

Interoperable QR payments in Singapore



Building a better
working world



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Preface

In a rapidly developing landscape of digital payments, interoperability will be key for Singapore's payments ecosystem to remain innovative, inclusive, and efficient.

Quick Response (QR) code payments have rapidly become the payment instrument of choice for merchants. Implementing an interoperable QR code payments infrastructure in Singapore can enable smoother, more secure, and accessible transactions between businesses and consumers. It will potentially simplify the daily operations and support the payment needs of micro and small merchants, which are essential for a vibrant business landscape.

Singapore's existing payments infrastructure has significantly streamlined payment processes for both businesses and consumers. The widely adopted Singapore Quick Response Code Scheme (SGQR) has provided a low cost and infrastructure-light solution for merchants across the country to accept safe, simple, and swift payments digitally. As merchants seek to scale their businesses and serve a wider range of domestic and foreign payment users, the need for real-time interoperable QR payments will become more critical.

This paper introduces the concept of an interoperable SGQR (SGQR+) as a potential solution for Singapore's interoperable QR payments infrastructure of the future.

By connecting payment providers and merchants seamlessly, SGQR+ aims to address current merchant challenges and unlock new avenues for digital inclusion. It signifies a commitment to nurturing innovation, promoting ease of doing business, and fostering a dynamic economy.

As we venture into this transformative phase, the data gathered from the SGQR+ Proof of Concept (POC) detailed in this report will serve as a foundation for the implementation of SGQR+. This initiative, built on rigorous research, innovation, and market insight, will pave the way for a resilient and a future-ready payments infrastructure that empowers consumers, merchants, and payment providers.



Banking Computer Services Private Limited
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Executive summary

This report presents the results of a comprehensive feasibility study on the potential for the introduction of SGQR+ as Singapore's future interoperable payments infrastructure.

The study was conducted by the EY organization, and Singapore's key payment network operator, Banking Computer Services (BCS), with the support of the Monetary Authority of Singapore (MAS). The study's key areas of focus were to determine the readiness of merchants and payment providers to adopt interoperable QR payments, and the benefits of enabling seamless and secure cross-platform QR payment transactions.

In Singapore, customer preferences for cashless payments have driven the uptake of QR payments among micro and small merchants. Payment providers followed this uptake with solutions for QR payments to address merchant needs, further diversifying payment options in Singapore and enabling lower-cost cashless payments.

In 2018, the SGQR was established as the common QR code standard to consolidate multiple payment schemes into a single SGQR label. This standardized framework simplified and streamlined payment processes for both consumers and merchants, eliminating the need for multiple QR codes.

However, in its current form, SGQR simply serves as a repository for multiple payment schemes. Further enhancements are needed to address challenges such as the need for merchants to manage relationships with multiple

payment providers and the lack of interoperability between payment schemes.

As seen in multiple case studies around the world, interoperability is crucial to ensuring seamless and convenient transactions across different payment providers, reducing fragmentation and fostering of a unified QR payments ecosystem.

In Singapore, the SGQR+ concept has been designed to offer an interoperable QR payments infrastructure that could serve as an anchor between multiple payment providers, allowing for seamless cashless payments and reducing the administrative burden for merchants.

The SGQR+ concept will be demonstrated through a POC from 1-30 November 2023, in conjunction with the Singapore FinTech Festival (SFF) 2023. The POC will be rolled out with the participation of five merchant acquirers, more than 20 local and international payment schemes, and more than 1,000 merchant acceptance points at the SFF venue and in the Changi district. After this POC, inputs will be gathered from POC participants to help refine the SGQR+ concept and assess the potential for a wider implementation of SGQR+ in future.



1. Singapore's payments landscape

In Singapore, rising consumer demand for cashless payments has led to micro and small merchants rapidly adopting QR payment solutions. The resulting growth in QR-enabled transaction volume is predicted to continue surging in the coming years.

1.1. The rise of cashless payment methods

As a nation with well-developed financial infrastructure and extensive access to financial services, debit and credit cards have become the preferred method for consumer payments in Singapore. Collectively, card and digital wallet transactions made up more than 75% of Singapore's transaction methods in 2022, suggesting significant consumer demand for cashless and convenient payments. According to the Global Payments Report, cards¹ constituted 57% of point of sale (POS) transactions, digital wallets² comprised of 18%, while cash payments accounted for 19%.

1.2. The emergence of QR codes

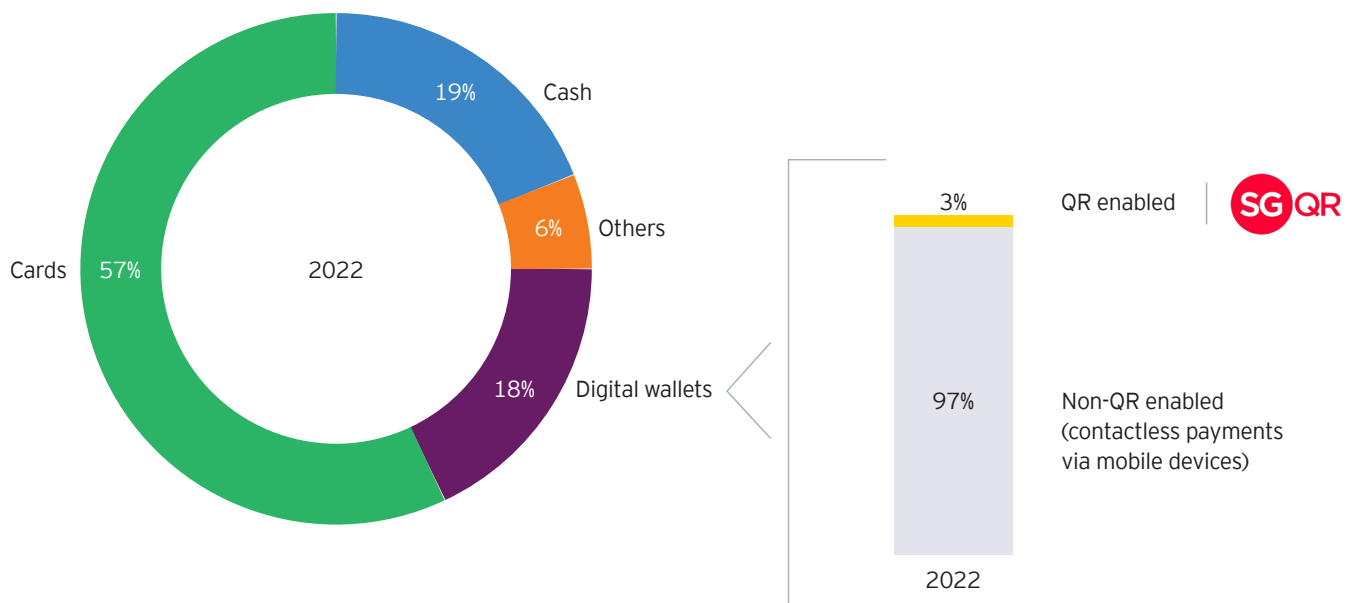
Merchants wanting to accept cashless transactions can use either an Electronic Point of Sale (EPOS) system, requiring terminals or card readers, or the infrastructure-light alternative of QR labels. Compared with traditional card-based transactions, QR payments offer a convenient and low-cost alternative, making them easily accessible to micro and small

