

Contents

Introduction	3
The rise of the cashless economy: fast payment systems in South-East Asia	4
Case study: The PromptPay–PayNow cross-border payments linkage between Thailand and Singapore	11
 Going from bilateral to regional cross-border connectivity in ASEAN and beyond 	14
4. The way forward	16
Appendix: References	17
Contributors	18
Endnotes	19

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Introduction

Financial services are undergoing a digital revolution. As economies become increasingly digital, consumers expect their financial interactions to keep pace, demanding seamless, secure and rapid payment solutions. The digital payments market is thus growing rapidly across countries, fuelled by the increasing adoption of contactless payments, e-wallets and e-commerce. In today's real-time digital economy, customers and businesses need access to payment systems that are fast, affordable, accessible and reliable.

This briefing paper, written in collaboration with the Bank of Thailand, analyses the current fast payments landscape and the opportunities and challenges associated with the implementation of real-time cross-border payment connectivity. It highlights progress on the deployment of cross-border fast payment systems (FPS), using as a case study the PromptPay–PayNow linkage between Thailand and Singapore's payment systems.

The case study presents the design and additional functionalities provided to users, offering valuable knowledge for stakeholders involved in future

cross-border collaborations. The paper also covers upcoming regional initiatives aimed at expanding cross-border payment connectivity across countries, such as the Association of Southeast Asian Nations (ASEAN) regional payment connectivity initiative and Project Nexus from the Bank for International Settlements (BIS).

Shaped in collaboration with key stakeholders involved in implementing this new cross-border fast payments infrastructure – central banks, payment providers and participating banks – the paper focuses on understanding the roadblocks to the broad adoption of cross-border payment system linkages and identifying lessons learned.

This briefing paper is presented in the hope that it will foster collaboration and knowledge-sharing among all stakeholders involved and accelerate the adoption of cross-border FPS across countries. The push towards seamless, secure and rapid payment solutions represents not just an economic shift but also a cultural bridge capable of bringing communities together through the empowering forces of financial access and technology.

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The rise of the cashless economy: fast payment systems in South-East Asia

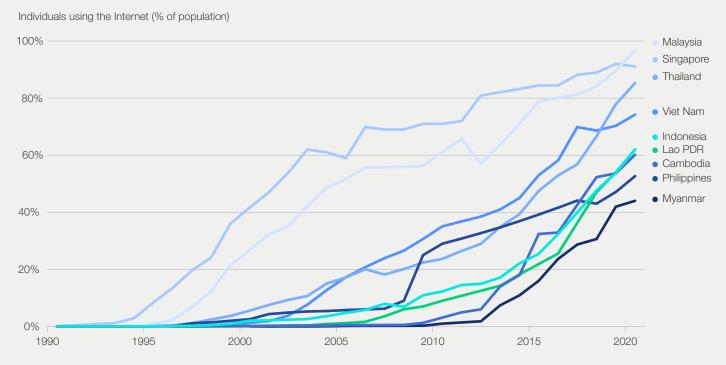
Over the past decade, ASEAN economies and societies have witnessed remarkable economic progress coupled with profound digital transformation, driven by technological change and a growing middle class. The gross domestic product (GDP) of the 10 ASEAN economies now represents a combined GDP of \$3.6 trillion as of 2022 - equivalent to the world's fourth largest economy.1 Despite the economic impact of the COVID-19 pandemic, ASEAN economies continue to be among the world's fastest growing, with average GDP growth remaining robust at 5.6% in 2022.2 Looking ahead, despite growing global economic uncertainty, ASEAN countries are projected to reach 4.6% GDP growth in 2023.3 The domestic consumption of the region's growing and increasingly affluent middle class, combined with significant productivity, have fuelled economic growth prospects locally.4

ASEAN countries have also witnessed a truly remarkable growth in internet penetration; this has trebled over the past decade across ASEAN's 663 million population,⁵ from 24.6% of the population having access to the internet in 2012 people to 79.5% in 2021.⁶ As illustrated in Figure 1, while Malaysia, Singapore and Thailand remain the most connected countries in the region, Indonesia, Lao People's Democratic Republic (Lao PDR), Cambodia, the Philippines and Myanmar have witnessed a sharp acceleration in their digitalization.

There are now 527 million internet users in South-East Asia,⁷ with an estimated 40 million new users added every year since 2019.⁸ The pandemic helped accelerate the pace of digital adoption, as people shifted many aspects of their lives online, with an estimated 125,000 new users coming online every day.⁹

FIGURE 1

The rise of internet usage across ASEAN countries since 1990



Source: International Telecommunication Union (ITU) World Telecommunication/ICT indicators Database

Across ASEAN countries, the digital economy now represents 5–10% of gross GDP, and this figure is forecast to double by 2025 and reach \$1 trillion by 2030. 10 The digital economy is not only an engine of economic growth but also a catalyst for job creation: it already indirectly supports close to 30 million jobs across the region and is a crucial enabler for many businesses. 11 Online platforms have helped more than 20 million merchants and 6 million restaurants to grow their businesses online. 12

The availability of smartphones and increased internet penetration have played pivotal roles in the

widespread adoption of online banking services, mobile money and e-wallets. As illustrated in Figure 2, account ownership within financial institutions has also taken a leap forward across ASEAN countries over the past decade. Account ownership or access to mobile money is now higher than 60% in seven out of the nine countries covered by the World Bank Findex, compared with only two countries in 2011. The number of people holding a bank account or signing up with a mobile money provider in that time has grown from 3% to 60% in Cambodia, from 9% to 62% in Lao PDR and from 12% to 62% in Indonesia.

