ASEAN BANKERS ASSOCIATION

DIGITAL
FORUM 2017
6 - 7 March, Bangkok, Thailand

PROGRAMME GUIDE

FOREWORD

Mrs Ong-Ang Ai Boon, ABS Director

The Association of Banks in Singapore (ABS) is pleased to organise the ASEAN Bankers Association (ABA) Digital Forum. ABS is a member of the ABA as well as Chairman of COFIT (Permanent Committee on the Cooperation in Finance, Investment and Trade) which is one of the three Permanent Committees of the ABA.

This Forum is an outcome of the ASEAN Banking Conference and Council Meeting which was held in November last year in Bangkok. We specially thank the Thai Bankers' Association for hosting this event.

For this Digital Forum, we have structured the content to focus on four fundamental building blocks namely;
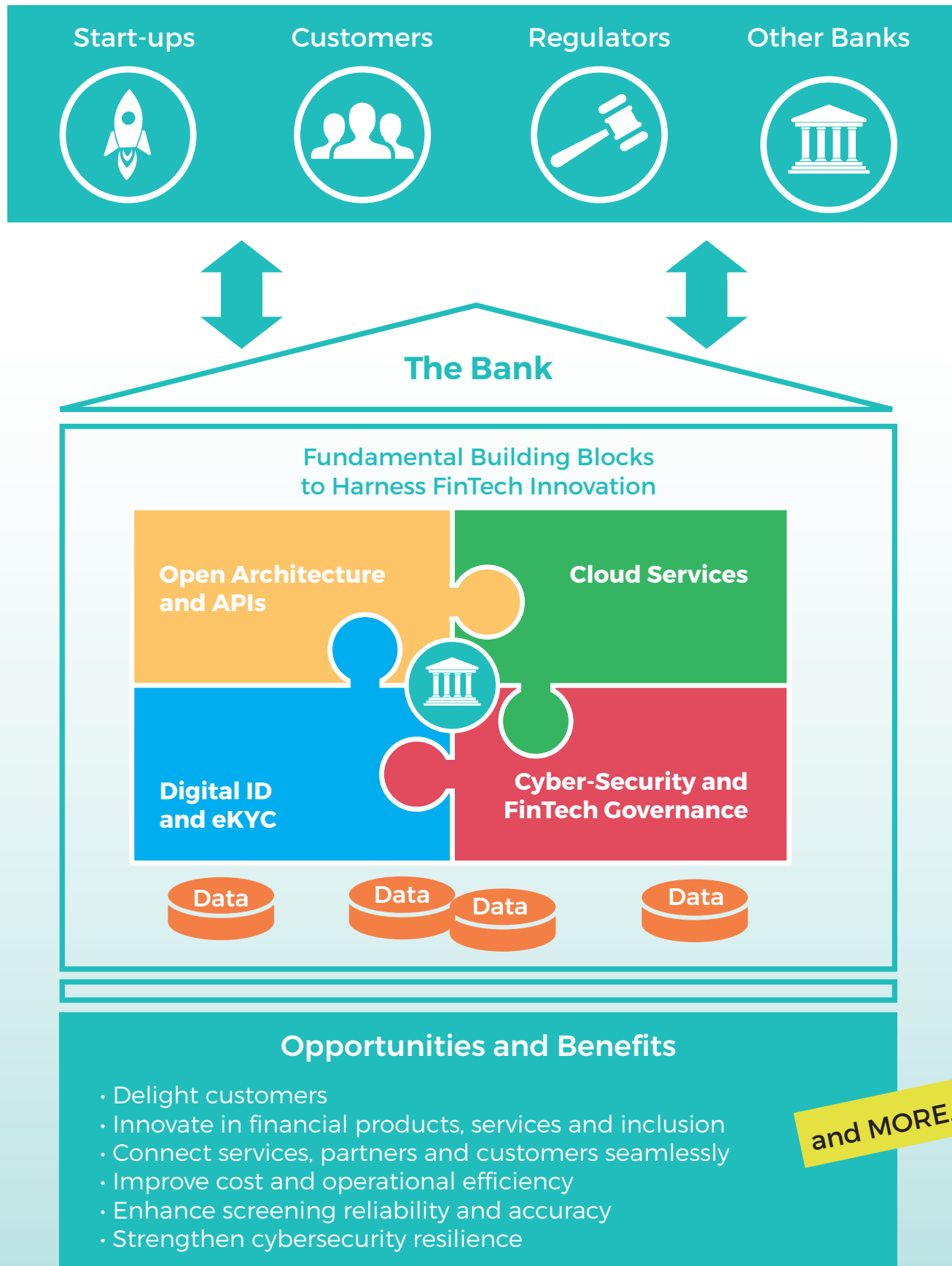
1. Open Architecture and APIs
2. Digital ID and eKYC
3. Cloud Services
4. Cyber-Security and FinTech Governance

These building blocks form the foundation to enable banks to strengthen their strategic competitiveness in the global financial arena with the harnessing of innovative technology. This Forum aims to provide our ASEAN banks with insights on how they can leverage these building blocks to accelerate their mobility and innovation initiatives including financial inclusion to reach the unbanked and underbanked. This is also a platform for sharing and collaboration to grow.
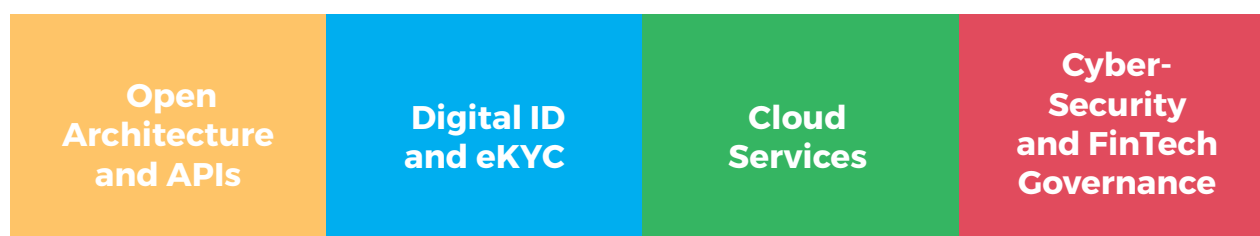
We also want to thank Deloitte, Ernst and Young, KPMG and PricewaterhouseCoopers for curating the content, and the banks and solution providers' for participating in the discussions. Lastly, please visit the startups' booths which will be show casing their solutions at the exhibition. Some of them will be joining the panel discussions as well.

We hope this Forum will kick-start many of such joint initiatives.

Here's wishing you a fruitful and enjoyable time at the Forum!

Start-ups   Customers   Regulators   Other Banks

The Bank

Fundamental Building Blocks to Harness FinTech Innovation

Open Architecture and APIs

Cloud Services

Digital ID and eKYC

Cyber-Security and FinTech Governance

Data   Data   Data   Data

Opportunities and Benefits

· Delight customers
· Innovate in financial products, services and inclusion
· Connect services, partners and customers seamlessly
· Improve cost and operational efficiency
· Enhance screening reliability and accuracy
· Strengthen cybersecurity resilience

and MORE...

FinTech Building Blocks

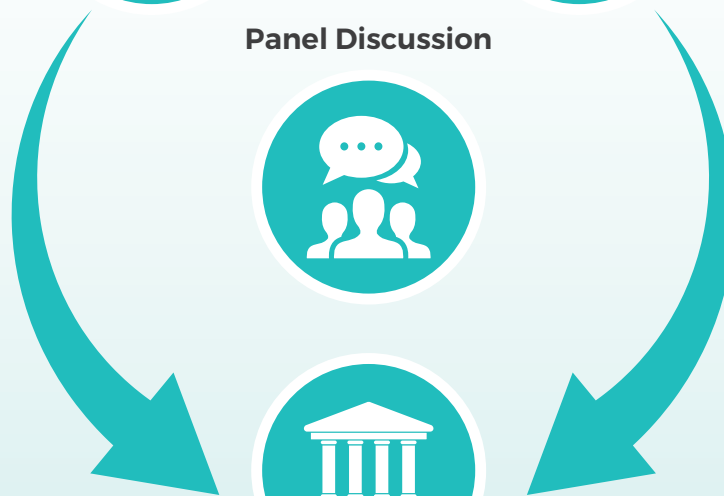| Open Architecture and APIs	Digital ID and eKYC	Cloud Services	Cyber-Security and FinTech Governance

