

Payments Modernisation for the Age of Intelligence

Why agility, governed AI and cloud-native engineering are becoming strategic capabilities for payment organisations in Singapore and Southeast Asia



Executive summary

For decades, payments technology has been assessed primarily against security, reliability, scalability, compliance and cost. These remain non-negotiable. Yet in Singapore and Southeast Asia, the competitive environment is changing faster than traditional technology investment cycles can accommodate. Real-time domestic rails are being connected across borders, digital businesses are scaling rapidly, and new forms of artificial intelligence are changing both the customer experience and the way software is designed, built and operated.

This paper argues that agility should now be treated as a first-class payments capability. Agility is not simply the ability to release code quickly. It is the ability to change products, controls, integrations, operating processes and infrastructure safely, repeatedly and at speed. It is the organisational capacity to respond to new payment rails, fraud patterns, regulation, partners and customer expectations without destabilising the platform that carries the economy.

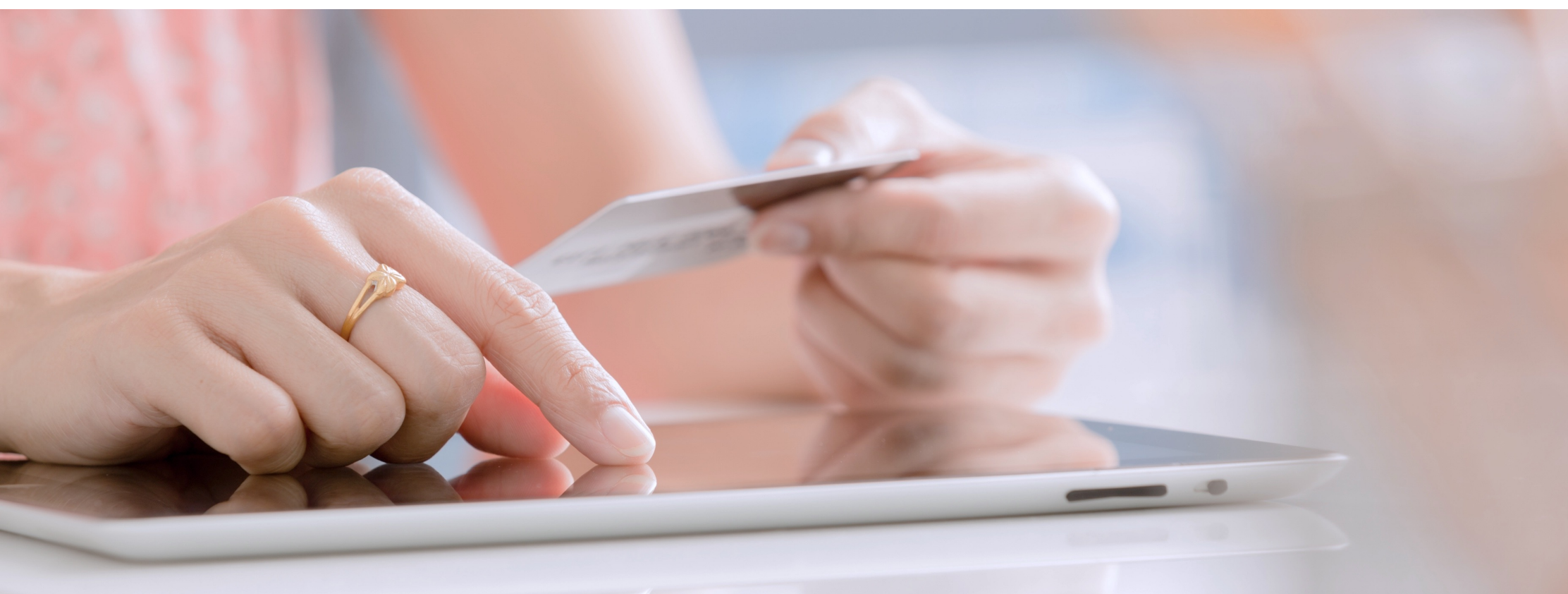
Artificial intelligence is widening access to software creation. Tasks that once required specialist teams can increasingly be attempted by smaller teams whose members are heavily augmented by AI. That creates a powerful opportunity for experimentation and inclusion, but it does not remove the need for engineering judgement. As the potential consequences of failure become more significant, the tolerance for opaque code, untested assumptions and ungoverned automation falls. An internal workflow can often be recovered. A customer-facing payment service can damage trust and create financial loss. A critical payment infrastructure failure can interrupt commerce across an entire economy.

