will be most important in its growth strategy, the bank needs to control the expansion to maintain its AA rating among the ratings agencies, which is why UOB focuses on improving risk management.

## Digital engine

A digital engine, data and security are the three "themes" overlaid on top of the common core banking platform, Hwee explains.

"One of the key things that we then looked at was how to create products and solutions for corporates interested in expanding in the region and to tap intra-Asian investment, capital and wealth flows."

To do this, UOB spent \$500 million on infrastructure, starting from a common banking system and overlaying it with the same risk, regulatory framework and financial language across its five geographies. "It took several years of regulatory approvals to be standardised and centralised, so we can have economies of scale," Hwee says of the exercise that was completed in 2014.

New and additional operational and security processes, fintechs and new technologies can be added to UOB's common platform across the region quickly. In 2015, UOB launched UOB Mighty, an all-in-one digital banking app that can do all necessary banking functions for UOB's consumer banking customers. Retail customers can buy shares and gold, place fixed deposits, apply for insurance products, make payments and so on. Other products followed, such as Business Internet Banking Plus (BIBPlus), the digital banking app for UOB's medium-sized

companies and large corporates. In 2018, as UOB was readying for TMRW's launch in Thailand, it added artificial intelligence (AI) and machine learning solutions onto the standardised platform to enable the digital bank to process and analyse data to personalise the banking experience for each TMRW customer and keeping its common equity Tier-One capital ratio at 13.7% (as at Sept 30), way above the regulatory minimum.

## Making data work

Data management is a large topic in itself. "Just to make data work requires enormous management and dedication," Hwee says. In the beginning — what she calls the first generation of data management — managing data was about getting all the business segments within the bank to share their data to facilitate performance reporting, customer information and risk.

An important use of data management is to enable the banking group to be Basel-compliant. The basic Basel rules in 2004 were straightforward. But, then, Basel III and Basel IV required an advanced internal ratings-based (IRB) approach, so UOB had to build a global data warehouse leveraging the standardised core banking systems across the region.

Thus, UOB is able to compute the difference based on regulations in different countries such as foundation IRB for Indonesia and advanced IRB for Singapore. "As we expand outside of Singapore, having the consistent risk lens of Singapore's standard of risk provides a level of comfort and efficiency that is unparalleled," Hwee says.

## Collaboration with fintechs

UOB has collaborated with fintechs — either by taking stake in them, financing or mentorship — to transform the use of its data through TMRW. The bank is also

using lessons from TMRW to improve UOB Mighty.

TMRW uses a data categorisation engine by Icelandic fintech, Meniga, to simplify complex and multiple transaction datasets into relevant data for its customers. Meniga's fintech solution is able to sort and categorise large volumes of transaction data. This means customers can match their purchases easily and organise the way in which they manage their finances in real-time, so that it is always personal to them and relevant to their own needs.

UOB has taken a stake in and collaborated with an Israeli fintech, Personetics, which enables TMRW to provide personalised insights based on each customer's different transaction patterns.

The same cognitive analytics engine is also used to drive Mighty Insights, a new service on UOB Mighty that guides customers to stay on top of their financial commitments and goals and to keep track of their expenses.

For credit and risk analysis, UOB is collaborating with Avatec.ai (Avatec), which uses non-traditional data and traditionally available information to determine creditworthiness of an organisation or individual. Avatec was formed in 2018 as a joint venture between UOB and Beijing-based PINTEC Technology Holdings. PINTEC's flagship product is Dumiao, a digital lending solution that uses third-party credit information and e-commerce transactions to generate credit decisions based on AI and machine learning.

With Avatec, banks can now access about 10 times the traditional number of data points used in credit assessments. This means that companies can extend loans to a broader base of customers and at lower loss rates.

Tookitaki, a Singapore-based fintech, and UOB have co-created a machine learning solution that enables its compliance team to conduct deeper and broader analyses as part of its anti-money laundering efforts.

## TMRW for Asean's young

TMRW is different from other digital banking and digital bank offerings in Asia, as its business model is focused primarily on deepening customer engagement and growing customer advocates.

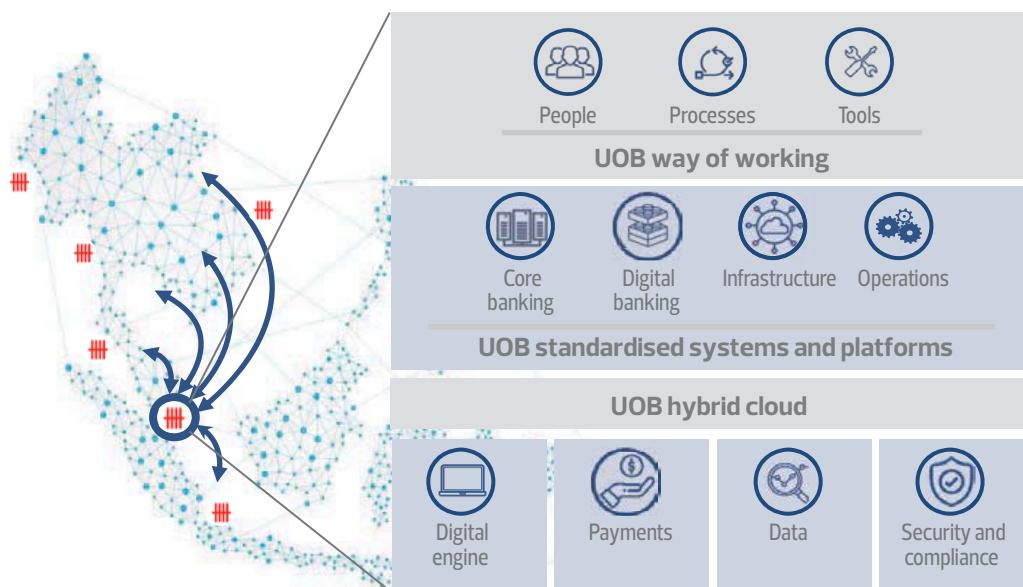
Still, was there a need to establish a standalone digital bank, whose delivery is going to be digital-only, with no other touch points, when UOB Mighty was already available in its Asean markets? Hwee says yes.

There is a difference between digital banking and a standalone digital bank. "The young do things differently. Digital banking must serve three generations," Hwee says. UOB's traditional customer base is usually older and wealthier. "Digital banking is omnichannel, which means you serve customers face to face or digitally. It's their choice," she adds. UOB Mighty — as with all banking apps — has an extensive menu.

Out of Asean's population of 642.1 million, 50.4% are aged between 20 and 54, according to Aseanstats. At least 94% of Asean's population is literate. Yet, the World Bank estimates that 80% of people in Indonesia, the Philippines, Myanmar and

## Chart 1

## UOB's common banking platform



Vietnam, and 30% in Malaysia and Thailand, are unbanked. UOB has an increasing presence in five of these six markets, helped by digitalisation.

"The young in Asean are a huge market and we want to be able to serve a new generation of customers," Hwee says.

TMRW, which took 14 months to develop, is targeted at young professionals. "We decided there is a need to serve young professionals who are mobile-first. There is a lot [we can learn] from a mobile-first generation, and we want to go somewhere that is larger than Singapore," Hwee says.

A digital bank is a mono-channel strategy in which the bank uses data to engage customers as its primary goal and business model. Interestingly, unlike an omnichannel digital banking app that allows customers to bank on a phone, TMRW has no menu.

TMRW is targeted at millennials (those born between 1980 and 1994) and Generation Z (those born in and after 1995). As a digital bank, TMRW is about engagement and not offering higher-yielding deposit accounts and cheap loans.

"We actually spent a lot of time understanding the regulatory framework and the population," Hwee says. TMRW cannot just offer high interest rates [for deposits]. Our measurement is that TMRW's accounts must be properly funded. That means when customers open an account, they must deposit money and not just open accounts for fun with zero balances."

TMRW uses the ATGIE model — acquire customers using AI, transact with a fast

digital service, generate data, gain insights with the help of personetics, and create an engagement lab to experiment and learn about engagement.

Net promoter scores, advocates and engagement metrics will be closely monitored. Advocates are customers who have used TMRW and recommend it to their friends. In TMRW's model, NPS reflects customers' sentiment and predicts business growth. The rationale behind a high NPS is that, once customers are happy with TMRW, they will refer the bank to friends. TMRW's target is to have 15% of advocates at the end of the first year.

#### Most difficult market first

According to a report titled "The Asean Fin-tech Ecosystem" by Judge Business School, Thailand is the most developed technology market after Singapore. As part of the country's broader Smart Cities and Thailand 4.0 Initiative, the government is aggressively pushing for the development of the fintech ecosystem to transform the country into a fintech hub for the Asean region, the report says.

Considered one of the more advanced countries in the Asean region after Singapore, Thailand enjoys the second-highest GDP per capita in the region, has a high literacy rate, has more than half of the population living in urban areas and whose median age is 40. The country also possesses the critical digital infrastructure needed for the development of fintech firms; there are 92.3 million mobile phone subscriptions,

or a 133% penetration rate, and 57 million internet users, or a 82% penetration rate," the report points out.

Hwee concurs: "The population is digitally very savvy and Thai banks are digitally creative. So, it's a highly competitive market." She is well aware that, as a traditional bank with 155 branches, UOB cannot compete with the local Thai banks. "It's a market we are committed to and in which we have a growing consumer franchise," she says. "If TMRW works in Thailand, we can bring it to a second market within Asean." (CEO Wee has said the next market will be a large market in Asean, which can mean either Indonesia or Vietnam.)

UOB did a lot of groundwork within the Thai regulatory framework of onboarding customers digitally. Thais have digital credentials on their identity cards, and TMRW accounts can be opened in seconds.

According to UOB executives, TMRW is not about launching something that anyone can copy; rather, it is about learning from data to engage customers. Based on a survey done by UOB for its launch of TMRW, it found that 60% of Asean's population is below 35, and thus are millennials. TMRW can remind millennials to pay their bills, set aside monies for savings plans at the end of a month. TMRW can also prompt its users with special dining, fitness or other offers depending on their lifestyle. At least 52% of millennials own a smartphone, and they want to bank differently — millennials want a friend, not a bank.

The absence of a fixed menu leaves the

#### Asean's promise for digital financial services

According to a report titled e-economy SEA 2019, co-authored by Google and Temasek Holdings, of the nearly 400 million adults in Southeast Asia, only 104 million are fully "banked" and enjoy full access to financial services. Another 98 million are "underbanked", with a bank account but insufficient access to credit, investment and insurance, while 198 million remain "unbanked" and do not own a bank account. Millions of small and medium-sized enterprises also face large funding gaps, the report says.

Digital financial services have the potential to solve many of these challenges. They should be able to lower costs, increase access through the mobile phone, improve convenience and deliver inclusive financial services in parts of Asean that have no physical bank branches.

Financial inclusion is important because it will lead to economic growth, and fulfil Asean's promise of a large, young middle class that will need more digital financial services.

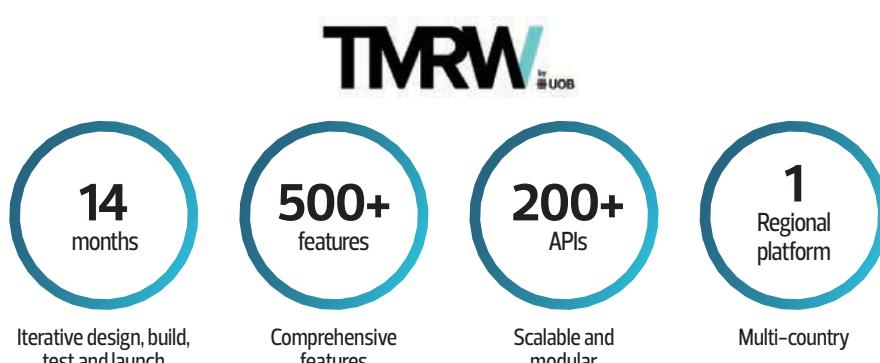
Five financial services are likely to grow in double digits, e-economy SEA 2019 says. These are payments, remittance, lending, investment and insurance. Digital payments are expected to cross US\$1 trillion (\$1.4 trillion) by 2025, becoming the payment method for nearly one in two dollars spent in the region. E-wallets, which are popular in emerging Asean, are likely to grow fivefold to US\$114 billion by 2025. Digital lending, on track for a US\$110 billion loan book by 2025, will be the largest volume contributor, underpinned by consumer and small business lending.

bank with the ability to experiment, such as harnessing data to deepen its understanding of each customer so that it can anticipate their needs and serve them accordingly. Whether a customer needs a savings plan or a loan depends on his or her transaction behaviour.

"Barriers to entry for technology are very low. Beyond technology, we have to understand banking and regulations. Banking is about trust, and making money in banking is about risk management; and you have to be profitable to sustain a return to shareholders, which is very important," Hwee says. ■

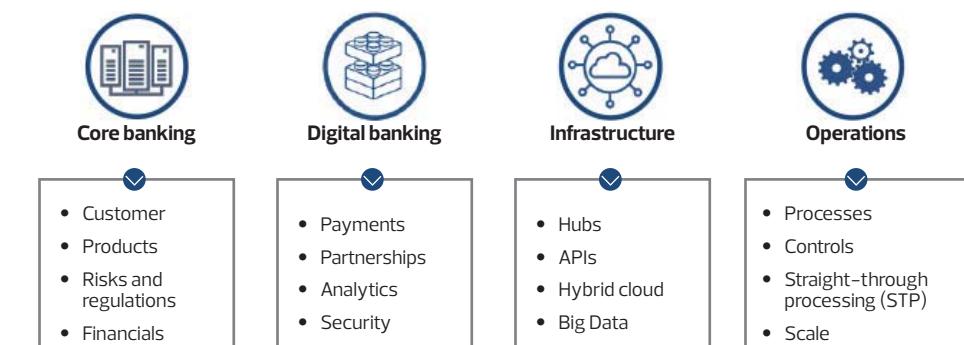
## Chart 2

## TMRW's flexibility



## Chart 3

#### Standardised systems and processes enable platform's scalability



BY GOOLA WARDEN

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The increasing adoption of fintech by Singapore financial institutions has placed them at the forefront of financial innovation and gained them new customers outside the city state. With fintech, Singapore's status as a hub — it is a transhipment and air hub as well as a financial centre — is enhanced. The Lion City aspires to be a leading fintech hub in Asia. According to consultants and universities, Singapore is among the top 10 global fintech hubs and, in some rankings, it is No 1.

The fourth edition of the Singapore FinTech Festival 2019 is likely to cement the city state's hub standing by facilitating deal flows, sustainable products and financial inclusion. Last year, SFF2018 was the largest festival of its kind globally, attracting more than 45,000 participants and visitors from 130 countries. This year, SFF and the Singapore Week of Innovation and Technology will come together as SFFxSWITCH and showcase innovative technologies across five key sectors.

In a report earlier this year, KPMG refers to Paul Romer's endogenous growth theory. The winner of the 2018 Nobel Prize for economics postulates that investments in technological innovation, the knowledge sector and human capital are the drivers of long-term economic growth. With an increase in the number of people working in the knowledge sector, there will be an increase in new ideas. This in turn raises efficiency and productivity. When incremental annual economic growth compounds over decades, the effect is transformational, KPMG notes.

Initially, SFF's aim was to bring together financial institutions and fintech players to collaborate, because of the opportunities for them to work together, says Jacqueline Loh, deputy managing director of the Monetary Authority of Singapore. Investors have an opportunity to gain and share knowledge on emerging technologies in the fintech space and discuss partnerships and investments with fintech players.

The opportunities and multiplier effect from the previous SFFs have benefited the financial services sector and the economy as a whole. Fintech boosts innovation, and Singapore has been ranked sixth globally in Bloomberg's Innovation Index. The Institute of Financial Services Zug (IFZ) at the Lucerne University of Applied Sciences (HSLU) evaluates the performance of fintech ecosystem centres worldwide and, earlier this year, it ranked Singapore as the No 1 fintech hub, ahead of Zurich, Geneva, London, Amsterdam and Toronto.

Singapore continues to take steps to nurture fintechs, or fintech start-ups, by encouraging investments and collaboration. SFF also provides a platform for investors and start-ups that need capital to meet and discuss possibilities. Facilitating fintech deals is now part and parcel of Singapore's role as a regional wealth and asset management centre.

In a survey by Accenture, it found that the total value of fintech deals in the nine months ended Sept 30 in Singapore jumped 69% y-o-y, from US\$435 million to US\$735 million (\$996.6 million), exceeding the US\$642 million raised in 2018. Accenture points out that deal sizes are getting larger even as the number of fintech deals fell 29% in those nine months.