businesses. Lower processing fees mean savvy merchants can pass these savings on to customers in the form of discounts or reduced transaction costs.

For Singapore's micro and small merchants, which generally lacked EPOS systems, simple and low-cost QR-enabled transactions became a popular and burgeoning form of payment. As merchant demand for cashless transactions grew, industry players started to increasingly leverage QR payments, which gained traction among a large customer base. User adoption began to grow rapidly, driven by promotional tactics, including discount offers and incentives offered on QR transactions.

This resulted in QR-enabled transactions increasing extensively at a Compound Annual Growth Rate (CAGR) of 72% between 2017 to 2022, constituting 3% of digital wallet transactions. This upward trend is expected to continue, with the volume of QR transactions in Singapore projected to grow at a CAGR of 36% between 2022 to 2026.

2022 POS payment methods in Singapore



Source: Global Payments Report, EY-Parthenon Analysis
 1. Card transactions refer to the use of physical credit and debit card.
 2. Digital wallet transactions refer to contactless payments made via mobile devices.

1.3. A first step to solve the limitations and challenges of QR payments

As QR payments became increasingly popular, payment providers began using QR labels as marketing tools. This trend led to the proliferation of multiple QR labels in retail establishments as businesses tried to cater to their customers' varying payment wallet preferences. As a result, merchant storefronts, which would otherwise have been used as advertising spaces, became cluttered with QR labels. While this approach offered customers choice and convenience, it also reduced retail spaces available for merchants to generate sales.

In September 2018, the Infocomm Media Development Authority (IMDA) and MAS co-launched SGQR to address these issues. SGQR combined multiple QR payment types into

a single, standardized QR code, enabling simpler cashless transactions for both consumers and merchants. As of September 2023, SGQR had been adopted by 31 financial institutions and more than 239,000 merchants in Singapore.

1.4. Benefits of standardizing QR Payments with SGQR

SGQR works by using an EMVCo³ standard static QR code with a centralized database where various payment schemes, banks and payment service providers can store their respective QR codes. The repository consolidates different payment options into a single platform, delivering a simplified payment process for consumers and businesses. SGQR enables e-wallets and bank applications to easily support cashless and cost-effective consumer-to-business transactions.



3. EMVCo is a global technical body that facilitates worldwide interoperability and acceptance of secure payment transactions by managing and evolving the EMV (Europay, Mastercard, and Visa) Specifications and related testing processes. EMVCo, which is collectively owned by American Express, Discover, JCB, Mastercard, UnionPay and Visa, was formed in 1999 to enable the development and management of specifications to address the challenge of creating global interoperability among different countries and to deliver the adoption of secure technology to combat card fraud, and to serve as a catalyst for innovation in the payments industry.

For further details on SGQR, kindly refer to the following link: <https://www.mas.gov.sg/development/e-payments/sgqr>

SGQR has brought significant benefits to consumers, merchants, and payment providers:

► Single QR code at merchant storefronts

Multiple QR codes have been consolidated into a single QR code, as businesses no longer need to display numerous QR labels associated with different payment options. Instead, a single SGQR label can be prominently displayed. A standard SGQR label makes it easier for customers to identify a payment QR code, and merchants only need to safeguard a single payment QR label against fraud and mischief.

► Multiple cashless payment options

Through an infrastructure-light payment solution, SGQR presented an alternative to EPOS hardware. The static SGQR label acted as a single-entry point for various payment schemes and allowed customers to transact with their preferred payment method from a range of available options.

► Increased consumer confidence in QR payments

With the robust support and oversight of regulatory authorities, SGQR has become a trusted and secure platform for digital payments in Singapore. The comprehensive standards and guidelines established by regulators assured consumers of the reliability and safety of QR transactions, further driving the adoption of QR payments.



- Decluttering merchant stores by consolidating multiple QR labels
- Enables businesses to offer multiple cashless payment options
- Introduction of SGQR standards by regulators have increased QR usage



However, SGQR also has certain limitations:

► Merchants need to form contracts with multiple payments providers

To enable multiple payment schemes, each merchant has to be independently onboarded and provided with settlements and statements of income reconciliations. This creates complexities and administrative burdens for merchants, who need to manage various relationships and processes with different payment providers.

► SGQR facilitated an interoperable payments ecosystem but does not provide for it

SGQR serves as a repository of labels for multiple closed-loop⁴ and independently formed open-loop⁵ schemes, such as PayNow. While SGQR provides a unified QR code solution, the closed-loop nature of the payment schemes remains.

- Merchants need to manage multiple payment provider relationships and processes
- SGQR only facilitates for an interoperable ecosystem

4. Closed-looped schemes refer to payment schemes that only has a single issuing wallet/payment app operating in the network.