Solutioning Perspective
Presentation/demo by solution providers

Start-up's Viewpoint
Presentation/demo by FinTech start-ups

Panel Discussion

Bank's Journey
Sharing of pilots or actual implementations by banks / FIs

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Day 1		
	Programme	**Speaker**
8.00 am	Registration	
8.30 am	Welcome Address	**Predee Daochai**, *Chairman, Thai Bankers' Association and President of Kasikornbank* **Ong-Ang Ai Boon**, *Director, The Association of Banks in Singapore*
8.40 am	The rise of FinTech in a digital economy – an ASEAN perspective A global report card on FinTech adoption, with focus on specific challenges and opportunities in ASEAN. Provides an overview of the critical FinTech building blocks.	**Jonathan Larsen**, *former Global Head, Retail Banking and Mortgages, Citibank based in Hong Kong and New York*
9.00 am	Fireside chat – Harnessing FinTech innovation	Moderator **Professor Annie Koh**, *Vice President, Office of Business Development, Practice Professor in Finance, Singapore Management University* Panelists **Jonathan Larsen**, *former Global Head, Retail Banking and Mortgages, Citibank based in Hong Kong and New York* **Sopnendu Mohanty**, *Chief FinTech Officer, Monetary Authority of Singapore*
FinTech Building Block #1 – Open Architecture and APIs		
9.30 am	Overview on open architecture and APIs Alain will provide insights into the global trends as well as the current state of adoption on open architecture and APIs across ASEAN; and highlight potential barriers and opportunities.	**Alain Schneuwly**, *Partner, Digital and Technology, Financial Services Industry , Deloitte South East Asia*
9.40 am	Enabling innovation with APIs Eduard will share UOB's API journey and the implementation process. Sonia will share DBS's digibank in India.	**Eduard Fabian**, *Managing Director, UOB Singapore* **Sonia Wedrychowicz**, *Managing Director, Digital Bank, DBS Singapore*
10.20 am	Architecting for the future Presentation on Digital Bank built by Deloitte on an Open API and Cloud infrastructure using agile delivery. Bank is block chain and biometrics enabled, is omni-channel across App, Internet, Instant Messaging and USSD2, and supports real time analytics. Presentation on how the early bet on APIs shaped Fidor Bank's digital architecture enabling fast and continuous innovation. The result is a bank with high speed architecture that enables agile innovation internally and externally, leveraging the power of ecosystem.	**Ben Davis**, *Associate Director, Innovation and Growth Services, Monitor Deloitte, South Africa* **Hassan Nasser**, *Global Head of Solutions Consulting, Fidor*
11.00 am	**Tea Break**	
11.20 am	Tapping the vibrant developer ecosystem Thibault from Moneythor, and Ravi from Yolopay will share the enabling impact of open architecture and APIs on developers, and the benefits to financial institutions and customers.	**Thibault Weintraud**, *Chief Technology Officer, Moneythor* **Ravi Patel**, *Co-founder, Yolopay*

Day 1		
	Programme	**Speaker**
12.00 pm	**Panel Discussion: Rebooting finance with APIs** The panel will discuss specific challenges and opportunities relevant in ASEAN, from business, technology, operations and governance perspectives.	Moderator: **Alain Schneuwly,** *Partner, Deloitte South East Asia* Panelists: **Eduard Fabian,** *Managing Director, UOB Singapore* **Hassan Nasser,** *Global Head of Solutions Consulting, Fidor* **Thibault Weintraub,** *Chief Technology Officer, Moneythor* **Bancha Manoonkunchai,** *Senior Director, FinTech Department, Bank of Thailand* **Saul Caganoff,** *Principal, Platform Engineering, Deloitte Australia*
12.40 pm	**Lunch + Tour the Exhibits**	
FinTech Building Block #2 – Digital ID and eKYC		
2.10 pm	**Overview on digital ID and eKYC** Nam Soon will provide insights into the global trends as well as the current state of adoption on digital ID and eKYC across ASEAN; and highlight potential barriers and opportunities.	**Liew Nam Soon,** *ASEAN Managing Partner Financial Services, EY Singapore*
2.20 pm	**Delighting customers with seamless eKYC** Chee Kin from DBS sharing key considerations while developing customer focused KYC solutions and balancing regulations with user convenience.	**Lam Chee Kin,** *Head Group Compliance, DBS Singapore*
3.00 pm	**Good data – critical for KYC and compliance** Financial institutions face three challenges: increasing data quality, operational efficiency, and customer experience. To meet those challenges they have to re-evaluate how KYC data is collected and generated within their institutions. "Good data" is not only critical for KYC and compliance assurance but for providing state-of-the-art service to the client during his/her entire lifecycle at the bank.	**Mark Büsser,** *CEO, IMTF*
3.40 pm	**Tea Break**	
4.10 pm	**Adapting solutions for digital ID and KYC for different regulatory environments** ASEAN has varied regulations regarding data sovereignty and cloud solutions leading to different classes of solutions – fully on-premise and fully cloud model. KYCK and Signzy will share solutions from opposite ends of this spectrum.	**Darryl Tan,** *Co-Founder, KYCK* **Ankit Ratan,** *Co-Founder and CEO, Signzy*
4.50 pm	**Panel Discussion: Building online identity and trust** The panel will discuss specific challenges and opportunities relevant in ASEAN, from business, technology, operations and governance perspectives.	Moderator: **Liew Nam Soon,** *ASEAN Managing Partner Financial Services, EY Singapore* Panelists: **Lam Chee Kin,** *Head Group Compliance, DBS* **Mark Büsser,** *CEO, IMTF* **Darryl Tan,** *Co-Founder, KYCK* **Ankit Ratan,** *Co-Founder and CEO, Signzy*
5.30 pm	**End of Day 1**	

Day 2		
	Programme	**Speaker**
8.30 am	**Connect Legacy & New Technologies Easier, Faster & Cheaper** Navin will share a powerful new approach to joining over 250+ structured, unstructured, real-time, API, Cloud, Blockchain data sources, without the need to trash any existing technology investments, plus preserve all existing processes and knowledge, while lowering risks associated with data movement.	**Navin Suri,** *Chief Executive Officer, Percipient Partners*
FinTech Building Block #3 – Cloud Services		
8.50 am	**Overview on Cloud Services** Tek Yew will provide insights into global maturing cloud trends, highlight potential barriers to cloud adoption across ASEAN and keys to unlocking cloud value.	**Chia Tek Yew,** *Head of Financial Services Advisory, KPMG Singapore*
9.00 am	**Improving operational efficiency with cloud services** Customer expectation and competition is rapidly changing and banks need to transform the way we work to deliver better and faster services to our customers. It is imperative for banks to be more agile and improve our ability and competencies in significant technology advancement through automation and cloud infrastructure provisioning. The journey just started.	**Altona Widjaja,** *VP, FinTech and Innovation Group, OCBC Bank Singapore*
9.40 am	**Building "Banking-as-a-Service"** Global digitisation combined with unprecedented changes to the financial services business model is mandating transformation. Microsoft empowers financial institutions to drive customer acquisition and retention, gain deep business insight, manage enterprise risk, and streamline operations Microsoft solutions enable banks to engage customers through seamless and contextual experiences across channels, enable a connected and collaborative workforce, and transform the business with connected and open systems. Through a combination of Microsoft and partner solutions, banks can turn data into insight, transform ideas into action, and turn change into opportunity.	**Orapong Thien-Ngern,** *General Manager, Microsoft Thailand*
10.20 am	**Tea Break**	
10.40 am	**Bringing technological innovation to the next level** Assume human behaviour is not random but chaotic and complicated but predictable. So if machine intelligence (AI) enabled by cloud is able to decode, understand and predict behaviour and through acquisition of large unstructured data sets, it helps solve a big pain point for financial institutions. Sqreem puts a finger on the pulse of a firm's brand and products, providing an understanding of who the client is by life stages and behaviors to better position targeted marketing campaigns to place products, acquire new clients, and cross and/or upsell to existing clients.	**Ian Chapman-Banks,** *CEO and Co-Founder, SQREEM Technologies business*
11.20 am	**Panel Discussion: Recipe for banking in the cloud** The panel will discuss specific challenges and opportunities relevant in ASEAN, from business, technology, operations and governance perspectives.	<u>Moderator:</u> **Chia Tek Yew,** *Head of Financial Services Advisory, KPMG Singapore* <u>Panelists:</u> **Altona Widjaja,** *VP, FinTech and Innovation Group, OCBC Bank Singapore* **Orapong Thien-Ngern,** *General Manager, Microsoft Thailand* **Ian Chapman-Banks,** *CEO & Co-Founder, SQREEM Technologies business* **Navin Suri,** *Chief Executive Officer, Percipient Partners*

Day 2		
	Programme	**Speaker**
12.00 pm	**Lunch + Tour the Exhibits**	
FinTech Building Block #4 – Cyber-Security and FinTech Governance		
1.40 am	**Overview on Cyber-Security and FinTech Governance** Vincent will provide insights into the global trends as well as the current state of adoption on cyber-security and FinTech governance across ASEAN; and highlight potential barriers and opportunities.	Vincent Loy, *Asia Pac Financial Crime and Cyber Leader, PwC Singapore*
1.50 pm	**Achieving the right balance between security and innovation** Teeranun will share the journey in strengthening its cyber security posture as Kasikornbank embarks on the FinTech and digital journey and how they use innovative solutions to deal with cyber-security threats	Teeranun Srihong, *President and Chairman, Kasikorn Business-Technology, Kasikornbank Plc Thailand*
2.30 pm	**Cyber-security imperatives for cyber-security success in the digital age – ¨Effective tactics, techniques and procedures (TTP) with the use of innovative technology"** Alvin will explore the threat landscape, policy, strategy, organisation, architecture and enabled innovative technology required to ensure cyber security success in the digital age.	Alvin Tan, *Country Manager, Palo Alto Singapore*
3.10 pm	**Tea Break**	
3.40 pm	**Investing in Cyber-Security technology** Research shows that attackers are getting better and faster at what they do at a higher rate than defenders are improving their trade. It's time to take the new way with new technology to detect advanced malware. The greatest challenge in security for any organisation, is to know where and when attacks will happen. Meanwhile the vast majority of security solutions currently offered to enterprises, can only prevent previously known attacks or threats. As a result, enterprises face many potential risks with severe consequences, while the pressure of reducing time and cost is higher than ever. This talk will focus on the ideas to build a next generation security solution to address all of these concerns.	Minh Duc Nguyen, *Founder, CyRadar*
4.20 pm	**Panel Discussion: Managing cyber risks while adopting innovation** Open Architecture and AI, Cloud Services, Digital ID and eKYC are just some of the key enablers in the digital transformation journey for FIs. However, implementing these enablers will carry some risks. One of the most relevant is cyber risks. This panel will discuss how FIs can embark on this digital journey while managing the cyber risks that come with it.	<u>Moderator</u> Vincent Loy, *Asia Pac Financial Crime and Cyber Leader, PwC Singapore* <u>Panelists</u> Teeranun Srihong, *President and Chairman, Kasikorn Business-Technology, Kasikornbank Plc Thailand* Alvin Tan, *Country Manager, Palo Alto Singapore* Minh Duc Nguyen, *Founder, CyRadar*
5.00 pm	**End of Day 2**	

