



# FinTech innovation in Singapore

**Sustaining growth  
in uncertain times**



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# Foreword

FinTech innovation has continued to grow and evolve, remaining a powerful force behind economic growth and the creation of solutions for better financial services. Yet, the global environment for FinTechs is uncertain, with increasing pressures for trust and security, as well as a lack of regulatory clarity in areas such as Web 3.0 and artificial intelligence (AI).

In September 2022, Mr Lawrence Wong, Singapore's Deputy Prime Minister and Minister for Finance and Monetary Authority of Singapore (MAS) Deputy Chairman, launched the refreshed Financial Services Industry Transformation Map (ITM) 2025. Part of the plan involves enhancing asset class strengths, including anchoring promising FinTech start-ups in areas such as Web 3.0, AI, and green FinTech. Despite a slight dip in FinTech funding in 2022 compared to 2021, we believe that the sustained growth in FinTech will not waver.

We also continue to observe how overseas and local FinTech companies have chosen Singapore as the home and hub for their Asian businesses. Curious to understand the considerations behind such decisions, we spoke with a number of FinTech players, with our focus ranging from Environmental, Social and Governance (ESG) FinTech to regulatory technology (RegTech) to Digital Assets. Through these conversations, we gleaned valuable insights on how they leveraged the support system provided by Singapore to springboard into the region, in particular Southeast Asia.

Transparency of regulations, ease of starting a business, and quality of the talent pool were some advantages that have helped budding businesses.



Companies also cited constraints in areas such as talent availability, where more support is welcome.

Holistically, Singapore offers a unique and competitive advantage for companies looking to seize emerging FinTech opportunities in a stable and certain environment.



**Wanyi Wong**  
FinTech Leader,  
PwC Singapore



**Philbert Gomez**  
Vice President and Head of  
Digital Industry Singapore,  
Singapore Economic  
Development Board



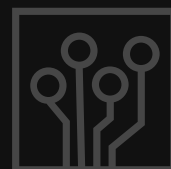
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President,  
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(SFA)



01

# FinTech

Powering innovation and growth



# Powering innovation and growth

## FinTech momentum continues to grow globally

The financial technology industry witnessed unprecedented growth over the past few years. The COVID-19 pandemic propelled this rising sector to greater heights as many countries rushed to transit into cashless societies. In PwC's 2022 FinTech report, 60% and 35% of respondents in the payments and lending sectors, respectively, reported more than S\$10 million in annual revenue.<sup>1</sup>

With ongoing geopolitical tensions and ever-shifting global macroeconomic conditions, the landscape witnessed today is vastly different from just a year back. News of big tech firms winding down operations and conducting mass layoffs spread across the world as they braced themselves for recession. Many FinTech companies have taken similar approaches to control costs. As a matter of course, the flow of investments decelerated, falling to US\$75.2 billion in 2022.<sup>2</sup> Despite the slowdown, the sector managed to capture a market value of more than US\$194.1 billion and is still enroute to grow at a compound annual growth rate (CAGR) of 16.8% between 2023 and 2028, reaching US\$492.81 billion.<sup>3</sup>

Despite the seemingly bleak outlook of the industry, momentum of financial innovation has not slowed down as international organisations push for greater financial inclusion. Payments continue to hold the top spot, with the total transaction value in the digital payments segment estimated to be US\$9.47 trillion in 2023 and the amount of users expected to reach 5.48 billion by 2024.<sup>4</sup>

Following closely behind is the rise of neobanking, with the segment expected to show a revenue growth of 28.9% and the average transaction value per user projected to be US\$18,080 in 2023.<sup>4</sup> Another segment making tailwinds among reserve banks across the globe is that of central bank digital currencies (CBDC). It is estimated that 114 countries, representing over 95% of global gross domestic product (GDP), have either launched or are considering launching national digital currency for either retail or wholesale purposes. This is a massive step up from 2020, where the number of countries was only 35.<sup>5</sup>

In order to keep up with society's insatiable need for FinTech solutions, this sector needs to keep its engines of innovation running despite slowing economic conditions.



- 1. Payments** - Amount of users expected to reach 5.48 billion by 2027.
- 2. Neobanking** - Average transaction value per user projected to be US\$18,080 in 2023.
- 3. CBDC** - It is estimated that 114 countries, representing over 95% of global GDP, have either launched or are considering launching national digital currency for either retail or wholesale purposes.

<sup>1</sup> [FinTech's state of play \(2022\)](#), PwC

<sup>2</sup> [State of Venture 2022 Report](#) (2023), CBN Insights

<sup>3</sup> [Global FinTech Market Outlook](#) (n.d.), Expert Market Research

<sup>4</sup> [FinTech - Worldwide](#) (n.d.), Statista

<sup>5</sup> [Central Bank Digital Currency Tracker](#) (n.d.), Atlantic Council

# Powering innovation and growth



## Southeast Asia: A land of opportunities for FinTech

With emerging economies, an expanding population and growing middle class, Southeast Asia presents a land of opportunities for FinTech. FinTech investments in ASEAN clocked in at US\$4.3 billion in the first nine months of 2022 — higher than the combined sum from 2018 to 2020.<sup>6</sup> Southeast Asia is enroute to becoming the fourth-largest economy by 2030, behind the European Union, United States, and China.<sup>7</sup> This area is blessed with a young and vibrant demographic that is receptive towards technology. The rapid urbanisation of rural areas and fast growth of household incomes drive consumption behaviour. Furthermore, small-to-medium enterprises (SMEs), the building blocks of emerging economies, remain underserved by traditional finance, leaving gaps to be filled by FinTech innovations. Collectively, these factors position this region to be a fertile ground for FinTech companies to test and grow their products.

However, sitting on a mine of opportunities does not mean there are no challenges to contend with. Emerging economies often grapple with challenges in financial and technological infrastructure, talent shortages, complicated tax and regulatory regimes, political and economic instability — not to mention, limited access to funding.

This is where Singapore comes in. The economic powerhouse of Southeast Asia serves as an excellent bridge for companies to reach these neighbouring countries. Besides the obvious physical proximity, the city-state has an extensive network of some 27 implemented free trade agreements.<sup>8</sup> Its conducive business environment accompanied with strong technological and financial infrastructure balances the risks involved in investing in emerging economies. The city-state also boasts a diverse, multilingual talent pool and a wide range of funding sources for early- to late-stage companies.

“

Southeast Asia is already a leader in the FinTech industry, and some see it developing even more significantly over the next 10 to 20 years.