5. Open-looped schemes refer to payment schemes that have multiple issuing wallets/payment apps operating in the same network.

2. Moving to a next level interoperable payments ecosystem

SGQR+ builds on SGQR as the next generation interoperable payments-to-merchants solution. SGQR+ is designed in a manner that aligns with Singapore's vision of a seamless, accessible, and interoperable payments ecosystem. Our feasibility study therefore began by considering the fundamental motivations for interoperability around the world and the benefits being delivered by different interoperable payment solutions.

2.1. Motivations for interoperability

Our study found that different countries had varying motivations for pursuing interoperability, which in turn shaped the future state of their interoperable payment systems. While some nations prioritized financial inclusion, seeking to extend digital payment services to all segments of the population, others had set emphasis on enhancing competition and innovation in its payments industry.

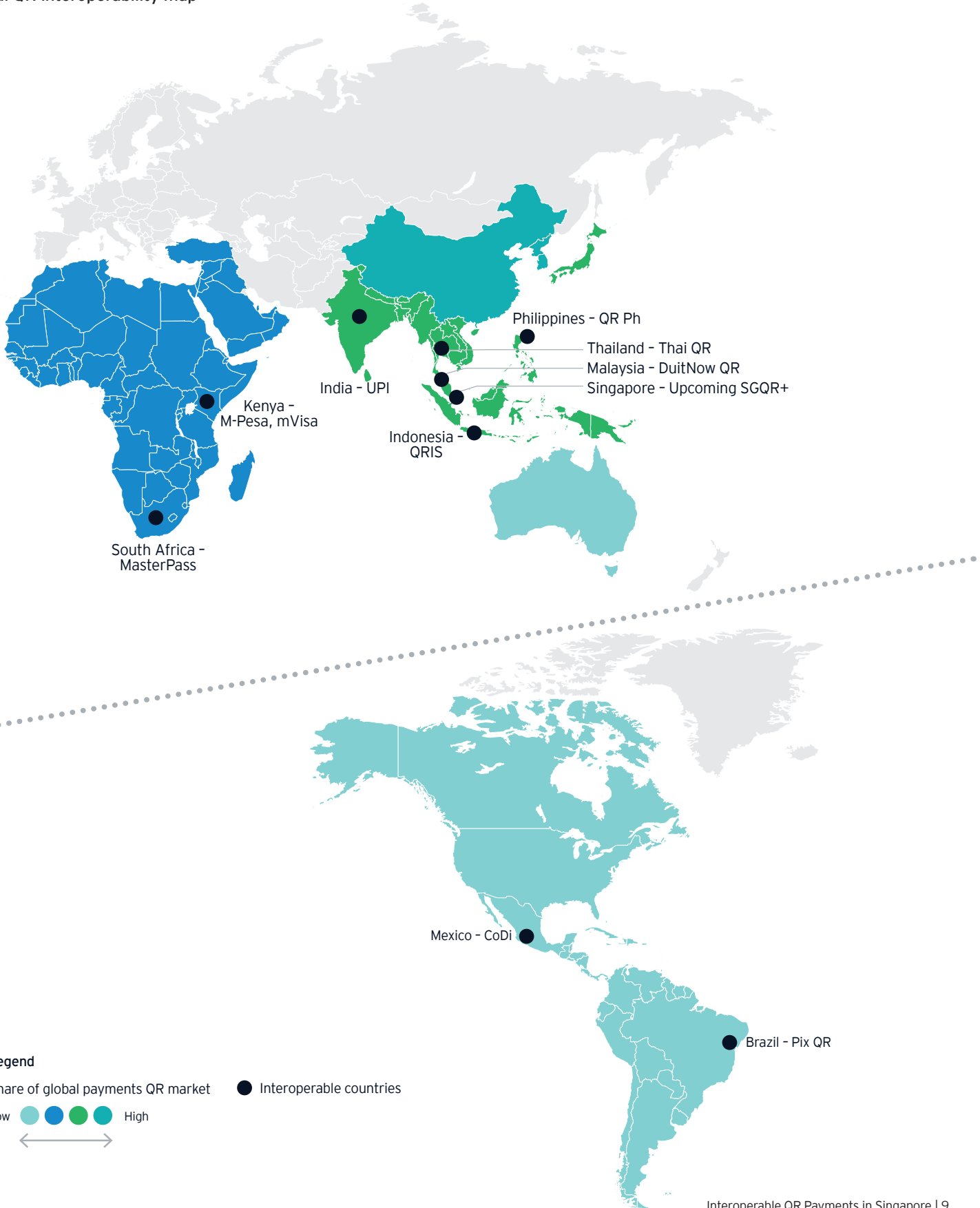
Observed benefits of interoperability include:

- Streamlining of customer and merchant experience**
1 Bringing wider choices of payment methods to customers through a standardized QR code and reducing administrative burden on merchants with an efficient reconciliation process.
- Preparing for systemic cross-border connectivity**
2 Increasing inbound transactions through cross-border linkages, while providing a seamless payments experience to inbound customers.
- Bolstering financial inclusion to unlock the potential of micro and small businesses**
3 Allowing acquirers to capture a more holistic view of a merchant's cashflows (compared with closed-loop payment ecosystems), enabling alternative credit scoring to increase unserved or underserved lending.
- Promoting QR penetration through scheme participants**
4 Encouraging scheme participants to develop service offerings with a focus on both merchants and consumers by leveraging enhanced propositions made feasible by scheme incentives and favorable unit economics.
- Introducing security and quality standards**
5 Establishing clear governance rules for facilitating payments and setting up infrastructure that standardizes technology, testing requirements, and transaction processes.
- Ensuring a competitive and diverse market**
6 Accessing granular data, previously held within proprietary closed loops, provides regulators with better oversight of the QR payments market, and allows for intervention where necessary to ensure fair competition and diversity amongst QR payment providers.