In this year's SFF, Singapore's fintech-related assets under management (AUM) should continue to rise, following the introduction of Deal Friday, which is an expansion of MATCH (Meet Asean's Talents and Champions), introduced in SFF2018,



# Fintech hub poised for next stage

**SFFxSWITCH to cement Singapore's standing as global fintech hub as deal sizes and sustainable finance increase and new digital banks emerge**

and the Investor Summit in SFF2017. During Deal Fridays, an event held every Friday, start-ups and the investment community will have the opportunity to connect and explore collaborations.

## More deals expected

The Investor Summit was introduced in SFF2017 with the aim of matching promising young Asean enterprises with global private equity (PE) and venture capital (VC) managers.

"Last year, we had MATCH, where we brought together promising young Asean enterprises and global PE and VC managers and generated more than 17,000 matches between 380 investors and 840 potential enterprises," Loh says.

Since June, MAS has been collaborating with Enterprise Singapore to organise Deal Fridays. "This year, we introduced a new Deal Friday component — a partnership between Enterprise Singapore and MAS. We have curated a list of promising growth-stage Asean enterprises and brought them together with investors through weekly matchmaking events. Since its launch this year, we have seen more than 400 potential companies and 400 investors participate in Deal Friday. We are looking forward to positive news on successful matches between investors and these companies," Loh says.

SFF has also provided an important launch pad for new initiatives. The API Exchange (APIX) was launched in SFF2018 to bring together financial institutions and fintech players. Since then, 140 fintech firms and 60 financial institutions from five countries have signed up on APIX (see "API Exchange not a 'success' yet, but will enhance fintech collaboration to solve financial inclusion problem" on Page S14).

In August, MAS and the Infocomm Media Development Authority launched Business Sans Borders to accelerate the testing and delivery of new services for small and medium-sized enterprises. BSB is a hybrid global meta-hub for business and digital services that enhances domestic and international trade opportunities for SMEs and interoperability between SME ecosystems, among others.

Elsewhere, the local banks have tied up with fintechs to provide better services for consumers and to meet their own anti-money laundering and know-your-client objectives. For instance, **Oversea-Chinese Banking Corp** has collaborated with Cline, an artificial intelligence start-up to power voice recognition. **United Overseas Bank** has taken a stake in and collaborated with Personetics, an AI platform that helps it to personalise data, and with another fintech, Meniga, to track and sort large volumes of

transaction data (see "UOB's digital future lies in serving Asean" on Pages S6 and S7).

## Fintech's role in asset management

PE and VC are chasing fintechs with innovative solutions, resulting in a growth in Singapore's AUM in 2018.

MAS's 2018 Singapore Asset Management Survey shows that AUM in 2018 increased 5.4% y-o-y to \$3.4 trillion, or US\$2.5 trillion. Singapore's AUM growth was helped by the alternatives sector, which saw AUM rise 15% y-o-y to \$646 billion (see Chart 1). In particular, PE, VC and real estate experienced strong inflows and continued valuation gains as investors increased exposure to private assets for return enhancement and portfolio diversification. Singapore, as a leading private-market hub, serves as an attractive location for investment managers and an increasing number of global public investors, including sovereign wealth funds and pension funds.

"We have 240 PE and VC managers, both globally and regionally, based here in Singapore," Loh says. "We have shared our vision in the Financial Services Industry Transformation Map, which is to be a leading global financial centre, connecting global markets and supporting Asia's development. One key thrust is to support enterprise financing, leveraging our deep

and broad asset management community in Singapore, including those in PE and VC. Deal Friday reflects our position as a natural gateway to Asean for investors globally."

As part of the Financial Services Industry Transformation Map, MAS has revised regulations to facilitate the activities of venture capitalists and give finance companies greater scope to support SMEs. MAS is also working with the industry on initiatives to support fintechs at various stages of the financing lifecycle and to profile Asean VC and PE activity and the landscape through collaborative research. At the exit stage, MAS is looking to set up private-market funding platforms to help growth companies access a wider network of investors.

VC and PE managers are an essential component of the enterprise financing ecosystem, specifically by providing smart capital. More Asian companies are expanding beyond their borders, which has led to a surge in capital raising in Asia and greater interest to invest in Asian companies.

Besides providing capital, VC and PE managers contribute operational and business expertise to their portfolio companies. Such expertise could improve the companies' operational efficiencies and unlock new markets for the companies' products and services.

Singapore's Financial Services Industry Transformation Map outlines growth strategies by business lines, programmes for upgrading skills, and an agenda for continuous innovation and technology adoption, of which enterprise financing is a component.

PE and VC asset managers would be keen to finance Asean enterprises. In 2018, Singapore's PE AUM grew 14% y-o-y to \$213 billion, and VC growth surged 40% y-o-y to \$6 billion (see Chart 2).

Deal value in Asean also experienced a notable increase, up 38% over the five-year average to reach US\$13 billion, while deal activity rose in number to 76, up 18% over the five-year average. This was propelled by mega deals such as those by Grab, Gojek and Tokopedia. Consultancy Bain & Co expects the region's total deal value to reach US\$70 billion with the birth of at least 10 new unicorns by 2024.

### Fintech a force for good

Last year, SFF focused on financial inclusion across Asean to promote economic growth and improve living standards. This year's SFF has sustainability as a key theme.

"Fintech can support sustainability by enabling green finance through utilising sensors to collect and digitise environmental data, which becomes the foundation to build different use cases. So, for example, financial institutions can use such digitised environmental data to enhance their risk capabilities and their reporting on environmental impact, as well as use this digitised information to introduce environmentally friendly investment products for customers," Loh says.

There are plans to include information and data on the use of water, fertiliser and pesticide for various commodities that are traded. This will improve the availability of sustainability data in this area.

"Another use case is leveraging big data to measure the sustainability of companies. One example is Arabesque, which started off as an asset management company and a user of ESG big data. Arabesque provides an innovative tool that allows investors to monitor the sustainability efforts and performance of global companies. For investors who want to invest in companies based on their ESG [environmental, social

and governance] commitments, the challenge is, how do we know how well these companies are actually meeting those expectations? Arabesque attempts to provide a solution there," Loh explains.

Over the past few years, banks have been piloting various projects in relation to blockchain, the same technology that produced bitcoin. Increasingly, blockchain is being used in various processes because of the ability of a blockchain ledger to remain unchanged and for a blockchain to remain unaltered and indelible. For sustainable investments, blockchain is proving a useful technology.

"Another example is the application of blockchain to promote traceability in supply chains. DBS Bank, for example, is working with a company called Agrocorp, which is developing a trade platform that connects 4,500 Australian farmers to supermarkets and restaurants. We understand the working capital cycle has been shortened by some 20 days, and the more you can shorten the working capital cycle, the more savings there are to different players in the supply chain," Loh says.

### Project Ubin's uses

For the past three years, MAS, the Bank of Canada and partner banks have been taking part in Project Ubin, a collaborative effort to explore the use of Distributed Ledger Technology for the clearance and settlement of payments and securities. Blockchain is a form of DLT.

"Blockchain is easier understood as a technology platform, with applications that are developed on this platform that service different use cases. On the blockchain platform, Project Ubin has brought the industry together to resolve technical issues such as scalability, performance and finality of transactions," Loh explains.

In May, the Bank of Canada and MAS announced that they had conducted a successful experiment on cross-border and cross-currency payments using central bank digital currencies. This is the first such trial between two central banks, and has great potential to increase efficiencies and reduce risks for cross-border payments, the banks said in the announcement.

Cross-border payments are often slow and costly. They rely on a correspondent banking network that is subject to counterparty risk, inefficient liquidity management and cumbersome reconciliation. The Bank of Canada and MAS have been collaborating on the use of DLT and central bank digital currencies to make the cross-border payment process cheaper, faster and safer.

"Some of the technical solutions developed in the course of Project Ubin have been incorporated into other enterprise blockchain platforms and used by financial institutions as well as other companies for a variety of use cases, such as in trade and trade finance as well as supply chain," Loh says.

In February, JPMorgan announced the creation of stablecoin, a digital coin representing the US dollar held in designated accounts at JPMorgan. When a client sends money to another over the blockchain, JPM coins are transferred and instantaneously redeemed for the equivalent amount of US dollars, reducing the typical settlement time. One stablecoin is equivalent to US\$1. The stablecoin is seen to reduce clients' counterparty and settlement risk, decreasing capital requirements and enabling instant value transfer.

"Specific to blockchain applications in payments, JPMorgan's stablecoin, which is a digital coin designed to make instantaneous payments using blockchain technology,

was built by the same team at JPMorgan that worked on Project Ubin," Loh says.

### In the sandbox

Fintechs are experimenting with blockchain for various purposes such as crowdfunding and bond trading, and two of these startups — iSTOX and BondValue — are in the MAS regulatory sandbox. (A regulatory sandbox allows financial institutions and fintechs to test innovative financial products and services in the market.)

iSTOX is using blockchain technology to provide a securities-based crowdfunding platform that targets fundraising start-ups as well as fund management companies. It also enables investors to access the secondary market for private securities over the blockchain-based platform.

"iSTOX is interesting from a private-market perspective, because in this space, transparency and liquidity are typically not high. iSTOX plans to address these challenges through a blockchain-based platform, which we hope will enhance transparency and liquidity for companies seeking funding as well as investors looking for opportunities in the secondary market," Loh says.

In August, MAS launched Sandbox Express for faster testing of financial products and services. "BondValue is the first company to enter our Sandbox Express. It aims to improve investors' access to bonds by fractionalising them through a blockchain-based platform," Loh says.

### New neo bank licences

The most exciting announcement from MAS this year is the plan to award five digital bank licences, comprising two digital full bank licences and three digital wholesale bank licences.

Chart 1

### Alternative AUM

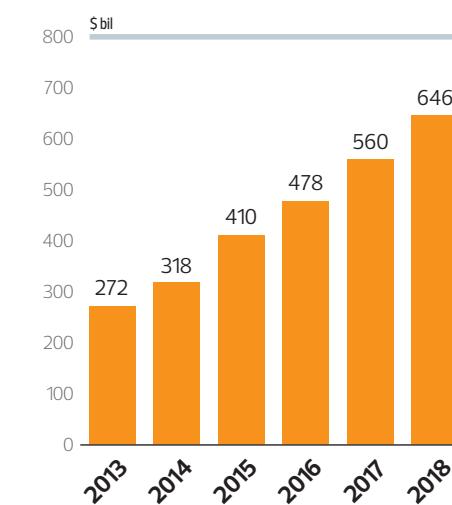
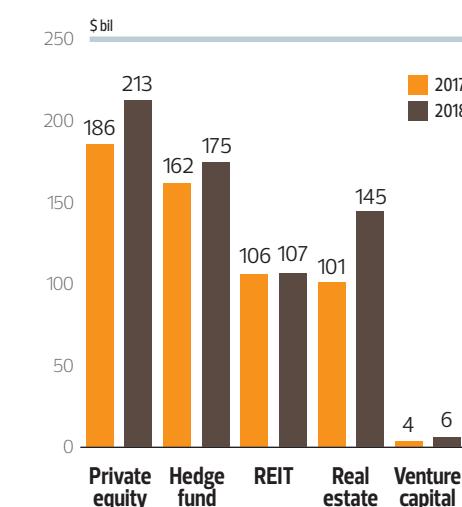


Chart 2

### Alternative sectors



CHARTS: MONETARY AUTHORITY OF SINGAPORE

Why digital banks? MAS has been working closely with the financial services sector and encouraging the greater use of technology and innovation in the banking industry. Banks themselves have been transforming their business models for a digital future and are providing a lot more digitalised services to meet changing customer needs.

As a fintech hub, the natural progression for Singapore would be to have more digital banks in the ecosystem. MAS has articulated that the new digital banks can comprise partners, including banks, but one applicant must include a firm that can bring deployable technological capabilities to the digital bank. Some examples include firms engaged in developing fintech, advanced data analytics, machine learning AI as well as those that operate digital platforms and provide telecommunications services. "Technologies such as AI are important, as they allow for new business models and innovative ways of providing banking services," Loh says.

"We asked ourselves: Can we further close the financing gaps for SMEs or expand financial inclusion for certain segments of the economy, and how can innovation in finance bring about a better outcome for consumers? These digital challengers [and banks] can introduce innovative business models that can add diversity as well as choice to our banking system."

What could the new digital banks bring to the table? "We can expect [digital banks] to be more nimble, leveraging the use of technology, and they are likely to have a lower cost structure than traditional banks. [With] new ways of delivering these needs and possibly lower cost structures, we could see lower-cost alternatives for consumers. For example, digital banks could offer deposit accounts without minimum deposit amounts or fall-below fees," Loh suggests.

With access to more wide-ranging data, digital banks could also adopt different credit risk assessment models for their customer base, which would allow them to lend to underserved segments of the economy such as the young and micro enterprises. By providing a greater suite of digital banking services, they may also benefit their SME client base by enhancing these clients' digitalisation.

"Singapore's domestic banking market is not large. We hope that digital banks anchored in Singapore can also serve Asean's needs. Financial inclusion is a real and pressing need in Asean; according to the World Bank, some 170 million in Asean with mobile phones are unbanked," Loh says.

Unlike in other jurisdictions where neo banks have mushroomed, such as Brazil, the UK and Europe, MAS has clearly stated criteria for digital banks, including capital and liquidity requirements that comply with Basel III regulations. MAS has also asked for business models to show a path to profitability.

"[While MAS is keen to promote greater competition in the financial sector,] financial stability remains our foremost consideration and we will not allow value-destructive business practices and unsustainable competitive behaviours that are detrimental to long-term financial stability," Loh emphasises.

Even as Singapore attracts new neo banks to be based here, the local banks have set up digital banks to serve digital natives outside the city state. Fintech has enabled them to do that, and the city state's reputation as a fintech hub is given a boost as they employ new technologies to serve customers better. ■

# Efforts to make green financing mainstream more urgent as climate concerns escalate

BY PAULINE WONG

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**A**s the world faces unprecedented climate change, it has never been more evident that urgent action must be taken. Monetary Authority of Singapore (MAS) assistant managing director (development and international) Benny Chey is under no illusion as to the cost of failure to do so.

"The consequences of inaction are severe. Singapore, specifically, is vulnerable to rising sea levels and more extreme weather patterns. Climate change is an existential threat for us, and combating climate change is now a national and regional security issue," he stresses. Studies have shown that by 2050, several cities in the world will experience unprecedented climate shifts, Singapore being one of them.

It is no surprise, then, that green financing has become a crucial element in the conversation about climate change and arresting it before it is too late. In fact, in his National Day Rally 2019 speech, Prime Minister Lee Hsien Loong said \$100 billion or more may be needed in the long term to protect Singapore against rising sea levels.

Furthermore, it is estimated that over US\$7 trillion (\$9.5 trillion) a year is needed to fulfill the United Nation's Sustainable Development Goals, of which climate is one of the 17 goals.

Green financing is loosely defined by the United Nations as actions or activities taken to increase the level of financial flows (banking, micro-credit, insurance and investment) from the public, private and not-for-profit sectors to sustainable development priorities.

Unfortunately, says Chey, green financing is far from being mainstream, as it faces several hurdles.

"[First,] how do we define what is green and what is not? How do we measure the activities [that] are reported to qualify them as green? And when companies disclose their activities, what is the quality of the disclosure? The overall concern is the lack of consistent data sets and the potential information asymmetry," he explains.

There are efforts to streamline the definition of green financing. They include the recently released 404-page report by the European Commission that provides guidelines on what qualifies as environmentally friendly investment. Their purpose is to generate more private investments or redirect existing funds, and help reach emissions targets.

Chey says, however, that there has yet to be a globally agreed definition for green financing. In addition, even with the growing body of scientific evidence and the ability to process huge amounts of data on climate change, one cannot underestimate the challenge of understanding what it all means in practice, says Chey.

"Even with the availability of data — with big data and technology today — what are the actionable insights? And how is it taking into account policy interactions? I think this is one of the reasons why finance has not stepped more forcefully into the picture."

He says another reason is the "principal agent issue", where there is a separation between the principal and the agent (that



Chey: The Singapore FinTech Festival is a powerful platform to plug the sustainability agenda into the technology, innovation and finance ecosystem

is, the person acting on the principal's behalf). The theory is if you separate the two, the decisions made might not be the same as those made if principal and agent were the same person.

"One of the manifestations of this separation is the acknowledgement of the problem by the agent, but it is not his mandate to resolve it. If the principal and agent are the same, the responsibility will be taken fully by the person," he explains. "What it means is, for a bond issuer, the mandate is to fund as cheaply and reliably as possible on behalf of a company. For an investor acting on behalf of the asset owner, the focus is on returns, and he may not opt for green assets if it does not generate at least equivalent financial returns." This then leads to a mismatch in purpose and outcome, where neither party is responsible for the mandate to take on green financing.