FIGURE 2

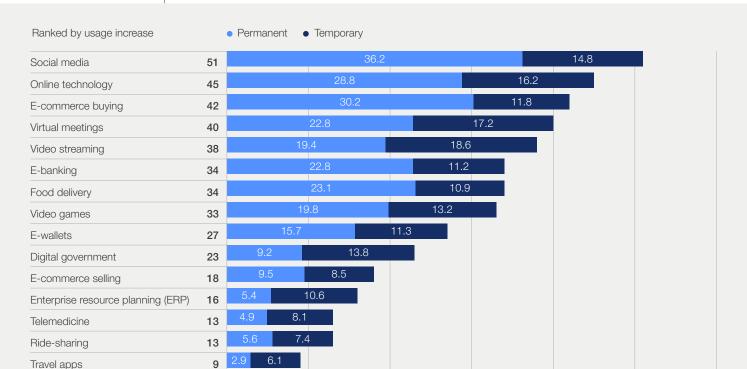
Account ownership at a financial institution or with a mobile money service provider



Source: World Bank, Findex 2022 edition

There is also growing evidence that the COVID-19 pandemic accelerated the use of digital tools across those ASEAN countries that embraced digital transformation. As can be seen in Figure 3, a large majority of young people in ASEAN countries adopted digital tools for the first time during the pandemic, and for many of them this permanently changed the way they consume information, buy goods, use financial services or interact with their government. This survey, conducted by the World

Economic Forum in collaboration with Sea Group and based on an analysis of more than 68,000 youths aged 16–35 years old from six countries in the South-East Asian region, shows the extent to which the COVID-19 pandemic accelerated the adoption of digital tools. ¹³ According to the World Bank, more than 80 million adults in India made their first digital merchant payment after the start of the pandemic; in China, this number was more than 100 million. ¹⁴



Source: World Economic Forum and Sea Group, COVID-19 - The True Test of ASEAN Youth's Resilience and Adaptability: Impact of Social Distancing on ASEAN Youth, ASEAN Youth Survey 2020 Edition, July 2020

20

30

% of respondents

Over the past decade, the evolution towards a cashless economy has been accelerated by the growing adoption of digital payment systems across the region. As a result, the value of gross digital payments across the six largest ASEAN economies reached \$806 billion in 2022, up 14% year on year, and is forecast to rise to close to

10

0

\$1.2 trillion by 2025.¹⁵ Furthermore, the use of e-wallets is also rapidly gaining traction across ASEAN countries. As illustrated by Table 1, half of the top 10 countries in the world in terms of e-wallet penetration are ASEAN countries (Thailand, Viet Nam, the Philippines, Malaysia and Indonesia).¹⁶

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TABLE 1 Global e-wallet adoption rates by country: top 10 countries by adoption rates (2022)

Rank	Country	Mobile wallet adoption rates (%)
1	Thailand	92%
2	Viet Nam	91%
3	India	90%
4	Hong Kong	89%
5	The Philippines	88%
6	Malaysia	86%
7	China	84%
8	Indonesia	82%
9	Saudi Arabia	80%
10	Taiwan	78%

Source: ACI Worldwide, Prime Time for Real-Time Global Payments Report, March 2023

Note: Based on a survey conducted by ACI in Q1–Q2 2022 among 49,751 consumers in 40 markets globally.

Evolution of payment systems across countries

Beginning in the 1990s, most economies adopted real-time gross settlement (RTGS), which marked the beginning of improvements in wholesale payments: 176 nations had RTGS or RTGS-equivalent systems in 2017 compared to fewer than 10 RTGS systems in 1990. The As digital economies grow, quick and secure digital payments are becoming ubiquitous. By settling high-value payments continuously in real time, RTGS reduces credit exposures between banks and enhances oversight; using RTGS is key for payment systems seeking to strengthen operations and harness infrastructure for future innovation.

While RTGS facilitates real-time wholesale settlements between financial institutions, fast payment systems (FPS) allow instant retail payments by individuals and businesses. FPS (often referred to as "instant payments", "real-time payments" or "immediate payments") offer the capacity for users to transfer money 24/7, 365 days a year and provide the payee with instant or quasi-instant payment of funds; they use optimized messaging protocols, liquidity management mechanisms and integrated settlement infrastructure to achieve near-real-time clearing and settlement finality for credit transfers. This allows transactions to be completed through interbank settlement in under 30 seconds, accelerating fund availability.

FPS expand real-time capabilities to a broader range of high-volume, lower-value transactions between end users. Implementing FPS can yield numerous benefits for countries seeking to modernize and improve their payment infrastructures. 18 The use of FPS can also reduce the costs associated with retail transactions for both merchants and consumers. More efficient clearing reduces overhead costs for payment service providers, and these savings can be passed to merchants in the form of lower payment acceptance fees and to consumers through lower service charges. 19 This may encourage merchant adoption of digital payments and increase consumers' use of electronic alternatives to cash. According to recent research, the use of real-time payments globally grew 63% year on year, reaching close to \$195 billion in transactions in 2022.20

FPS allow for a smooth, seamless flow of funds between accounts at different banks and financial service providers. This delivers a consistent, convenient customer experience regardless of where accounts are held. Rather than postponing settlement, a number of FPS are now using real-time settlement throughout all the entities involved. Other FPS provide real-time transactions for payers and merchants, but banks/non-banks will use net settlement to settle the transactions.