2.2. Global case studies

Across the world, many countries have recognized the transformative potential of interoperable QR payments and are implementing strategies to form well-connected and inclusive payment ecosystems.

Global QR interoperability map



While the benefits of interoperable QR payments are clear, nations are at different stages of adopting interoperable QR payments solutions, primarily due to variations in consumer preferences for cashless payments. The following countries have successfully achieved various degrees of interoperability, with some having established well-connected cross-border QR payment systems.



Brazil

Launched in 2020, Pix QR is the standard QR code that facilitates interoperable payment initiation for all payment schemes in the country. Established by the Central Bank of Brazil, Pix QR relies on the nation's real-time payments platform, Pix, which allows people, companies, and governmental entities to send or receive payment transfers in real-time by transferring funds between transactional accounts.



India

Launched in 2016, the Unified Payments Interface (UPI) QR is one of the digital payments acceptance channels of India's real-time payments platform, UPI. Established by the National Payments Corporation of India (NPCI), this interoperable QR payments system empowers merchants with seamless access to cashless payments while minimizing the operational burden and reducing the risks associated with handling cash.



Indonesia

Launched in 2019, the Quick Response Code Indonesian Standard (QRIS) is an interoperable QR code standard established by Bank Indonesia and the Asosiasi Sistem Pembayaran Indonesia (ASPI) as part of Indonesia's Payment System Vision 2025. In 2019, the country's mandated QR standard consolidated an array of 26 proprietary QR codes into a single QRIS code, reducing confusion around QR payment usage and decluttering merchant storefronts. QRIS has since established cross-border linkages with Malaysia (DuitNow), Singapore (upcoming linkage with NETS QR), and Thailand (PromptPay).



Malaysia

Launched in 2018, DuitNow QR is Malaysia's national QR standard. It relies on DuitNow, the nation's real-time payments platform, which was established by PayNet under the Bank Negara Malaysia's (BNM) Interoperable Credit Transfer Framework. The network is made up of more than 40 participating banks and e-wallets, with an established cross-border payment network with Indonesia (QRIS), Singapore (NETS QR), and Thailand (PromptPay).



Philippines

Launched in 2021, QR Ph is the standardized QR code by Bangko Sentral ng Pilipinas (BSP). QR Ph enables 12 BSP-supervised financial institutions to generate QR codes that are interoperable with one another. Through this standardization, a merchant's QR Ph code can be scanned by the QR e-wallet platforms of all participating banks.



Singapore

Launched in 2018, SGQR is the standardized QR code which combined multiple QR payment types into a single QR, enabling simpler cashless transactions for both consumers and merchants. As of September 2023, there are 31 members of SGQR, all being financial institutions that conduct merchant acquisition services in Singapore. NETS, the largest merchant acquirer in Singapore, introduced NETS QR to provide QR payment services to merchants using SGQR. Through the utilization of SGQR, NETS has implemented an interoperable QR system with more than 21 local and foreign banks and e-wallets, designed for merchants in the food and beverage sector. NETS QR has also established cross-border QR payment linkages with multiple countries that include China (UnionPay QR), Indonesia (upcoming linkage with QRIS), Malaysia (DuitNow), and Thailand (PromptPay).



Thailand

Launched in 2017, Thai QR is a regulatory-led harmonization that relies on PromptPay, its real-time payments platform. Thai QR was established by the Bank of Thailand (BoT) as a part of the country's National e-Payment Master Plan to improve unbanked and underbanked financial inclusion and drive economic development in the country. Thailand has established linkages with multiple countries in the region, including Cambodia (KHQR), Indonesia (QRIS), Japan (NTT Data, StarPay), Malaysia (DuitNow), Singapore (NETS QR), and Vietnam (VietQR).