Persefoni, climate management and carbon accounting platform

”

<sup>6</sup> *FinTech in ASEAN 2022: Finance, reimagined* (2022), PwC, SFA, UOB

<sup>7</sup> *The Davos Agenda* (2022), World Economic Forum

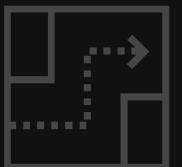
<sup>8</sup> *Free Trade Agreements* (n.d.), MTI



02

# Choppy waters

Navigating the way forward



# Key trends

## The rise of artificial intelligence (AI)

The widespread adoption of AI is rapidly transforming all industries.

For example, we noted a good adoption rate of AI in the RegTech sector.

It has been found that 69% of executives are not confident that their current risk management policies and procedures are sufficient to deal with future challenges.<sup>9</sup> Furthermore, with the expansion of the digital economy, the increase in digital crime is inexorable – more than 50% of organisations expect a surge in reportable incidents in 2022, above 2021 levels.<sup>10</sup>

Over the years, AI has become progressively sophisticated, giving rise to use cases in identity verification and transaction monitoring for fraud detection as well as identifying money laundering and terrorist financing behaviours. Moreover, enhancements have been made to risk management procedures, such as stress testing and micro- and macro-prudential reporting.

“

As financial crime becomes rampant and continues to evolve in an even more elaborate manner, the risk management and compliance team are pushed to be equipped with the best tools to combat threats and manage financial risks.

Napier, AI-powered anti-money-laundering platform

”

### Summary



**The widespread adoption of AI** is rapidly transforming all industries. We noted a good adoption rate in the RegTech sector.

**Emphasis on AI governance** means implementing a digital trust strategy that cements trust and confidence in the technology. Strong safeguards against malicious usage of AI have come under the spotlight as the technology gains traction.

**Client relationships must be reimagined**, as the use of tools like ChatGPT are expected to grow at an exponential speed.



Rise of artificial intelligence (AI)



Focus on sustainability



Importance of digital trust



Regulatory expectations



Talent uncertainty



<sup>9</sup> Risky Business: Mitigating Exposure Through Comprehensive Risk Management (2017), Mondaq

<sup>10</sup> Cyber Global Digital Trust Insights (2022), PwC



# Key trends

## Explainability of AI

Traditional AI models are often referred to as "black boxes" due to the opaqueness in the manner they determine output. What started out as an effective decision-making programme can quickly transform into a tangled web of algorithms after consuming large datasets consisting of numerous layers and millions of parameters as well as datasets that propagate biases and errors. Ultimately, the inability to trace the programme's thought process and how a decision is reached makes it hard to get to the root of the problem when an unwanted outcome is produced. As a result, this could expose organisations to risks arising from unplanned consequences due to the lack of oversight.

Explainable AI demystifies the decision-making process, enabling users to understand and validate the decisions made by the AI model. In finance, it allows the designer of a programme to identify biases, errors, or unexpected behaviours, ensuring fairness, accountability, and regulatory compliance. By providing clear and understandable explanations, financial institutions can mitigate risks, address potential biases, and make informed decisions based on the insights gained from AI models, fostering confidence and trust in this powerful technology.



## Emphasis on AI governance

Top PwC cybersecurity analysts urge organisations to set AI usage policies, placing an emphasis on the need to protect AI training and output. Only if the training data is specifically refined and tailored for a business case can the company then harness the power of AI to provide valuable insights into its business. Furthermore, implementing a digital trust strategy cements trust and confidence in the technology and, as a result, drives institutional and retail use cases of AI.<sup>11</sup>

Use cases for AI in the digital asset industry are blossoming. Blockchain technology provides a high degree of security by making it near impossible for individuals to alter transactions upon confirmation. AI takes it a step further by identifying and preventing potential security breaches. Deep learning identifies anomalous activity as adversaries scan network assets seeking vulnerabilities. Through analysing blockchain transactions and market movements, AI can be tapped to make predictions about the future, including informed investment decisions.

It is important for any business to set policies for the use of generative AI to avoid confidential and private data from going into public systems, and to establish safe and secure environments for generative AI within their business.



Rise of artificial intelligence (AI)



Focus on sustainability



Importance of digital trust



Regulatory expectations



Talent uncertainty

<sup>11</sup> [Artificial intelligence solutions](#) (n.d.), PwC

# Key trends

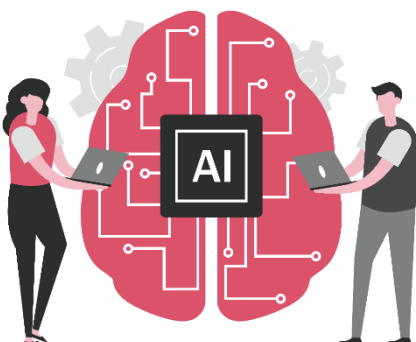
## Reimagining client relationships with ChatGPT

One of the largest impediments to good customer service in the financial services industry is the lengthy waiting time. ChatGPT's advanced algorithms can analyse massive data sets and provide end-users with real-time information and suggestions. This lessens the load on staff and, at the same time, enhances customer experiences. Not only does the advanced chatbot answer customer queries; it has the ability to provide recommendations on financial products and offer insights on financial planning. With the increasing popularity of digital banking and the rise of FinTech start-ups, the use of ChatGPT in the financial industry is expected to grow at an exponential speed, and we can expect it to be an integral part of the FinTech landscape, helping to shape the future of financial services.

FinTechs looking to leverage Southeast Asia can partner with AI Singapore (AISG) to scale their efforts. AISG was launched in 2017 as a meeting point for Singapore-based research institutions, vibrant AI start-ups, and an advantageous ecosystem to conduct use-inspired research, grow knowledge, develop tools, and develop the talent that powers Singapore's AI efforts.

## ChatGPT statistics

By the end of the year 2024, OpenAI expects its revenue to increase to



# US\$1 billion

This could lead to increased investment and further innovation.

Source: Chat GPT Statistics 2023: Trends And The Future Perspectives (2023), Gitnux

## What Singapore can offer FinTechs

### 1. AI International Grant Call

Offers grants for AI research through partnerships between Singapore and other countries, as agreed upon at the national level. The goal of these calls is to foster collaboration between research communities in Singapore and overseas, leading to significant advancements in AI that benefit both parties.

### 2. 100 Experiments (100E)

Supports companies in deploying AI by using a co-investment model. AI Singapore's flagship programme seeks to solve industries' AI problem statements and help them build their own AI teams.