The practical conclusion is to build a risk-calibrated model of delivery in which AI accelerates work, cloud infrastructure provides scale and resilience, and experienced payments and engineering professionals retain accountability for architecture, controls, release decisions and live operations.

The capabilities required to respond to today's competitive environment are complementary. Payment organisations need domain expertise to understand customer journeys, unpick complex legacy technology stacks, preserve the operational knowledge embedded in existing platforms and engineer seamless payment experiences. They also benefit from strategic thinking informed by visibility across global payment markets, helping distinguish durable structural shifts from passing technology fashions and translate them into practical priorities. Alongside this, they need highly reliable, scalable infrastructure and tooling to support secure modernisation, elastic growth, controlled experimentation and operational confidence.



01 From efficiency to adaptability



The first generations of electronic payments were judged by whether they could replace manual processes with faster, cheaper and more reliable automation. As payments became digital, the benchmark expanded to include security, fraud management, scalability, availability, interoperability and regulatory compliance. Those measures still define the minimum acceptable standard. No payment organisation can trade away security or reliability in exchange for speed.

What has changed is the rate and diversity of change around the platform. A payment provider may need to support cards, instant account-to-account payments, QR-based experiences, wallets, tokenisation, open banking, cross-border connectivity and new forms of commerce. In Southeast Asia, these changes occur across markets with different schemes, regulations, currencies, identity models and levels of infrastructure maturity. A platform designed only for today's product set can become a constraint on tomorrow's growth.

Agility is therefore best understood as a risk-managed ability to change. It combines modular architecture, disciplined engineering, reusable controls, automated testing, observable operations, decision-ready data and a delivery model that allows small changes to be made without reopening the whole system. Cloud is an enabler of this model, but cloud adoption alone does not create agility. The operating model, architecture and governance must be designed to use it.

Three observable shifts in payments

01/

Disruption in cross-border payments continues to grow

A recent example is [Nexus Global Payments](#) - designed to connect multiple domestic instant payment systems through a single standardised platform connection. Capitalising on the opportunity [Nexus](#) presents will require payment industry participants to extend their trusted customer interfaces to support new cross-border channels. Nexus is not the only innovation looking to disrupt cross-border payments. The challenge for financial institutions is not picking which single payment method wins, but how to balance payment methods, credentials, routing, risk, settlement and customer [experience seamlessly across a diverse regional ecosystem](#). This challenge explains why our second observable shift is becoming increasingly important – the need for orchestration.

02/

Payment capability is increasingly being orchestrated and embedded

Marketplaces, software platforms and digital brands are integrating payments into the journeys where customers already work, shop, travel or manage a business. The payment experience is becoming less visible as a standalone destination and more dependent on orchestration across payment methods, providers, fraud controls, tokenisation, settlement and reconciliation. This creates a demand for modular capabilities and clear control points rather than a single, tightly coupled payment stack.

03/

Programmable money and machine-led commerce are expanding the range of possible payment interactions

Agentic commerce could allow software to search, select and pay within defined permissions. Stablecoins are being tested for programmable and cross-border settlement, while protocols such as [x402 demonstrate](#) how an API or digital resource could request payment directly over HTTP, including micropayments for machine-to-machine services. These developments remain subject to adoption, [regulation](#), trust and practical economics, but they show why payment platforms need to accommodate new forms of value exchange without assuming that every future transaction will look like a [conventional card purchase](#).

How are banks responding in other regions?

A recent partnership between [Tyl by NatWest and Endava](#) provides a practical illustration of this shift. The initiative is focused on giving Tyl's customers a modern, fully integrated payments acceptance experience, using components of Endava's Payments Gateway Accelerator to bring best-of-breed products and services to market faster while improving flexibility, scalability and performance across the payments lifecycle. The example shows how an established payments business can treat the gateway as an adaptable platform for new products, providers and customer experiences, rather than as a fixed connection to a single payment method.

From Agile development → to intelligent delivery

For a period, Agile software development was the principal mechanism for adapting to change while retaining traditional coding practices. Some industries adopted Agile readily. Many financial institutions found it harder. Monolithic architectures, complex legacy codebases, technology debt and annual budget cycles did not provide an amenable foundation for short feedback loops and continuous delivery. Mature banks often had to modernise while protecting systems that customers and the wider economy already depended on.