FinTech Building Block #1- Open Architecture and APIs

"Open APIs are the next evolution in 3rd Party integration"
As of today there almost 17,000 Open APIs available globally[1]

Statement 1	Statement 2	Statement 3	Statement 4	Statement 5
Open APIs is an approach to generating top line and bottom line business effects	Open API sets the path to becoming an Exponential Firm	Open API Ecosystems are reached traversing through an API maturity path	Open API requires active governance	API is a platform and a community approach

Market insights

Internet has changed how we interact with people and businesses in various industries. However, the business model for banks remains largely intact over the years, oblivious to the waves of technological innovations. This is set to change, as we are on the cusp of an API-driven economy, where banks can seize the opportunity and avoid being disrupted.

It is time for banks across ASEAN to commit and make concrete investments to embrace this change. Alongside, it is equally important to educate and promote the benefits of architecting and deploying API-driven services. Only then can we connect to the developer community for external talents and harness the benefits of emerging technology efficiently and effectively.
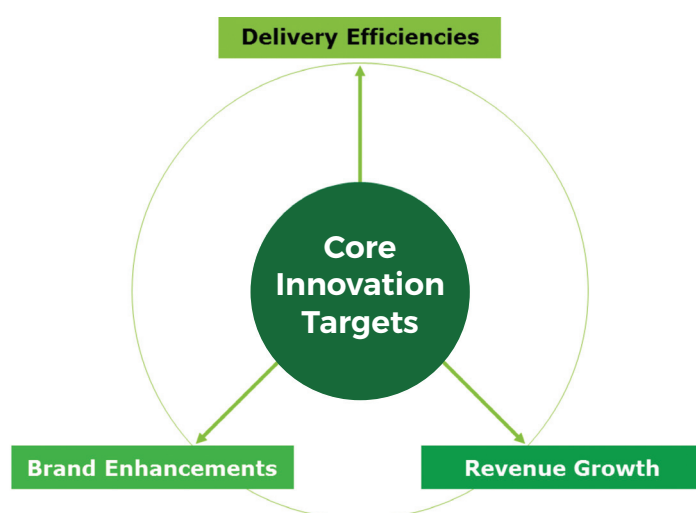
"Benefits of Open APIs at both ends of the spectrum –
Cost and Revenue"

"Open APIs can enable ASEAN banks to not just explore additional revenue opportunities but also optimize their cost base in a number of ways"

[1]Source: ProgrammableWeb, http://www.programmableweb.com, accessed February 28th 2017

"But how do you measure success of an Open API approach?"

Core Innovation Targets

- Delivery Efficiencies
- Brand Enhancements
- Revenue Growth

A three pronged approach is needed to effectively measure the success of an Open API approach covering

1. Delivery Effectiveness - Making core capabilities available as simple APIs promote efficient re-use, reduced effort and increased availability and dependability of systems & processes within the banks resulting in cost efficiencies

2. Brand Enhancement - Rich product features combined with global accessibility and better availability will provide a frictionless approach to target customers and lead to the heightened brand perception of the product & services

3. Revenue Growth - Exposure of core product/services capabilities through APIs to enable various B2B and B2B2C product & service models helps promote end-user uptake and drives consumption of existing resources

"And how do we measure API readiness in ASEAN?"

Following parameters are considered for assessing the API readiness of banks in ASEAN:

1. Availability of APIs
2. IT Infrastructure Readiness
3. API Governance and Standardisation
4. Availability of Talent

Banks in ASEAN still lag global banks on these four areas and are yet to attain the full potential of an Open API economy. **Singapore, Indonesia, Malaysia and Thailand are leading the charge** however there are gaps that they need to bridge across these four areas.

On the Talent front, the key for banks in the region is to **bridge gaps in Functional Talent** – people who understand the business implications and benefits of APIs and can become the evangelist for the new thinking and custodian of the API library going forward. They need to be **supported by a critical mass** of rightly skilled **Technical Talent**.

Singapore has taken a giant leap forward with the release of its **Finance-as-a-Service API Playbook,** which identifies common and useful APIs for the industry and cross-sectoral stakeholders, as well as details guidance on information security standards and governance models for financial institutions and FinTech players. It's important for regulators to continue to provide clear guidelines around regulatory impact of APIs and facilitate the development of an API ecosystem.

On Technology Infrastructure, banks will need to have an appropriate infrastructure to facilitate API development. Financial institutions with legacy systems often struggle to quickly integrate innovative technology into their business.

These three foundational parameters contribute to API availability and the progress they make on these factors has a direct bearing on the availability of the APIs.

FinTech Building Block #2: Digital ID and eKYC

Current landscape

Increasing regulatory scrutiny is requiring financial institutions to do more with KYC. Significant budget and time is dedicated to compliance.

According to survey data on client screening,[1] PEP/watch list screening and identifying source of funds cause the highest levels of frustration, with screening of high-risk clients requiring 5.4 human workforce hours. Capturing data and collating documents also rates among the greatest pain points. Two thirds of the respondents to the survey indicated they would increase their client due diligence spend in 2016-17, with the majority evenly split between staff recruitment and investing in technology.

A key issue for financial institutions is that KYC processes such as customer information collection and alert investigation remain largely manual and inefficient. Rule-based software is used for various processes but has limitations.

KYC processes need to be enhanced with automation (e.g. RPA), together with implementation of greater risk management and controls (e.g. via introduction of digital IDs). FinTech innovation, biometrics and secure mobile credentials are supporting the development of digital IDs, delivering customer focused solutions with better security and individual control over personal data.

Trends

Automation of KYC – improving compliance and building trust

- Financial institutions are looking to automate processes, to enable the human workforce to focus on the areas that are value add (e.g. looking at exclusions).

- Employing robotics improves speed and data analysis, and reduces errors/false positives.

- More advanced robotics solutions offer the potential to analyse large volumes of structured and unstructured data from different sources, to pick up on patterns and trends in real time.

- Automation ensures quicker onboarding of customers, resulting in both a better customer experience and cost savings for financial institutions.

Exploring centralised utilities for efficiencies, better customer experience

- Co-investing in industry utilities with competitors is expected to become a key trend of the future. [2]

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[1] Wealthbriefing/EY/smartKYC survey of 106 financial professionals in the UK, EU, Switzerland, Hong Kong, Singapore and US, 2016
[2] EY, Capital Markets: building the investment bank of the future, 2016

- Utilities offer the opportunity for a more standardised approach to data collection and sharing, improving processes and cost efficiencies by simplifying and automating KYC processes.

- From the customer's perspective, a utility avoids the need to provide similar information across multiple banks and thus improves the customer experience.

- Data privacy laws in some jurisdictions (e.g. requirements to keep customer data onshore/not in the cloud) may create challenges for banks that operate across multiple jurisdictions.

Biometrics as a more secure and frictionless form of identity verification

- Fingerprint and voice biometric authentication are being used by some banks in ASEAN.

- Iris, facial, palm vein, heartbeat and behavioural biometric recognition are other authentication options being explored.

- One example of a biometrics-enabled ID system is India's Aadhaar, a 12 digit unique-identity number. E-KYC has reduced the time required for customer verification from two to four weeks to less than a minute. [3]

Blockchain technology likely to play a role in establishing secure digital identities

- Access to a user-driven ID on a blockchain, would allow customers to provide a key to verify their identity securely.

- The R3 blockchain consortium has undertaken a proof of concept of a distributed ledger-based KYC registry that provides a mechanism for complying with KYC regulation. [4]

- The shared KYC service would allow participants to create and manage their own identities including relevant documentation. They can then permission other participants to access this identity for KYC purposes.

- The approach to sharing data, whereby only those with a need to see it will have access, addresses data privacy and security concerns.

Use of smartphones to access financial services demands a secure mobile identity

- Consumers want convenience, ease of use, speed and security in their online and mobile transactions. According to GSMA research, 87% of consumers have left a website when asked to register; 83% of mobile users have concerns over sharing personal information when accessing the internet or apps; 40% using the 'forget password' feature monthly.

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[3] ADB, Accelerating financial inclusion in Southeast Asia with digital finance, 2017

[4] International Business Times, R3 develops proof-of-concept for shared KYC service with 10 global banks, 10 Nov 2016 http://www.ibtimes.co.uk/r3-develops-proof-concept-shared-kyc-service-10-global-banks-1590908

- As smart phones become a primary means for consumers to access financial services, a more secure mobile-based identity (e.g. token-based authentication embedded within the mobile device, biometrics) is key to building greater trust. Mobile identity services can help improve customer satisfaction and increase advocacy by developing trust in keeping personal information safe and reducing incidences of fraud, security and privacy breaches.