He adds that there is also a lack of confidence in investing in sustainable activities, owing to a lack of data as well as a perception that there is an "early mover disadvantage".

Chey says there is a wait-and-see attitude among companies, at least until it is clear to them what the risks are. There are also friction points for issuers getting into the green bond market. Among other things, they have to incur additional and explicit costs, so there is an issue of being penalised, so to speak, for doing good or going green, he adds.

"On the demand side, too, there is some

hesitation. Is there evidence that investing in green helps? Is it within my mandate, is the regulator telling me to do something? So in the absence of demand, there may be inertia," he points out.

MAS has stepped in to address some of the obstacles. "For example, in the areas of supervision and lending practices, MAS has included bank sustainability practices in our supervisory assessment role, [to] strengthen [the banks'] efforts to integrate sustainability into their business models and risk management functions, in addition to discussions about best practices. These are best practices, not regulations, but doing so helps to move the financial institutions into a space where the data and knowledge gaps can be narrowed."

In fact, adds Chey, The Association of Banks in Singapore in 2015 issued guidelines on responsible financing. The objective was to set minimum standards on responsible financing practices to be integrated into the banks' business models and risk management functions.

In 2017, MAS issued a Guidance on Own-risk Self Assessment for insurance companies. It provides guidelines for insurance companies to consider environmental risks and incorporate climate variability scenarios when they run stress tests on their portfolios, further closing the knowledge gap. In terms of disclosure, Chey says, despite the Singapore Exchange's compulsory sustainability disclosures for listed companies, there is still a long way to go.

He says to this end, the upcoming Singapore FinTech Festival is a powerful platform to plug the sustainability agenda into the technology, innovation and finance ecosystem, bringing them together and harnessing their collective capabilities.

"I think this coming together will catalyse innovative solutions and really accelerate [green financing] forward for Singapore and the region," he adds.

Not only that, MAS is building up industry awareness, capacity and expertise in green financing by working with multiple partners, including the International Finance Corporation and World Wide Fund for Nature.

Chey believes the problem must be tackled holistically. "We incentivise — everyone loves that — but we also signal to everyone in the industry the kinds of activities we do not want or discourage."

He points out, however, that this top-down approach will ultimately be overtaken by an even more powerful driver of change — the bottom-up demand from a new generation of investors for green activities and assets that will push the reallocation of resources into sustainable activities.

"It's coming. In terms of the new generation, the demand has been expressed much more in the private market space thus far. The demand for green and sustainable projects, and impact investment is growing. It is only a matter of time that these bottom-up-driven forces drive the choices and decisions financial institutions make." ■

# The time for a sustainable future is now; private sector must play its part, says Refinitiv

BY PAULINE WONG

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It has been four years since the United Nations (UN) Sustainable Development Goals (SDGs) were established as the blueprint for achieving a better and more sustainable future for the world, encompassing 17 goals on addressing poverty, inequality, climate, environmental degradation, prosperity, and peace and justice.

Yet, as it stands today, no country is on track to achieving them by the 2030 deadline.

When Julia Walker, head of market development for Asia-Pacific at data analytics firm Refinitiv, attended the UN General Assembly and Climate Week NYC last month, there was definitely a sense of urgency in the air, and it bordered on panic, she says.

"If we don't achieve [the SDGs], we leave millions to die, because it's serious. We need to go into the great acceleration, and that means the private sector has to step up," she tells *The Edge Singapore*.

Walker, co-author of the book *Sustainable Development Goals: Harnessing Business to Achieve the SDGs through Finance, Technology and Law Reform*, is not one to mince words. She is quite clear that, for the SDGs to succeed, a step change is needed. Information gleaned from Refinitiv's vast data pool shows that companies are not stepping up enough, the world no longer has the luxury of time, and nowhere in the world is this agenda for change more urgent than in Asia.

The world's fastest-growing region, Asia is becoming its greatest polluter as well in its pursuit of growth. In fact, in the coming decade, the region will be the growth engine of the world, with two-thirds of the global middle-class living in Asia by 2030.

Drawing on Refinitiv's Environment, Social and Governance (ESG) database, which covers 70% of global market cap, a report released by the firm called "Financing a Sustainable Future in Asia" looks at the performance of the largest companies across Asia and clearly demonstrates the link between sustainability and financing.

"We can't achieve it [the SDGs] without the private sector. We need companies and businesses to do their part. And it comes down to: How do we do it? Financing. Money is the key," says Walker.

The growth of sustainable financing has been incredible, with more than US\$86.3 trillion (\$118.4 trillion) in investable assets committed to the Principles of Responsible Investing, says Walker. "We need US\$7 trillion a year to achieve the SDGs. So, if there's US\$86.3 trillion in assets, there's enough money. It just needs to be channelled in the right direction." Already, there is substantial growth in the issuance of green bonds. In Asia-Pacific and Japan, a record high of US\$21.9 billion was raised in green bonds, up 29.6% from a year ago. According to the report, Southeast Asia also gained momentum, with US\$3.3 billion worth of proceeds in 1H2019, up 36.1% y-o-y.

## Looking beneath the surface of sustainable finance

Yet, increasingly, it is not enough to look at the financials alone. "Sustainable financing means bringing in factors other than fi-



**Companies in Asia that set CO2 emission targets in 2013 achieved an 8% reduction in their collective emissions over a five-year period. Those that did not have targets reported a 226% increase.**

nancial, [such as] environmental, social and governance," says Walker. "From what we've seen in the past, a lot of the time, there's been corporate governance issues, and we're getting through them now. So, people now know that you can't just look at financials; you really need to look at what's under the bonnet."

Indeed, a closer look at many of Asia's largest companies shows that it is what lies under the surface that tells the greater story. The Refinitiv report found that, for many of Asia's largest companies, there is still a gap between intention and action, with many companies implementing policy change without establishing targets.

For example, it found that nearly two-thirds (63%) of global companies have a policy to reduce emissions, up from 56%

five years ago, but only one-third (35%) have specific reduction targets for emissions, meaning many are setting policies without backing up their intentions.

"This is a big call-out to companies. It is one thing to have a policy, but you really need to have a target. What our data is showing is that, the companies that had targets are actually reducing their emissions, but the ones that don't have targets have been actually increasing emissions," she says.

The companies in Asia that set carbon dioxide emission targets in 2013 achieved an 8% reduction in their collective emissions over a five-year period, from 1.503 billion tonnes to 1.385 billion tonnes annually. Those that did not have targets, however, reported a 226% increase in CO2 emissions over the same period — from 834

million tonnes to 1.88 billion tonnes.

"So, it goes back to the old saying that what gets measured, gets managed," says Walker.

It is also not enough that funding is channelled in the right direction, but there is a crucial need to actively prevent it from being siphoned out in the wrong direction.

"So, [on the one hand,] we have an opportunity to fund sustainable finance. But, if we're siphoning it out through money laundering or illicit trade, we have another thing," she says. "There's enough money to be invested in the right way in Asia, but we need to stop it from leaking out and plug the leaky bucket."

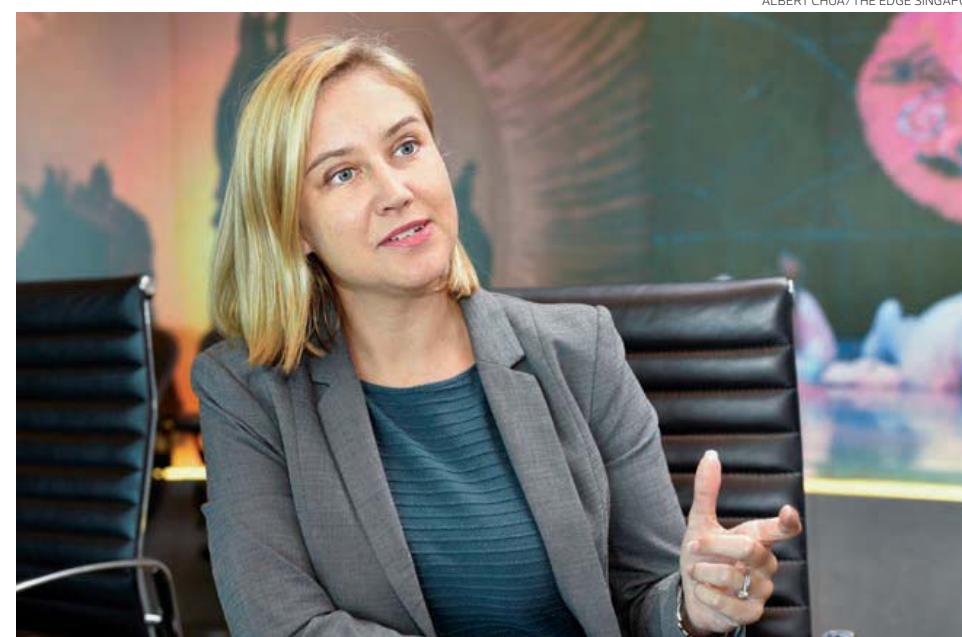
To this end, the rise of digital financing and fintech has been instrumental in plugging the illicit flows of funds, and Walker says this is the key to transforming sustainable financing.

## No time to lose

Still, Walker agrees that the time for "awareness" is over. "We don't have enough time to waste. We need to move into mitigation and adaption," she says. "We're past the point that we can be light-handed and just coax people along."

Hearteningly, there is a lot of movement in this regard. "Many central banks have formed committees and committed to the greening of the financial system, and are now very much looking at their role in the green economy," she adds. "The UK, for example, is actually stepping forward; Singapore is very much on the front foot of fintech and innovation."

Walker says the question of our generation is: What is the price of our planet? "At the end of the day, it's very simple economics. When you put a price on it, it's going to cost more. Things will cost more when you price in the externalities, and we've been polluting for free for a long time." ■



**Walker: We can't achieve [the SDGs] without the private sector**

# Conditions in Singapore conducive to growth of start-ups

BY CHAN CHAO PEH

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For years, the Singapore government has been promoting entrepreneurship and innovation to build a stronger local community of businesses that can help create jobs and grow the GDP. Edwin Chow, assistant CEO of Enterprise Singapore, knows the scene more intimately than many civil servants promoting entrepreneurship and innovation. He tried it more than a decade ago and, in his own words, "failed miserably".

Back then, Chow and his partners came up with the idea of a handset designed for the elderly who lived independently. Instead of the tiny buttons in the Nokia phones that were popular at the time, Chow wanted to build a phone with a simple layout. It would enable users to keep track of their medical appointments and get in touch with their children. He managed to interest a few nursing homes but before the product could be launched, two things happened. First, the iPhone was introduced, and whatever services and functions Chow's phone had could now easily be installed through an app. Then, the 2008 global financial crisis struck and any chance of acquiring additional funding disappeared.

Yet, that stint gave him first-hand experience at running a start-up. He understands the struggles and factors needed to succeed, and he believes the conditions today are better than ever for start-ups to grow in Singapore. "You have [global crowdfunding platform] Kickstarter, crowdfunding platforms, you have grants from Enterprise Singapore, you have help from so many accelerators and incubators. So, if I were 10 years younger, three kids fewer and if I had the same idea today, I wouldn't be talking to you," quips Chow during an interview with *The Edge Singapore*.

A decade ago, when Chow was trying to get his start-up off the ground, there were about 3,000 tech start-ups in total. Today, the number has increased by a third to 4,000. At the time, there was just a handful of active investors whereas today, there are about 100 active incubators and accelerators that are helping to draw in venture capital money and investing their own money.

The deal sizes have grown too. While a typical seed round would call for \$250,000 in venture capital and value the start-ups at between \$1 million and \$2 million, now many start-ups can attract more than \$1 million in the seed round and be valued at \$5 million.

Most tellingly, the value of deals done has surged. In the first nine months of 2019, a whopping \$13.4 billion was invested in start-ups in 437 deals — up 36% from the same period last year. Nearly half of this amount — \$6.6 billion — was raised by Grab but, even if that is stripped out, the total value of deals is easily 20 times that of a decade ago, says Chow.

## Strong synergy

Start-ups are enjoying not just more funding, but also better access to markets. For one, many big companies are now happy to work with start-ups, such as inviting them to come up with solutions to their problems. Biotechnology and pharmaceutical



**Chow: There's a very strong synergy between what the start-up system is doing and what the innovation system is doing. This is mutually reinforcing.**

companies pioneered this model, which has since spread to big engineering and even property companies.

For the start-ups, getting a big company as a partner is fantastic validation and shortens time to market. For venture capital companies — which face the risks of technology, market and operations when they fund a start-up — market risk is mitigated if the start-up finds a partner in a big company. "There's a very strong synergy between what the start-up system is doing and what the innovation system is doing. This is mutually reinforcing," says Chow.

But if current conditions allow start-ups to thrive, why is there a need for the government to play such an active role? The government, via the National Research Foundation's five-yearly Research, Innovation and Enterprise plan, is dishing out \$19 billion between 2016 and 2020, up from \$16 billion between 2011 and 2015. Of this, some \$15 billion has been allocated to R&D activities and the remaining \$4 billion to fund start-ups and companies keen to commercialise the technologies arising from the R&D.

Chow says while the numbers are big, it takes a long time to bring a technology from lab to market and chances of success vary. He adds that the government's aim of funding start-ups and innovation is to get local companies to put the traditional models of trading using middlemen, and competing on costs, behind them. For decades, both models served Singapore's economy well, but they are harder to defend to

day. "You need to quickly pivot to a model where you own the brand, the product or some of the secret process and secret sauce that allows you to charge a premium."

Along the way, the government hopes to show there is value in supporting start-ups. "Instead of buying a property and living off rental income, I should invest in a company, invest in a project," he says.

Chow adds that Singapore is not the only government actively promoting start-ups. Others such as the US have gone down this path before. The Silicon Valley would not have started if the US Defense Advanced Research Projects Agency had not hired US scientists to do R&D, which eventually led to the creation of technologies such as GPS and touchscreens. Over in Europe, leading semiconductor company ST Microelectronics received state funding and support from the governments of France and Italy.

## International models

Similarly, the Israelis have created a system that fosters innovation and the growth of numerous technology-based companies. Chow warns, however, that while it is tempting to hold up Israel as a model for Singapore, there are key differences. For one, Singapore is not a "war economy" and the government's spending priorities should not be determined as such.

Yet, there is an aspect Singapore can adopt: attracting talent. Israel was able to attract 800,000 Jews to emigrate from the

Soviet Union, including many scientists and engineers. Chow relates the story of how an Israeli stumbled upon his building cleaner one evening peering at technical documents left on the table. As it turned out, the cleaner was a recent Russian immigrant and a doctorate holder in astrophysics from the Russian Academy of Sciences. He was hired by the Israeli. "That's how you absorb talent," says Chow.

There are already formal ties to tap Israel's technological capabilities and innovation. Under the Singapore-Israel Industrial R&D Foundation, the countries team up to fund R&D projects and then help commercialise the outcome in each other's regional markets. Chow acknowledges that perhaps more than 10 years ago, the technology was mainly from Israel while Singapore played a bigger role in funding. However, that imbalance is being corrected. Funding is shared and more Singapore technology is being developed. Similar arrangements have been put in place with other countries, such as Germany.

## Big market

Singapore's efforts to promote start-ups and entrepreneurship have made many, including those who are overseas, sit up and pay attention. Anecdotally, start-ups led by foreign founders have set up shop here. When asked why, their reasons are usually that Singapore is an easy place to do business, a springboard to Southeast Asia or generous with funding, both private and public.

Chow stresses that while there is plenty of government funding and support for start-ups, there are many conditions attached to ensure the funds go to deserving companies. For example, Enterprise Singapore, one of the main administrators of such government funding, provides funding in the form of grants or equity. Grants are given only to companies that are at least 30% Singaporean-owned. Other schemes include one where the funding can be converted to equity and the government becomes an eventual shareholder of the start-up. The list of criteria includes having an accredited mentor to agree that the start-ups are on the right track and put in a corresponding amount of investment in the form of "sweat equity".

Chow disagrees with the suggestion that many foreign start-ups relocate to Singapore because of the availability of easy funding and sometimes pulling a fast one after obtaining it. "Maybe, 10 years ago, you could still find suckers. Was the government a sucker? Maybe. But now, you have accelerators, incubators and [venture capitalists], and they have their own money in. If the start-ups can convince them, then okay, you are a damn good salesman. I hope you can correct the misperception. As far as we are concerned, we are very clear. This one I will defend and push back hard."