The next generation of banks and financial institutions often responded by adopting commercial off-the-shelf solutions. This improved speed to market and reduced the need to build every capability internally, but it could also weaken in-house engineering depth and increase dependence on vendors and product roadmaps. That created space for fintechs to gain traction. API-led, event-driven architectures allowed newer firms to build focused, real-time financial services and to assemble propositions around modern infrastructure.

This is an intentionally simplified timeline, and it should not be read as evidence that fintech will be the overall victor in financial services. The reality is more nuanced. Mature institutions possess an asset that cannot be created by architecture alone: accumulated customer trust. Customers expect their bank to protect their data, safeguard their money and remain available when they need it, wherever they are in the world. That helps explain why banking preferences often change slowly against a backdrop of rapid technical development. In payments, reliability and security are not merely engineering qualities. They are part of the institution's social licence to operate.

The strategic question is therefore how established institutions can combine the trust and scale of the traditional model with the adaptability of the fintech model. AI-assisted development adds a new dimension to that challenge. It may reduce the cost and specialist effort required to create software, but it also makes governance, architecture and engineering judgement more important, particularly when the code will sit inside a service that customers trust with their money.

02 AI is changing the software factory

AI-assisted development is rapidly evolving. Teams are using AI to explain unfamiliar code, generate tests, summarise documentation, translate requirements into implementation tasks, identify defects, propose infrastructure changes and support incident analysis. This can make smaller teams more productive and can help less experienced practitioners work with technologies that previously required a deeper specialist base.

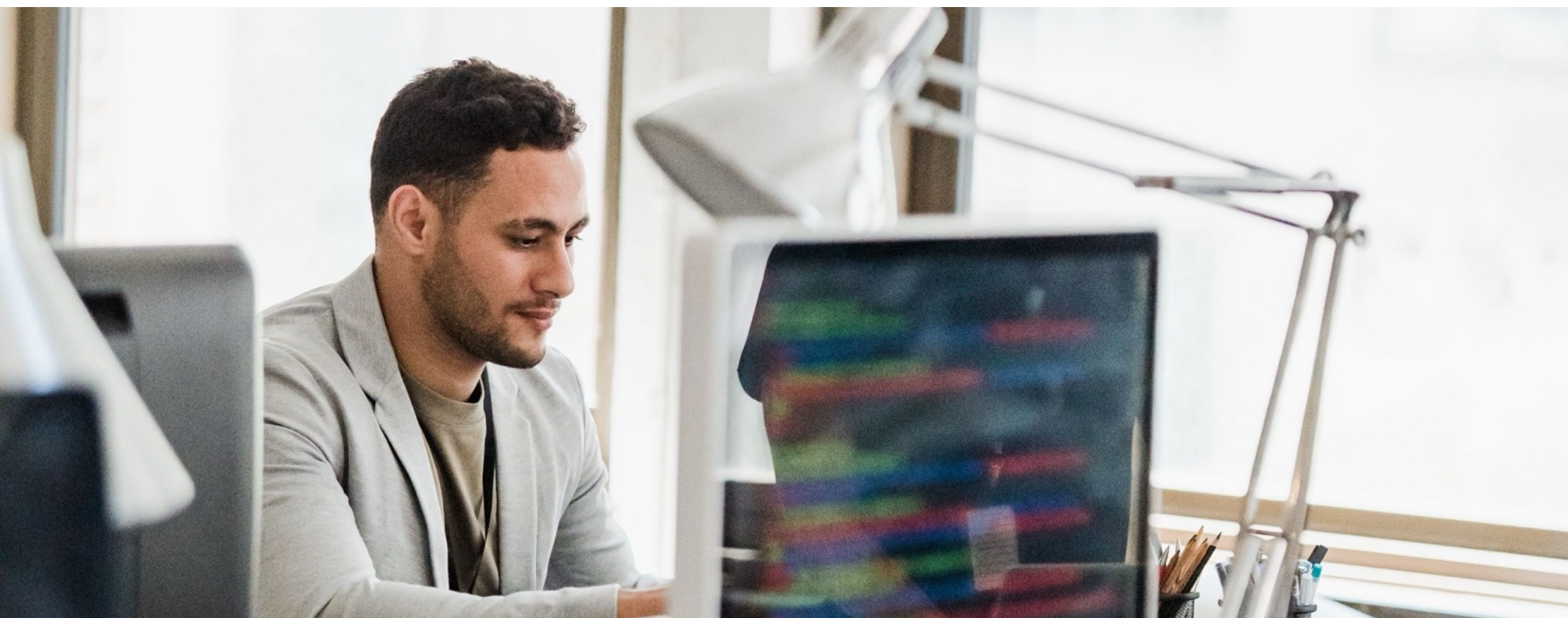
The opportunity is not an argument for treating AI as a substitute for specialist engineering. Its value is realised when skilled team members use modern tools with judgement. In payments, that means people who understand the domain, the customer journey, scheme and rail behaviour, data and control requirements, and the operational consequences of failure. Teams that work continuously across payment projects build a practical understanding of both the tooling and the contexts in which it works best. They can use AI to explore, generate, test and modernise more efficiently, while retaining responsibility for whether the resulting code is correct, secure, maintainable and fit for production. AWS provides the reliable, scalable infrastructure and tooling foundation on which that engineering work can operate, but the quality of the outcome depends on the expertise applied to the payment problem.