Challenges

Developing a unified approach to digital ID systems

- To streamline interactions while ensuring individual identities remain secure requires a unified approach to digital ID systems that can be adopted by multiple organisations. This is particularly important for the Asia-Pacific region, with data showing identity attacks at a rate double the global average and rising, attributed to the region's higher rates of cross-border transactions.[5]

- A 'digital passport' can optimise the customer experience: simple enrolment, with data provided once, with the individual/entity responsible for keeping the data up to date and who to share it with.

Consumer protection/fraud control – can e-commerce help?

- The Asia-Pacific region has major e-commerce potential: the region' share of B2C e-commerce increased from 27.9% in 2011 to 40% in 2016 of global sales.[6] But to fully realise this potential, consumers need to have trust and confidence in the safety and security of their data.

- The rise of e-commerce is likely to drive greater investment in identity systems and processes to protect against fraud. 87% of respondents to a 2015 survey (including financial services respondents from Singapore, Malaysia and Indonesia) predicted that improving the customer experience would drive greater investment in identity systems and processes.[7]

Balancing security versus user experience

- Each online transaction needs the appropriate level of access control—balancing security risks against user friendliness and cost factors.

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[5] Threatmetrix, Cybercrime attacks rise 40 percent across Asia-Pacific with identity attacks double the global average, 13 Dec 2016 https://www.threatmetrix.com/press-releases/cybercrime-attacks-rise-40-percent-across-asia-pacific/

[6] Asean Secretariat News, ASEAN, Korea to build trust and confidence in e-commerce, 7 Sept 2016

[7] Telstra, Mobile identity: the fusion of financial services, mobility and identity, May 2015

ASEAN government and regulatory digital ID initiatives

Indonesia

- An advanced adopter of digital ID credentials with e-KTP using multiple biometrics and ease of 3rd party integration with on/offline verification

- Data from e-KTP allows financial institutions to simplify KYC processes, while use of digital signatures is also permitted on government documents.

Malaysia

- Has a progressive, multipurpose ID system, MyKad with universal coverage and 3rd party integration

- A centralized data-sharing repository allows access to stored data on MyKad (e.g. for real-time authentication by banks to manage bribery and fraud)

Philippines

- Its Unified Multi-Purpose ID (UMID) system has extremely low coverage, is difficult to integrate and offers only a chip-based offline authentication process

- Transitioning to Filipino ID (FID) as the single ID for all transactions

Singapore

- Developing industry KYC utility to centralize processes

- Also enables FIs to leverage government registered information with client consent (using MyInfo, the personal data platform containing government-verified personal details) Piloting MyInfo with 2 banks in Q1 2017, before scaling to other FIs

Thailand

- Bank of Thailand's Financial Sector Master Plan promotes adoption of e-payment services and strengthening of online procurement by means of e-contracts and invoices

- eKYC regulation permits select account opening via e-devices with customers' information verified via a smart card reader or biometric technology

Vietnam

- ID system remains paper-based without authentication services, but it is piloting a new national e-ID system & service delivery framework

- State Bank of Vietnam is pushing for tighter payment security, biometric authentication and PKI (public key infrastructure) for large transactions

Presented by KPMG

FinTech Building Block #3 – Cloud Services

A. Introduction

Cloud computing is evolving and expanding rapidly. The benefits of cloud can be immense as cloud can enable Financial Institution (FIs) to deliver business outcomes and innovations quickly, securely and sustainably with little, if any capital expenditure. And there are many different kinds of clouds services as there are many different kinds of Cloud Service Provider (CSPs).

Key cloud considerations revolve around data protection and data sovereignty, which applies to any form of technology service, but they can become more complex in cloud. This is because the cloud platform may be shared with many other unknown tenants, where customer data may be stored and processed in many different jurisdictions.

Financial Institutions (FIs) must choose the right cloud service and service provider for the job based on the common Service & Deployment models, in order to get the optimum benefits from cloud, without compromising the overall security of information assets.

Service models	Deployment Models
Infrastructure-as-a-service (IaaS) CSP provisions a virtual infrastructure for the application processing and storage of data	**Public cloud** Applications, data storage and other resources owned and managed by CSP
Platform as a service (PaaS) On-demand environment for consumers to develop and deploy applications of their own	**Private cloud** Consumers procure dedicated infrastructure from CSP
Software as a service (SaaS) CSP delivers business applications, on demand and typically on a subscription basis	**Hybrid cloud** Balances use of different cloud deployment models for flexibility and scalability

B. Cloud Adoption – key risks and how to mitigate them

Transitioning to the cloud is a non-trivial decision for FIs and those responsible and accountable for making such decisions need to consider:

Key Risks

· Data sensitivity, minimum security controls

· Criticality of service to FI, customers & partners

· Regulatory and privacy restrictions

Operational Risks

- Confidentiality, integrity and availability of the data maintained
- Where the data is stored and if off-shore, are the additional legal implications and risks assessed, well understood
- Data encryption and who generates, holds and distributes the encryption keys
- Monitoring of data over a diverse cloud-base supply chain
- Accessibility of cloud services for users, seamless yet secure
- Independently assured certifications and accreditations that the CSP hold
- Clear "Exit Plan" whereby the data and service should be easily moved from one CSP to another
- Fit for purpose cloud contract that is compliant with all applicable regulations
- Jurisdiction specified within the contract for the purposes of conflict resolution

C. Top 10 Key Considerations for FI Decision Makers

Risks to adoption needs to be well understood and mitigated. With primary concerns of security, privacy and data protection serving to inform decision making, key considerations for FI decision maker include:

1. Adherence to regulations: FIs need to comply with the regulations of each country's jurisdiction that the organisation operates and does business in.

2. Organisational readiness: Ensure that relevant stakeholders within the organisation understand the implications of the cloud model for their functions and have plans in place to push through the relevant cultural, technical and procedural change.

3. Develop a cohesive and consistent approach: Organisations will likely implement an ever increasing number of cloud services, across a variety of service and deployment models; organisation should have a clear and consistent approach to the management of cloud services.

4. Evaluate the data and service: Identify the types of data that may be required to be stored or processed in the cloud and note any regulatory or legislative requirements on the data or service concerned.

5. Determine the appropriate security wrap: Identify the security controls that you need to be able to apply to protect the confidentiality, integrity and availability of the data and services to be hosted in the cloud; specify which of those controls are mandatory and which may be waived as part of an informed risk balance case. This security wrap must be informed by a comprehensive assessment of the services and data in scope.

6. Evaluate the proposed cloud service: Map the required security controls on to the proposed cloud service(s) and identify where there are gaps in capability – or where the provider may offer services that allow an alternative approach to securing the data or service to be delivered. Document residual risk.

7. Document responsibility splits: Identify where responsibility sits for delivery of the various capabilities (technology and process) – is it the provider or the data owner? It is the common mistake to find gaps in delivery responsibilities during implementation and it is usually far more cost–effective to document cohesive hand-over points between provider and consumer to fill any gaps in delivery responsibility as the cloud providers offer a standardized service.

8. Evaluate the service provider and service terms: Conduct due diligence activities with respect to the service provider, e.g. financial stability, examination of independent assurance and accreditation statements, ethical and independence checks, etc. Review the standard terms and conditions offered by the cloud provider and consider any additional clauses that may be available for relevance. Issues to consider include regulatory and legislative compliance, data location and jurisdiction and exit, e.g. how long does the provider make data available for extraction after termination?

9. Take the accountability test: Ensure that the justifications for the decisions taken with respect to the adoption of cloud services can pass the accountability test – is the decision justifiable to your customers, your Board, your shareholders or the press/media if the worst comes to pass and the cloud service is compromised? Could the organisation bear the reputational damage of it was found to be storing sensitive data off-shore, or placing large contracts with providers that practices tax avoidance?

10. Make an informed decision: Based on all of the above, in particular a balancing of the residual risk and the expected benefits, make a defensible choice on whether or not to proceed with a cloud based solution.

D. Regulatory Landscape for ASEAN members
(Less Brunei, Myanmar, Laos, Cambodia – where legislation, infrastructure and public awareness are still evolving)

Most ASEAN countries apply Outsourcing regulations in relation to Cloud Services. The adoption of Cloud Services and the regulatory landscape differs for each country's jurisdiction and in some jurisdictions, the regulations are not always clear. Summary by themes is as follows:

	Indonesia	Malaysia	Philippines	Singapore	Thailand	Vietnam
Cloud Services Permitted?	Yes	Yes	Yes	Yes	Yes	Yes
Is due diligence required?	Yes	Yes	Yes	Yes	Yes	Yes
Are there specific Cloud Services regulations?	No	No	Yes	No	No	No
Is approval needed from Regulators?	Yes	Yes^	Yes	No	Yes*	No
Must the Regulators be notified?	Yes	Yes	Yes	Yes* #	Yes*	No
Is there a prescribed document or questionnaire for FIs to complete?	Yes	No	Yes	Yes	Yes	No

^ If data is tranferred off-shore

* For "material" projects only

Source/Report dated 2015. MAS has since removed the expectation for FIs to pre-notify MAS of material outsourcing arrangements (including cloud).