At the end of the day, Chow believes there is plenty of potential for start-ups in Singapore — there are 7,000 MNCs, 2,000 large local companies and 30,000 small and medium-size enterprises with \$10 million and above in turnover here. If the start-ups are targeting the regional consumer market, there is Indonesia, with its population of 300 million mostly young people, close by. "The market is here," he stresses. ■

# DBS expands fintech's purpose beyond digital banking with sustainable products, risk assessment

BY GOOLA WARDEN

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**M**ikkel Larsen, chief sustainability officer at DBS Group Holdings, sees fintech's purpose as more than making banking accessible and convenient to millions with a mobile phone. Increasingly, fintech, which has made banking easy through smartphones and been a force for good by fostering financial inclusion in emerging Asia, can through Sustainable Digital Finance (SDF) also provide solutions to the most pressing global problem of our times: sustainability and climate change.

DBS contributed to a publication, *Sustainable Digital Finance in Asia*, along with the Sustainable Digital Finance Alliance, an organisation founded by Ant Financial Services and UN Environment.

"SDF is about financing technologies that allow banks to have a positive environmental or social impact," Larsen says.

DBS's carbon footprint from its banking activity is tiny. "The reality is 99% of our carbon footprint comes from who we lend to. If I want to have the lowest footprint I shouldn't be lending to aviation, agriculture and shipping because all three are carbon-intensive," Larsen says. Think **Olam**, **Singapore Airlines**, **SIA Engineering** and **ST Engineering**.

"What we can do is help. We can help these clients reduce the carbon intensity and that's what we've been doing in automobile, shipping and agriculture," Larsen continues. "The real economy is carbon-intensive. So, you can choose to make a positive impact by redirecting your finance to those that are less carbon-intensive."

For instance, the increasing use of electric vehicles can resolve some of the emission issues. "Shipping and aviation are much harder, as the weight of those vehicles is much heavier. I think there is some breakthrough in aviation but shipping is a really hard problem. Many shipowners are trying to shift from bunker to [liquefied natural gas], which is a transition fuel," Larsen says.

## Sustainable digital finance

By using technologies, data can be captured by sensors in the environment and structured to integrate sustainability into existing products and services.

As Larsen tells it, there are three ways in which SDF can have a real impact. "First is financial inclusion. There are 1.7 billion people who don't have access to basic banking products," he says. Access to basic financial products — such as bank accounts and loans — through a digital bank can improve lives.

Second is sustainable finance. DBS has collaborated with organisations to use technologies such as distributed ledger technology (DLT), application programming interface (API) and artificial intelligence, along with reams of data, to track-trace the origins of a product to determine whether it was produced sustainably. "Sustainable finance is where you redirect funding using technology and data to get money to move in the right direction where it wasn't before," he explains. If you have the right data, this creates a higher impact than using just financial information.

"It's about track-tracing, so you know



Larsen: You can choose to make a positive impact by redirecting your finance to those that are less carbon-intensive

where products come from," Larsen adds. Track and trace is a system that determines the inputs and processes that go into a product. For the purposes of SDF, this is a challenging process, as data on the impact on the environment is incomplete.

There is some success with rubber in the manufacture of tyres. The bank has partnered with **Halcyon Agri Corp**, a rubber producer, to use DLT to track the production of rubber from the origins of the tree all the way to the tyre. "If you could trace the rubber, all the way from source and, ultimately, as it makes its way into our tyres, and if you can create that transparency and there is proof that the rubber comes from a plantation that has sustainable practices and where they don't cut down trees, the consumer is willing to pay a premium for this," Larsen says. "We've seen it happening. And it can be applied to cocoa, coffee and fish."

Third is sustainable practices to create bankable products. "This is where you use technology and data to nudge people to do the right things," Larsen says. To commit to sustainable practices, banks such as DBS need to focus on what Larsen describes as missing data.

"If you don't have data you don't know what's doing good or not. You actually know very little about the environmental and social impact of any investment product you buy. We want to use data to have deep conversation so that our clients can make a decision. And we think about how we can redirect funds, how we can work with our institutional and corporate clients, our private banking clients and our larger retail clients."

## Blockchain to track and trace

HeveaConnect, the DBS-Halcyon Agri digital marketplace for rubber, aims to connect farmers, rubber producers and tyre manufacturers in an integrated ecosystem, offering a convenient one-stop shop for participants in the natural rubber supply chain. Through HeveaConnect, natural rubber producers and consumers can track pricing and supply information and transact directly on the platform, promoting greater price

transparency in the industry. Other offerings provided include access to value-added services such as financing, insurance and logistics.

"Imagine doing this for fish, describing the batch of different fish, where the head goes somewhere and the fillet goes somewhere else. The fish starts as one project but ends up in different products. All these different products can be traced using DLT," Larsen says.

Banks have started to help with the deployment of satellites and blockchain technology to increase the auditability and transparency of value chains to verify that products are produced sustainably. For instance, DBS and Agrocorp International are collaborating to provide an end-to-end cross-border blockchain trade platform for a commodity supply chain network, comprising farmers, exporters, traders and end-customers. Benefits include the ability to offer supply chain participants real-time updates on commodity prices and delivery information, and trade financing approval for orders coming in from anywhere in the world. With the implementation of the blockchain platform, Agrocorp and its counterparties can also enjoy a more seamless and secure transfer of goods ownership and payments.

Initially, the blockchain platform will connect about 4,500 farmers in Agrocorp's network in Australia to end-customers such as supermarkets and restaurants. With access to real-time pricing and supply information, suppliers and end-customers are currently able to carry out "live" transactions at any time and track the delivery of orders on-the-go, allowing both sides to better manage their stock inventories.

Agrocorp plans to broaden the reach of the blockchain platform from Australia to its other key origination markets, including Canada, Myanmar, Ivory Coast and Ukraine, in the next 12 to 18 months. The commodities trading company also intends to increase the variety of commodities traded on the blockchain platform from pulses such as mung beans and chickpeas, to cereals, cotton, edible nuts and oilseeds.

In September, DBS announced a multi-

tier financing facility on a logistics blockchain platform named Rong-E Lian to help small and medium-sized enterprises (SMEs) in China get quicker access to trade financing.

Another example of tracking and tracing in which DBS is not involved is conflict diamonds. "You need the data to show whether the mine the diamond is from is good or bad. But the very first thing you need is capturing the data," Larsen says.

## Democratising data

SDF needs data, hence the need to "democratise" data, that is, making data available to everyone "so we can understand where the money is flowing".

Data allows banks to provide tailored investment products that create not only a financial outcome but also achieve specific environmental outcomes.

Private wealth has an important role in mobilising capital into SDF products. Banks can use data analytics to build personalised investment portfolios for high-net-worth clients based on their sustainability preferences. This may introduce a source of more "patient capital" from impact investors who still seek financial returns.

## Green products

Fintech can be used to certify and monitor the origins of capital market instruments such as green bonds. Digitalising bond offerings brings down the cost of obtaining and reporting environmental data for green bonds, allowing many more companies, especially SMEs, to meet the requirements to issue green bonds. Although Asian green bond issuance reached US\$43.4 billion in 2017, only a very small portion of green assets is financed by capital market instruments certified as "green".

Elsewhere, banks may open additional APIs to collaborate with external partners that commit to designing new green products. Alternatively, banks — which have customers' data through their transaction accounts — can analyse data on individual consumers' consumption patterns and lifestyle choices. Algorithms can structure this data and turn it into individualised environmental footprints from consumption, compare trends across peer groups and demographics, and develop peer competition incentives using social media.

"We don't have a vocabulary to discuss the social and environmental impact. If I said DBS made \$5 billion this year, it means something. If I said we made 10 tonnes of carbon this year, does that make a difference for you?" Larsen wonders. In the future, though, companies are likely to start capturing and reporting data on the environment. Emitting 10 tonnes of carbon will have meaning for investors, Larsen suggests.

"We need to democratise data to make it understandable for everyone; we also need the equivalent of IFRS [International Financial Reporting Standards] and FASB [Financial Accounting Standards Board] to give sustainable environment standards on what companies report. If I'm having a glass-half-full day, I would say it took financial standards that long to get to [IFRS]. So, we will get there with sustainable environmental standards. [But] if I'm on a glass-half-empty day, we are nowhere near," Larsen says. ■

# API Exchange not a 'success' yet, but will enhance fintech collaboration to solve financial inclusion problem

BY **JEFFREY TAN**

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Two years ago, Sopnendu Mohanty had coffee with a senior official of a multilateral agency. It was a casual meet-up, but the coffee session turned into a serious discussion about financial inclusion. While Mohanty enjoyed the exchange of ideas over sips of coffee, it inspired him to create the API Exchange (APIX). "That was the genesis of APIX," says Mohanty, who is chief fintech officer of the Monetary Authority of Singapore.

APIX is the world's first cross-border, open-architecture platform that facilitates collaborations between financial institutions — such as banks — and fintech start-ups. It was launched at last year's Singapore FinTech Festival (SFF).

The platform allows banks and fintech start-ups to conduct experiments in a sandbox. In particular, banks are able to access fintech solutions through application programming interfaces (APIs) to drive digital transformation and financial inclusion across Asia-Pacific. APIs are a set of functions and procedures that allow for the creation of applications that access the data and features of other applications, services or operating systems. So far, APIX has signed up 70 banks and 150 fintech start-ups across 19 countries — mostly from Asean but also from other parts of Asia, Europe and North America.

Mohanty says many people talk about financial inclusion in terms of how to get the unbanked segment to open a bank account and obtain credit. However, financial inclusion goes deeper than that, according to him. "There is a structural problem to that. My question to the gentleman with whom I had coffee was: Are we solving the issue fundamentally?" he tells *The Edge Singapore* in a recent interview.

## Infrastructure gap

The way Mohanty sees it, the current infrastructure that enables banks to reach the unbanked segment needs a "massive upgrade". Most banks in emerging markets (EMs), especially in rural areas, face problems in onboarding new customers. The solution is to employ new methods by leveraging technology.

However, many of these banks are small and do not have the financial capability to invest in the relevant technology and infrastructure. One way to solve this is for them to tie up with fintech start-ups that have already figured out how to onboard new customers. That way, the banks do not have to reinvent the wheel and make a massive investment outlay. Yet, there are challenges to getting both parties to work together.

Based on anecdotal feedback received by MAS, Mohanty notes that the majority of banks had difficulty finding the right fintech start-up that could solve their problems. A significant number of banks also found it difficult to evaluate fintech start-ups as potential partners. Other hurdles included obtaining internal approvals to run a proof of concept project and scaling of the solution provided by the fintech start-up. Furthermore, banks faced challenges in working together with the fintech start-ups on the POC projects.



**Mohanty says the APIX platform expedites the process for banks and fintech start-ups to mutually find the right partner**

From the fintech start-ups' perspective, Mohanty notes that a large number of them found it difficult to meet banks for the first time to pursue potential tie-ups. Even if they did, fintech start-ups faced challenges in getting to the POC stage, because the banks had to get internal clearances from the procurement/vendor management, legal and IT departments. As a result, a majority of fintech start-ups took six to 12 months to secure a POC project, leading to few implementations of POC projects. This, in turn, translated into fewer production orders.

Adding insult to injury, a majority of fintech start-ups did not get paid after conducting the POC projects, as the banks expected them to be implemented for free. "They are not compensated enough for doing so much and they end up running into cash-flow problems so that they eventually wind up," he says.

## APIX plays matchmaker

How can APIX solve these problems? Mohanty says the platform expedites the process for banks and fintech start-ups to mutually find the right partner. Banks can perform their due diligence faster. Upon finding the right partner, the banks can conduct experiments using the APIs provided on APIX. All of this is conducted on the cloud.

To illustrate, Mohanty uses the example of a rural bank in Indonesia that is looking for an image processing solution to make its know-your-customer procedures more efficient. However, such a solution is only provided by a fintech start-up based in Norway. Under normal circumstances, the rural bank may not engage with the Norwegian fintech start-up because it is unlikely to be aware of the latter's existence. And even if it is, it is difficult for both parties to meet to explore a potential collaboration, he says. Who will bear the costs of the trip? Language may also be a barrier.

With APIX, however, the rural bank in Indonesia can engage with the Norwegian fintech start-up solely on the cloud, says Mohanty. Neither party needs to physically meet the other, thus saving on flight, accommodation and meal costs. Any language barriers can be minimised, as the only language that is really required is software. If the experiment on APIX produces a positive result, both parties can arrange for a physical meet-up to ink a formal agreement. This avoids unnecessary sunk costs.

Essentially, APIX replaces the need for banks to establish an innovation lab. According to Mohanty, innovation labs are an expensive method for banks to discover fintech start-ups to potentially work together.

"The innovation process of discover, design and deploy is now entirely on the cloud, not in physical premises. That dramatically reduces costs and makes it affordable for banks in Asean and other EMs," he says. "Rural banks can now employ fintech solutions to better serve their customers. This enables financial inclusion."

But if the aim is to build better infrastructure to enable financial inclusion, why not allow the fintech start-ups to provide their solutions without the involvement of banks? After all, fintech start-ups are meant to disrupt the status quo.

According to Mohanty, only 20% of fintech start-ups are in direct competition with banks, while the remainder 80% are complementary to the latter. Hence, it would make better sense to collaborate than to compete, he says. After all, the banks are already well-established and may have better insight into customers, he adds.

"The answer to [the financial inclusion problem] is not to find a new fintech start-up to solve it. The answer can be found in the banks, which have been in operation for many years. Why can't we just help the banks to rapidly digitise? The bank manager understands the people; banks just lack the right tools to deliver financial services in a cheaper, faster and better way," he says. "You can always argue about market forces, but it need not be all about competition. The Asian story is about collaboration; and we [are bringing] banks and fintech start-ups [together]."

## New iteration

Although APIX has been operating for about a year now, Mohanty declines to a call it a "success" yet. This is because the platform is still new and will have to undergo upgrades to better meet the needs of banks and fintech start-ups, he says. These upgrades are in response to feedback received from stakeholders after MAS embarked on a roadshow in Myanmar and Cambodia to explain and showcase APIX to potential users. In fact, a new iteration of APIX will be launched at this year's SFF, after which the "real activity" will occur, says Mohanty.

For now, he declines to reveal how much "activity" has occurred on APIX except to say that it is "not significant". Still, he notes that five prototypes resulting from the collaborations between five banks and five fintech start-ups will be announced and showcased at this year's SFF.

If all goes according to plan, a new feature will be introduced on APIX early next year. It will allow investors, who may want to invest in these fintech start-ups, access to activity data. Mohanty says this feature aims to solve the pain point of investors, who do not fully understand the unique selling proposition of a fintech start-up. This is especially so for B2B fintech start-ups, as their value may not be easily measured.

By allowing investors access to APIX, they can find out the value provided by the fintech start-up through its involvement with the banks on the platform. Investors may rely on quantifiable criteria, such as the number of prototypes completed, to assist in the investment evaluation process. "It's like a pitchbook with real live data," Mohanty says. ■

# NEC has wide portfolio of products to help banks transcend limitations

BY BENJAMIN CHER

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With the adoption of technology, banking has evolved from physical branches with human tellers to automated teller machines to online platforms where transactions are carried out without entering a bank branch.

Today, banking is undergoing yet another evolution with digital technologies, which have enabled some banks to be wholly digital, without any physical presence. These changes in banking are the result of the availability of data and the ability to interpret the data, according to Daichi Iwata, director of the digital integration division at **NEC Corp.**

“Some people say digital banking is an extension of the current banking through the smartphone, but I think it is going to be totally different. It will be based on a deeper understanding of people and businesses, with data to provide services on demand,” says Iwata in an interview with *The Edge Singapore*.

Banking is about understanding people and businesses, and technology is about providing better insights and more information for banks and financial institutions. Technology is providing more precise and cheaper analytics, which can help financial institutions identify customers better.

“You can identify people through digital channels much better than through physical channels. By combining insights, information and identity, product generation and delivery for banking is going to change,” says Iwata.

Data science and automation will be the driving forces for the changes banks will face as they turn digital. Data collection is going to get easier, and integrating the data, including data other than banking transactions, will also get easier. The hard part, according to Iwata, is the ability of organisations to automate data science.

“There are only a few people well versed enough in data science and analytics to understand people and create new products. But if you automate the data science process, more people can be involved in digital banking product generation and offerings. Offering such automation is going to change a lot of things,” says Iwata.

While not all banks might need to go digital, the opportunities might prove hard to miss out on. Iwata notes that going digital might help bank the unbanked, which makes up a significant portion of the Southeast Asian population.

“[The unbanked] have a hard time identifying themselves; this can be solved with a digital identity. If they can prove who they are through the data they generate from working or payment or other exchanges, banks can start offering them new services,” he says. “These are new opportunities for banks to capture, and I know some banks are opting for these opportunities and some are not. This is dependent on the bank’s strategy.”