Furthermore, FPS can also promote competition among payment service providers.²¹ They can also allow the introduction of new features and use cases such as QR code acceptance, payment APIs or alias-based addressing.²² QR code acceptance enables convenient digital payments by allowing customers simply to scan a code instead of entering payment details manually. Payment APIs facilitate easy integration with third-party applications to support digital commerce. Alias-based addressing simplifies peer-to-peer transfers by using aliases (such as phone numbers) rather than account numbers.

As Table 2 shows, there are more than 70 live FPS across countries and regions. An increasing number of domestic FPS have already adopted or are also on the verge of adopting the ISO 20022 message format, increasing their potential interoperability.²³ The ISO 20022 standard specifies an extensible markup language (XML)-based financial messaging schema. It provides a standardized and structured representation of transactions and associated metadata across the transaction life cycle.²⁴ ISO 20022 messages consolidate and rationalize formats by establishing a common vocabulary of financial terms and codified meanings. Adoption facilitates integration between systems by harmonizing messaging protocols. By strengthening operational resilience, lowering market fragmentation and removing single points of failure, the ISO 20022 standard expands the potential for increased interoperability and harmonization among payment systems.²⁵

TABLE 2

Table 2 Fast payment systems across countries

Region	Country	Real-time payments method	Status	Year
Asia Pacific and South-East Asia	Australia	New Payments Platform (NPP)	Live	2018
	Cambodia	Real-Time Fund Transfer (RFT)	Live	2019
	China	IBPS	Live	2010
	Hong Kong	Faster Payment System (FPS)	Live	2018

Region	Country	Real-time payments method	Status	Year
	India	IMPS	Live	2010
		UPI	Live	2016
	Indonesia	BI-FAST	Live	2021
	Japan	Zengin System	Live	1973
	Kazakhstan	ISMT	Planned	2025
	Malaysia	DuitNow	Live	2018
		Interbank Funds Transfer (IBFT)	Live	2006
	Myanmar	No scheme in place		TBD
	New Zealand	No scheme in place		TBD
	Philippines	InstaPay	Live	2018
	Singapore	FAST	Live	2014
		PayNow	Live	2017
	South Korea	CD/ATM	Live	1988
		Electronic Banking System (EBS)	Live	2001
	Sri Lanka	CEFTS (LankPay)	Live	2015
	Taiwan	Financial XML	Live	2003
		Interbank ATM funds transfer system	Live	1987
	Thailand	PromptPay	Live	2016
	Viet Nam	NAPAS Quick Money Transfer Service	Live	2016
Europe	Austria	SCT Inst	Live	2017
	Azerbaijan	IPS	Live	2020
	Belgium	SCT Inst	Live	2019
	Bulgaria	Borica Instant Payments	Live	2021
	Croatia	NKSInst	Live	2020
	Czech Republic	Instant Payment	Live	2018
	Denmark	Straksclearing	Live	2014
	Estonia	SCT Inst	Live	2014
	Finland	Siirto	Live	2017
		SCT Inst	Live	2018
	France	SCT Inst	Live	2018
	Germany	SCT Inst	Live	2017

Region	Country	Real-time payments method	Status	Year
	Greece	IRIS	Live	2017
	Hungary	Azonnali Fizetési Rendszer (AFR)	Live	2020
	Iceland	СВІ	Live	2020
	Ireland	SCT Inst (few banks only are offering)	Live	2020
	Italy	SCT Inst	Live	2017
	Latvia	EKS Zibmaksajums	Live	2017
	Lithuania	CENTROlink	Live	2017
	Luxembourg	BILnet	Live	2020
	Netherlands	SCT Inst	Live	2017
	Norway	Straksbetalinger	Live	2011
		Vipps	Live	2015
	Poland	Express Elixir	Live	2012
		Blue Cash	Live	2013
	Romania	Plati Instant	Live	2005
	Russia	FPS	Live	2019
	Serbia	IPS	Live	2018
	Slovakia	No scheme in place		TBD
	Slovenia	Flik	Live	2020
	Spain	SCT Inst	Live	2017
		Bizum	Live	2016
	Sweden	BIR	Live	2012
	Switzerland	TWINT	Live	2016
	Türkiye	Retail Payment System (RPS)	Live	2012
		FAST	Live	2021
	United Kingdom	Faster Payments	Live	2008
	Ukraine	In progress		TBD
North America	Canada	Interac e-Transfer	Live	2002
	United States	RTP and Zelle	Live	2017
		FedNow	Live	2023

Region	Country	Real-time payments method	Status	Year
Middle East and Africa	Bahrain	Fawri+	Live	2015
Alliou	Egypt	IPN	Live	2022
	Ethiopia	EATS	Live	2011
	Ghana	GhIPSS Instant Pay (GIP)	Live	2007
	Iran	No scheme in place		TBD
	Israel	No scheme in place		TBD
	Morocco	No scheme in place		TBD
	Nigeria	NIP	Live	2011
	Oman	MPCSS	Live	2017
	Pakistan	Raast	Live	2021
	Qatar	QMP	Live	2020
	Saudi Arabia	Sarie	Live	2021
	South Africa	RTC	Live	2006
	Tanzania	Tanzania Instant Payment Systems (TIPS)	Live	2019
	United Arab Emirates	Immediate Payment Instruction (IPI)	Live	2019
Latin America	Brazil	SITRAF	Live	2002
	Chile	TEF	Live	2008
	Colombia	Transfiya	Live	2019
	Honduras	SIP	Live	2008
	Mexico	SPEI	Live	2004
	Peru	Immediate Interbank Transfers	Live	2016
	Uruguay	ACH Transferencias Inmediatas	Live	2021