Source: Asia's Financial Services: Ready for the Cloud 2015

E. Scenario Based Cloud Control Guidance Matrix

In 2016, the Association of Banks in Singapore (ABS) developed an "Implementation Guide for FIs in Singapore" with the intent to assist FIs in understanding approaches to due diligence, vendor management and key controls that should be applied.

ABS Guide: Scenario-based cloud control guidance matrix

	1. Encryption and/or tokenization	2. Dedicated equipment	3. Change management	4. Virtualised environment security	5. User access management/ segregation of duties	6. Collaborative disaster recovery testing	7. Security events monitoring and incident management	8. Penetration testing and vulnerability analysis	9. Administrative remote access	10. Secure system development life-cycle	11. Securing log data and backups
Client facing systems											
Internet banking, payment portals, CRM	■	■	■	■	■	■	■	■	■	▨	■
Service management	■	☐	■	■	■	■	■	■	■	▨	▨
Microsites and surveys	☐	☐	■	■	■	☐	■	■	■	▨	▨
Data analytics	■	☐	■	■	■	▨	■	■	■	▨	▨
Compliance											
Fraud prevention services	■	☐	■	■	■	☐	■	■	■	▨	■
Email security products	■	☐	■	■	■	☐	■	■	■	▨	■
Security operations centre (SOC)	■	☐	■	■	■	☐	■	■	■	▨	■
Infrastructure & delivery											
Authentication services & HR portal	■	☐	■	■	■	☐	■	■	■	▨	■
Content delivery networks	☐	☐	■	■	■	☐	■	■	■	▨	▨
Testing and delivery operations	☐	☐	☐	▨	■	☐	☐	■	■	▨	▨
Data rooms	■	☐	■	■	■	☐	■	■	■	☐	☐

Legend: ■ Strongly recommended   ▨ Recommended   ☐ FI discretion

Sources: ABS Cloud Computing Implementation Guide 1.1

References:
- KPMG Moving to the Cloud – Key Considerations (Feb 2016) & KPMG Journey to the Cloud – The Creative CIO Agenda (2017)
- ABS Cloud Computing Implementation Guide 1.1 (for the Financial Industry in Singapore, 2 August 2016)
- Asia's Financial Services: Ready for the Cloud 2015

FinTech Building Block #4- Cyber-Security and FinTech Governance

Current environment and future state of Cyber Security in ASEAN Countries

Cybercrime has a high economic cost for ASEAN countries. Between 2007 and 2012, Malaysia reportedly lost nearly $900 million to cybercriminals while over 70% of all crimes[1] in the country are considered cybercrimes. Additionally, cybercrime costs neighbouring Indonesia $2.7 billion on an annual basis[2]. In 2013, Singapore had the highest per capita losses to cybercrime in the world at $1,158[3].

1. ASEAN member countries lost over $240 million to cybersecurity breaches in 2014.

In more developed nations, e-mail scams and hacking are serious security threats not only for ASEAN residents, but also for communities overseas. Scams operating in Thailand, the Philippines, and Indonesia, have all targeted individuals and banks abroad.

2. ASEAN member countries are diverse in their current cybersecurity capabilities, creating an opportunity for valuable knowledge sharing between states.

Singapore and **Malaysia** have some of the strongest national cybersecurity agencies in the **world**, while other member countries are still working their CERTs and equip national security forces with adequate cybersecurity training.

3. ASEAN is showing promising signs of cybersecurity cohesion.

It is acting in unison at ASEAN-Japan and ASEAN-China Network Security summits, and its ICT Masterplans illustrate a roadmap for coordinated computer emergency responses, while ASEAN Conventions begin the process of legal uniformity on security issues.

Current stage for each ASEAN member

Singapore

Current environment: Singapore is a leading ASEAN member in Cybersecurity space and has a strong Cybersecurity agency. Financial sector is heavily regulated by MAS. Other CIIs are also catching up as the Government is putting lots of efforts to improve cyber posture of the nation. One of the main aims of the Government is to be recognised as global hub for Cybersecurity services, a new source of economic growth. Singapore has introduced its own Cyber security strategy in 2016 and hosts a number of cyber security conferences such as GovWare, SICW etc.

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[1]http://www.computerweekly.com/feature/Asean-organisationms-braced-for-cyber-attack
[2]http://now-static.norton.com/now/en/pu/images/Promotions/2012/cybercrimeReport/2012_Norton_Cybercrime_Report_Master_FINAL_050912.pdf
[3]http://www.computerweekly.com/feature/Asean-organisationms-braced-for-cyber-attack

Legislation: Computer Misuse and Cybersecurity Act, PDPA, Electronic Transactions Act, Spam Control Act, MAS TRMG, data breach notification to MAS.

Going forward: Strengthen all CIIs cyber posture, improve cyber security governance and legislative framework, cooperation with ASEAN on cyber crime reporting and response, innovate and promote R&D in cyber.

Malaysia

Current environment: Similar to Singapore, it has its own Cyber security agency, FIs are regulated by BNM.

Legislation: Computer Crimes Act, PDPA, Communication and Multimedia Act, Data management and MIS Framework by BNM, data breach notification to BNM

Going forward: The new technology trends such as Internet of Things (IoT), advanced machine learning, autonomous Agents and Things, Adaptive Security Architecture, Advanced System Architecture will introduce more security challenges and Government is proactively working with public/private sector to address those issues, such as National IoT Roadmap. By 2020, Malaysia is hoping to be the globally recognised national cyber security reference and specialty centre as per Digital Economy.

Indonesia

Current environment: Has its own National Cyber Security Agency (BCN). Each day, Indonesia experiences more than 50,000 cyber attacks and successful hacks could cost a banking organisation up to an estimated US$261 million a day[4]. Indonesia was attacked 3.9 million times in cyberspace from the years 2010-2013 and it overtook China as the number one source of cyber-attacks in the second quarter of 2013. The general level of awareness in cyber-threats of Indonesians (consumer and enterprises) is comparative low as compared to other ASEAN nations – reported by the Leader of Indonesia Internet Domain Name Organiser (PANDI).

Legislation: Electronic System and Transaction Operation (EIT Law), Data Protection Law

Going forward: Improve public cyber awareness, strengthen infrastructure to meet demands of growing internet users. Being one of Asia's most infected country (#2) by malware, Indonesia should really start to take the right steps towards increasing cyber security awareness in embracing the booming all-digital era.

Thailand

Current environment: In February 2016, Thailand's Ministry of Defense approved several new strategies on cyber security. This national framework is comprised of three core strategies: defense, deterrence, and cooperation. The defensive strategy focuses on

[4]http://www.opengovasia.com/articles/6563-indonesia-launches-cyber-security-agency-in-wake-of-growing-threat-landscape

strengthening national and military networks and cyber systems that will be employed to support military operations. Under the cooperation strategy, the Ministry will enhance domestic and international cooperation on cyber-preparedness and response. However, the most concerning strategy is deterrence, which entails the use of retaliation through the cyber realm. Thailand is the **fifth most vulnerable** country in Asia for cyber security risks and one of the underlying reasons of the country's own vulnerability is the usage of **pirated software** – a popular target for malware and cybercrime.

Legislation: Computer Crime Act, Data Protection - government is gearing up for the digital economy and is currently considering nine bills regulating different aspects of that economy. As part of this package of reforms, on 6 January 2015, the Cabinet of Thailand approved a draft data protection bill.

Going forward: The amendments will be followed by the **Cyber Security Act** and the **Personal Data Protection Act,** which the government has approved in principle and aims to pass through parliament by March.

Vietnam

Current environment: MCI and VNCERT are the leaders in the nation's battle against cybercrime. Vietnam ranked number 1 in the world for the rate of malware infection through portable storage devices (USB, memory sticks or external drives), with 70.83% of PCs infected and 39.95% of users faced with malware from cyberspace. According to PwC GSISS 2016 report, only 45% of Vietnamese company boards now have a cybersecurity strategy. According to the Department of Cyber Security under the Ministry of Public Security, up to 600 hacker groups attacked Vietnamese e-portals last year, most from abroad.

Legislation: Cyber Information Security Law, Decree on Civil Cryptography that ultimately empowers the government to access encrypted information.

Going forward: As Vietnam's citizens become ever more internet savvy and politically active, interest in encryption is likely to grow. Vietnam's government needs to balance its desire to monitor citizens' private communications with the much higher economic and political cost of cybercrime and network attacks from China and abroad.

Philippines

Current environment: In 2014, the country ranked 9th among Asia Pacific countries when it comes to cybersecurity readiness, according to the Global Cybersecurity Index (GCI). Philippines placed 20th globally and 3rd in the Asia Pacific region for social media scams.

Legislation: Cybercrime Prevention Act

Going forward: In Dec 2016, DICT launched National Cybersecurity Plan 2022 that seeks to safeguard the ICT environment of the country through the establishment of a robust

cybersecurity infrastructure. Development of Cyber capabilities such as Digital Forensics, CERT is planned together with the help of Malaysia CSA.

Brunei, Myanmar, Laos, Cambodia

Current environment: Cyber security management strategy is still evolving.

Going forward: Needs to work on legislation, infrastructure, and public awareness etc.