Rise of artificial intelligence (AI)



Focus on sustainability



Importance of digital trust



Regulatory expectations



Talent uncertainty

# Key trends

## The focus on sustainability

### Green economy gains momentum

Asia has more than 4.5 billion people and houses five of the world's ten largest greenhouse gas emitters — China, India, Indonesia, Japan, and South Korea — accounting for approximately 45% of the world's total emissions.<sup>12</sup> As 2030 approaches, the race to push for greener economies in Asia is accelerating. Businesses inadvertently face pressure from stakeholders to adopt greener practices, which presents an abundance of opportunities for sustainability-technology companies to roll out their solutions.

### Catalysing FinTech for sustainability

FinTech unlocks green opportunities, accelerating the transition to a green economy. Data analytics tracks and measures the impact of green investments and provides insights into the performance of green projects. This data can help investors make informed decisions about where to invest their money to support the green economy. A growing number of FinTech platforms offer easy and convenient access to green financing for individuals and businesses while providing investors with access to sustainable and responsible investment opportunities, such as renewable energy projects, sustainable agriculture, and eco-friendly infrastructure.



### Building and scaling sustainable businesses

In 2020, the Monetary Authority of Singapore (MAS) launched Project Greenprint to foster a green finance ecosystem by mobilising capital, monitoring commitments, and measuring impact. To further nurture the sustainability ecosystem, MAS has also started the ESG Impact Hub, a co-located cluster of ESG FinTechs and organisations, to encourage collaboration. At the point of establishment, there were already 15 participants.<sup>13</sup>

#### Summary



**Green economy gains momentum** - there is an ongoing pressure for businesses in Asia to adopt greener practices

**Catalysing FinTech for sustainability** - FinTech unlocks sustainable investment opportunities, accelerating the transition to a green economy.

Project Greenprint and ESG Impact Hub are some initiatives launched by MAS to **build and scale sustainable businesses.**



Singapore has good financial infrastructure where entities can set up businesses easily with help from grants and other resources. The ESG sector is well supported as well.

**STACS**, ESG FinTech solutions provider



Rise of artificial intelligence (AI)



Focus on sustainability



Importance of digital trust



Regulatory expectations



Talent uncertainty

<sup>12</sup> Asia-Pacific, the Gigantic Domino of Climate Change (2021), IMF

<sup>13</sup> MAS launches ESG Impact Hub to spur growth of ESG ecosystem (2022), MAS



# Key trends



The Singapore government has been making great strides in the development of the green economy. With S\$180 million set aside, the Enterprise Sustainability programme assists ESG-centric companies in building their capabilities, empowering them to capture new market opportunities.<sup>14</sup>

The Sustainable Bond Grant Scheme (SBGS) encourages issuance of green, social, and sustainable bonds in Singapore. The enhanced SBGS covers pre-issuance and post-issuance costs of engaging independent sustainability assessment and advisory service providers to obtain external analysis or report for bonds under this scheme.<sup>15</sup>



Singapore's investment in ESG development locally is encouraging for firms whose agendas see ESG as an increasingly important aspect of operation.

**Weavr**, plug-and-play embedded finance solutions platform



## Green finance in action

As part of Singapore's 2022 budget, the public sector is set to issue S\$35 billion worth of green bonds by 2030 to fund the growing needs in green infrastructure projects.<sup>16</sup> This move intends to support Singapore's transition into a low-carbon economy and propel Singapore's development as a green finance hub. The proceeds will finance expenditures under the Green Plan, a whole-of-nation movement to advance Singapore's national agenda on sustainable development.

To set Singapore on the world stage, MAS has also been developing a sustainable finance framework. The Green Finance Industry Taskforce has issued a detailed implementation guide for climate-related disclosure by financial institutions to help banks assess eligible green trade finance transactions.<sup>17</sup>

## What Singapore can offer FinTechs

The **Greenprint ESG Registry** provides a blockchain-powered data platform which supports a tamper-proof record of sustainability certifications and verified sustainability data, providing financial institutions, corporates, and regulatory authorities a common access point for these data.

**ESGenome** provides a digital disclosure portal for companies to report ESG data in a structured and efficient manner and for investors to access such data in a consistent and comparable format.



Rise of artificial intelligence (AI)



Focus on sustainability



Importance of digital trust



Regulatory expectations



Talent uncertainty

<sup>14</sup> [New \\$180 million ESG scheme to help 6000 companies go green](#) (2021), Straits Time

<sup>15</sup> [Sustainable Bond Grant Scheme](#) (n.d.), MAS

<sup>16</sup> [Budget 2022: New net zero emissions target a bold move that will create jobs](#) (2022), EDB

<sup>17</sup> [Accelerating Green Finance](#) (2021), MAS

# Key trends

## The growing importance of trust

A survey found that 87% of consumers are willing to walk away from a service if a data breach occurs.<sup>18</sup> This figure proves how vital security and privacy is for the long-term sustainability of FinTech companies. Almost 70% of organisations predict a rise in cyber spending in 2022, with more than a quarter predicting a surge of 10% or more in cyber spending.<sup>19</sup>

When CEOs were asked to frame the cyber mission for their organisations, more than half chose bigger-picture growth-related objectives for their security team, as opposed to narrower short-term expectations.<sup>19</sup>

This demonstrates the awareness that cybersecurity is crucial in this digital era. Businesses have to demonstrate to consumers and regulators that they are taking it seriously, even as it raises the costs of doing business.

“

A way to establish trust with our customers with respect to how we use their data ethically and protect their data was the number-one cyber mission choice.

PwC 2023 Global Digital Trust Insights

“

There is immense potential for companies to transform themselves if they are enabled properly through regulatory partnerships and proper risk management.

Dowsure, API platform for cross-border e-commerce

”

## A catastrophic cyber-attack is the top scenario in 2023 resilience plans.

Two-thirds of executives consider cybercrime their most significant threat in the coming year.

### Bigger picture: growth-related framing of mission and expectations



Question: Which of the following best describes how you/your CEO frames the cybersecurity mission to your organisation?  
Source: PwC, 2022 Global Digital Trust Insights, October 2021.

<sup>18</sup> 2022 Global Digital Trust Insights (2022), PwC

<sup>19</sup> How reputational damage from a data breach affects consumer perception (2020), Imprivata



Rise of artificial intelligence (AI)



Focus on sustainability



Importance of digital trust



Regulatory expectations



Talent uncertainty

# Key trends

## Renewed focus on digital trust and stability

One of the top goals of 2022 highlighted by C-suites is to increase the prevention of successful cybersecurity attacks. To achieve this objective, it is important to implement robust data protection procedures and strong risk management processes and cybersecurity measures to minimise the leakage and misuse of sensitive financial information.<sup>20</sup>

Internally, it is crucial for firms to create comprehensive cybersecurity policies and procedures to oversee areas in network activity, encryption, and access controls. This includes active monitoring of network traffic and system logs accompanied with periodic security audits and conducting regular security assessments. While the former identifies vulnerabilities and suspicious activity preventing cyber-attacks, proper encryption and access control management protects sensitive data from falling into the hands of unscrupulous actors.