Source: ACI Worldwide, It's Prime Time for Real-Time, March 2023

Case study: The PromptPay-PayNow cross-border payments linkage between Thailand and Singapore

Singapore and Thailand, two of ASEAN's economic powerhouses, have spearheaded the evolution of the region's cross-border payment infrastructure by linking their local FPS, Singapore's PayNow and Thailand's PromptPay. This case study synthesizes insights from stakeholder interviews into high-level lessons that can inform similar initiatives elsewhere.

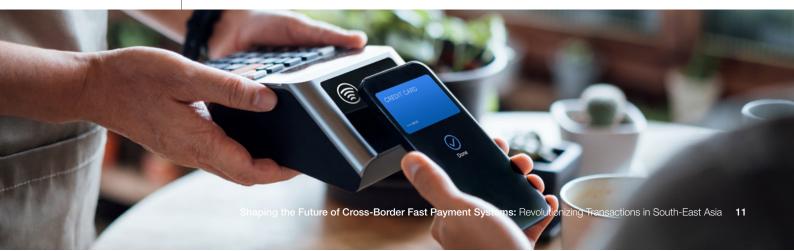
Initiated in 2021, this first-of-its-kind project within ASEAN marked a major milestone in the region's journey towards a cashless society. Thailand launched PromptPay in late 2016, leveraging the country's high smartphone penetration. It enables real-time Thai baht (THB) transfers using proxies such as mobile phone numbers, national ID numbers, e-wallet IDs and corporate IDs instead of bank account numbers. Singapore introduced PayNow in 2017 for instant Singapore dollar (SGD) transfers using mobile/National Registration Identity Card (NRIC) numbers or virtual payment addresses.

By connecting these systems, the central banks aimed to extend domestic convenience to crossborder payments within South-East Asia. After extensive planning, the PromptPay-PayNow linkage went live in April 2021. The linkage uses domestic fast payment rails and proxies (the recipient's mobile phone number) to send cross-border transfers, avoiding cumbersome account details. A sender is able to "look up" a mobile proxy as part of the PromptPay-PayNow service in order to verify the

name connected to that mobile proxy before starting a transfer. Using this function means erroneous transfers can be avoided, giving senders confidence that they will be sending funds to the right person.

The linkage enables individuals to make real-time and low-cost transfers of up to SGD 1,000/THB 25,000 daily between Thailand and Singapore using just the recipient's mobile number. 26 As of mid-2022, the linkage was processing more than 65,000 cross-border transactions monthly, with transaction size averaging \$150-200 per transfer.²⁷ The fixed cost per transaction is currently THB 150 (+/- \$4) or lower, depending on the banks' promotions - in Thailand and is currently free to use in Singapore, although it includes a small foreign exchange markup defined by the participating bank issuing the transfer. The transfers are complete within minutes compared to days for traditional remittances. Before the establishment of the PromptPay-PayNow linkage, senders had to pay up to 10% of the amount sent to transmit money between the two countries, and it might take several working days for the money to arrive.²⁸

This pioneering linkage provides a blueprint for connecting FPS across borders. While not without challenges, PromptPay-PayNow demonstrates how countries can collaborate to extend the benefits of instant domestic payments to the cross-border environment.



Lessons learned from the implementation of the PromptPay-PayNow linkage

The PromptPay-PayNow linkage represents an important milestone, proving the viability of connecting domestic FPS across borders. The project faced complexities, but, through structured collaboration, stakeholders in Thailand and Singapore successfully delivered a world-first linkage that meets customer needs for convenient, accessible and affordable crossborder payments.

The different stakeholders involved in this project provided several lessons learned, which they believe could be valuable to other countries looking to implement similar crossborder linkages between their payment systems. They can be grouped into the following five key overarching categories:

1. Governance: establishing robust governance and projectmanagement structures

The project established clear governance and project-management structures upfront. A steering committee of senior central bank officials provided oversight and direction. Project-management offices in each country facilitated working groups covering business, technical and legal/regulatory issues.²⁹ Domestic operators, settlement banks and commercial banks from both countries collaborated closely. Strong governance and structured project management enabled alignment across multiple stakeholders.

2. Technical standards: allowing flexibility in technical standards

Allowing flexibility in technical standards ensures adaptability to unforeseen challenges, promotes collaboration and facilitates the integration of evolving technologies to meet dynamic project needs. To streamline crossborder peer-to-peer (P2P) fund transfers, BCS and ITMX (the two countries' systems operators) devised a gateway using ISO 20022 as the message benchmark. The solution facilitates message conversion for cross-border sections while maintaining domestic formats, and addresses the time discrepancy between PromptPay and PayNow. Ensuring flexibility in the implementation of the cross-border linkage was balanced with interoperability needs, which helped to smooth onboarding and minimized disruption across legacy infrastructure.