Some references:
https://jsis.washington.edu/news/asean-cybersecurity-profile-finding-path-resilient-regime/

Jonathan Larsen

Jonathan Larsen has been at the leading edge of the financial services industry for the last 29 years across the Asia Pacific region and globally. He brings a unique blend of strategic vision, operational depth, and understanding of the new technology landscape. He has lead multiple large-scale, successful businesses across a wide range of markets and has extensive experience in negotiating and managing partnerships and M&A transactions.

Jonathan spent 18 years at Citigroup where he was most recently Global Head of the firm's Retail Banking and Mortgage businesses, generating ~$12Bn in Revenues and spanning 19 countries. Example achievements while at Citi include:

• Key player in leading Citi's digital transformation: establishment of Citi FinTech, embedding agile development teams into all key businesses, and pursuing accelerated digitisation agenda centered on customer journeys,

• Led transformation of Citi's US Retail Business, to refocus on affluent clients and wealth management, a hub and spoke network model using Citi's Smart Banking distribution model and rapid digitisation of all key elements of client experience. Improved profitability from loss making to pre-tax earnings of $500MM in 2 years,

• Led Citi's Asia consumer business for six years pioneering new distribution models, partnerships, and perceptual scale; delivering strong cost discipline and above peer revenue and earnings growth,

• Transformed Citi's consumer business in Singapore from niche player to mainstream consumer bank able to compete with major local banks on equal terms,

• Completed numerous game-changing partnerships and acquisitions for Citi in Asia.

Prior to Citi, Jonathan was a Principal in the Financial Services Practice of global management consulting firm, Booz Allen & Hamilton where he spent eight years advising large banks and other financial institutions across Asia, Australia and New Zealand and in the United States and Europe. His work with Booz Allen clients spanned strategy, operations and technology with a particular focus on achieving competitive differentiation through client segmentation. While at Booz Allen Jonathan was a recipient of the firm's coveted Professional Excellence Award.

Jonathan has served as Chairman of Citibank Berhad in Malaysia, CEO and Director of Citibank Singapore Limited, a member of the Advisory Board of Visa International, a council member and Vice-Chairman of the Singapore Association of Banks, a member of the advisory board of the National University of Singapore Business School. He currently serves on the Advisory Board of YMCA Singapore.

He is a Distinguished Fellow of the Institute of Banking and Finance, Singapore and was named Retail Banker of the Year in 2011 by Asian Banker magazine. He has been widely quoted in major business publications including the Financial Times, Bloomberg, Reuters, New York Times, Wall Street Journal, the Economist as well as local media throughout Asia Pacific. Jonathan holds a Bachelor of Arts (Hons, 1st class) from the University of Melbourne, where he received the Enid Derham Prize for 1987. He currently resides in Hong Kong and his personal interests include music, sailing, wine-making and staying fit.

Navin Suri

Navin - co-founded Percipient in 2014 with two senior ex-banking colleagues. Prior to Percipient, Navin was hired by Bank of New York Mellon in Hong Kong (2012-14) with a remit to build out the retail distribution of their asset management business in the Asia Pacific region. He was listed in the Movers & Shakers column of The Financial Times. Earlier, as MD and CEO (2009-12) of the asset management unit of ING Group in India, Navin turned around the loss making company, making it one of India's top-30 best places to work. Prior to this (2003-08), he led the Sales & Distribution function for Citibank's Asia-Pacific Retail Bank. Based out of Singapore, he helped deliver sales results of over 2000 staff in 12 markets. Navin currently serves as a member of the Board of Directors of Nomura Asset Management Taiwan Limited.for her contributions to education and public sector.

Sopnendu Mohanty

Mr Sopnendu Mohanty is responsible for creating development strategies and regulatory policies around technology innovation to "better manage risks, enhance efficiency and strengthen competitiveness in the financial sector". Prior to joining MAS, Mohanty was with Citibank as their Global Head of the Consumer Lab Network and Programs, which included driving innovation programs and managing innovation labs across multiple geographies globally.

Mohanty has spent 20 years in the APAC region and held various roles in technology, finance, productivity, and business development. He was Citibank's APAC regional head of Branch operations along with heading the Consumer Innovation Lab in Singapore. He spent a significant time in Japan, where he was Citibank's Retail Business Development head and also did leadership stints in various functions within operations and technology. Globally, he played a significant subject matter expert role in driving Citibank's global smart banking program, to transform bank's physical network to digital first, smart & innovative, client centric and highly delightful customer engagement center.

Mohanty has co-authored various patented work in area of retail distribution of financial sector. He is based in Singapore, loves travelling, reads history and pursues culinary innovation as a hobby. He was in the list of FinTech's Most Powerful Dealmakers of 2016 by Institutional Investor. trade finance space and a leading financial institution in the region

Annie Koh

Annie Koh is Vice President for Office of Business Development, Singapore Management University (SMU). A Practice Professor of Finance, Annie also holds the position of Academic Director for two university level institutes - the Business Families Institute (BFI) and International Trading Institute (ITI). Her previous portfolio includes positions as Associate Dean, Lee Kong Chian School of Business and Dean, Office of Executive & Professional Education.

A notable conference speaker, panel moderator and commentator, Annie serves on a number of councils, advisory boards and steering committees of regional and local corporate, government and academic institutions. She is a member of the World Economic Forum (WEF) Global Future Council on Regional Governance and is a board member of Family Firm Institute, Inc. Prof. Koh chairs the finance and investment committee on the board of GovTech Singapore, and serves on Singapore's Central Provident Fund Board. She is also an independent director of k1 Ventures Ltd, and lead ID of Health Management International Ltd (HMI). Her appointment as a member of SkillsFuture HR Sectoral Tripartite Committee, HR Certification Taskforce, MOE-SSG Skills Development Council and chairs the Asian Bond Fund 2 Supervisory Committee of the Monetary Authority of Singapore, is testament to her strong linkages to businesses, governments and society.

A Fulbright scholar, Annie earned her PhD in International Finance from Stern School of Business, New York University in 1988. Her research interests are in Family Office and Family Business, Investor Behaviour, Alternate Investments and Enterprise Risk Management. She co-authored Financial Management: Theory and Practice, An Asia Edition (2014), and Financing Internationalisation – Growth Strategies for Successful Companies (2004). She is also author of a number of Asian family business cases and survey reports.

Annie is a recipient of the prestigious Singapore Public Administration Medal, Bronze in 2010 and Silver in 2016, for her contributions to education and public sector.

Alain Schneuwly

Alain is a Strategy and Technology practitioner with more than 20 years of experience across Asia and Europe, focusing on the intersection of Business and Technology. He is based out of Singapore since 2010 and has developed a strong understanding of the challenges and opportunities that ASEAN players and MNCs in the financial services industry face

Alain works closely with C-level in Europe and Asia across Industries but primarily in Financial services to identify how Digital and IT can deliver the most business value from existing investments and position IT organisations to deliver most business benefits in the future

He has recently led several engagements in IT Strategy, IT Transformation, Digital Strategy, Cloud Strategy, Enterprise / Program Architecture, IT Operating Model Design, Organisational Transformation, Cost Reduction, Strategic Sourcing. Key clients in recent years have included a leading Sovereign Fund, an APAC Stock Exchange, a Global Japanese Bank, a Global Swiss bank and leading Indonesia banks

Alain has experience in developing Digital Blueprint and master plans, IT Strategies and IT Transformation plans for Financial Services Organisations. He has worked with banks to redefine their APAC IT Service Management and Transform their Application Environment as-a-Service. He has also helped ASEAN banks to define the Technology roadmap to support stronger customer centric capabilities. Alain has also advised Financial Institutions to define their Journey to the Cloud and adopt Agile Build and Run methodologies

Alain is responsible in Deloitte for leading and driving the FSI technology growth programs and technology strategy and transformation across businesses with a focus on key enablers such as digital, analytics, data management, enterprise architecture and cloud computing

Eduard Fabian

Eduard is Managing Director, Head Group Technology of UOB and is responsible for driving the formulation and implementation of the overall technology strategy and IT architecture design for the UOB Wholesale and Retail Banking businesses. Eduard also directs the day-to-day operations of the UOB Group Technology organisation across 4 subsidiaries (i.e., Malaysia, Indonesia, Thailand and China) and 15 global branches. Having joined UOB from Citi, Eduard has had extensive experience in managing bank technology teams which are distributed across the US, Europe and Asia and leading these teams into winning several prestigious industry awards such as the Asian Banker Technology Innovation Award for Mobile Banking in 2016; the Global Finance Best Bank for Liquidity Management in 2015; the Mobile World Congress's Best Mobile App for Enterprise in 2015.

Prior to joining the financial services industry, Eduard has served in several leadership positions in technology and software development, including helming Oracle's newly established Cloud Services Engineering team in Oracle's European Software Development Centre in Romania. Eduard holds a Bachelor's degree in Computer Science.

Sonia Wedrychowicz-Horbatowska

Sonia Wedrychowicz-Horbatowska joined DBS Bank in February 2015 as Managing Director of the Digital Bank division. She brings immense depth and breadth of consumer and commercial banking experience spanning over 20 years. In September 2016, she was promoted to become Singapore CBG Technology Head, responsible for Consumer Bank Singapore Technology delivery and API Strategy for the bank.

Between 2012 and 2015, Wedrychowicz was the Country Head of Consumer Bank at Standard Chartered in Malaysia . She was responsible for the strategy, development, and management of the bank's consumer business which included a network of more than 40 branches all over Malaysia, employing over 1,600 people. She also chaired the bank's financial education programme initiative aimed at improving financial literacy, and was part of the bank's Women Initiative Network.