## AI to the rescue

Going digital can prove to be lucrative for banks and financial institutions, but there are limitations to their digital push: the tight talent pool of data scientists and an-



**Iwata: Our goal is to be a leading player in the digital banking solutions space, through data science automation, banking as a service, data governance and security by design**

alysts. “The issue here for banks is to hire top talent for data analytics. Even in Singapore, it is getting harder and harder to find top talent,” says Iwata.

The competition for top talent has driven salaries sky high. Banks are competing with other industries, including hot start-ups and tech companies from Silicon Valley. NEC is focusing on finding a solution by providing and automating data analytics services.

“The issue is the high cost for data science talent — there is more demand than supply. We are trying to tackle this issue by providing a service to automate the data science process so that entry data science analysts or engineers can perform and get results like top data scientists,” Iwata says.

NEC, one of the largest and most renowned technology companies in Japan, is already providing such a service to banks in its home market. The company has integrated its data science automation software with banking services. This integration and automation will allow banks and financial institutions to unlock new opportunities from understanding their customers better, improved credit assessment and matching businesses. According to Iwata, these are basic functions for banks.

Traditionally, understanding the customer meant segmenting them into age bands, sex, marital status and income level. This meant products were more general than specific to customers.

“It is like providing clothes that are sized S, M and L. But what data analytics can do for customer profiling is really understand who the customers are. Rather than provide clothes sized S, M and L, you can provide clothes that are the correct fit

for the customer,” says Iwata.

This is what artificial intelligence (AI) and data analytics can do for financial institutions. With deeper insights into customers, more products and services can be tailored for each customer.

This, then, leads to better credit risk assessment as financial institutions get a better understanding of customers. This will allow customers to get the best interest rates, based on the financial institutions’ understanding of them. “You will be able to get the best interest and credit rates for the customers,” Iwata explains.

Leveraging the data would also allow financial institutions to match businesses through a digital platform, he says. This opens up opportunities for small and medium-sized enterprises (SMEs) through financial institutions.

“We started offering this business matching service in Japan, and it is one of the things financial institutions can do. SMEs have great products, but lack resources. But if you can match their supply and demand through digital channels and AI, you can help them have access to the right customers, with low marginal cost,” says Iwata.

To him, digital banking would be a combination of things such as risk assessment and helping businesses grow through matching them with customers on a digital platform. “Banks are in the best place to understand what the business is doing. Human research has limitations, and that is where technology can come in and understand each business more easily and match their needs in a cost-effective way,” he says.

These are also part of the broader digital trends NEC is seeing from its banking customers. As financial institutions turn digital, it would result in a win-win situation for both the customers and the institutions.

## Ensuring security

In this day and age of data breaches and hacked servers, going digital will also require financial institutions to consider security. Digital banking requires not just digital solutions but also a community to support financial institutions as they go digital.

“Banks want to go digital to serve customers better and grasp new opportunities. But there is a risk in cybersecurity and data governance. If there is a community to support the banks to go digital — people who care about security and data governance issues, a community around the banking ecosystem — banks can easily go digital. Without people playing that role, it would be harder for banks to go digital,” says Iwata.

NEC has a huge portfolio of technological capabilities. One key area is its strength in cybersecurity, using technology such as biometrics. The company is also enhancing its solutions with digital identity, security by design and data governance, so that banks can go digital more easily without overthinking the risks.

“Our goal is to be a leading player in the digital banking solutions space, through data science automation, banking as a service, data governance and security by design. We have strong assets and good customers; with our banking-as-a-service software solutions, we have data science services, and cybersecurity as our strength. By combining these good assets and collaborating with fintech start-ups, we can offer digital banking services that [prioritise] data governance and cybersecurity,” says Iwata.

Along with these services, NEC is also in the cryptography space, with R&D focused on improving encryption. This is one of NEC’s strong suits, according to Iwata. Private and public key encryption as well as hash encryption are methods to ensure data integrity.

“Crypto is a combination of technologies such as signatures, hash, encryption and keyless encryption. We have combined these technologies to better suit the increasing risk of cyberattacks,” says Iwata.

Ensuring cybersecurity is a challenge that never ends, with new threats constantly on the horizon. Iwata’s solution is to cultivate resilience, as financial institutions continue to fight against these threats. “It’s about fixing systems to become better. I think it’s a cycle, to understand and detect what happens and become more resilient after that. It’s not about a one-time solution but a life cycle of security,” he says.

Digital banking opportunities are for all, not just financial institutions. Customers benefit too, as the case of the unbanked population shows. For example, NEC has a financial inclusion gateway in India, for which a handful of banks signed up. Another example — citizens in India can do banking transactions using their biometrics. NEC’s solution can also help other countries looking to solve this problem as well. “NEC wants to do more in this space and will be doing more in the coming years,” says Iwata. ■

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## Key Themes



Day 1 : 11 Nov

### Startup Ecosystem

Explore the thriving startup and investment landscape in Singapore.



Day 2 : 12 Nov

### Enabling Innovation

Discover innovation opportunities with institutions, corporates and startups.



Day 3 : 13 Nov

### Openness & Access

Find out how you can leverage Singapore as a springboard into global markets.

## Find us at SFF x SWITCH

### DATES

11 – 13 November 2019

### TIME

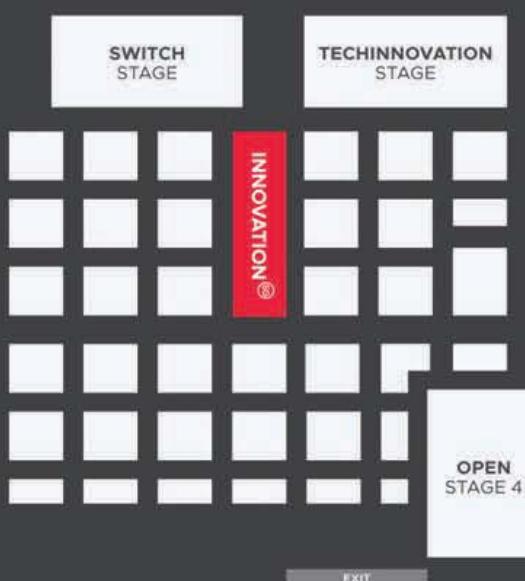
9am – 6pm

### LOCATION

Singapore Expo, Hall 5

### BOOTH NUMBER

Booth 5F17



## Programme Highlights

Day 1  
11 November

**AngelCentral: Understanding An Investor's Mindset by Huang Shao-Ning**  
12.30pm – 1.00pm

**Startup Legal Hub: 1-on-1 Consultations by VIMA Working Group**  
1.00pm – 2.00pm

**How to master your Cap Table with Florian Cornu**  
2.00pm – 3.00pm

**Deal Mixer (FinTech)**  
5.00pm – 6.00pm

Day 2  
12 November

**Deal Mixer (Deep Tech)**  
5.00pm – 6.00pm

Day 3  
13 November

**Internationalisation: From Singapore to Beyond**  
12.00pm – 1.00pm

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EXHIBITION GUIDE

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# WHEN CATTLE X CRYPTOS

Blockchain, mentioned in the same breath as "fintech", has created plenty of buzz in recent years among established financial institutions, new start-ups, and regulators alike. Much has been discussed on how blockchain is revolutionizing the way we pay and the way we trade.

More compellingly, blockchain is famous for its use as the underlying technology of bitcoin, Ethereum, and the other thousands of cryptocurrencies in circulation. For investors bored with staid gold, bonds, or REITs, cryptocurrencies are a new and exciting asset class to punt on.

Now, cryptocurrencies do grab a lot of attention, but the underlying technology, blockchain, can be applied widely to disrupt many other sectors too.

Take for example, InfoCorp Technologies, a Singapore-based fintech and agritech company. Founded in 2015, it has created the Farm-Trek blockchain-based platform to provide cattle registry, livestock insurance, and financing services to cattle farmers in Myanmar – a decidedly different world from the glitzy fintech centres of London, Silicon Valley, and Singapore.

Yet, between Nov 11 and 15, the two worlds are coming together in Singapore. For the first time, the Singapore Fintech Festival is held in conjunction with SWITCH (Singapore Week of Innovation and Technology), to be known as SFF x SWITCH. InfoCorp Technologies, showcasing its blockchain-based cattle registry technology, is but just one of the hundreds of companies – including a long list of globally renowned names in business and finance – to have a presence at the week-long event.

Together, SFF x SWITCH will put forward a comprehensive showcase of innovative technologies to drive business transformation. The two events will be bringing common stakeholders and interested parties eager to take part in the transformation. They can be pooling resources, inspiring each other with new ideas; investors with capital will be matched with funding new technologies and business models. Regulators will be on hand to update on what can or cannot be done in their respective jurisdictions.

"You have the problem owner, you have the market opportunity, and you want to find a match for the solution provider. Between SWITCH participants and SFF participants, we think we are likelier to find a

match," says Edwin Chow, assistant CEO of Enterprise Singapore, the government agency in charge of organizing SWITCH.

SFF x SWITCH will feature five broad sectors: advanced manufacturing and engineering; urban solutions and sustainability; health and biomedical sciences; services and digital economy, and last but certainly not least, fintech.

The Singapore Expo, where this massive SFF x SWITCH event is held, is a massive venue. It takes ten minutes just to walk a straight line from one hall to another. For visitors to SFF x SWITCH, it will be impossible to complete this walk without getting distracted by exhibitors large and small along the way. Each of them will try to attract eyeballs in their own way.

For example, iFast Corp, one of local pioneers in melding an online platform with financial services and products, will be showcasing its new products and service such as a mobile app launched earlier this year by its wealth advisory arm, iFAST Global Markets (iGM), which enables wealth advisers to take a step forward towards becoming a complete "Adviser of the Future".

And of course, the multi-day event will be packed throughout the day with presentations, panel discussions, and various other formats where ideas can be shared and conversations held. Just about every conceivable angle between "fin" and "tech" will be covered.

As a leading Singapore publication focusing on business, finance, and investment, The Edge Singapore has been closely following developments in the fintech and broader innovation space for years.

We have the privilege and joy of sharing the excitement with our newsmakers. They can be the largest local banks or the smallest new start-ups, but when it comes to embracing new technologies and innovation, they do so with equal levels of enthusiasm.

The Edge Singapore is happy to be one of the top-tier official media partner of this festival for three years running. We see this partnership as a natural extension of our coverage of this space. To help you, the visitor better weave your through SFF x SWITCH and spend a more fruitful time at the event, our team of journalists have put together this exhibition guide.

We hope to see you again next year.

THE EDGE SINGAPORE

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# SINGAPORE FINTECH FESTIVAL

## SFF

### Day One (Monday, Nov 11)

#### 9:10am

In line with this year's theme of sustainability, Pavan Sukhdev, President of WWF International (World Wide Fund For Nature) will kick off this year's opening talk. As a scientist by education, but a banker by training, and an environmentalist by passion, he has the background and credibility to tell the wider community how sustainability and the invisible economics of nature can be weaved together.

#### 9:30am

Ong Ye Kung, Minister for Education and Board Member, Monetary Authority of Singapore, will give his "Tech Talk"



Mike Wells, Group CEO, Prudential

across the world. They are Aishah Ahmad, Deputy Governor, Central Bank of Nigeria; Bill Song, COO, Zhong An Tech Global; Wilf Blackburn, Chief Digital Officer, Prudential. The topic of their fireside chat is "The Next Generation of Insurance and Risk Management". The session is moderated by James Lloyd, Asia-Pacific FinTech & Payments Leader, EY.

#### 2:35pm

Rightly or wrongly, the banking industry is often stuck with labels such as "conservative" and "boring". As the financial services industry embraces new technologies with gusto, they are taking a good look at how processes can be reviewed, in line with newer products and services. Terje Kjøs, CEO of Banqsoft, an NEC Group company, will be joining the "Open Stage 3" on the theme "Digital banking re-designed". Kjøs will discuss how to approach the foreseen future challenges in the banking and finance industry.

#### 4:00pm

With artificial intelligence gaining rapid strides, will it still be the case of "Smart Machines, Smarter Humans?" Andy Maguire, Group Managing Director and Group COO, HSBC; Dean Tong, Managing Director & Head of Group Human Resources, United Overseas Bank; Lu Yu, Managing Director, Senior Portfolio Manager, Allianz Global Investors and Tan Bin Ru, Chief Executive Officer, OneConnect Financial Technology will share their perspectives in this panel discussion, which is moderated by Greg Miller, Co-Founder & Executive Director, Faethm.ai.



Dean Tong, Managing Director & Head of Group Human Resources, United Overseas Bank

### Day Two (Tuesday, Nov 12)

#### 11:30am

This year we have seen a step change in the exploration of digital currencies from Facebook's Libra, to Binance's Venus to People's Bank of China's own digital currency. Blockchain technol-

ogy is moving far beyond technical experimentation into the realm of live applications that address real use cases. Unprecedented partnerships are emerging between tech giants, financial institutions and startups; and even central banks are pushing new frontiers of tokenisation with their own national digital currency developments such as Bakong Project in Cambodia.

HE Chea Serey, Assistant Governor and Director-General of Central Banking, National Bank of Cambodia; Christian Catalini, Co-Creator of Libra & Head Economist, Calibra; Mu Changchun, Director, Digital Currency Research Institute, People's Bank of China and Umar Farooq, Head of Digital Treasury Services & Head of Blockchain CIB, J.P. Morgan Chase & Co, will speak at this plenary session with the topic "Defining the future of Digital Currency". They will give the latest updates on Project Libra, JPM Coin and Bakong Project; emerging challenges across regulation, security, privacy and adoption, as well as predictions for blockchain network adoption for 2020

### Day Three (Wednesday, Nov 13)



Agustin Carstens, General Manager, Bank for International Settlements

#### 10:00am

Agustin Carstens, General Manager, Bank for International Settlements, dubbed the 'central bank of central banks', will be giving a policy fireside chat on the Future of Central Banks.

#### 10:30am

Heng Swee Keat, Deputy Prime Minister of Singapore, the man slated to be the next prime minister, will be giving a talk on "Inspiring the Future".

#### 11:00am

Dado Banatao, Managing Partner, Tallwood Venture Capital; Eduardo Saverin, Co-Founder and Partner, B Capital and Co-Founder, Facebook and Tan Min-Liang, CEO, Razer, will come together to share their journey from inventors to investors. The session will be moderate by Tilman Ehrbeck, Managing Partner, Flourish.

#### 2:00pm

Innovation drives transformation, transformation leads development. How are emerging technology providers and established financial institutions balancing this journey?

Adam Reynolds, APAC CEO, Saxobank; Christopher Davison, CEO & Co-Founder, BigPay; Jeremy Anderson, Board Director, UBS and Katsunori Tanizaki, Senior Managing Executive Officer; Group Chief Digital Innovation

Officer, SMBC and Michael Gorri, Group Chief Information Officer, Standard Chartered come together and share their experience on the topic "Digital Finance Transformation: Technology Developments in Financial Services Sector".

#### 2:40pm

Sustainability is a relatively new, yet broad topic. The word means different things to different organisations and people. This will be even more so in a region as fragmented as Asia. Some are already at the forefront of driving sustainability efforts, many still struggle with awareness, and even more fall somewhere in between. Julia Walker, Head of Market Development for Asia-Pacific at Refinitiv, will be speaking on the topic Sustainable Finance: Opportunities and Challenges in Asia Pacific. The session is hosted by Baker & McKenzie.



Julia Walker, Head of Market Development for Asia-Pacific at Refinitiv



Russell Tham, President, New Enterprises and Ventures, ST Engineering

gineering; Doro Tan, Executive Director, Matex; Philipp Gneiting, Head of Open Innovation, Daimler AG; will explain why big companies like theirs are "Harnessing the Power of Open Innovation for Business Growth". The panel will be moderated by Jordi Rafols, CEO, Innoget.

### Day Three (Wednesday, Nov 13)

#### 1:45pm

Is there a business value to design? Can innovation be quantified? How can a well-thought-out design process be converted into a business advantage?

Tim Kobe, Founder, Eight Inc; Emma Greer, Partner at Carlo Ratti Associati; Welby Altidor, Chief Creative Officer, CityNeon Ltd and Former Creative Director of Cirque du Soleil, will share their experience at a panel on "Enabling and Empowering New Design Frontiers" moderated by Mark Wee, Executive Director, DesignSingapore.



Mark Wee, Executive Director, DesignSingapore

#### 2:45pm

Steve Leonard, Founding CEO, SGInnovate, will host a panel discussion featuring leading scientists to describe where we are in the "Global AI Revolution". The panel consists of Dame Wendy Hall, Professor, University of Southampton; Prof. Ho Teck Hua, Executive Chairman, AI Singapore; Dr Phillip Beaudoin, SVP – Research Group & Co-Founder, Element AI and Dr Andreas Liebl, Managing Director, appliedAI.