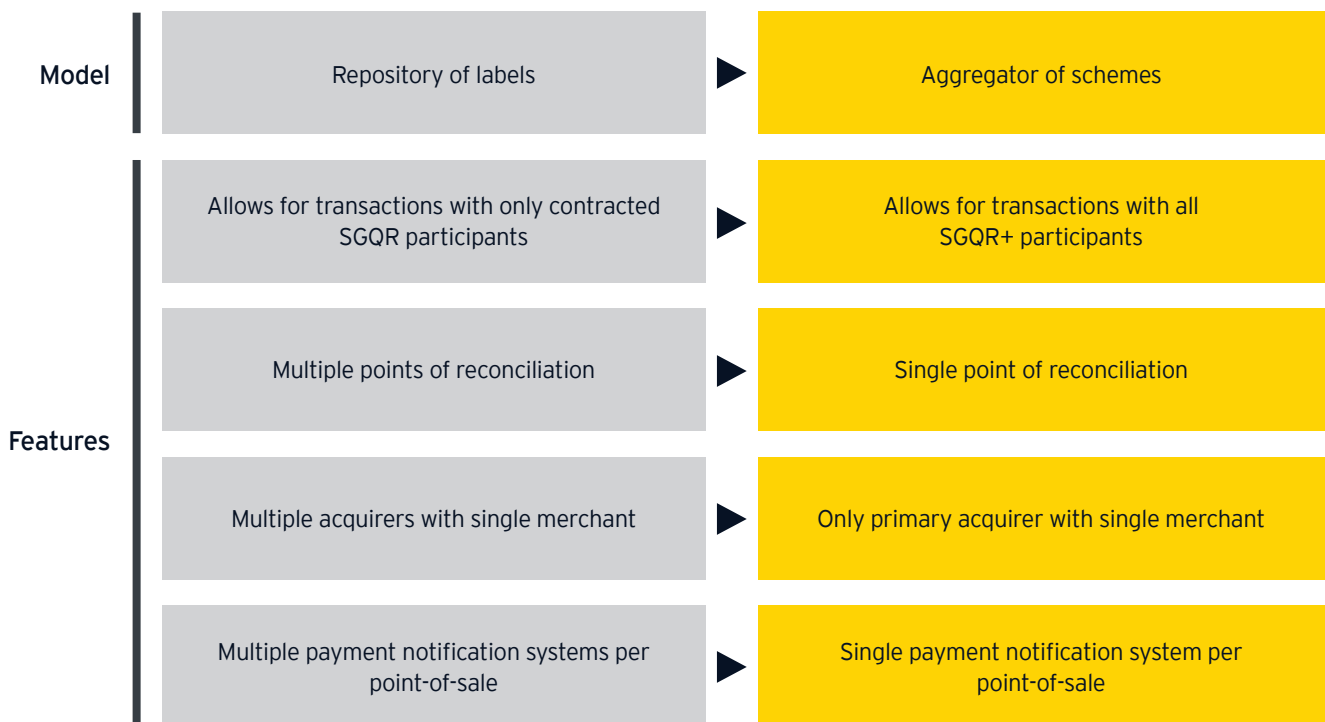
2.3. Introducing SGQR+

SGQR+ aims to jumpstart interoperable open-loop QR payments in Singapore, unifying a diverse range of payment providers to offer customers and merchants a seamless and convenient payments experience.

In this concept, both SGQR and SGQR+ payloads will co-exist in a single SGQR label, offering both QR payment scheme options. With these options, merchants will have the flexibility in selecting a basic or interoperable QR payment scheme for

their business needs. While some may continue to use SGQR as a simple, reliable, and standardized QR code solution, SGQR+ can enable merchants to significantly expand their consumer base and leverage the benefits of an interoperable payments scheme.

Both SGQR and SGQR+ payloads will co-exist in a single SGQR label.

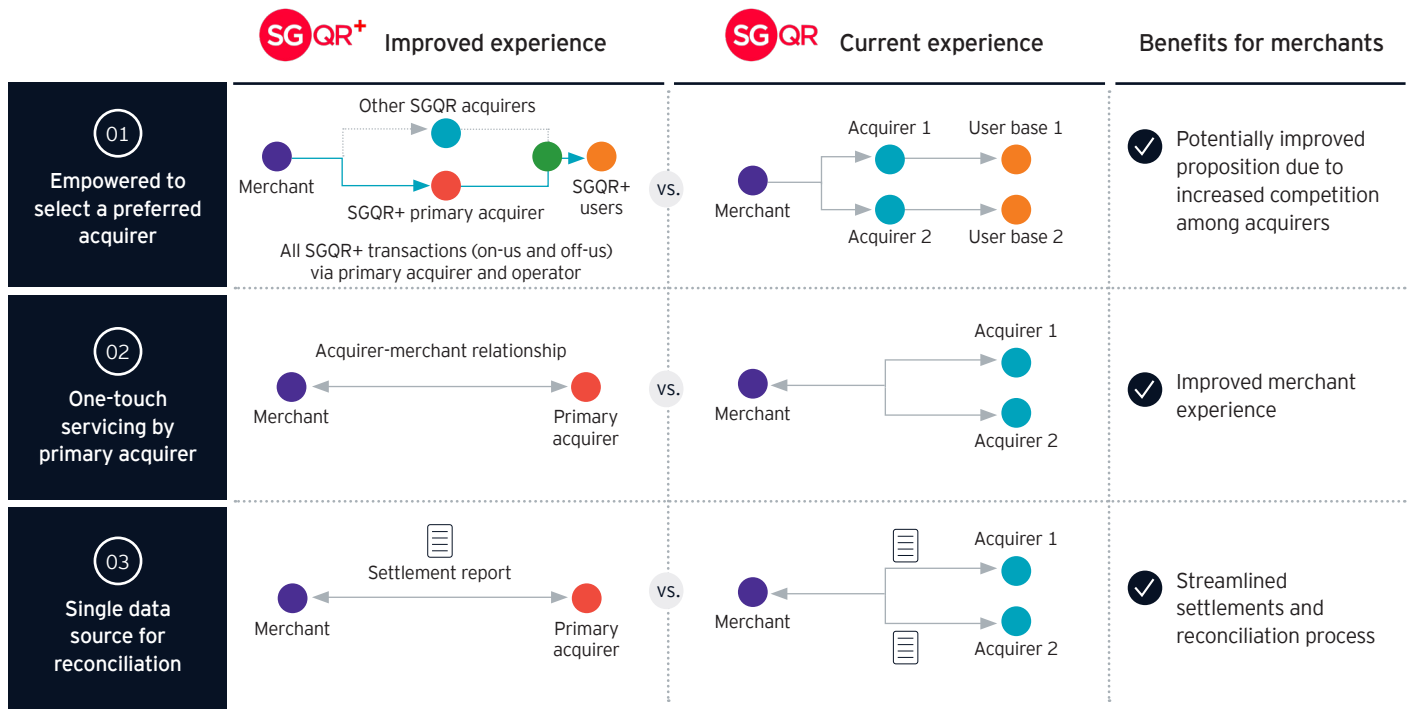


Payment providers, whether an existing member of SGQR or part of an open-loop scheme, will be able to join SGQR+, with SGQR+ serving as a scheme aggregator. SGQR+ will be able to seamlessly connect all participants, enabling their payment options to be accepted at merchant stores acquired by any scheme member.



2.4. Benefits of SGQR+

SGQR+ enables merchants to accept multiple payment schemes by registering with a single acquirer, resulting in a more streamlined transaction journey. Through their preferred primary acquirer, merchants will be able to optimize payment acceptance processes with the continued service of on-us transactions⁶, and the enablement of off-us transactions⁷. The improved QR payment scheme will also allow merchants to select a single acquirer to partner with, eliminating the need to manage multiple acquirer relationships and perform separate reconciliation processes for each acquirer.



Legend




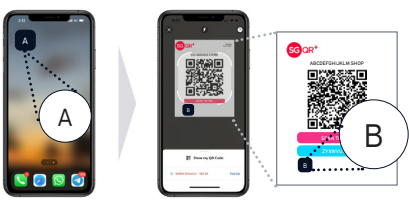
Merchant Users Operator SGQR+ acquirer SGQR acquirer

6. On-us transactions refer to transactions where merchant's acquirer and user's choice of issuing wallet are the same entities.