A thorough and well-tested incident response plan allows an organisation to act swiftly to minimise cyber damage and restore business operations as soon as possible. Supplementing with cyber vigilance training adds an additional layer of security by reducing the likelihood of staff falling victim to phishing attacks or having their accounts compromised.

These measures are vital in creating a multi-pronged cyber framework to achieve cyber-resiliency and fortifying trust with the public

Aside from cybersecurity, transparency of FinTech services is another important pillar of digital trust. Building consumer trust is a process that results from consistent and predictable interaction between businesses and consumers, where a business acts in the best interests of end-users through transparent and easy-to-understand terms and condition and disclosure on collection and usage of data as well as pricing information.

In 2022, Singapore launched the Digital Trust Centre (DTC) to lead research and development efforts for trust technologies and support talent development in this area. Josephine Teo, Singapore's Minister for Communications and Information, highlighted that, as technology evolves, new risks will emerge. Therefore, it is important to invest in trust technologies such as privacy enhancing technologies (PETs) that preserve data privacy while the data is being analysed, as well as trustworthy AI technologies which help verify and explain the expected performance of AI systems.<sup>21</sup>

At the time of inauguration, Singapore launched the world's first AI governance testing framework and toolkit called AI Verify, which provides a structured approach for companies in Singapore to demonstrate responsible AI in an objective and verifiable manner.<sup>21</sup>

Building on established frameworks, DTC will ramp up efforts in trust tech research and innovations, introduce a new sandbox environment to test trust technologies, and cultivate talent in digital trust.<sup>21</sup>

### What Singapore can offer

The **SG Cybersafe Programme** aims to help Singapore organisations better protect themselves in the digital domain and enhance their cybersecurity.

**AI Verify** is the world's first AI governance testing framework and toolkit. It enables industry members to demonstrate their deployment of responsible AI.



Rise of artificial intelligence (AI)



Focus on sustainability



Importance of digital trust



Regulatory expectations



Talent uncertainty

<sup>20</sup> 2022 Global Digital Trust Insights (2022), PwC

<sup>21</sup> Singapore grows trust in the digital environment (2022), IMDA



# Key challenges

## CEOs see multiple challenges to profitability in their industry

Question: To what extent do you believe the following will impact (i.e., either increase or decrease) profitability in your industry over the next 10 years?

Showing only responses indicating 'to a large extent' and 'to a very large extent'



Rise of artificial intelligence (AI)



Focus on sustainability



Importance of digital trust

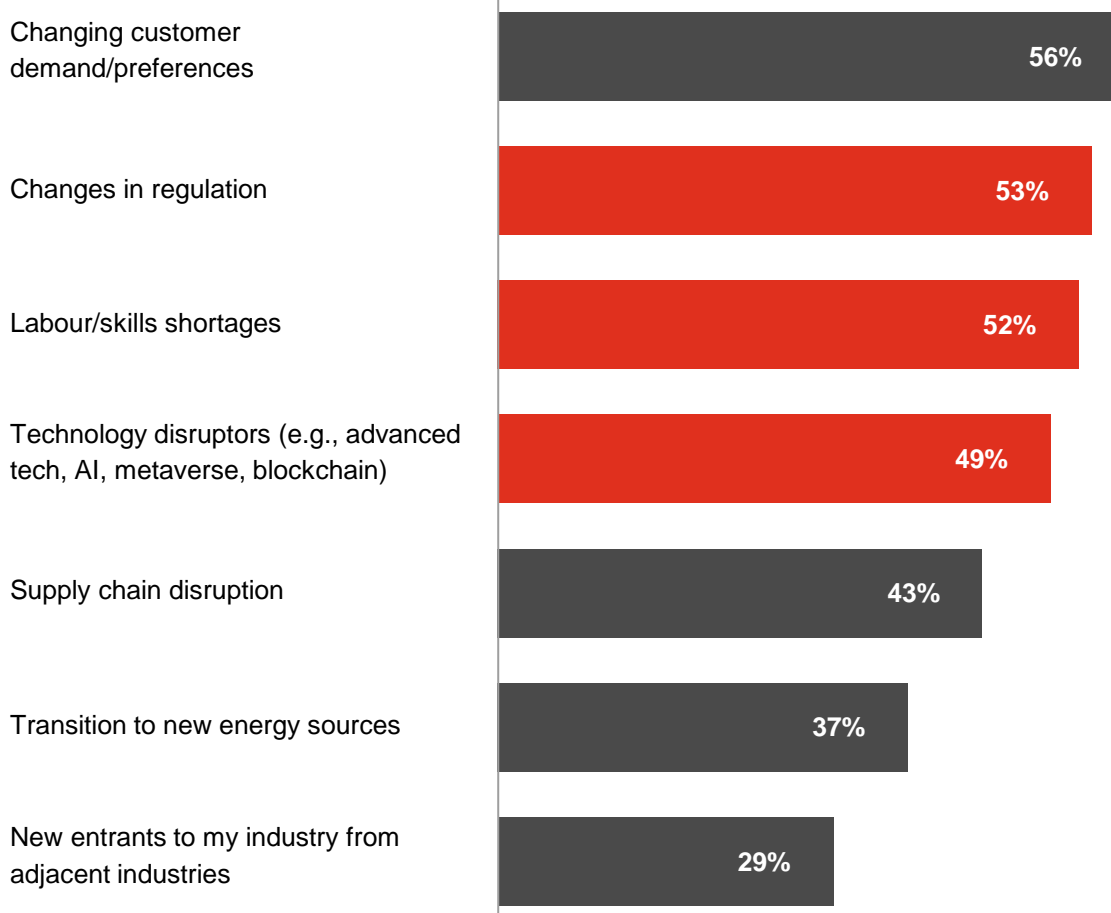


Regulatory expectations



Talent uncertainty

**Table 1**



Source: PwC's 26th Annual Global CEO Survey

# Key challenges

## Regulatory expectations

A common challenge faced by FinTech companies is the speed and ability needed to develop and refine existing solutions to keep pace with the frequency of regulatory updates across multiple jurisdictions.

### A fragmented regulatory environment

At present, the FinTech market is fragmented – each with varying levels of maturity, all attempting to serve regulatory needs across jurisdictions.