Starting her banking career in Citibank in 1994, Wedrychowicz rose through the ranks and held various roles in transaction banking before becoming the Vice President of the Management Board as well as Head of Consumer Banking in Citi Handlowy, Poland.

She has also held other leadership roles including Chairman of the Board of Junior Achievement Foundation, Member of the Supervisory Board of Handlowy – Leasing S.A., and Member of the Supervisory Board of Bank Handlowy Brokerage House.

Wedrychowicz is an avid kickboxer and enjoys travelling across Asia and around the world. She holds a Master's degree in Foreign Trade from Warsaw School of Economics and a BA in European Business Studies from Brunel University in London. She lives in Singapore together with her husband and two children.

Ben Davis

Ben is an Associate Director in the Innovation and Growth Services division of Monitor Deloitte in South Africa. Ben has a 14 year track-record of work across Sub-Saharan Africa, with a focus on the development of new businesses both within the current operating market, adjacent to the core business and into new markets. Key clients have included large African and International banks, insurance companies, power utilities and petro-chemicals companies, retailers, telecoms companies, capital market participants and public sector organisations. Ben has experience in developing business strategies for financial service providers with a specialisation on understanding low income customers, SME's, savings, credit and payments across Sub Saharan Africa and the Middle East.

In his role Ben: leads large teams delivering new sustainable revenue streams from first to market businesses in the financial services, energy and property. These include MNO insurance, Peer-2-peer lending, energy finance and digitised banking platforms.

Has leveraged key innovations that are impacting how FSI is delivered, including Cloud Platforms, Micro-Services Oriented Technology Architectures, Big Data, Business Componentisation and Agile build and run methodologies.

Has assisted Banks, Retailers and Telco's in understanding the dynamics of entering Emerging Markets (mainly in Africa), in both core operations and financial services (including the use of mobile platforms to effect payments, sell, manage, maintain insurance products and savings solutions)

Researched and developed a strong understanding of African economic development, economic structure and which sectors are expected to drive economic development and growth going forward.

Hassan Nasser

Hassan leads Fidor solution's consulting practice globally shaping propositions for digital banks, hand in hand with our customers and partners. In a nutshell, Hassan helps ensure end to end viability of Fidor's propositions.

Previously, Hassan held a key position at CSC where he was Industry Chief Architect for Banking & Capital Markets with Focus on Digital Transformation & Next Gen Technologies in Asia, Middle East & Africa. Further, Hassan led the Strategic & Complex 100+ Million Dollars bids at CSC Globally.

He also held multiple Leadership Roles in Solution Consulting & Architecture, Product Management & Project Delivery throughout his career. Hassan also holds a track record of designing & delivering solutions fitting within the overall enterprise architecture while pushing the boundaries and maximizing value and ROI for clients.

Hassan started his career as an IT Support Engineer, Network Engineer then Developer. His skill sets now span across the stack of the Digital Enterprise ranging from Digital Channels, Customer Experience Platforms, APIs, Enterprise Business Applications, Big Data Solutions all the way to Cloud Platforms & Infrastructure Services, Data Center Services, as well as Infrastructure Operations.

Hassan has been a speaker at multiple events around Business Intelligence, Core Banking, Risk Management Technologies, Digital Channels, Portals, and Business Process Management.

Hassan's expertise in Banking spans across Risk & Compliance, Core Banking, Loan Origination, Consumer & Corporate Lending, Corporate Credit Management, Automatic Signature Verification, Digital Channels, Trade Finance, Electronic Check Clearing, Transaction Auditing & Remediation.

Hassan holds a bachelors' degree with honors in Computer Engineering and is actively engaged on a voluntarily basis with multiple accelerators to support the Tech Startups community in Dubai.

Hassan's personal interests are Sports, Adventure, Technology, Business, People, Music and Reading.

Thibault Weintraub

Thibault has over 18 years of experience in building enterprise software and 15 years dedicated to digital banking systems deployed at leading international banks. In his role as CTO and co-founder of Moneythor based in Singapore, he leads the engineering team and is responsible for the overall architecture of the company's personalisation engine for digital banking. He was instrumental in defining the technology and the API delivery model of the solution and he takes an active role in its integration at leading banks in the region from design to production stage.

He was previously with Misys, one of the largest banking software providers as a lead technical architect for its digital banking solutions where he was playing a major role in designing and developing trade & supply chain finance and cash management front-end solutions for corporate customers of international banks. Prior to Moneythor, he was based in Europe where he was also in charge of the implementation of Misys products at two of Europe's largest banks and then spent two years in Singapore leading a solution team implementing an innovative digital service at one of Singapore's tier-1 banks.

Thibault is a regular contributor on FinTech matters at regional Java & Spring user groups. He holds a MSc degree in software engineering from Paris VI University in France.

Ravi Patel

Ravi Patel is a FinTech and Banking entrepreneur who is building the next generation of digital banking and loyalty services solutions for smart technology consumers and businesses. He spent over 10 years of his career in various strategy roles for global Financial Institutions including Barclays, Credit Suisse and Accenture to help grow the banking and trading operations across Europe, the Middle East, Africa and Asia. This included market entry/exit, setting up platforms and operations, restructuring, growth, cost-cutting, special projects as well as general business and performance management.

He left the traditional Financial Services industry in 2014 instead to focus only on building internet generation technologies to accelerate innovation for the industry and deliver new products and services designed with mobile technology.

YoloPay was co-Founded by Ravi Patel and Daniel Blomberg in 2014 to develop the "neobanking" model in Asia and the Middle East. They have a specific focus on the unserved needs of social money management, specifically for digitising money spend for households, businesses and government.

Buncha Manoonkunchai

Buncha Manoonkunchai has joined the Bank of Thailand for more than 20 years. His education background is in Economics and Finance. Currently, he is a senior director of Financial Technology Department. One of his main responsibility is to promote the adoption of Financial Technology and innovative payment products in order to enhance the capability of Thai financial service providers to be comparable with international players.

During the past several years, Buncha has worked actively in the area of payment systems policy. His important task is to formulate and implement the National e-Payment master plan, including PromptPay System and expansion of debit card usage in Thailand. He also plays a vital role in drafting the Payment System Act as well as the Payment System Roadmap.

Besides, Buncha has long experience in financial institutions policy and supervision. He used to work in the areas of risk management, risk modelling, and supervision of Information Technology of commercial banks.

Dr. Saul Caganoff

Saul is a senior technologist with over 25 years in the industry, including 16 years specialising in systems integration. He has a strategic view and expert understanding of enterprise information technologies and information management. He was the CTO at Sixtree, an API consulting firm in Australia and joined Deloitte as part of the acquisition to set up the Platform Engineering practise where he is the lead strategist and thought leader specialising in Web APIs, Microservices, integration and distributed architectures in general. Saul is engaged in multiple client projects covering enterprise agility, digital transformation and technology strategy. His previous experience includes

Sixtree, CTO

Responsible for technical leadership, strategy and practice development.

Executed projects including:
·Developing Sixtree's knowledge, education and process methodologies
·Numerous strategy and architecture engagements for Sixtree customers
·Organizer of APIdays Conferences in Australia and New Zealand

Ausgrid, Lead Architect, Smart Grid Smart City

The Electric Thinking Program is a strategic project portfolio developing SmartGrid infrastructure for the next generation of energy distribution and metering. Activities included:
·Established SOA Governance and Design processes
·Lead architect on Smart Grid Smart City Customer Applications
·Senior member of the Electric Thinking Program Enterprise Architecture team
·Data architecture and alignment between network and asset systems
·Developed TOGAF enterprise architecture and 5 year integration technology plan for regulatory submission

TIBCO (Principal Global Architect and Director of Emerging Technologies)

Delivered multiple engagements in Australia, the United States and Asia. Recognised leader, mentor and consultant in Enterprise Architecture and SOA. Lead Architect or consultant on implementations for major customers including:
·Wholesale and Retail Banking customers in Australia (x 4)
·Retail banking customers in Singapore (x 2)
·Investment banking customers in Hong Kong (x 2)
·Energy utilities in Australia (x 2)
·Telecommunications companies in Australia (x 2) and India

Liew Nam Soon

Nam Soon is Managing Partner, Financial Services, ASEAN for EY, responsible for managing the advisory, assurance, tax and transactions business. He is a member of the Financial Services Asia Pacific Leadership team and is also the Diversity and Inclusiveness leader for Asia Pacific.

Nam Soon has over 24 years of consulting and industry experience in large scale business and technology transformation, as well as risk management and compliance. He has worked extensively in retail, private, commercial and investment banking, asset management, insurance and private equity.

Prior to joining EY, Nam Soon held senior leadership positions as Chief Transformation Officer, Prudential Asia; and Partner, Financial Services and Wealth Management leader, IBM. He was also previously a partner with PwC and started his career with Andersen Consulting.

Nam Soon has deep experience in advising senor client executives on business, technology and digital transformation; risk management and governance, regulatory compliance; M&A, operations improvement of shared services information technology and operations; design and implementation of target operating models; managing cross-border IT and operations and outsourced portfolios across countries including China, Hong Kong, Taiwan, Japan, Korea, Thailand, Philippines, Malaysia, Singapore, Vietnam, Indonesia, India, U.S. and the U.K.