3. Regulation: bridging operational differences

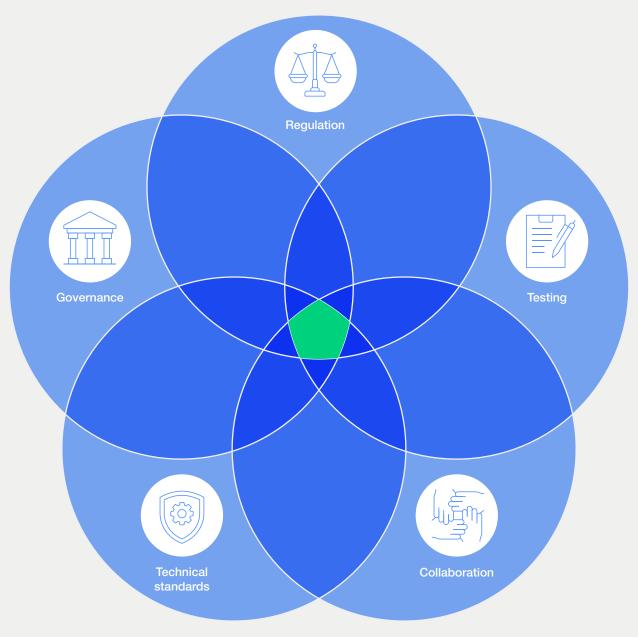
Different countries have different laws and regulations; such operational differences are common and must be studied and resolved collaboratively. For example, the turnaround times differed between PromptPay and PayNow, which had to be addressed to avoid transaction failures. New, asynchronous messaging flows were implemented. Another example was the disparity in anti-money laundering/combating the financing of terrorism (AML/CFT) screening between the countries: Thailand requires real-time screening to be conducted during the look-up stage, whereas Singapore is open to performing this at the payment stage. Although the domestic systems shared similarities, they had operational differences that needed careful reconciliation, including variations in the message formats and timing. Instead of trying to completely harmonize the approaches, a compromise was reached that considered the differing processes in both countries and respected each country's approach and honoured their respective regulations.

4. Testing: conducting extensive testing and ensuring comparable methodologies

The project allotted significant time for rigorous testing by operators and banks. This revealed unanticipated issues, such as subtly different data-field norms, which caused transactions to fail. While time-consuming, comprehensive testing ensured a smoothly functioning system. As well as providing sufficient testing resources, it was also crucial to ensure from the outset that the testing methodologies used by both parties were comparable.

5. Collaboration: developing legal frameworks collaboratively

Developing mutually acceptable legal agreements between parties in two jurisdictions was complex but essential for risk management and recourse. A novel multiparty structure was devised to handle issues such as governance, liability and dispute resolution. While demanding, this collaborative legal infrastructure provides the bedrock for sustainable operations. The roles of the Bank of Thailand and the Monetary Authority of Singapore were also highlighted as key stakeholders in overseeing the governance of this project. In cases where agreements could not be reached between the participating banks and payment service providers, these issues could be escalated to the central banks for resolution.



Source: World Economic Forum

The successful linkage between PromptPay and PayNow provides a promising template for connecting domestic FPS across borders. This implementation demonstrates that with pragmatic technical accommodation, operational precision, extensive testing and legal collaboration, the complications of cross-border connectivity can be overcome.

When countries exhibit willingness to bridge operational variations, establish mutually acceptable legal frameworks and orchestrate efforts across technical, operational and legal domains,

linkages become feasible. Domestic fast payment convenience can be extended across borders while unlocking the game-changing benefits of international fast payment interoperability for consumers and businesses.

The PromptPay-PayNow linkage indicates an achievable path for replicating fast payment convenience regionally and globally. With vision and commitment to cross-border collaboration, countries can follow this blueprint to deliver the future of streamlined, instantaneous worldwide payments.

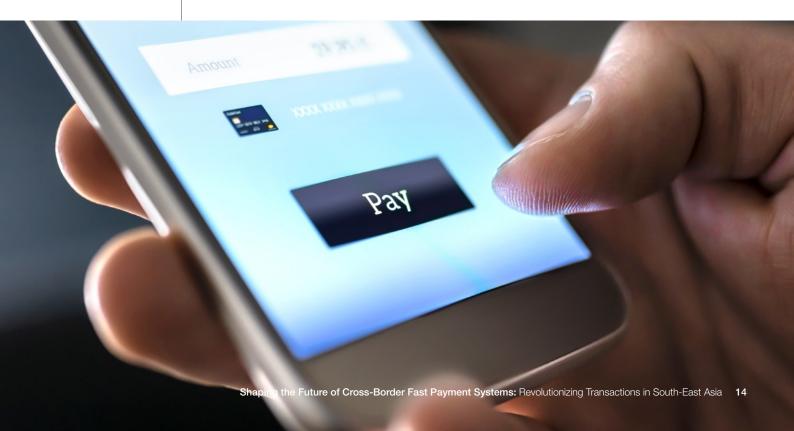
Going from bilateral to regional cross-border connectivity in ASEAN and beyond

While bilateral linkages between domestic FPS in two countries can deliver significant benefits, this approach does not scale efficiently. Each new country linkage requires complex technical integration and legal negotiation between payment system operators and industry stakeholders. Bilateral initiatives such as the PromptPay-PayNow linkage are viable for close trading partners, but many country pairings lack the transaction volumes to justify the investment required for a customized bilateral linkage. This limits the reach of fast payments regionally and globally.