Steve Leonard, Founding CEO, SGInnovate

## SWITCH

### Day One (Monday, Nov 11)

#### 1:00pm

Nick Nash, Managing Partner & Co-Founder, Asia Partners, will first give a presentation "The Dawn of the Future", and will then be followed by a panel discussion on "Riding the Asian Innovation Boom" with Dr Jeffrey Jaensubhakij, Group Chief Investment Officer, GIC. The panel will be moderated by Ai Ai Wong, Principal, Global Executive Committee, Baker McKenzie.

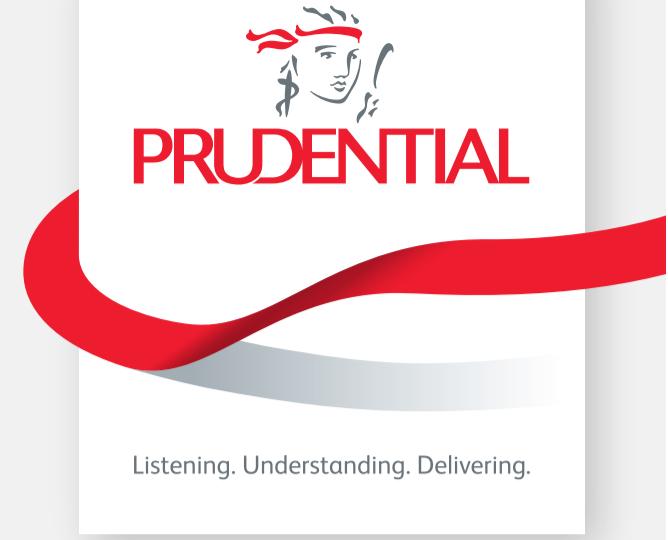


Nick Nash, Managing Partner & Co-Founder, Asia Partners

### Day Two (Tuesday, Nov 12)

#### 1:00 pm

Big corporates can't innovate – they are waiting and vulnerable to disruption to smaller and nimbler companies. Lathika Pai, Country Head, Microsoft for Startups India; Russell Tham, President, New Enterprises and Ventures, ST En-



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# FinTech Conference

(Day 1, 11 November 2019)



Monday, 11th November 2019		Singapore FinTech Festival				
8:55am	<b>Opening Act</b>					
9.00am	<b>Opening Video: Setting the Stage</b>					
9.10am	<b>Climate Change Video by WWF</b> Opening Talk: Pavan Sukhdev, President, WWF International					
9.30am	<b>Tech Talk</b> Ravi Menon, Managing Director, MAS					
	<b>2020: Banking on Economic Uncertainty &amp; the Data Conundrum</b> Bill Winters, Group Chief Executive, Standard Chartered Bank Calvin Choi, Chairman & Chief Executive Officer, AMTD Group John Dugan, Chairman, Citigroup Inc		Noel Quinn, Group Chief Executive, HSBC Holdings plc Piyush Gupta, Chief Executive Officer, DBS Moderator: Haslinda Amin, Chief International Correspondent, Bloomberg			
10.30am	<b>2020: Digital Transformation Agenda</b> Henry Ma, Executive Vice President & Chief Information Officer, WeBank Kristo Kaarmann, Chief Executive Officer and Co-Founder, TransferWise		Markus Braun, Chief Executive Officer, Wirecard Roman Regelman, Senior Executive Vice President, Head of Digital, BNY Mellon			
11:20am	<b>2020: Policy Choices for the Digital Economy</b> Arunma Oteh, Academic Scholar, University of Oxford Daniela Stoffel, State Secretary, Swiss State Secretariat for International Finance		Senator Jane Hume, Assistant Minister for Superannuation, Financial Services and Financial Technology Saeb Eigner, Chairman, Dubai Financial Services Authority Moderator: Bob Contri, Global Financial Services Industry Leader, Deloitte			
12.00pm	<b>Innovating with AI: Amazon's Chief Economist and VP, Core AI</b> Pat Bajari, Chief Economist, Amazon and VP, Amazon Core AI					
12.20pm	BREAK					
	<b>Sustainability, Finance and Tech</b>	<b>Future of Finance</b>	<b>Investment and Global Markets Opportunities</b>	<b>Exponential Technologies</b>		
PM	<b>Sustainable Development</b>	<b>Banking, Capital Markets and Insurance</b>	<b>Global Investor Summit</b>	<b>AI and Big Data</b>	<b>The Himalayas</b>	<b>Coral Triangle</b>
1:00pm – 1:50pm	<b>Opening</b> <b>Humanity, the greatest threat to Mother Nature</b> Will Steffen, Emeritus Professor, Australian National University  <b>The climate crisis: Our last chance to act</b> H.S.H. Prince Max Von Und Zu Liechtenstein, Chief Executive Officer, LGT Group  <b>Moderator:</b> Lisa Genasci, Chief Executive Officer, ADM Capital Foundation	<b>Opening</b> <b>Global Trend on the Insurance Market</b> Mike Wells, Group CEO, Prudential  <b>Fireside Chat</b> <b>The Next Generation of Insurance and Risk Management</b> Aishah Ahmad, Deputy Governor, Central Bank of Nigeria  <b>Moderator:</b> Bill Song, Chief Operating Officer, Zhong An Tech Global Wilf Blackburn, Chief Digital Officer, Prudential Moderator: James Lloyd, Asia-Pacific FinTech & Payments Leader, EY	<b>Opening</b> <b>A Wall Street Veteran's Big Crypto Wins and Losses</b> Mike Novogratz, Former Principal & member in Board of Directors, Fortress Investment Group  <b>Fireside Chat</b> <b>Why Big Tech invests in Blockchain</b> Jack Lee, Managing Partner, HCM Capital, Foxconn Moderator: Patrick Murck, Fellow, Harvard Berkman Klein Centre	<b>Opening</b> <b>From Phones to AI-Powered Finance</b> Hong Feng, Chairman & Chief Executive Officer, Xiaomi Finance, and Co-Founder & Senior Vice President, Xiaomi Corporation  <b>Tech Talk</b> <b>How is Digital Technology Changing Finance?</b> Chen Long, Vice President, Ant Financial and Director, Luohan Academy	<b>Global FinTech Hackcelerator Demo Day</b> 4.45pm – FinTech Awards Ceremony • ASEAN Open • ASEAN SME • Singapore Founder • Global Global FinTech Hackcelerator winners	More details to be revealed
2:00pm – 2:50pm	<b>2100 – A prosperous future, or a world in ruins?</b> Daniel Klier, Chief of Staff to the CEO of Global Banking, and Global Head of Sustainable Finance, HSBC Geraldine Buckingham, Senior Managing Director & Chairman, BlackRock Asia Pacific Michael Sheren, Senior Advisor, Bank of England Tomas Otterstrom, Head of Responsible Investment & Sustainable Finance Services in Finland & Sweden, KPMG Moderator: Dominique Duval, Sustainable Banking – Head of Asia Pacific, Credit Agricole	<b>Aging &amp; Finance – Societal Readiness and the Emerging Role for FinTech</b> Han Yik, Head of Institutional Investors, World Economic Forum LLC Prof. Keyong Dong, Sec-Gen, CAFF50 Beijing Parul Seth Khanna, Co-Founder & Director, Pinbox Solutions Yumiko Murakami, Head of Tokyo Centre of OECD Moderator: Harry Smorenberg, CEO, SCC	<b>Leadership Dialogue: Fuelling Global Growth</b> Abheek Anand, Managing Director, Sequoia Ben Savage, Partner, Clocktower Ventures Hugh Young, MD, Aberdeen Asia Raj Dugar, MD Asia, Eight Roads Ventures Moderator: Nikshep Shetty, Director, APAC OakNorth Moderator: Victor Alexiev, Senior Vice President, APAC Markets & Securities Services Program Management, D10X Citi	<b>AI-driven Disruption: The New Normal?</b> Coenraad Jonker, Co-Founder and Chief Executive Officer, TymeGlobal and Non-Executive Director, TymeBank Guru Johal, Global Financial Services Artificial Intelligence Leader, Deloitte Qiang Yang, Chief AI Officer, WeBank Moderator: Jo Ann Barefoot, Founder and Chief Executive Officer, Barefoot Innovation Group		More details to be revealed
3:00pm – 3:50pm	<b>Hard truths: Developed and Emerging countries' perceptions on sustainability</b> Daniel Hanna, Global Head of Sustainable Finance, Standard Chartered Prof Jeff Obbard, Living Planet, Singapore & Cranfield University Stanislas Pottier, Chief Responsible Investment Officer, Amundi Asset Management Moderator: Henry Cho, Director, Head Sustainable Finance Asia Pacific, ING	<b>Open banking - It's a revolution. Navigating your way to a thriving, open, digital future</b> Francesco Simoneschi, CEO TrueLayer Michael Tang, Global Financial Services Digital Transformation Leader, Deloitte Noriaki Goto, Regional Executive for Asia, Senior Managing Executive Officer, MUFG Todd Schweitzer, CEO, Brankas Moderator: Michael Lawrence, CEO, Asia House	<b>Leadership Dialogue: Delivering Sustainable Impact</b> Arnaud Caudoux, Deputy CEO, Bpifrance Ganesh Rengaswamy, Founder, Quona Oki Matsumoto, Founder, Chairman and Chief Executive Officer, Monex Group, Inc. Moderator: Kabir Kumar, Partner, Flourish	<b>AI for Good</b> Luciano Floridi, Professor of Philosophy and Ethics of Information, University of Oxford and Director, Digital Ethics Lab, Oxford Internet Institute Nicolas Chapados, Co-Founder and Chief Science Officer, Element AI Shamina Singh, Founder & President, Centre for Inclusive Growth and Executive Vice President, Sustainability, Mastercard Moderator: Malavika Raghavan, Head, Future of Finance Initiative, Dvara Research		<b>Roundtable: Sustainability and Climate Change – The Future of Mankind (by Ecosystem)</b> Human actions threaten to move Earth towards an environmental tipping point, creating consequences that future generations must bear. There is a crucial need to promote sustainable development for the future of mankind. Failure to integrate environmental factors into decision-making puts the capital of financial institutions, and their investors, at unnecessary risk. Be part of this session and hear from global leaders on how collective action, as well as integration of environmental, social or governance criteria into financial services, can avert a climate crisis.
4:00pm – 4:50pm	<b>Change agents for a sustainable future</b> Curated by IFC Achal Agarwal, President, Asia Pacific, Kimberly-Clark Corporation Andrew Lim, Chief Financial Officer, CapitaLand Bruce Crane, Managing Director, Singapore, OMERS Infrastructure Ruth Horowitz, Deputy Chief Executive Officer and Chief Operating Officer, IFC Asset Management Company Moderator: Rachel Freeman, Chief Strategy and Innovation Officer, AMTD Group	<b>Opening</b> <b>Innovation from backend to frontend</b> Datuk Abdul Farid Alias, CEO, Maybank Group  <b>The Impact of Tech in the Financial Services Industry</b> Christian Unger, Co-Head, Industry Value Creation & Entrepreneurial Governance and Operating Directors, Partners Group Diane Reyes, Group General Manager, Global Head of GLCM, HSBC Jason Tu, CEO, MioTech Martin Jennings, CEO, Parmenion	<b>The Long View: How do CVCs and Family Offices drive Value Creation</b> Abhinav Jhunjhunwala, CEO, AJ Capital Anju Patwardhan, Managing Partner, CreditEase Jojo Malolois, Head of Digital Enterprises, JG Summit T.V. Mohandas Pai, Chairman, Aarin Capital Partners Rajeev Natarajan, Managing Director - APAC, Iconiq Moderator: Jinesh Patel, Partner, Dymon Asia Ventures	<b>Smart Machines, Smarter Humans?</b> Andy Maguire, Group Managing Director and Group Chief Operating Officer, HSBC Dean Tong, Managing Director & Head of Group Human Resources, United Overseas Bank (UOB) Lu Yu, Managing Director, Senior Portfolio Manager, Allianz Global Investors Tan Bin Ru, Chief Executive Officer, OneConnect Financial Technology Moderator: Greg Miller, Co-Founder & Executive Director, Faethm.ai		
5:00pm – 5:50pm	<b>Economics of climate change: Why should we care?</b> Ghazala Shahabuddin, Senior Scientist, Centre for Ecology, Development and Research (CEDAR) Linda Broekhuizen, Chief Investment Officer, FMO – The Dutch Entrepreneurial Development Bank Linda Broekhuizen, Chief Investment Officer, FMO – The Dutch Entrepreneurial Development Bank Moderator: Elsa Palanza, Global Head of Sustainability & Citizenship, Barclays  <b>Fireside Chat</b> <b>AI for Earth</b> Lucas Joppa, Chief Environmental Officer, Microsoft Moderator: Olivier Jan, Global Sustainability Leader, Deloitte	<b>Opening</b> <b>The New Long Life</b> Andrew Scott, Professor of Economics, London Business School  <b>Impact on new business models for insurance in the digital era</b> Prash Pandit, Managing Director, IAG Firemark Ventures Shamus Weiland, CIO, Manulife Yannick Even, Director, Head of Digital & Smart Analytics APAC, Swiss Re	<b>Riding the Investment Wave in Asia</b> Anju Patwardhan, Managing Partner, CreditEase Aymerik Renard, General Partner, Hardware Club Baijayan 'Jay' Panda, National Vice President & National Spokesperson, Bhartiya Janata Party (BJP) Khanh Tran, Partner, VinaCapital Ventures Moderator: Paul Santos, Managing Partner, Wavemaker Partner  <b>Closing</b> <b>How to close a million-dollar deal</b> Joel Yarbrough, VP Asia Pacific, Rapyd	<b>Power of the New Oil: Data</b> Elena Alfaro, Head of Data & Open Innovation, Client Solutions, BBVA Gregory Chen, Lead, Policy, Consultative Group to Assist the Poor (CGAP) Katharine Kemp, Senior Lecturer, Faculty of Law, University of New South Wales Moderator: Charles Ross, Editorial Director, The Economic Intelligence Unit  <b>Closing</b> <b>Creating the Marketplace Economy of the Future: Business in Real-Time</b> Brad Peterson, Executive Vice President, Chief Technology Officer & Chief Information Officer, Nasdaq		More details will be revealed
6:00pm – 7:30pm	<b>Happy Hour / Networking</b>					

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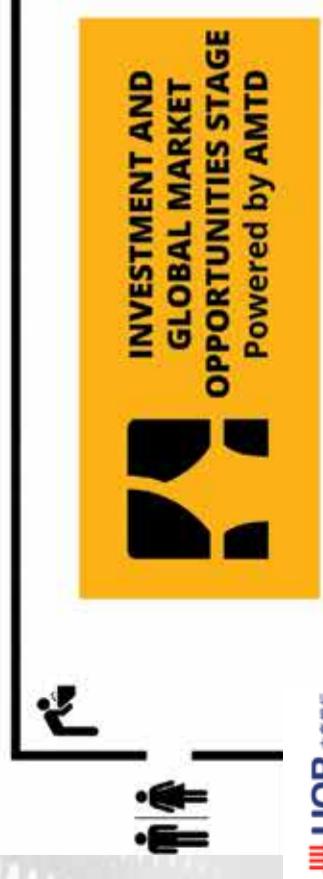
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THE BEGINNING