7. Off-us transactions refer to transactions where merchant's acquirer and user's choice of issuing wallet are different entities.



Interoperability among payment schemes will further elevate the consumer payment experience by increasing the number of wallet applications merchants can accept. With SGQR+, consumers, including local residents and foreign visitors, will be able to conveniently transact using their desired payment app or e-wallet at a wider range of merchant stores.

	 Improved experience	 Current experience	Benefits for consumers
01 Continuation of on-us transactions		Consistent with existing SGQR user journey	<ul style="list-style-type: none"> ✓ No change in user journey
02 Ability to perform off-us transactions		N.A.	<ul style="list-style-type: none"> ✓ Higher convenience through increased acceptance of preferred app ✓ Better aggregation of customer data to derive expenditure insights

3. SGQR+ proof of concept

A POC of SGQR+ will be conducted from 1-30 November 2023 in conjunction with SFF 2023 (Refer to Annex I for details on SFF activities) to demonstrate use cases of the SGQR+ concept and explore the feasibility of a wider rollout in future. The POC comprises of two separate tracks, each with different technology solutions to enable interoperable QR transactions from both local and foreign wallets, irrespective of the merchant's contracted acquirer.

3.1. POC test conditions

The POC will be rolled out across merchants at the SFF venue and in the Changi district (i.e., Districts 16 and 17). Consumers will be able to make QR payments to these merchants using any payment app partnered with Liquid Group (as a switch operator) or NETS (as a master merchant acquirer). Each merchant will be served by a single merchant acquirer, without the need to maintain multiple merchant acquirer commercial arrangements.

During the showcase, each participating merchant will be enabled to receive interoperable QR payments, through either the XNAP interoperable switch (Liquid Group) or the master merchant acquirer (NETS). Merchants will display only a single static SGQR label, supplied by only one of the participating acquirers. Transactions between consumers and participating merchants will be verified and cleared instantaneously.

3.2. POC participants at SFF 2023

A range of local and cross-border payment providers will be involved in the POC, including five merchant acquirers and more than 20 local and international payment schemes (Refer to Annex II for details on issuers of these international schemes). More than 1,000 merchant acceptance points will be enabled for interoperable QR payments during the POC (refer to Acknowledgements section for the full list of POC participants).

3.3. Two tracks for SGQR+ POC

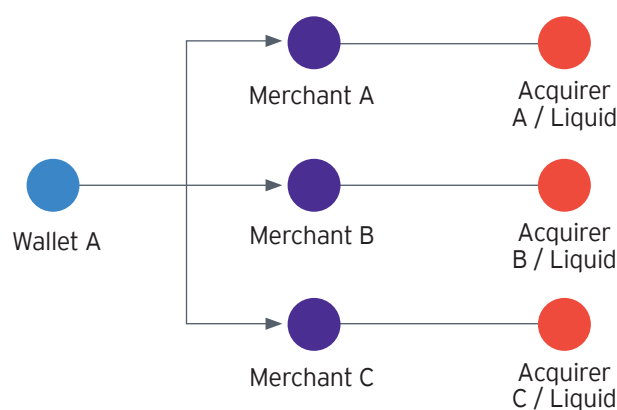
The POC will showcase two tracks:

- ▶ Interoperable switch by Liquid Group
- ▶ Master merchant acquirer by NETS



SGQR+ POC Track I: Interoperable switch by Liquid Group

Transaction overview of XNAP by Liquid Group



Legend

→ Flow of funds — Transactions supported by

Liquid Group provides interoperable QR payments for various wallets and payment schemes, including card-linked QR payments between different issuers and acquirers through its network switch, XNAP.

In this track, XNAP will enable digital wallets that are linked to scheme cards such as Visa and/or Mastercard cards linked to Google Pay, to make QR payments. Participating merchants will be able to accept payments from a wider range of wallets and payment apps. For the first time in Singapore, merchants will also be able to accept card scheme-linked QR payments from multiple local and overseas payment apps.

At the same time, consumers will be able to pay using their scheme cards for QR payments via multiple participating wallets and payment apps, and use the unique rewards, incentives, and digital programs run by the issuers of individual wallets and payment apps.

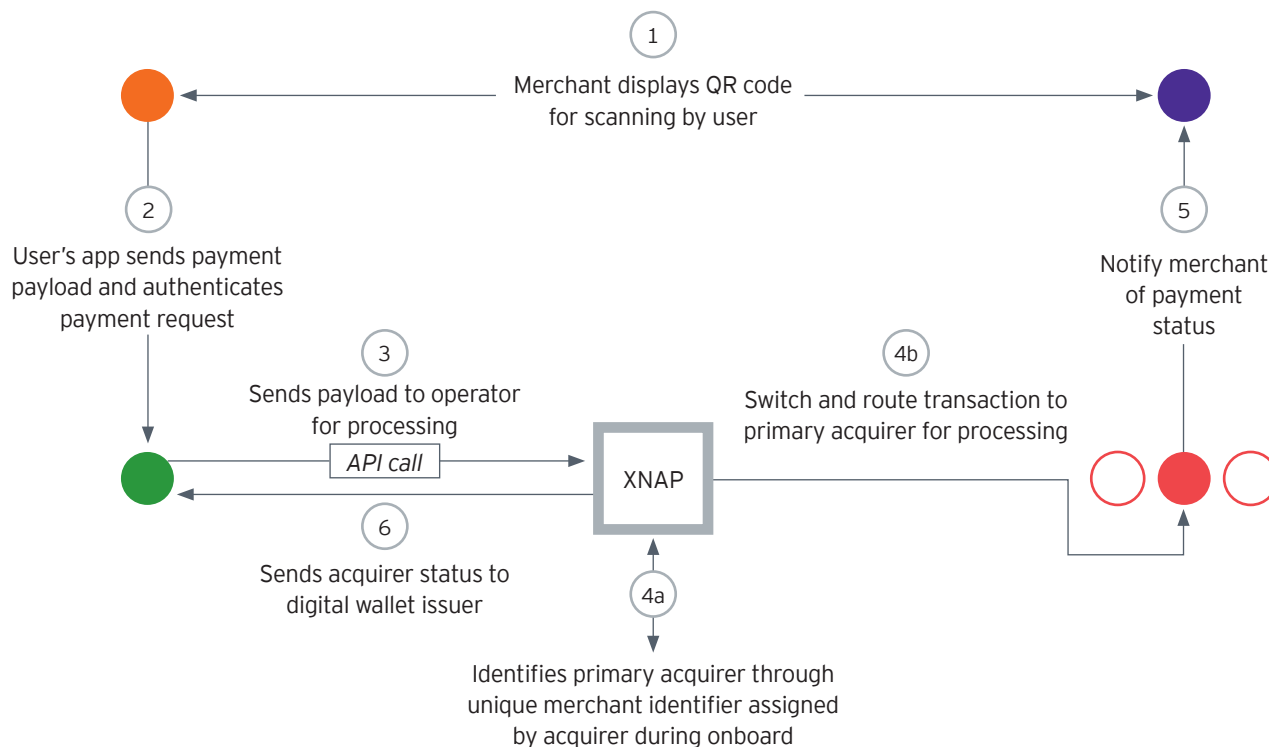
XNAP will also benefit wallet and payment app issuers and acquirers by:

- ▶ **Enabling interoperability for issuers of local and overseas wallets and payment apps** - XNAP allows digital wallet issuers to pay all SGQR+ merchants under this track, without needing to integrate with each acquirer individually.
- ▶ **Expanding the merchant acceptance base** - After integrating once with XNAP, participating acquirers can offer their merchants a wider base of wallet and payment app issuers.

In this track, Liquid Group functions as a switch operator, utilizing XNAP, allowing payment providers to function as primary acquirers for merchants. This track therefore eliminates the need for a banker's guarantee. Acquirers will take full responsibility for the merchant-acquirer relationship, overseeing core functions such as onboarding, settlement, and reconciliation.

SGQR+ POC Track I: Interoperable switch by Liquid Group

Liquid Group SGQR+ POC transaction flow



Legend

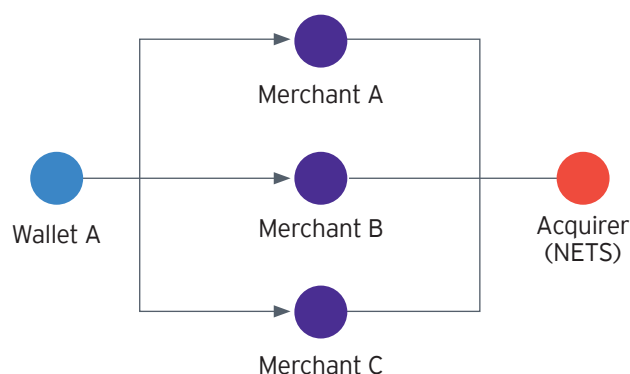
● Merchant ● User ● Issuer ● Acquirer

Liquid Group identifies the main SGQR+ acquirer for each merchant and subsequently directs and verifies a payment transaction through the following sequence:

1. Once a user scans the QR code presented by the merchant, the digital wallet issuer app decodes and recognizes the SGQR+ QR code payload.
2. The SGQR+ merchant name, merchant category code, and currency code are displayed on the app. Users can then enter the amount and confirm payment.
3. The digital wallet issuer sends a payment notification to XNAP through an API call for transaction processing.
4. XNAP identifies the primary acquirer of the merchant through its unique merchant identifier submitted in the payment notification API. Payment notification is then forwarded to the relevant primary acquirer.
5. The acquirer acknowledges the payment notification sent by Liquid Group and forwards the notification to the merchant. This triggers a successful payment completion response to Liquid Group.
6. Liquid Group sends the acquirer status in response to the digital wallet issuer to complete the payment cycle.

SGQR+ POC Track II: Master merchant acquirer by NETS

Transaction overview of master merchant acquirer by NETS



Legend

→ Flow of funds — Transactions supported by

In this track, NETS serves as the only acquirer for issuers and merchants. NETS provides interoperable QR payments as the master merchant acquirer, allowing merchants to accept multiple payment methods. This provides customers with a seamless way to transact domestically and across borders using their preferred payment app.

Benefits to merchants and consumers include:

- ▶ **Wider payment acceptance** - Participating merchants will be able to accept payment from a wider range of local wallets and payment apps, as well as various foreign national payment partners.
- ▶ **Seamless user experience** - The user journey remains unchanged for merchants and consumers using a foreign or local wallet/app in Singapore. Additionally, there will be no changes required in existing operational setups for merchants.
- ▶ **One-stop reconciliation** - The NETS Merchant Portal offers integrated reports and validation for merchant transactions and settlement.