The accessibility effect is visible in Southeast Asia's developer ecosystem. GitHub reported that Indonesia had more than 3.5 million developers on the platform with 23 per cent year-on-year growth in 2024, while the Philippines had more than 1.7 million with 29 per cent growth. GitHub also reported 137,000 public generative-AI projects and a 98 per cent year-on-year increase in such projects. These figures do not prove that AI alone caused developer growth, but they demonstrate the scale and speed of the ecosystem in which AI-assisted development is spreading.

The risk is that the apparent simplicity of an AI-generated solution can conceal complexity in data handling, identity, authorisation, concurrency, failure recovery, cryptography, auditability and operational support. Payment systems are particularly unforgiving because a defect may not merely crash an application. It may approve the wrong transaction, duplicate a debit, expose sensitive data, weaken fraud controls, misroute funds or create an irreconcilable ledger position.



03 The greater the system criticality, the stronger the need for human oversight



Not every software project requires the same degree of assurance. A useful way to think about AI-enabled delivery is to match the level of human oversight to the system's criticality and potential impact. The more users, money, regulated activity, external dependencies and economic activity a system touches, the more demanding the assurance model must become.

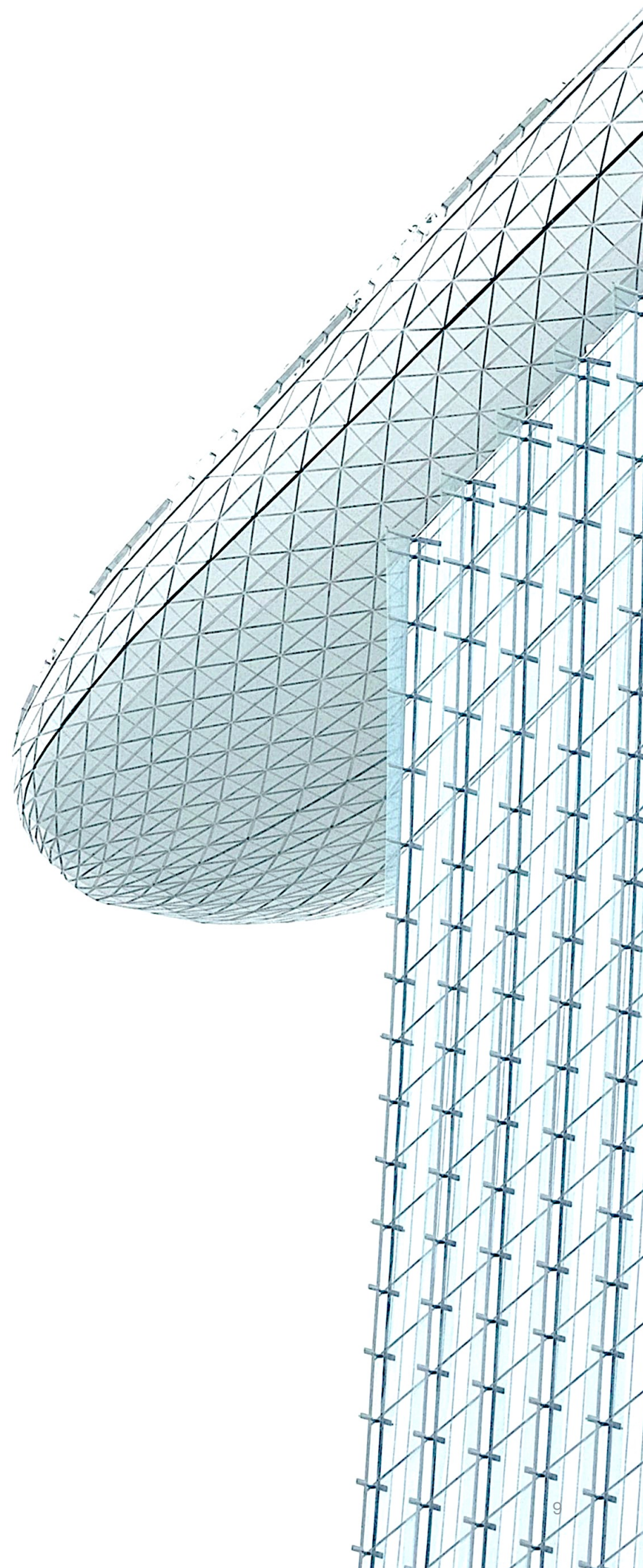
04 Cloud infrastructure as an agility foundation in Singapore and Southeast Asia