With the number of live FPS across countries growing quickly, consideration must be given to the issues posed by scaling the number of bilateral connections among countries. Connecting just 60 countries bilaterally would require 1,770 integrations,30 and the number of connections required grows exponentially as more countries are added.³¹ Clearly, an alternative to individual bilateral linkages is needed to efficiently enable broad interoperability between a growing number of FPS worldwide.

There are still significant challenges that will need to be overcome before the fragmented national payment systems and business models across ASEAN countries can be fully integrated. Domestic payment systems have adopted different technical standards, messaging formats and processing flows. Bridging these differences requires custom integrations for each connection. While many systems use ISO 20022 messaging, they are often customized in incompatible ways, and these technical factors compound the complexity of bilateral linkages.32

Beyond technical factors, legal and regulatory disparities also need to be solved. Compliance requirements concerning areas such as AML/CFT screening differ, as do rules on sharing customer data.33 The legacy technical architecture of some of the partnering banks across countries can also constrain the development of new cross-border linkages.34 Furthermore, there are also commercial challenges that need to be settled among participating stakeholders, solving disparities in currency conversion and settlement mechanisms across countries.



Project Nexus, developed by the Bank for International Settlements (BIS) Innovation Hub, provides one model for such regional interoperability.35 Multilateral connectivity models address the limitations of bilateral linkages by establishing common standards and a single integration point for domestic systems. Project Nexus offers a standardized way for payment system operators to link their domestic FPS and route cross-border transactions. By connecting to Nexus, systems gain reach to all other participants. This avoids the need for custom bilateral integrations between each country pair, creating a common technical framework that facilitates the onboarding of new systems.

Legal and regulatory complexities are also streamlined under a unified Nexus scheme. Project Nexus provides standard template contracts and compliance documentation to drive consistency; it advocates regulatory convergence through identifying best practices and gaps; the project also fosters coordinated oversight between central banks and transparency between authorities to ease compliance burdens.

In 2022, the Nexus prototype demonstrated crossborder payments between the Eurosystem's TIPS, Malaysia's RPP and Singapore's FAST systems.³⁶ This proved the viability of the model. Building on this success, central banks in Indonesia, Malaysia, the Philippines, Singapore and Thailand plan to connect their FPS using the Nexus approach.

With a combined population across these five countries of 490 million, the initiative has great potential for improving regional payments.37 Domestic payment proxies such as mobile phone numbers will be valid across borders, providing a seamless user experience. While starting within ASEAN, the goal is an interconnected global network. Nexus aims to develop an advisory panel of central banks and system operators worldwide to guide this expansion.38

Project Nexus highlights the potential of regional payment connectivity models to unlock the benefits of fast payments across the whole region and demonstrates the viability of scalable regional models to interconnect domestic fast payments across countries. By tackling legal, regulatory, technical and commercial barriers, it can extend the reach of real-time payments across entire regions.

The potential of Project Nexus highlights the power of collaborative regional initiatives to unlock fast payments globally. Through shared infrastructure and unified frameworks, barriers to broad crossborder connectivity can be overcome. Recent efforts by central banks across ASEAN represent a first step on the path towards an integrated real-time payments ecosystem. Success will pave the way for an exciting vision of seamless, instant payments within South-East Asia and beyond, delivering major economic and social benefits through improved speed, enhanced access and reduced costs.



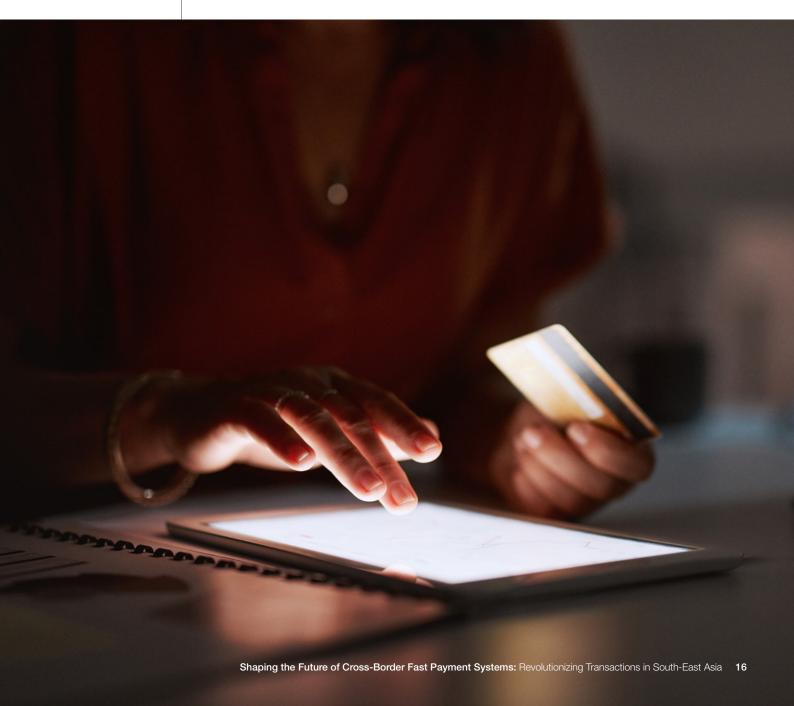
The way forward

South-East Asia stands on the cusp of a new era of financial integration powered by instant cross-border payment capabilities. This briefing paper highlights the tremendous progress already achieved in modernizing payment infrastructure across ASEAN and linking domestic FPS internationally. The successes already achieved, such as the PromptPay-PayNow linkage, can provide valuable lessons for other countries looking to implement similar crossborder linkages. The paper aims to outline both the progress made to date and the work still to be done.