**WireX, a Web 3.0 money app**, shared that the key difference between Europe and the Asia-Pacific (APAC) is licensing. In Europe, a licence in one jurisdiction allows you to conduct business across the entire region. However, in APAC, there is no such license passporting. As WireX is regulatory-focused, it does slow things down in terms of scale in APAC.

Jurisdictions need to be more consistent in their regulatory approaches. With cryptocurrency especially, several countries like India have rapidly changed laws, which have hindered development of the market. Marketing of products to retail investors needs to be improved such that, while it protects investors and service providers, it encourages growth of the industry.

“

Bad actors can often be ahead of security regulations, and there must be safeguards in place to ensure that industry players are protected by harmful events such as hacking and scams.

Wirex, a Web 3.0 money app

”

## Regulatory partnerships

Collaboration amongst stakeholders appears to be the ideal solution, and there is scope for more amongst stakeholders in Asia. As purported by **Chainalysis, a blockchain data analytics platform**, “companies need to be more comfortable with sharing information that can push the development of the industry as a whole.”

Partnerships can be transformative, driving efficiency throughout the ecosystem. The mutual understanding between various stakeholders can propel the growth of the RegTech industry. It allows companies to stay abreast by dividing and conquering the task of monitoring regulatory updates, enabling rapid dissemination of important information that can impact developments. Consequently, financial institutions benefit from the up-to-date solutions, and regulators could adjust policies accordingly.

### Summary



**A fragmented regulatory environment can hinder development of the market.**

FinTechs can **turn obstacles into opportunities** by creating innovative RegTech solutions to manage the regulatory landscape.



Rise of artificial intelligence (AI)



Focus on sustainability



Importance of digital trust



Regulatory expectations



Talent uncertainty

# Key challenges

## Turning obstacles into opportunities

Opportunities arise from needs that remain unfulfilled. As mentioned by **Fintrail, a financial crime consultancy**, unlike Europe, with the European Union's Anti-Money Laundering Directives (AMLDs), there is no single prescriptive standard of anti-money laundering/counter-terrorist financing (AML/CFT) requirements across the APAC region. Since each jurisdiction has its own AML/CFT regime, data-protection policies, and differing capacities to collect data, it becomes a hurdle to enforce AML/CFT standards. Currently, establishing operations in each new APAC country requires local regulations to be taken into account. The fragmentation of regulatory standards opens the gate for new and innovative RegTech solutions.

### What Singapore can offer FinTechs

**APIX** help market players connect with one another to design experiments collaboratively as well as testing and deploying new digital solutions.

**Digital economy agreements** assist with the development of international frameworks to foster interoperability of standards and systems.

**The FinTech Regulatory Sandbox** framework enables financial institutions and FinTech players to experiment with innovative financial products or services in a live environment but within a well-defined space and duration.



Singapore's Project Ubin, a collaborative project run by the MAS in conjunction with industry members, aims to solve the financial regulation issue in international remittance by exploring the use of blockchain technology to enable faster, cheaper, and more secure cross-border payments.<sup>22</sup>

Currently, the international remittance market is highly fragmented, with different countries and financial institutions having varying regulatory requirements and compliance standards. This makes it difficult for individuals and businesses to transfer money across borders efficiently and cost-effectively.

By exploring the use of blockchain technology, Project Ubin aims to create a more streamlined and efficient cross-border payment and settlement system. This system could reduce the need for intermediaries and enable direct transactions between parties, reducing counterparty risk and also comply with international financial regulations and standards.<sup>22</sup>

MAS has also been exploring blockchain technology to solve other challenges faced by the financial services industry, including through Project Guardian and Project Orchid.

“

When the business ecosystem is collaborative and there is no delineation between foreign and local players, the industry can work together to solve common issues, creating mutualistic growth.

Vesta, e-commerce fraud prevention and protection platform

”



Rise of artificial intelligence (AI)



Focus on sustainability



Importance of digital trust



Regulatory expectations



Talent uncertainty

<sup>22</sup> Project Ubin: Central Bank Digital Money using Distributed Ledger Technology (2022), MAS



# Key challenges

## Talent uncertainty:

### How is it impacting APAC?

The tech sector has been through a turbulent past few years talent-wise. 2022 saw a wave of resignations in APAC, with almost half of survey respondents (47%) having only been at their current jobs for not more than two years.

It was also found that 73% of respondents intended to look for new jobs over the next six months.<sup>23</sup> In line with the global average, one in five Singapore workers said they were likely to switch to a new employer in the next 12 months, including almost one in three from the Gen Z segment of 18–25 year-old-workers. Nearly a third planned to ask for a raise. Skilled employees, in particular, are at an elevated risk of quitting.<sup>24</sup>

Recent retrenchments in the tech sector globally, elaborated on later, have also caused talent to explore new opportunities beyond their comfort zones. As FinTechs position themselves for recovery and growth, it is important they consider their strategies to stay attractive for talent, tap local talent pools, and increase access to critical global talent.

### What Singapore can offer FinTechs

**Tech Skills Accelerator (TeSA)** is a nationwide effort between government and industry to build a skilled tech workforce, enabling FinTechs to tap a local pool that has undergone practitioner training.

**Tech@SG** provides company-level endorsement to the Ministry of Manpower (MOM), reducing the risk of rejection for their Employment Passes to enable access to critical tech talent.

**Overseas Networks and Expertise Pass (ONE Pass)** is a new five-year work visa offers spousal privileges alongside greater flexibility and certainty for top global talent across all sectors.



Rise of artificial intelligence (AI)



Focus on sustainability



Importance of digital trust



Regulatory Expectations



Talent uncertainty

### Number of years working for current company:

APAC

% by market

0–2 years

47%

Largest segment:  
23% - Less than one  
year with current  
company

Australia - 70%  
Mainland China - 48%  
Japan - 47%  
Malaysia - 45%

Singapore - 47%  
Southeast Asia - 43%  
Vietnam - 42%

Indonesia - 43%  
Philippines - 42%  
Hong Kong - 42%  
India - 38%  
Taiwan - 40%  
Thailand - 37%