Singapore is a natural anchor for regional payment technology because it combines a sophisticated financial centre, a strong technology ecosystem and an important role in cross-border payments. AWS describes each region as comprising a minimum of three physically separate Availability Zones, enabling architectures designed for high availability and fault tolerance. [The AWS Asia Pacific \(Singapore\) Region](#) also had 170 services in scope under the 2025 [OSPAR assessment](#), including AWS Payment Cryptography. These are infrastructure and assurance capabilities, not a substitute for application architecture, but they can materially reduce the effort required to build a credible foundation.

The regional opportunity extends beyond a single-country deployment. A modern payment organisation may use Singapore or Malaysia as a regional engineering, data or control centre while deploying workloads closer to customers and regulated operations in other Southeast Asian markets. The design must account for data residency, latency, local licensing, scheme connectivity, operational support, disaster recovery and the possibility that a regional dependency becomes a concentration risk. Agility means being able to make these deployment choices without redesigning the entire product.

Project Nexus illustrates the direction of travel. The Bank for International Settlements (BIS) describes Nexus as a standardised approach to connecting multiple domestic instant payment systems through a single platform connection. India, Indonesia, Malaysia, the Philippines, Singapore and Thailand have incorporated [Nexus Global Payments](#) to take the project towards live implementation. More broadly, as cross-border instant payments develop, payment providers will need architectures that can manage multiple domestic schemes, currencies, compliance models and failure states while maintaining a coherent customer experience.

The division of responsibility is important. Cloud infrastructure can supply the dependable foundation, security services, observability, automation and scale on which modern payment services depend. It does not, by itself, determine how a legacy ledger should be decomposed, how a scheme-specific exception should be handled, how a customer journey should behave when a payment is pending, or how operational controls should work across a regulated service. Those decisions require payments knowledge, engineering judgement and close engagement with the organisation that owns the customer relationship. The value comes from bringing that context together with modern engineering practice and using cloud capabilities to turn it into a resilient and adaptable operating platform.



Conclusion

The defining payments challenge of the next decade will not be choosing between security, reliability, scalability, compliance, efficiency and agility. It will be learning how to combine them. The organisations that succeed will use AI to broaden participation in software creation and accelerate delivery, while using cloud infrastructure to provide elastic scale, resilience and controlled experimentation. They will also recognise that the value of speed is limited if the resulting system cannot be trusted.

Agility is essential to remain relevant, but trust is deeply human. Customers expect more than a technically available service. They expect care, accountability and oversight. They expect their money and data to be protected, their payments to work when needed, and someone capable of understanding and resolving a problem when automation encounters an unfamiliar situation. These expectations help explain why trust can take years to build and why banking preferences often change more slowly than technology.

The same balance must be retained in product engineering. Team members can and should be augmented with AI, and efficiency is valuable. But trusted payment capability still depends on engaged payments engineering expertise, using modern tools to make informed decisions about architecture, controls, testing, resilience and live operations. The right combination of security, reliability, scalability, compliance and efficiency creates trust. Agility then becomes the capability that allows trusted organisations to keep innovating.

In Singapore and Southeast Asia, where domestic real-time payment systems are becoming more connected and digital commerce is expanding across borders, this is becoming a strategic imperative. The combination of deep payments engineering experience, an ability to modernise complex technology estates and dependable cloud infrastructure offers a way to pursue agility without losing sight of the human standards on which payment systems depend. Agility unlocks innovation. Trust underpins adoption.

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