Realizing this future depends on collective action from stakeholders across the payments ecosystem. By sustaining collaboration, aligning

standards and investing in connectivity, the promise of integrated real-time payments across ASEAN can become a reality. ASEAN is well positioned to emerge as a global leader in developing cross-border payment connectivity, as highlighted by the BIS-led Project Nexus.

With sustained commitment and public-private collaboration, seamless cross-border payments could become a reality in South-East Asia, serving as a model that shows how faster, more inclusive payment systems can transform trade, commerce and financial access worldwide. This model can provide a useful reference and catalyst for constructive action among the diverse payment stakeholders that will shape the future of payments across South-East Asia and globally.



Appendix: References

ACI Worldwide/GlobalData, It's Prime Time for Real-Time, 2023: https://www.aciworldwide.com/real-timepayments-report.

ASEAN, Statistical Yearbook 2022, December 2022: https://www.aseanstats.org/wp-content/ uploads/2023/02/ASYB-2022 0223.pdf.

Baker McKenzie, PayNow-PromptPay/PromptPay-PayNow Linkage White Paper, 28 April 2022: https:// abs.org.sg/docs/library/PayNow-PromptPay_Linkage_White_Paper.pdf?sfvrsn=9#:~:text=In%20this%20 white%20paper%2C%20we,their%20domestic%20fast%20payment%20systems.

Bank for International Settlements (BIS), "Developments in Retail Fast Payments and Implications for RTGS Systems", 14 December 2021: https://www.bis.org/cpmi/publ/d201.htm.

Bank for International Settlements (BIS) Innovation Hub, Project Nexus: Enabling Instant Cross-Border Payments, March 2023: https://www.bis.org/publ/othp62.pdf.

Bank of Thailand, "BIS's Project Nexus Prototype Successfully Links Eurosystem, Malaysia, and Singapore Payment Systems; Partners in Indonesia, Malaysia, the Philippines, Singapore and Thailand to Work Towards Wider Payment Connectivity", 23 March 2023: hhttps://www.bot.or.th/content/dam/bot/ documents/en/news-and-media/news/2023/n1466e.pdf.

Bank of Thailand, "Thailand's Experience on Cross-Border Payments: PromptPay PayNow", March 2023.

Google, Temasek and Bain, e-Conomy SEA 2022, May 2022: https://services.google.com/fh/files/misc/e_ conomy sea 2022 report.pdf.

International Labour Organization, Extension of Social Security to Workers in Informal Employment in the ASEAN Region, 2019: https://www.social-protection.org/gimi/RessourcePDF.action?id=55856.

International Telecommunication Union, "Two-Thirds of the World's Population Use the Internet, But 2.7 Billion People Remain Offline": https://www.itu.int/itu-d/reports/statistics/2022/11/24/ff22-internet-use/.

Kell Jay Lim, "How to Close Southeast Asia's Financial Inclusion Gap", World Economic Forum, Davos Agenda 2022, 7 February 2022: https://www.weforum.org/agenda/2022/02/closing-southeast-asia-sfinancial-inclusion-gap/.

Organisation for Economic Co-operation and Development, Economic Outlook for Southeast Asia, China and India, 2023: https://www.oecd.org/dev/asia-pacific/economic-outlook/Overview-Economic-Outlook-Southeast-Asia-China-India.pdf.

Statista, "Gross Domestic Product (GDP) of the ASEAN Countries from 2018 to 2028", 2022: https://www. statista.com/statistics/796245/gdp-of-the-asean-countries/.

World Bank, Considerations and Lessons for the Development and Implementation of Fast Payment Systems, September 2021: https://fastpayments.worldbank.org/sites/default/files/2021-11/Fast%20 Payment%20Flagship Final Nov%201.pdf.

World Bank, Fast Payments Systems: Preliminary Analysis of Global Developments, 2020: hhttps://thedocs. worldbank.org/en/doc/8f85b06f02562c802e97d9ec9d413b0e-0350012021/original/Fast-Payment-Preview-April21.pdf.

World Bank, The Global Findex Database 2021: https://www.worldbank.org/en/publication/globalfindex.

World Bank, Implementation Considerations for Fast Payment Systems, June 2021: https://documents1. worldbank.org/curated/en/515381630386274535/pdf/Implementation-Considerations-for-Fast-Payment-Systems.pdf.

World Economic Forum, ASEAN Digital Generation Report: Digital Financial Inclusion, 6 December 2022: https://www.weforum.org/reports/asean-digital-generation-report-digital-financial-inclusion/.

World Economic Forum, Defining and Measuring Payment Interoperability, April 2022: https://www3. weforum.org/docs/WEF_Defining_and%20Measuring_Interoperability_2022.pdf.