3–4 years

20%

5–6 years

11%

7–10 years

11%

11+ years

11%

<sup>23</sup> The Great X (2022), Michael Page

<sup>24</sup> Global Workforce Hopes and Fears Survey (2022), PwC

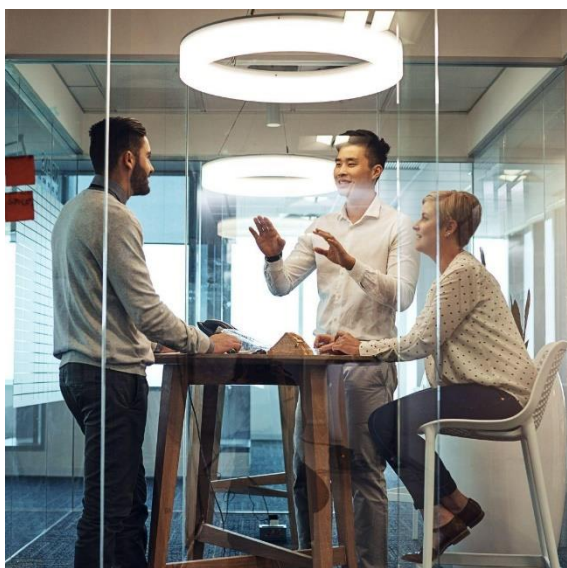
# Key challenges

## Talent skill sets and longevity

### Hiring needs have scaled back to be more focused on specialised skill sets

The surge in hiring during the pandemic has reversed, with a series of mass layoffs from tech giants in 2023, citing economic uncertainty, sharp inflation, and high interest rates. Hiring freezes are expected as firms prepare for a possible recession. For remaining roles within companies, skillset expectations have increased and become more specialised for each individual.

Nonetheless, tech talent is still highly sought after in Singapore. MOM's recent job vacancy report indicated that roles in software, web, and multimedia development remain largely unfulfilled.<sup>25</sup> FinTechs need to learn how to work better with the talent they have and invest into training development programmes to develop more specialised talent within their organisations.



“

Companies bring talent with them when they enter a new market, which can improve the overall quality of the workforce in the locale.

**1982**, Singapore based VC firm focused on investing in early stage FinTech start-ups in Southeast Asia

“

Emerging industries like Web3 have diverse and complex ecosystems that require a wide range of talents in technology, operations, marketing, and business. While there is demand for these skills, there are currently gaps in the market that need to be addressed.

**Safeheron**, digital asset self-custody solutions provider

“

Global companies can leverage their scale and experience to attract talent from different jurisdictions for offices in different regions, moving them around countries and helping them relocate while increasing the quality of their internal workforce.

**ShareIT**, peer-to-peer file sharing, content streaming and gaming platform

”



Rise of Artificial Intelligence (AI)



Focus on Sustainability



Importance of Digital Trust



Regulatory Expectations

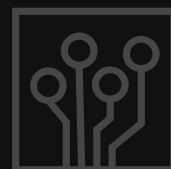


Talent uncertainty

<sup>25</sup> Tech talent still highly sought after in S'pore, MOM job vacancy report shows (2023), Straits Times

03

# Enabling a thriving FinTech environment





# Enabling a thriving FinTech environment

## Forward-looking regulation

Regulation is akin to flying a kite, and tugging on the string too hard may stifle innovation and impact funding for the budding FinTech ecosystem. Embracing this principle, Singapore approaches regulation of this dynamic sector in a nimble and responsive manner.

## Building a fortress against cybercrimes

The Cybersecurity Act was enacted to enhance defences against sophisticated cyber-attacks. In response to accelerated digitalisation of the nation, regulators work closely with sector leads to ensure companies have the capabilities and measures to detect, respond to, and recover from cyber threats.<sup>26</sup> The Personal Data Protection Act (PDPA) was introduced to govern the collection, use, disclosure, and care of personal data in Singapore.

## Accelerating development of the ecosystem through certainty

Following the rise of the FinTech industry, the parliament passed the Payment Services Act in January 2019 to cover various areas of payment activities, including domestic and cross-border money transfer service.<sup>27</sup>

In 2021, Singapore quickly responded to the growth of digital assets by expanding the Payment Services Act to cover the scope of digital payment tokens and assets.<sup>28</sup> It was one of the earliest regulators to impose risk management principles on digital asset players.

## Ushering the next wave of innovation

To accelerate technology and drive innovation within the financial sector, the local government committed S\$250 million in the second round of the Financial Sector Technology and Innovation scheme.<sup>29</sup> This phase seeks to further strengthen large-scale innovation projects and build a stronger presence of FinTech talents within the country.



Forward-looking regulation



Support from government



Cross-border collaboration

“

Having forward-looking regulations can increase confidence and trust in a brand.

Talos, digital asset data analytics and trading platform

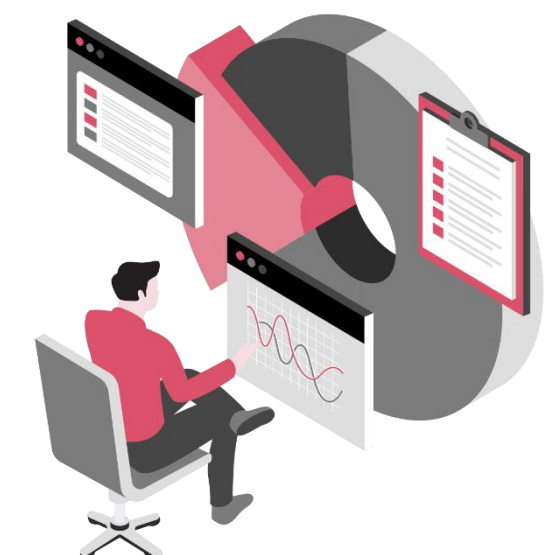
”

“

Bad actors can often be ahead of security regulations, and there must be safeguards in place to ensure that industry players are protected by harmful events such as hacking and scams.

Wirex, a Web 3.0 money app

”



<sup>26</sup> [Cybersecurity Act](#) (n.d.), CSA Singapore














<sup>27</sup> [Payments Services Act 2019](#) (2019), MAS

<sup>28</sup> [Securities and Futures Act 2001](#) (2006), MAS

<sup>29</sup> [MAS commits \\$250M to boost innovation, tech in financial sector](#) (2020), EDB Singapore

# Enabling a thriving FinTech environment

## MAS FinTech Regulatory Sandbox Framework

Sandbox	Sandbox Express	Sandbox Plus
 <p>Fully customisable for any regulated activity</p>	 <p>Pre-defined environments for low-risk activities</p>	   <p>Fully customisable or pre-defined environments</p>
 <p>First movers only</p>	 <p>First movers only</p>	   <p>First movers only</p>
	 <p>Fast-tracked approvals</p>	 <p>Financial grant for first movers</p>
<p>For more information, please refer to <a href="https://www.mas.gov.sg/development/FinTech/regulatory-sandbox">https://www.mas.gov.sg/development/FinTech/regulatory-sandbox</a></p>		 <p>Participation in Deal Fridays</p>



Forward-looking regulation



Support from government



Cross-border collaboration



“

With crypto-based activities, it is basically an investment in a prospective future, the shape of which is not clear at this point. But not to get into this game, I think risks Singapore being left behind. Getting early into that game means we can have a head start and better understand its potential benefits as well as its risks.