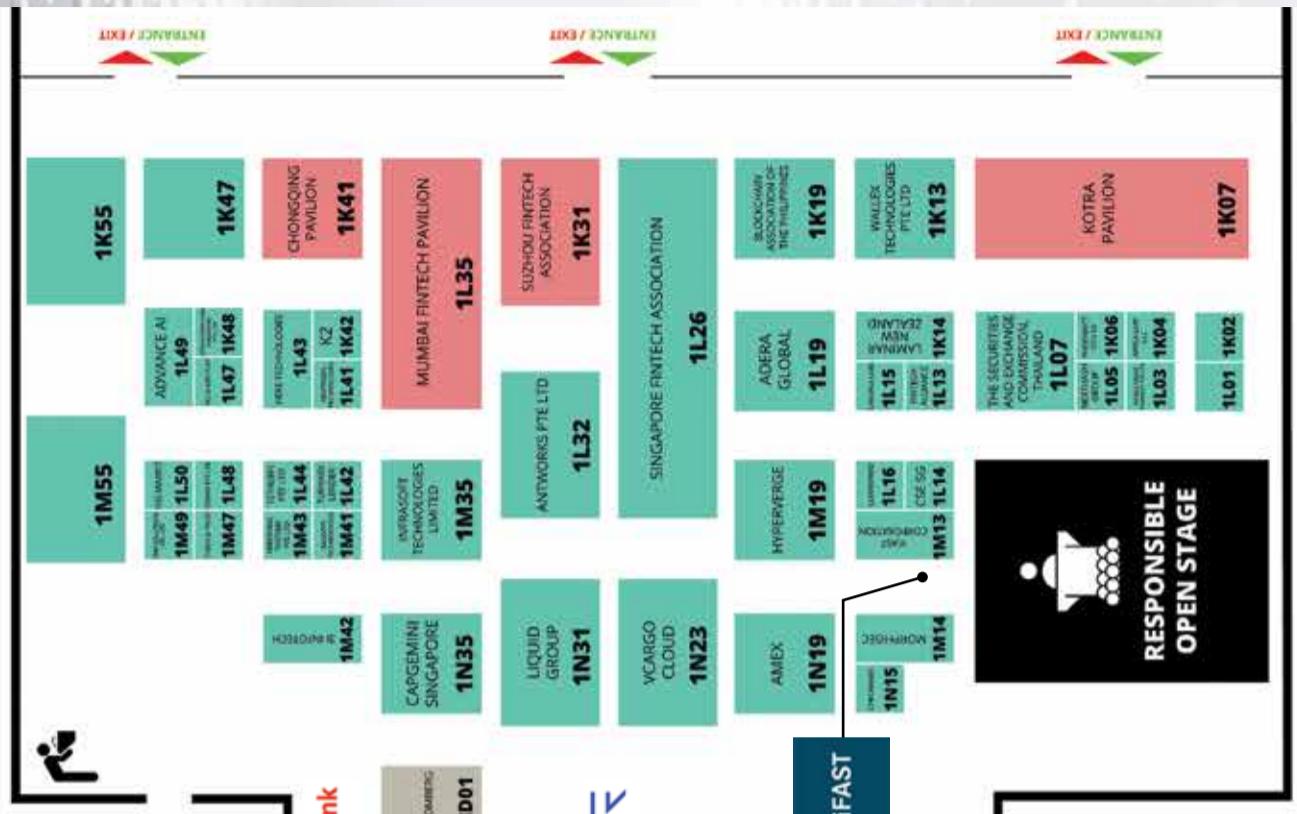


# FLOOR PLAN

## HALL 2 ▶



## HALL 1 ▶





# FinTech Conference

(Day 2, 12 November 2019)

SINGAPORE  
FINTECH  
FESTIVAL

SI.FINTECH

Tuesday, 12th November 2019

<p><b>The US Tech Giants Agenda: Conversation with Amazon, Intel, Microsoft &amp; Nasdaq</b></p> <p>Brad Peterson, <i>Executive Vice President, Chief Technology Officer &amp; Chief Information Officer, Nasdaq</i>  9:00am Kurt DelBene, <i>Chief Digital Officer &amp; Executive Vice President, Corporate Strategy, Core Services Engineering and Operations, Microsoft</i>  Michael Punke, <i>Vice President, Global Public Policy, Amazon Web Services</i>  Parviz Peiravi, <i>Chief Technology Officer, Financial Services Industry Solutions, Intel</i></p>																																																					
<p><b>B2C Hype vs B2B Opportunities</b></p> <p>Anshu Jain, <i>President, Cantor Fitzgerald</i>  9:50 am Moderator: Haslinda Amin, <i>Chief International Correspondent, Bloomberg</i></p>																																																					
<p><b>Sustaining Financial Services – Why Tech is Key</b></p> <p>Antoni Ballabriga, <i>Global Head of Responsible Business, BBVA</i>  10:10am Jennifer M. Johnson, <i>President &amp; Chief Operating Officer, Franklin Resources Inc (Franklin Templeton)</i>  Lucas Joppa, <i>Chief Environmental Officer, Microsoft</i>  Moderator: HE Jo Tyndall, <i>New Zealand High Commissioner, New Zealand High Commission Singapore</i></p>																																																					
<p><b>Sustainability and Design Thinking</b></p> <p>Cameron Sinclair, <i>Founder and Principal Designer, Archi.NYC</i>  10:50am</p>																																																					
<p><b>Evolution of Data Storage Technology: From carving in stone to writing in DNA</b></p> <p>Kees Schouhamer Immink, <i>President, Turing Machines Inc</i>  11:10am</p>																																																					
<p><b>Defining the future of Digital Currency</b></p> <p>HE Chea Serey, <i>Assistant Governor and Director-General of Central Banking, National Bank of Cambodia</i>  11:30am Christian Catalini, <i>Co-Creator of Libra &amp; Head Economist, Calibra</i>  Mu Changchun, <i>Director, Digital Currency Research Institute, People's Bank of China</i>  Umar Farooq, <i>Head of Digital Treasury Services &amp; Head of Blockchain CIB, J.P. Morgan Chase &amp; Co.</i></p>																																																					
<p><b>12:10pm BREAK</b></p>																																																					
<table border="1"> <thead> <tr> <th></th> <th><b>Sustainability, Finance and Tech</b></th> <th><b>Future of Finance</b></th> <th><b>Investment and Global Markets Opportunities</b></th> <th><b>Exponential Technologies</b></th> <th></th> </tr> <tr> <th><b>PM</b></th> <th><b>Sustainable Finance</b></th> <th><b>Payments</b></th> <th><b>Global Markets Outlook</b></th> <th><b>Blockchain</b></th> <th><b>Coral Triangle</b></th> </tr> </thead> <tbody> <tr> <td>1:00pm – 1:50pm</td> <td> <p><b>Opening</b>  <b>Eyeing humanity's impacts on Earth through satellite imagery</b>  Robbie Schingler, <i>Co-Founder &amp; Chief Strategy Officer, Planet</i></p> <p><b>SDGs: The blueprint for a sustainable future</b>  Dr Mahmoud Mohieldin, <i>Senior Vice President, World Bank Group</i>  Moderator: Melissa Moi, <i>Head of Asia Pacific, Environment, Social &amp; Governance, Bank of America Merrill Lynch</i></p> </td> <td> <p><b>Payments are Dead. Long Live Payments.</b></p> <p><b>Opening</b>  Joop Wijn, <i>Chief Strategy &amp; Risk Officer, Adyen</i></p> <p><b>Panel Discussion</b>  Andrea Donkor, <i>Vice President, Global Head of Regulatory Relations, PayPal</i>  Arik Shtilman, <i>Co-Founder &amp; Chief Executive Officer, Rapyd</i>  Jason Thompson, <i>Chief Executive Officer, OVO</i>  Joop Wijn, <i>Chief Strategy &amp; Risk Officer, Adyen</i>  Moderator: Dawn Tan, <i>Presenter, Channel</i></p> </td> <td> <p><b>Fireside Chat</b>  Arif Amiri, <i>Chief Executive Officer, Dubai International Financial Centre</i>  Moderator: Pieter Franken, <i>Director, ITAP</i></p> <p><b>Plugging the Trade finance Gap-How Technology is changing unmet financing needs of businesses</b>  Andrew Raymond, <i>CEO, Bolero International</i>  Sharon Yang, <i>Deputy Assistant Secretary for International Financial Markets, US Department of the Treasury</i>  Moderator: Adam Cotter, <i>Director &amp; Head of Asia, OFMIF</i></p> </td> <td> <p><b>Tokenisation of Everything: What does the future hold?</b></p> <p><b>Fireside Chat</b>  Joseph Lubin, <i>Founder, ConsenSys</i></p> <p><b>Panel Discussion</b>  Matthew Roszak, <i>Founder, Tally Capital</i>  Paul Veradittakit, <i>Partner, Pantera Capital</i></p> </td> <td> <p><b>1:00pm – 2:30pm</b>  <b>Roundtable: Driving Inclusion – Re-thinking The Unbanked (by Ecosystem)</b>  Financial inclusion is a significant subject to address for governments and institutions globally. However, there is still the pressing concern of unequal access to basic financial services, especially within the underbanked and underserved communities. Join leading industry experts while they discuss how FinTech innovations are reshaping the global financial landscape and what it takes to create a more equitable financial system.</p> </td> </tr> <tr> <td>2:00pm – 2:50pm</td> <td> <p><b>Sustainable finance: The trillion-dollar opportunity</b>  Beatrix Anton-Groenemeyer, <i>Managing Director &amp; Chief Sustainability Officer, Allianz Global Investors GmbH</i>  Celine Soubiran, <i>Head of Group Corporate Responsibility, AXA Group</i>  Michael Baldinger, <i>Head of Sustainable &amp; Impact Investing, UBS Asset Management</i>  Robin Hu, <i>Head, Sustainability and Stewardship Group, Temasek International</i>  Moderator: Suvir Varma, <i>Senior Adviser, Bain &amp; Company</i></p> </td> <td> <p><b>Breaking the rules; and rewriting them</b>  Maha El Dimachki, <i>Head of Payments Supervision Department, Financial Conduct Authority</i>  Simon Chesterman, <i>Dean, Faculty of Law, National University of Singapore</i>  Melisande Waterford, <i>General Manager, Regulatory Affairs and Licensing, Australian Prudential Regulation Authority</i>  Motonobu Matsuo, <i>Vice-Commissioner, Policy Making, Digital &amp; FinTech Strategy, JFSA</i>  Moderator: Jo Yeo, <i>Deputy Director, Payments Policy Lead, MAS</i></p> </td> <td> <p><b>Opening</b>  <b>The Essence of Digital Transformation</b>  Sonia Wedrychowicz, <i>Transformation Practitioner and Thought Leader, Former JP Morgan Chase and DBS Singapore</i></p> <p><b>The Rise of Digital Banks</b>  Chris Yao, <i>General Manager, Strategy &amp; International Business Department, JD Digits</i>  Nick Ogden, <i>Founder &amp; Chairman, ClearBank</i>  Nik Storonsky, <i>Chief Executive Officer &amp; Founder, Revolut</i>  Moderator: Andreas Braun, <i>MD, Accenture</i></p> </td> <td> <p><b>Securities Dematerialisation to Assets Tokenisation</b>  Adam Ludwin, <i>CEO, Chain and Interstellar</i></p> </td> <td> <p><b>2:30pm – 4:00pm</b>  <b>Roundtable: Exponential Technologies – Creating a Better World (by Ecosystem)</b>  Disruptive technologies are some of the most powerful forces in the world today. Exponential innovation in FinTech can drive growth in not only the commercial sector but also on a social level. Global Leaders from the financial services, technology, academia and public sector weigh in on how we can harness the power of exponential technology for the greater good.</p> </td> </tr> <tr> <td>3:00pm - 3:50pm</td> <td> <p><b>New deal for finance: Natural capital for resilient portfolios</b>  Richard Kooloos, <i>Director of Sustainable Banking, ABN AMRO Bank</i>  Michael van der Meer, <i>Director, RobecoSAM AG</i>  Moderator: Jeanne Stampe, <i>Head of Asia Sustainable Finance, World Wide Fund For Nature</i></p> </td> <td> <p><b>Fast Forward Payments. The future is here.</b></p> <p><b>Opening</b>  Chris Clark, <i>Regional President, Asia Pacific, Visa Inc.</i></p> <p><b>Panel Discussion</b>  Chris Clark, <i>Regional President, Asia Pacific, Visa Inc.</i>  Jeffrey Goh, <i>Group Chief Executive Officer, NETS Group</i>  Michael Moon, <i>Managing Director, Payments, Trade &amp; Communications, Asia Pacific, SWIFT</i>  Rahul Shinghal, <i>Head of APAC – Revenue &amp; Growth, Stripe</i>  Moderator: Masakazu Masujima, <i>Head of FinTech, Mori Hamada &amp; Matsumoto</i></p> </td> <td> <p><b>Global Leaders' Perspectives on Financial Services Innovation</b>  Hans Brown, <i>Global Head of Innovation, BNY Mellon</i>  Mikhail Patai, <i>Deputy Governor, Magyar Nemzeti Bank and Member of the Monetary Council</i>  Nicolas Aguzin, <i>Chairman &amp; CEO, Asia Pacific, CEO of International Personal Banking, JP Morgan</i>  Sassan Danesh, <i>CEO, Etrading Software</i>  Moderator: Nasir Zubairi, <i>CEO, Luxembourg House of Financial Technology</i></p> </td> <td> <p><b>Blockchain Interoperability</b>  Brian Behlendorf, <i>Executive Director, Hyperledger</i>  Marley Gray, <i>Principal Architect, Microsoft</i>  Richard Brown, <i>Chief Technology Officer, R3</i>  Moderator: David Treat, <i>Managing Director, Global Blockchain Lead, Accenture</i></p> </td> <td> <p><b>2:30pm – 4:00pm</b>  <b>Roundtable: Exponential Technologies – Creating a Better World (by Ecosystem)</b>  Disruptive technologies are some of the most powerful forces in the world today. 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Morgan Chase &amp; Co.</i>  Kitty Li, <i>Head, APAC Electronic Trading, UBS</i>  Roger McAvoy, <i>Senior Vice President, Markets, HKEX</i>  Stuart Jones, <i>Chairman, PASLA</i>  Moderator: Lyndon Chao, <i>Managing Director, ASIFMA Equities Division</i></p> </td> <td> <p><b>Opening</b>  David E. Rutter, <i>Founder &amp; Chief Executive Officer, R3</i></p> <p><b>Beyond PoCs: The Production Journey</b>  Christine Moy, <i>Executive Director, Blockchain Program Lead, J.P. Morgan Chase &amp; Co.</i>  David E. Rutter, <i>Founder &amp; Chief Executive Officer, R3</i>  Justo Ortiz, <i>Chairman, Union Bank Philippines</i>  Orapong Thien-Ngern, <i>President Siam Commercial Bank &amp; Chairman of the Board Digital Ventures</i>  Shalini Warrier, <i>Chief Operating Officer, The Federal Bank Ltd</i></p> </td> <td> <p><b>2:30pm – 4:00pm</b>  <b>Roundtable: Exponential Technologies – Creating a Better World (by Ecosystem)</b>  Disruptive technologies are some of the most powerful forces in the world today. Exponential innovation in FinTech can drive growth in not only the commercial sector but also on a social level. 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The current models deployed by banks and Mobile Network Operators (MNO) display a clustering in mainly urban centres, proving to be economically unviable in more rural areas. However, there are a new group of players that are targeting last mile distribution with increased success. Globally there has been an increase in the prevalence of different models which are being led by providers like FinTechs, e-commerce firms, FMCG companies and agribusiness that are showing signs of success in expanding into rural areas. There are already key learnings that can be adapted from a number of these models that can enrich the dominant bank and MNO models that are struggling in reaching the last mile. The key messages that are going to be focussed on, originate from the results of the Gates CICO program that includes work from CGAP, IDEO and BCG.</p> </td> </tr> <tr> <td>6:00pm – 7:30pm</td> <td colspan="5"> <p><b>Happy Hour / Networking</b></p> </td></tr> </tbody> </table>							<b>Sustainability, Finance and Tech</b>	<b>Future of Finance</b>	<b>Investment and Global Markets Opportunities</b>	<b>Exponential Technologies</b>		<b>PM</b>	<b>Sustainable Finance</b>	<b>Payments</b>	<b>Global Markets Outlook</b>	<b>Blockchain</b>	<b>Coral Triangle</b>	1:00pm – 1:50pm	<p><b>Opening</b>  <b>Eyeing humanity's impacts on Earth through satellite imagery</b>  Robbie Schingler, <i>Co-Founder &amp; Chief Strategy Officer, Planet</i></p> <p><b>SDGs: The blueprint for a sustainable future</b>  Dr Mahmoud Mohieldin, <i>Senior Vice President, World Bank Group</i>  Moderator: Melissa Moi, <i>Head of Asia Pacific, Environment, Social &amp; Governance, Bank of America Merrill Lynch</i></p>	<p><b>Payments are Dead. 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Bank less



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"DBS represents what we believe a bank should look like today. No other institution has worked so hard to embrace and lead digital disruption, by embedding digital innovation into everything it does – with a positive impact on the bottom line. It has achieved this with a clear-sighted focus on sustainability that positions it well for the years ahead."