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Endnotes

- Statista, "Gross Domestic Product (GDP) of the ASEAN Countries from 2018 to 2028", 2022: https://www.statista.com/ 1 statistics/796245/gdp-of-the-asean-countries/.
- 2 Organisation for Economic Co-operation and Development, Economic Outlook for Southeast Asia, China and India 2023: https://www.oecd.org/dev/asia-pacific/economic-outlook/Overview-Economic-Outlook-Southeast-Asia-China-India.pdf.
- 3 lhid.
- 4 lbid.
- 5 ASEAN, Statistical Yearbook 2022, December 2022: https://www.aseanstats.org/wp-content/uploads/2023/02/ASYB-2022 0223.pdf.
- 6 Ibid.
- 7 lbid.
- 8 Google, Temasek and Bain, e-Conomy SEA 2022, May 2022: https://services.google.com/fh/files/misc/e_conomy_ sea 2022 report.pdf.
- 9 World Economic Forum, ASEAN Digital Generation Report: Digital Financial Inclusion, 6 December 2022: https://www. weforum.org/reports/asean-digital-generation-report-digital-financial-inclusion/.
- Google, Temasek and Bain, e-Conomy SEA 2022, May 2022: https://services.google.com/fh/files/misc/e_conomy 10 sea 2022 report.pdf.
- lbid. 11
- 12 lbid.
- 13 World Economic Forum and Sea Group, COVID-19 - The True Test of ASEAN Youth's Resilience and Adaptability: Impact of Social Distancing on ASEAN Youth, ASEAN Youth Survey 2020 Edition, July 2020: https://www3.weforum.org/docs/ WEF ASEAN Youth Survey 2020 Report.pdf.
- World Bank, "COVID-19 Drives Global Surge in Use of Digital Payments", 29 June 2022: https://www.worldbank.org/en/ 14 news/press-release/2022/06/29/covid-19-drives-global-surge-in-use-of-digital-payments.
- 15 Google, Temasek and Bain, e-Conomy SEA 2022, May 2022: https://services.google.com/fh/files/misc/e_conomy_ sea_2022_report.pdf.
- 16 Ibid.
- World Bank, Fast Payments Systems: Preliminary Analysis of Global Developments, 2020: https://thedocs.worldbank. 17 org/en/doc/8f85b06f02562c802e97d9ec9d413b0e-0350012021/original/Fast-Payment-Preview-April21.pdf.
- World Bank, Implementation Considerations for Fast Payment Systems, June 2021: https://documents1.worldbank.org/ 18 curated/en/515381630386274535/pdf/Implementation-Considerations-for-Fast-Payment-Systems.pdf.
- 19 Ibid.
- 20 ACI Worldwide/GlobalData, It's Prime Time for Real-Time, 2023: https://www.aciworldwide.com/real-time-payments-report.
- World Bank, Implementation Considerations for Fast Payment Systems, June 2021: https://documents1.worldbank.org/ 21 $\underline{\text{curated/en/515381630386274535/pdf/Implementation-Considerations-for-Fast-Payment-Systems.pdf.}$
- 22 lbid.
- 23 World Economic Forum, Defining and Measuring Payment Interoperability, March 2022: https://www3.weforum.org/ docs/WEF_Defining_and%20Measuring_Interoperability_2022.pdf.
- 24 Ibid.
- 25 lbid.
- 26 Ibid.
- 27 Bank of Thailand, "Thailand's Experience on Cross-Border Payments: PromptPay-PayNow", March 2023.
- Central Banking, "Initiative: BoT and MAS's PromptPay-PayNow Link", May 2022: https://www.centralbanking.com/ 28 awards/7941666/initiative-bot-and-mass-promptpay-paynow-link.
- 29 Baker McKenzie, PayNow-PromptPay/PromptPay-PayNow Linkage White Paper, 28 April 2022: https://abs.org.sg/ docs/library/PayNow-PromptPay_Linkage_White_Paper.pdf?sfvrsn=9#:~:text=In%20this%20white%20paper%2C%20 we,their%20domestic%20fast%20payment%20systems.
- 30 Bank for International Settlements (BIS) Innovation Hub, Project Nexus: Enabling Instant Cross-Border Payments, March 2023: https://www.bis.org/publ/othp62.pdf.
- 31 lhid
- 32 World Bank, Considerations and Lessons for the Development and Implementation of Fast Payment Systems, September 2021: https://fastpayments.worldbank.org/sites/default/files/2021-11/Fast%20Payment%20Flagship_Final_ Nov%201.pdf.

- 33 lbid.
- Bank for International Settlements (BIS), Developments in Retail Fast Payments and Implications for RTGS Systems, 34 $\label{eq:december2021:https://www.bis.org/cpmi/publ/d201.htm.} December 2021: \\ \underline{\text{https://www.bis.org/cpmi/publ/d201.htm}}.$
- 35 Bank for International Settlements (BIS) Innovation Hub, Project Nexus: Enabling Instant Cross-Border Payments, March 2023: https://www.bis.org/publ/othp62.pdf.
- 36 Bank of Thailand, "BIS's Project Nexus Prototype Successfully Links Eurosystem, Malaysia and Singapore Payment Systems; Partners in Indonesia, Malaysia, the Philippines, Singapore and Thailand to Work Towards Wider Payment Connectivity", 23 March 2023: https://www.bot.or.th/content/dam/bot/documents/en/news-and-media/news/2023/ n1466e.pdf.
- 37 Bank for International Settlements (BIS) Innovation Hub, Project Nexus: Enabling Instant Cross-Border Payments, March 2023: https://www.bis.org/publ/othp62.pdf.
- lbid. 38



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