**Ravi Menon**, Managing Director, Monetary Authority of Singapore

”

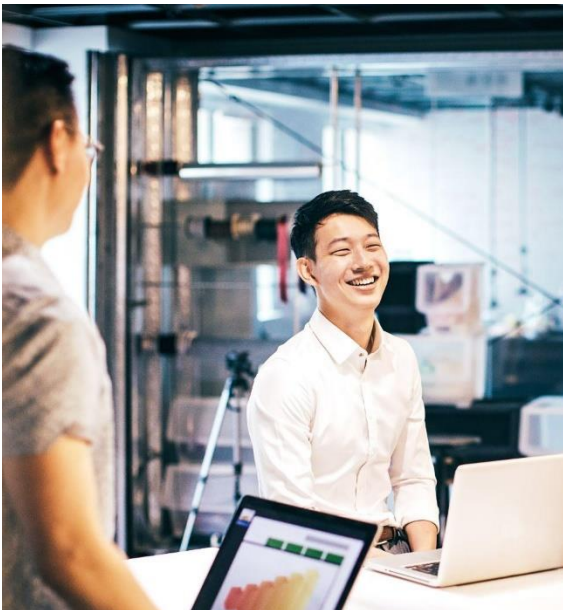
# Enabling a thriving FinTech environment

## Government agencies supporting the digital economy

The Singapore government takes pride in its collaborative approach to developing the digital economy. As an example, the Digital Industry Singapore (DISG) team exists as a joint office between various government agencies to support digital companies in their growth in Singapore. Here, we introduce the key agencies to take note of.

### Infocomm Media Development Authority (IMDA)

The IMDA develops and regulates the converging infocomm and media sectors in a holistic way, creating a dynamic and exciting sector filled with opportunities for growth through an emphasis on talent, research, innovation, and enterprise. It looks after ecosystem development programmes such as TechSkills Accelerator (TeSA), the Open Innovation Platform, Accreditation, and Spark.



### Monetary Authority of Singapore (MAS)

MAS is Singapore's central bank and integrated financial regulator. MAS also works with the financial industry to promote Singapore as a dynamic international financial centre. For FinTech, MAS partners with industry members to promote innovation in the financial sector and to support a thriving and vibrant ecosystem in Singapore. It administers relevant schemes, such as the Regulatory Sandbox and the Financial Sector Technology and Innovation Scheme, and is the main government body facilitating collaborative projects, such as Project Ubin and Greenprint.

### Singapore Economic Development Board (EDB)

The EDB is responsible for strategies that enhance Singapore's position as a global centre for business, innovation, and talent. It provides assistance for international investors looking to invest into Singapore through a toolkit of connections, resources, and incentives. It also works closely with other local government agencies to ensure that companies are supported by a well-developed business environment and a globally competitive workforce.

### Enterprise Singapore (ESG)

ESG is the government agency championing enterprise development. They work with committed companies to build capabilities, innovate, and internationalise. They also support the growth of Singapore as a hub for global trading and start-ups. As the national standards and accreditation body, they continue to build trust in Singapore's products and services through quality and standards. ESG is the lead agency for enterprise development activities such as the Singapore Week of Innovation and Technology (SWITCH).



Forward-looking regulation



Support from government



Cross-border collaboration

# Enabling a thriving FinTech environment

## Enabling companies across maturities to take the next step

Startups are the harbinger of economic growth and contribute to the creation of new jobs, products, and services. However, in a recent study, it has been found that many face closure due to lack of funding (38%), flawed business models (19%), regulatory challenges (18%), competition (20%), and no market need (35%).<sup>30</sup>

Understanding the needs of start-ups, the Financial Sector Technology and Innovation (“FSTI”) Scheme was launched by the MAS to support innovation in Singapore. Funds secured by early-stage companies could be used to offset proof of concept and allow them participate in industry-wide collaboration to boost their business capabilities. As the third tranche of funding ends early 2023, MAS will begin the next round of funding in the later half of 2023.

## Transforming ideas into reality

To pave the road for long term growth, the Singapore government increased funding, up to S\$150 million, for the “Startup SG” programme to continue helping aspiring entrepreneurs through mentorship and financial assistance.<sup>31</sup> This programme covers a range of sub-schemes to support different needs at the startup stage.



## Fuelling the next phase of growth

Mid-stage and mature companies who are looking to tap into international markets or cross-border collaboration can benefit from the Market Readiness Assistance grant (MRA), Enterprise Development grant (EDG), and International Co-Innovation programme.<sup>32</sup>

## Scaling from Singapore

For profitable companies that are looking to leverage Singapore’s ecosystem and connectivity to the region by building a base of operations in the city-state, Singapore also offers an International Headquarters (IHQ) tax incentive for expansionary activities.<sup>33</sup>

In 2021, the EDBi also established a S\$500 million Growth IPO Fund and co-invested in Anchor Fund 65 to finance growth-stage companies, grooming them for IPOs in Singapore. A well-known beneficiary is Carousell, a home-grown unicorn who has raised US\$100 million in its latest round of funding.<sup>34</sup>

“

The digital-friendly environment provides FinTech companies with the platform to innovate and iterate fast to launch products aligned to consumer requirements.

**Featurespace**, fraud and financial crime detection platform

”



Forward-looking regulation



Support from government



Cross-border collaboration

<sup>30</sup> [Start-up failure reasons](#) (n.d.), Statista

<sup>31</sup> [Singapore to pump S\\$150m into Start-up SG Founder Programme](#) (2020), Business Times

<sup>32</sup> [Market Readiness Assistance Grant](#) (n.d.), Enterprise Singapore

<sup>33</sup> [International Headquarters Award](#) (n.d.), EDB Singapore

<sup>34</sup> [EDBi announces new pathbreaking initiatives and celebrates our portfolio companies' public listings and world-leading achievements](#) (2021), EDBi



# Enabling a thriving FinTech environment

## 01

### Startup stage

- Startup SG Founder
- Startup SG Equity



Forward-looking  
Regulation



Support from  
government



Cross-border  
collaboration

## 02

### Growth stage

- Market Readiness Assistance Grant
- Enterprise Development Grant
- International Co-Innovation Programme



## 03

### Scale-up stage

- International Headquarters Award
- Enterprise Financing Scheme
- EDBi Growth IPO Fund



# Enabling a thriving FinTech environment



Forward-looking  
Regulation



Support from  
government



Cross-border  
collaboration

## Scaling from Singapore to the world

Collaboration improves the way a team works and problem solves. On a larger scale, it fosters innovation, promotes efficiency, and increases success on a global level. MAS has partnered with 37 government organisations, including those in Switzerland, the United Kingdom, the United States, China, and India.<sup>36</sup> The FinTech Cooperation Agreement strengthens collaboration among the participating countries through sharing of technological information, referrals, and joint projects. By doing so, institutions can pool resources in an efficient manner, taking advantage of each country's strengths while addressing each other's weaknesses.