Credentials Nam Soon graduated with an MBA from Imperial College, London and a Honors in Bachelor of Engineering. from Nanyang Technological University of Singapore. He has also attended executive programmes

Chee Kin Lam

Chee Kin is the Group Head of Legal, Compliance and Secretariat and has upwards of 20 years' experience in financial services. Prior to joining DBS, he held various roles in Standard Chartered Bank, JPMorgan Chase, Rajah & Tann and Allen & Gledhill. Chee Kin also serves on the Disciplinary Committee of SGX, the Advisory Panel to the NUS Centre for Banking and Finance Law, and the Data Protection Advisory Committee of Singapore. In 2015, Chee Kin was recognised as a Distinguished Fellow by the Institute of Banking and Finance in the field of compliance.

Mark Büsser

Mark Büsser studied Aeronautical Engineering at the ETH (Federal Institute of Technology, Zürich, Switzerland) and holds an MBA from IMD. He started his career in management Consulting, then led a big machine tool company before founding IMTF, which he has successfully built up and managed for over 30 years to become a market leader in administrative process automation, document compliance and management in Switzerland and over 50 countries.

Darryl Tan

KYCK! Co-founder Darryl previously held a designation of an Assistant Vice President at DBS Vickers Securities and was responsible for retail equity dealing and equity portfolio management. He was also involved in fund raising work pertaining to two Indonesian listings. Recently, Darryl and his team led an asset management company, with ownership of Mining, Oil and Gas (MOG) assets in four countries in Southern Africa. The team was responsible for monetization, divestment and M&A activities. Currently, Darryl is also a Founding and Managing Partner of Cleantech Incubator Lignar Labs and working with VC partners to identify and curate new Cleantech technologies.

Ankit Ratan

Over 6 years of experience working with financial institutions. Worked for boutique Analytics firm in US deploying AML/CFT solutions at Citi Bank and Metlife. Started own company in Analytics in India in 2013, worked with Axis Bank, Maersk and Benetton helping them with Analytics needs specializing in fraud analytics. Was silver medalist at IIT Delhi where he also published 3 research papers and a patent. Currently building Signzy, where we use cryptography, Artificial Intelligence and India Stack to build trust APIs for digital banking.

Chia Tek Yew

Chia Tek Yew is Head of KPMG Singapore's Financial Services Advisory Practice where he leads engagements with clients on areas such as digital transformation and customer growth strategies.

Tek Yew started his early career with KPMG Singapore and left the Firm in 1993 to take on a Management Consulting role with Coopers & Lybrand Hong Kong before returning to Singapore as Managing Partner of PwC Consulting Singapore. During this period, he was also the Managing Partner of PwC Consulting's Financial Services Practice across Greater China and South East Asia and co-head of their Strategy practice.

After PwC Consulting was sold to IBM, Tek Yew joined Hewlett Packard as Vice President/head of their Asia Pacific Consulting & Integration business working with leading businesses across Asia to develop their technology platform to support their business strategies

Tek Yew left HP in 2006 and co-led a private equity sponsored management buy-out of then listed Whitehead Mann Partnership, a talent management and leadership advisory firm listed on the London Stock Exchange. He was appointed Co-Global Managing Partner in charge of international expansion whereupon he helped expand/establish the Dubai, Hong Kong and Singapore offices. In 2010, WHM Partnership was acquired by Korn Ferry, the world's largest headhunting firm

In 2014, Tek Yew became Executive Director of Majuven, a venture capital firm in Singapore which invests in high growth Asian technology companies and today, remains as a Venture Partner there to assist in mentoring some of their start-ups. Majuven focuses on Sustainability Technology, Medtech and Digital Disruption

His recent experience include:

· Working with a leading insurer on co-innovation digital programs
·Proof of concept engagements in Blockchain, IoT and telematics technologies
for banks and insurers
·Digital only market entry strategy for an international insurer
·Developing the concept of a regioanl Digital Innovation and Operations Centre for an international insurer
·Developing co-innovation programs with an Institute of Higher Learning
·Developing a co-incubation program with IIPL (unit of IDA)
·Developing a Next Generation Payments Landscape for Singapore 2020

Altona Widjaja

Altona Widjaja is a coder by training with Masters in Knowledge Engineering from National University of Singapore.

Altona joins OCBC over 10 year ago in the technology unit from there he has held wide ranging portfolio from Treasury system analyst, project delivery manager, led the Project Management Office in Indonesia operations that delivered multiple projects from technology deployment to retail banking management and Senior Program Manager in Group COO Office where he oversees strategic projects in OCBC Bank

Today he runs The Open Vault, the FinTech and Innovation arm of OCBC Group. Where he oversees the development of the FinTech acceleration program,
FinTech solution development and Innovation culture building for OCBC Group. He has built key enablers for experimentation/innovation process in OCBC Group, build the data sandbox platform, drive projects in area of KYC, AML, Trade finance, Blockchain and Machine learning

Altona is passionate in technology as an enabler and challenging status quo.

Orapong Thien-Ngern

Orapong is the General Manager of Microsoft Thailand. He has been with Microsoft for 2 years and have taken the roles of General Manager of Business Strategy in APAC and acting General Manager of Microsoft Malaysia.

 Prior to joining Microsoft, Orapong was the Deputy Secretary-General to the Prime Minister Yingluck Shinawatra. He was an advisor to the Prime Minister and was responsible for shaping key country strategies such as Agriculture Reform, Country IT Strategy, SME Development Strategy and Country's Key Performance Indicators Development.

 Orapong also had a long career with Accenture working in more than 10 countries before becoming the Country Managing Director of Accenture Thailand. His areas of expertise includes strategic planning, Customer Relationship Management, Change Management, Supply Chain Management and complex system implementation

Ian Chapman-Banks

Ian is a Scientist and Coder by training with an MBA from the University of Chicago Booth School of Business and has had senior leadership positions in Apple, Microsoft, Dell and was CEO of a 4 billion dollar business at Motorola in Asia Pacific over 30,000 staff across the region

Ian has over 30 years of broad global expertise having lived in San Francisco, New York, London, Beijing, Shanghai. Tokyo and Singapore and has a wealth of experience in Product Development, Deep Learning technologies, General Management, Sales, Marketing and Business Development having worked for Apple, Microsoft, Motorola, Dell and Xerox in CMO & CEO positions

Currently CEO and Co-founder of SQREEM an Artificial Intelligence company that provides predictive analytics focusing on behavioural intelligence and financial surveillance services to the Financial Services Industry, Brands and Governments
 Ian's core competencies include a strong track record in, product development, sales, general management, and managing large complex PnL's across diverse geographies and delivering PnLs in excess of US$4 B

Ian has a unique understanding of Artificial Intelligence and Machine Learning technology in the consumer and business environments and has a natural ability to think through and implement new and innovative business models

Ian in 2009 delisted a majority held Temasek owned company from the NASDAQ and sold the entity for over 4 billion US Dollars to Global Foundries and he also listed a Chinese lottery company on the U.K. Stock market in 2011 with a valuation of over 500 million US Dollars Ian's first adventure in the world of entrepreneurship was in 1984 out of University set up he first specialist Cheese and Wine shop on a high street in the UK, become runner for young Business Person of the year in the Yorkshire area and became an advisor to the Prince's Trust

Vincent Loy

Vincent is a practice lead partner at PwC, and formerly headed PwC UK's Financial Services Technology Risks practice as well as a member of PwC Risk Assurance Leadership team. He has over 20 years' experience with global companies, specializing in complex and emerging business and related technology issues, advising organisations on strategy, governance, cyber, sourcing and operations relating to risks, resilience, cyber and data. He has advised governments, regulators and some of the biggest global organisations on cyber resilience and strategy.

Teeranun Srihong

Over 28 years of experience in financial services, I have a broad range of experience from finance, ALM, Trading, Derivatives, Corporate Banking Products, Marketing, Operations and IT. Also, I have been successfully leading a number of key transformation and turnaround programs which have significantly enhanced the bank's competitiveness.

Outside banking, I am also an active member of Thailand Management Association, Thailand Competitiveness Center and Thai Japanese Association.

Alvin Tan

In his current role as Singapore Country Manager, Palo Alto Networks, Alvin focuses on driving the strategic cyber security initiatives for major customers across multiple industry verticals, ensuring that their needs are met. He has over 14 years in cyber security, 21 years total experience in the IT industry, a strong technical background, and an excellent track record of successful sales and business growth.

Alvin started his career at IBM, where he was part of a team that created innovative self-service banking solutions, coming up with the first ever cash deposit machine in Singapore, cheque deposit machine, as well as the self service passbook printing solution. The launch of the cashcard around that time also meant that he had to ensure existing self-service solutions could be used to support the cashcard.

As the FinTech industry evolves, Alvin brings his experience to bear, merging banking domain knowledge with strong cyber security capabilities to help banks navigate the digital age.

Minh Duc Nguyen

Duc Nguyen is the founder at CyRadar, a cyber security startup, using big data analytics for security solution. Before CyRadar, Duc had been worked over 12 years in for cyber security industry where he led security research team, developing security products, reporting vulnerabilities for organisations and vendors.

FinTech is not just about using the most advanced technology but embracing innovation.

ABS is confident that, by embracing the FinTech revolution, the ASEAN banks will be left stronger and more prepared to adapt to a brave new world of apps and social media.

The organisation reserves the right to revise the programme should circumstances so warrant.