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# FinTech Conference

(Day 3, 13 November 2019)

SINGAPORE  
FINTECH  
FESTIVAL

SiNTECH

Wednesday, 13th November 2019

8.30am	Keynote: Inclusive Finance and Diversity				
9.00am	<b>Great Merchant Digitalisation Story</b> Praveen Khandelwal, <i>National Secretary General, Confederation of All India Traders</i> Moderator: Matthew Gamser, <i>Chief Executive Officer, SME Finance Forum</i>				
9.20am	<b>A Macro View on Financial Inclusion</b> Ahmed Ali Al Sayegh, <i>Minister of State, United Arab Emirates, Executive Chairman, ADGM</i> Judith Karl, <i>Executive Secretary, UNCDF</i> Rajnish Kumar, <i>Chairman, State Bank of India</i> Tobias Adrian, <i>Financial Counsellor and Director of Monetary &amp; Capital Markets, IMF</i> Moderator: Alfonso Garcia Mora, <i>Finance Global Director – Finance Competitiveness &amp; Innovation, World Bank</i>				
10.10am	<b>Future of Central Banks: A Policy Fireside Chat</b> Agustin Carstens, <i>General Manager, Bank for International Settlements</i>				
10.30am	<b>Leader's Talk: Inspiring the Future</b> Heng Swee Keat, <i>Deputy Prime Minister of Singapore</i>				
11.00am	<b>Tech Legends: From Inventor to Investor</b> Dado Banatao, <i>Managing Partner, Tallwood Venture Capital</i> Eduardo Saverin, <i>Co-Founder and Partner, B Capital and Co-Founder, Facebook</i> Tan Min-Liang, <i>CEO, Razer</i> Moderator: Tilman Ehrbeck, <i>Managing Partner, Flourish</i>				
11.30am	<b>The Hard Stuff.</b> A panel of experts dig into the importance of hardware and security in an increasingly virtual world, moderated by Chris Colbert, the former Managing Director of the Harvard Innovation Labs. Prof Isaac Ben-Israel, <i>Director, Blavatnik Interdisciplinary Cyber Research Center</i> Sir Robin Saxby, <i>Former Founding Chief Executive Officer &amp; Chairman, ARM</i> Vincent Chong, <i>CEO, ST Engineering</i> Moderator: Chris Colbert, <i>Managing Director, One Eighty Global Innovation</i>				
12.10pm	(More details to be revealed)				
12.30pm	BREAK				
	<b>Sustainability, Finance and Tech</b>	<b>Future of Finance</b>	<b>Investment and Global Markets Opportunities</b>	<b>Exponential Technologies</b>	<b>SMEs and Platforms – Trade without Barriers</b>
<b>PM</b>	<b>Financial Inclusion</b>	<b>Future of Market Infrastructure</b>	<b>Tech-Driven Opportunities</b>	<b>Cyber Security</b>	<b>Coral Triangle *Open to Trade Visitors</b>
1:00pm – 1:50pm	<b>Opening</b> <b>Financial inclusion in the digital age: how to make a difference?</b> Denis Beau, <i>Deputy Governor, Banque de France</i>  <b>Financial Inclusion 2.0</b> Karen Miller, <i>Chief Knowledge &amp; Communications Officer, Women's World Banking</i> Naureen Hyat, <i>Co-Founder &amp; Chief Operating Officer, Tez Financial Services</i> Nestor Tan, <i>President and CEO of BDO Unibank</i> Sael Al Waary, <i>Deputy CEO, Arab Banking Corporation</i> Moderator: Greta Bull, <i>CEO, CGAP &amp; Director, World Bank</i>	<b>Disrupting Wholesale Markets</b> <i>Curated by ISDA</i> David Becker, <i>Head of Asia-Pacific, Broadridge International</i> Johan Toll, <i>Head of Digital Assets, NASDAQ Market Technology</i> Kate Birchall, <i>Head of Asia-Pacific, LCH</i> Ryan Wuebels, <i>Principal Strategic Investments, Goldman Sachs</i> Moderator: Scott O'Malia, <i>CEO, ISDA</i>	<b>Opening</b> <b>Productivity &amp; Technology: solutions to low inflation and low growth</b> Dr Amlan Roy, <i>Head of Global Macro Policy Research, Senior MD, SSGA</i>  <b>Rethinking of Financial Services business model to supercharge growth for stakeholders</b> Andrew Watkins-Ball, <i>Founder &amp; CEO, Jumo</i> Annerie Vreugdenhil, <i>Chief Innovation Officer, ING Wholesale Banking</i> Ben Goldin, <i>CTO, Mambu</i> John Stecher, <i>Chief Innovation Officer, Barclays</i> Moderator: Ridzuan Aziz, <i>President of FinTech Association of Malaysia</i>	<b>Building Cyber Resilience: From Reactionary to Proactive Measures</b> Alex Rice, <i>Founder &amp; Chief Technology Officer, HackerOne</i>  Karthik Ramanathan, <i>Senior Vice President, Cyber &amp; Intelligence (C&amp;I) Solutions, Asia Pacific, Mastercard</i> Tobias Gondrom, <i>Chief Information Security Officer, United Overseas Bank Limited</i> Moderator: Lijun Chui, <i>Counsel, Clifford Chance Asia</i> Wendy Callaghan, <i>Chief Innovation Legal Officer and Associate General Counsel</i> Moderator: Lijun Chui, <i>Counsel, Clifford Chance Asia</i>	<b>Digitise and Globalise – How SMEs and Ecosystems can change the World</b> • Jane Lim, <i>ACE, IMDA</i>  <b>The SME Growing Pains: Intimate Fireside Chat with Founders</b> • Audrey Regis, <i>President of Audrey Confectioneries</i> • Janak Sarda, <i>MD, Deshdoott Media Group</i> • Mr. Koh San Joo, <i>Managing Director, iHub Solutions Pte Ltd</i> • Kelvin Teo, <i>Co-Founder, Funding Societies</i> Moderator: Sameer Vakil, <i>CEO, Digivation</i>  <b>Remapping Trade Routes: The Impact of the Trade Wars on SMEs, Platforms and Supply Chain management</b> • Amlan Roy, <i>Head of Global Macro Policy Research and Senior MD at SSGA</i> • Winston Nesfield, <i>Partner, PwC Strategy &amp; Singapore Leader</i> • Praveen Khandelwal, <i>National Secretary, CAIT</i> Moderator: Robert Tay, <i>Cluster Director, IMDA</i>
2:00pm – 2:50pm	<b>Financial Inclusion and Blockchain- Is Blockchain the missing piece to Financial Inclusion?</b> Adrienne A Harris, <i>Chief Business Development Officer, States Title</i> Changpeng Zhao, <i>CEO, Binance</i> Moderator: Perianne Boring, <i>President and Founder of Chamber of Digital Commerce</i>	<b>Challenges in Building Technologies infrastructure for future banks</b> Bernard Gavagni, <i>Group CIO, BNP Paribas</i> David Hudson, <i>Co-Head of Digital Platform Services Corporate &amp; Investment Bank, JPM</i> Jonathan Larsen, <i>CIO Ping An Group &amp; Chairman &amp; CEO, Global Voyager Fund</i> Moderator: Pauline Wray, <i>MD, BCG</i>	<b>Digital Finance Transformation: Technology Developments in Financial Services Sector</b> Adam Reynolds, <i>APAC CEO, Saxobank</i> Christopher Davison, <i>Chief Executive Officer &amp; Co-Founder, BigPay</i> Jeremy Anderson, <i>Board Director, UBS</i> Katsunori Tanizaki, <i>Senior Managing Executive Officer and Group Chief Digital Innovation Officer, SMBC</i> Michael Gorri, <i>Group Chief Information Officer, Standard Chartered</i> Moderator: Ivo Distelbrink, <i>EVP, Head of APAC, Fiserv, Inc</i>	<b>Hunt or be Hunted: Staying Ahead with Cyber Security</b> Barry Libenson, <i>Group Chief Information Officer, Experian</i> Charles Henderson, <i>Global Managing Partner and Head of X-Force Red, IBM</i> Mikko Hypponen, <i>Chief Research Officer, F-Secure</i> Moderator: Jeffrey DiMuro, <i>Chief Security and Compliance Architect, Salesforce</i>	<b>What SMEs and platforms need to know – 2020 and beyond</b> • Chin Kok Poh, <i>Managing Director, SESAMI (Singapore) Pte Ltd</i> • Nikhilesh Goel, <i>Co-founder, Validus Capital Pte Ltd</i> • Dr. Santitarn Sathirathai, <i>Group Chief Economist, Shopee</i> • Sundeep Mohindru, <i>CEO, M1exchange</i> . Moderator: Dr Janos Barberis, <i>Co-Founder, Centre for Finance, Tech &amp; Entrepreneurship, UK</i>
3:00pm – 3:50pm	<b>Financial inclusion in the age of evolving Global FinTech Regulations</b> <i>Curated by Milken Institute</i> Brian Quintez, <i>Commissioner of the US Commodity Futures Trading Commission</i>  Dr Rafaelita M. Aldaba, <i>Undersecretary for Competitiveness and Innovation, Department of Trade and Industry, Philippines</i> Magdalena Borowik, <i>Chief FinTech Officer, Polish Financial Supervision Authority (KNF)</i> Moderator: Michael Piwowar, <i>Head of Centre for Financial Services</i>	<b>The China Dialogue – with academic support from Tsinghua Financial Review</b> David Ye, <i>CEO, Rong360/Jianpu Technology</i> Zhao Hong Qiang, <i>CFO, Bairong</i> Moderator: Ben Zhai, <i>Chief Strategy Officer, HC Financial Service Group</i>	<b>Emerging FinTech giants from Latin America</b> <i>Curated by IDB</i> Diego Caicedo, <i>Co-Founder and CEO of OmniBnk</i> Juan Ketterer, <i>Head of Connectivity, Markets and Finance, Inter-American Development Bank</i> Sebastian Rualde, <i>Corporate Business Development Director, Rappi</i>	<b>Collaborating to Combat Cyber Crime</b> Clark Smith, <i>SVP Cyber Fraud Threat Management, TD Bank</i> David Gurle, <i>CEO, Symphony</i> Steven Silberstein, <i>CEO, Financial Services Information Sharing and Analysis Center</i>	<b>Show me the money: SME Financing Reimagined</b> • Ankur Mehrotra, <i>MD of Grab</i> • David Simon, <i>Senior Vice President, Global Head of SMEs, Visa</i> • John Januszczak, <i>CEO of UBX</i> • Neil Daswani, <i>Global Head, Business Banking Trade &amp; Partnerships, SCB</i> Moderator: Matthew Gamser, <i>CEO, SME Finance Forum, IFC</i>
4:00pm – 4:50pm	<b>Africa FinTech 2.0: Beyond mobile money</b> Natalie Jabangwe, <i>CEO, EcoCash</i> Lobna Hilal, <i>Deputy Governor, Central Bank of Egypt</i> Moderator: Hisham Hendi, <i>Managing Director, Vodacom Tanzania</i>	<b>Singaporean FinTech success stories</b> Richard Koh, <i>CEO, MDAQ</i> Shailesh, Naik, <i>Founder &amp; CEO, MatchMove</i> Walter de Oude, <i>CEO, Singapore Life</i> Yash Kotak, <i>Co-founder &amp; CEO, Jumper.ai</i> Moderator: Murli Buluswali, <i>Head, US Consumer Analytics, Citi</i>	<b>Opening</b> Simone Robbers, <i>Assistant Governor, Reserve Bank of New Zealand</i>  <b>Financial Literacy</b> <i>Curated by Dame Diana Crossan, Chair, International Advisory Board, GFLEC</i> Professor Annamaria Lusardi, <i>Academic Director, Global Financial Literacy Excellent Center (GFLEC), George Washington University School of Business</i> John Roberts, <i>Co-Founder/CEO, Mosabi</i> Moderator: Dame Diana Crossan, <i>Chair, International Advisory Board, GFLEC</i>	<b>Driving Cyber Hygiene and Portability in the Cloud</b> Mark Johnston, <i>Head of security, Google Cloud</i> Myles Hosford, <i>Head of Security Architecture – ASEAN, Amazon Web Services</i> Myles Hosford, <i>Head of Security Architecture – ASEAN, Amazon Web Services</i> Steven D'sa, <i>Director, Mandiant Consulting, South-East Asia, FireEye</i> Tee Chun Meng, <i>Head of CISO office, DBS Bank</i>	<b>East Meets West: Debt Capital for Asian Platforms Business sans Borders: The Journey Ahead</b> • Ari Sarker, <i>Co-President, Asia Pacific, Mastercard</i> • Claus Andresen, <i>President and Managing Director, SAP Southeast Asia</i> • Ng Tiong Gee, <i>Chairman, Yellow Pages Singapore</i> • Robert Tay, <i>Cluster Director, IMDA</i> Moderator: Eugene Goh, <i>Deputy Director, MAS</i>
5.00pm	<b>Forging Pathways for Financial Innovation</b> Samuel Tsien, <i>CEO, OCBC</i> Rico Usthavia Frans, <i>Director of IT and Operation, Bank Mandiri</i>				
5.30pm	<b>Fireside Chat on Data, Trade and Connectivity</b> Justice Bellur N, Srikrishna, <i>Former Judge, Supreme Court of India</i> Dr Veerathai Santiprabhob, <i>Governor, Bank of Thailand</i>				
5.50pm	<b>Spacewalks with Sergey Ryazansky</b> Sergey Ryazanskiy, <i>Pilot-Astronaut, Hero of The Russian Federation</i>				
6.05pm – 7.30pm	<b>Closing Party</b>				

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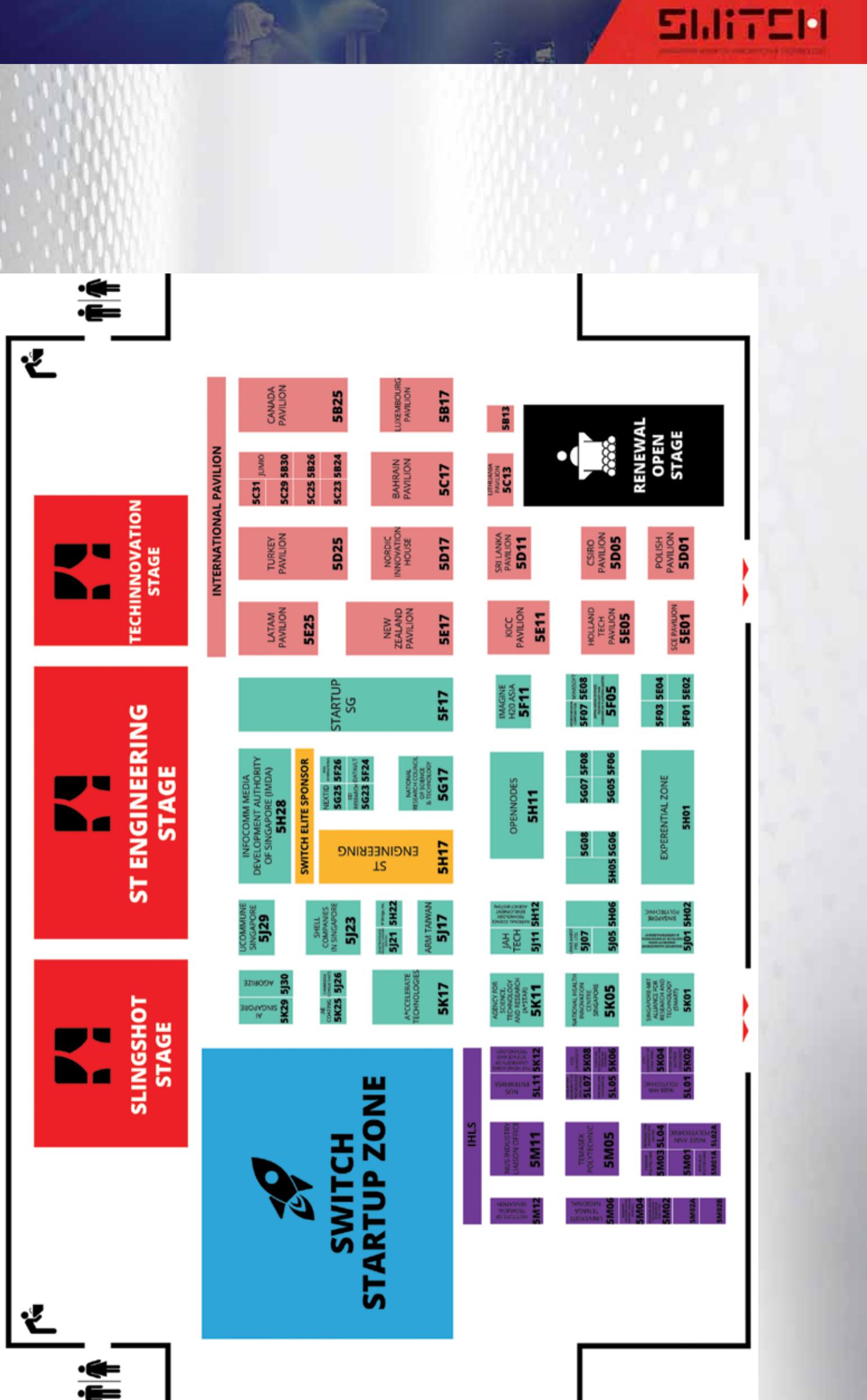
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# HALF 5



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