Markets do not scale in isolation; they are interconnected.

AirCarbon, carbon exchange platform



## What Singapore can offer FinTechs

The **Global Financial Innovation Network (GFIN)** is catered to companies who wish to test innovative products and services across more than one jurisdiction.

The **International Technology Advisory Panel (ITAP)** is an advisory board made up of global experts to advise MAS on international developments in FinTech.

**MAS-UNCDF partnerships for financial inclusion** are ASEAN-focused programmes aimed at facilitating development and access to digital financial services within the region.

**FinTech Cooperation Agreements** promote innovation in financial services in their respective markets. To date, Singapore has signed with 29 different countries.



<sup>36</sup> [FinTech Cooperation Agreements](#) (n.d.), MAS

# Singapore as an anchor for a thriving FinTech environment

1

**Singapore** sits among the **top three** innovation economies across Southeast Asia, East Asia, and Oceania

**Source:** Global Innovation Index Database, WIPO, 2022

2

**Singapore** retains its lead in business environment rankings

EIU's business environment rankings (BERs) November 2022







# About the interviewees

## We would like to thank the following for their insights:

**AirCarbon**, a commodities exchange built on a blockchain architecture based on Ethereum and ERC20 and ERC721 tokens.

**Chainalysis**, a blockchain analysis firm that offers compliance and investigation software to analyse the blockchain public ledger.

**Dowsure**, a cross-border e-commerce insurance company that leverages API technologies to provide risk solutions.

**Fintrail**, a global consultancy that helps companies manage their exposure to financial crime risk and maintain regulatory compliance.

**Featurespace**, a real-time machine-learning-enabled platform that protects individuals and organisations from the rising threats of fraud and financial crime.

**Napier**, an AI-enhanced platform to connect data, control operations, and manage risk in a single, fully integrated financial crime risk management centre.

**Persefoni**, a software provider for automating carbon accounting and financial disclosures.

**Safeheron**, an institutional-grade MPC self-custody platform for digital assets.

**STACS**, a one-stop registry of ESG data and certifications for financial institutions, corporates, and SMEs.

**ShareIT**, a peer-to-peer file-sharing, content-streaming and gaming platform that supports online and offline sharing of files and contents.

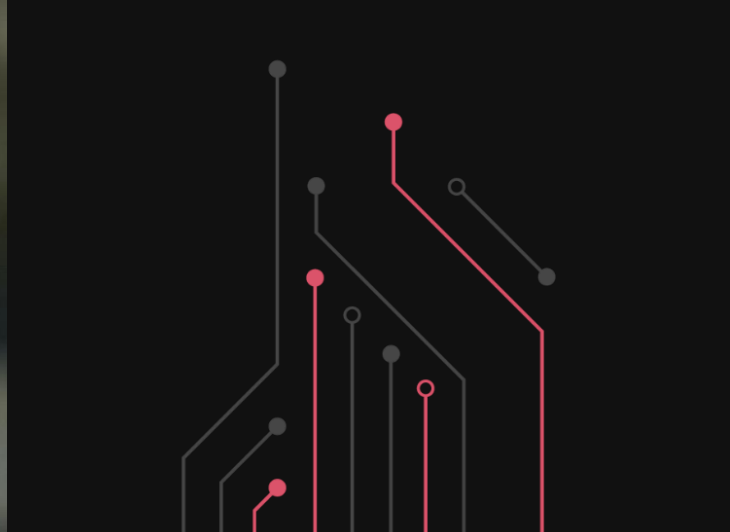
**Vesta**, an end-to-end transaction guarantee platform for online purchases.

**Weavr**, a technology provider that empowers businesses with plug-and-play embedded finance solutions.

**Wirex**, a payments platform that enables individuals to manage and use digital and traditional currency in one place.

**1982**, a Singapore based VC firm focused on investing in early stage FinTech start-ups in Southeast Asia.





# Acknowledgements

## About the Singapore Economic Development Board (EDB)

The EDB, a government agency under the Ministry of Trade and Industry, is responsible for strategies that enhance Singapore's position as a global centre for business, innovation, and talent. We undertake investment promotion and industry development and work with international businesses, both foreign and local, by providing information, connection to partners, and access to government incentives for their investments. Our mission is to create sustainable economic growth, with vibrant business and good job opportunities for Singapore and Singaporeans.

For more information on EDB, please visit [www.edb.gov.sg](http://www.edb.gov.sg)

## About PwC

At PwC, our purpose is to build trust in society and solve important problems — this is at the core of everything we do, from the value we provide to our clients and society to the decisions we make as a firm.

Our services started with audit and assurance over a century ago. As times changed and the issues faced by businesses and individuals evolved, we have developed specialised capabilities in tax, advisory, and consulting to help you address emerging new challenges across focus areas like ESG, sustainability and climate change, digital transformation, cybersecurity and privacy, data, mergers and acquisitions, and more.

In Singapore, we have more than 3,500 partners and staff to help resolve complex issues and identify opportunities for public, private, and government organisations to progress.

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As part of the PwC network of nearly 328,000 people in 152 countries, we are among the leading professional services networks in the world focusing on helping organisations and individuals create the value they are looking for.

## About the Singapore FinTech Association (SFA)

The SFA is a cross-industry and non-profit organisation. Its purpose is to support the development of the FinTech industry in Singapore and to facilitate collaboration among the participants and stakeholders of the FinTech ecosystem in Singapore. The SFA is a member-based organisation with over 860+ members. It represents the full range of stakeholders in the FinTech industry, from early-stage innovative companies to large financial players and service providers. To further its purpose, the SFA also partners with institutions and associations from Singapore and globally to cooperate on initiatives relating to the FinTech industry. The SFA has signed over 50 international Memorandum of Understanding (MoU) in 40 countries and is the first U Associate organisation to be affiliated with the National Trades Union Congress (NTUC). Through their FinTech Talent (FT) Programme, launched in 2017, over 300 professionals have been trained in FinTech, including blockchain & cryptocurrency, cybersecurity, and regulation. For further information, visit <https://singaporefintech.org/>



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