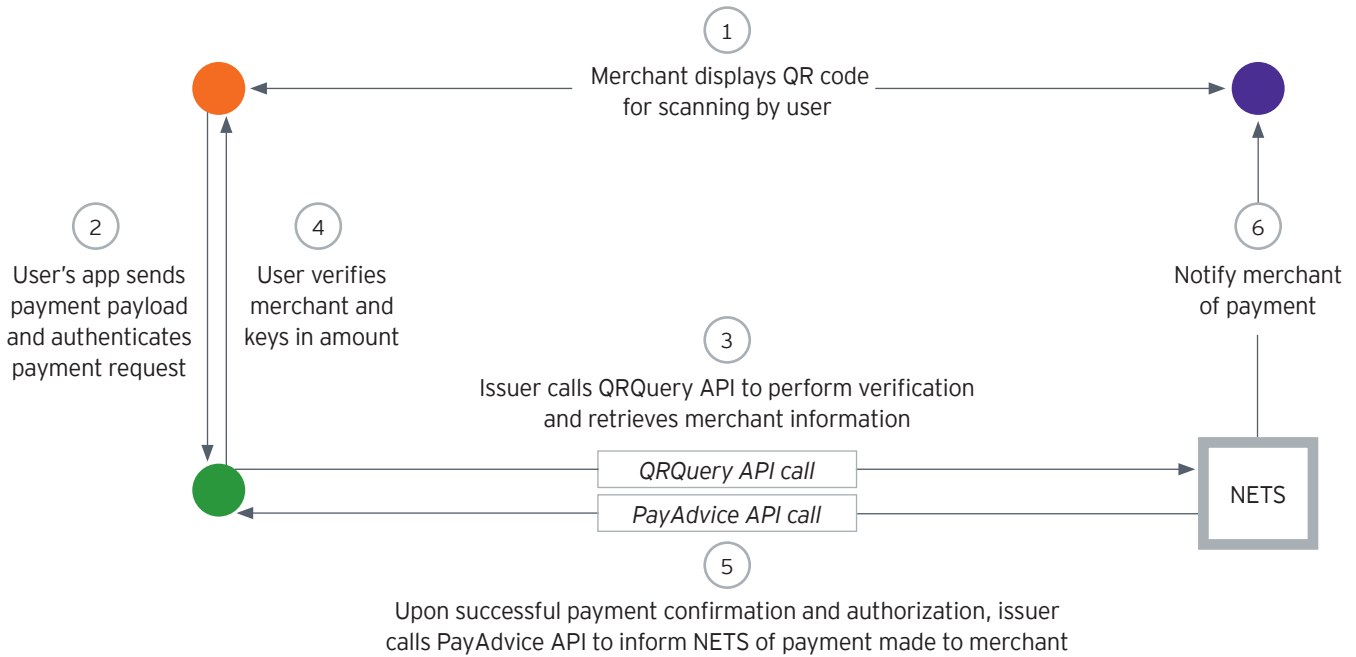
Benefits to wallet and payment app issuers include:

- ▶ **Access to wide merchant base** - As the leading acquirer in Singapore, NETS provides issuers with the advantage of connecting with a wider merchant base through its nationwide payment infrastructure, which comprises over 130,000 acceptance points, of which 70% accept QR payments.
- ▶ **Ready to go** - No additional integration is required for existing wallet issuers currently capable of reading the NETS QR payload.

NETS functions as the primary acquirer for merchants and takes full responsibility for the merchant-acquirer relationship, overseeing core functions such as onboarding, settlement, and reconciliation. This approach requires a Banker's Guarantee for NETS to provide a T+1 settlement to merchants on behalf of all issuing payment providers.

SGQR+ POC Track II: Master merchant acquirer by NETS

NETS SGQR+ POC transaction flow



Legend

● Merchant ● User ● Issuer

NETS directly processes and verifies payment transactions for all merchants through the following sequence:

1. The user identifies issuing wallet logo on the SGQR+ code, scans and reads NETS payload in SGQR label.
2. The issuer receives a payment request from the user and proceeds with merchant authentication and verification.
3. The issuer calls QRQuery API to verify NETS' acquisition of the merchant and retrieves merchant information from NETS' database.
4. Upon verification, merchant information will be displayed on the issuer app. Users can then enter the transaction amount and confirm payment.
5. Upon successful payment confirmation and authorization, the wallet host calls PayAdvice API to inform NETS of the payment made to the merchant. In the event of a timeout exception, the issuer can trigger a PayQuery API to check and confirm transaction status through NETS.
6. NETS sends a payment notification to the merchant via its NETSBiz app, which merchants can use to query on their last successful transaction status.



4. Next steps

4.1. Post-POC survey

Once the POC is complete, BCS will consolidate feedback from all participating merchants and payment providers.

By analyzing the POC's transaction data and collecting feedback through a post-POC survey, MAS will assess market demand for the SGQR+ solution and consider the appropriate commercial and technical arrangements that should be employed in any future implementation of SGQR+. The survey aims to assess POC participants' intent to utilize SGQR+ beyond the POC, along with their preferences on technology solutions employed, namely Track I, Track II, or a combination of both. Based on preliminary feedback, POC participants, consisting of at least seven issuing wallets, three merchant acquirers, and three payment schemes, have expressed interest to participate in a live pilot.

4.2. Collaborative efforts for an interoperable payments ecosystem

As Liquid Group is currently integrated with NETS for the Call-for-Collaboration (CFC) project⁸, Liquid Group intends to explore the technical feasibility for scheme card payments to be incorporated in the CFC. To enable NETS to support Liquid Group e-wallet apps (i.e., LiquidPay, Changi Pay, XNAP app) for such payments, Liquid Group would need to curate and collaborate with NETS to allow digital wallet issuer apps to send card credentials for authorization as one of the payment capabilities to merchants. (Refer to Annex III for detailed information on the possible collaboration between Liquid Group and NETS)

4.3. Looking ahead

The implementation of SGQR+ will enable merchants to offer consumers a wide range of local and foreign payment options. The interoperable QR payments infrastructure will enhance merchant experiences by streamlining transaction journeys, eliminating administrative burdens associated with managing multiple acquirer relations and performing separate reconciliation processes.

The expansion of acceptance points for payment apps and wallets will allow both domestic and foreign consumers to seamlessly transact using their preferred payment application through the network of merchant stores facilitated by SGQR+.

According to the Institute of Southeast Asian Studies (ISEAS), the establishment of a regional payments infrastructure has the potential to streamline trade and investment activities significantly as well as promote the use of domestic currencies in regional trade settlements. By enabling seamless cross-border payments, the implementation of SGQR+ will play a critical role in promoting greater regional payments connectivity, in addition to its benefits to the domestic payments landscape. This can provide the launchpad for closer inter-linkages between payments infrastructures in the region.

A well-informed and market-driven interoperable QR payments infrastructure will lay the foundation for Singapore's future payment evolution. If successful, the SGQR+ initiative will represent a pioneering effort on a global scale.

8. CFC project refers to Singapore's unified e-payment initiative launched in 2019, aimed to create a commercially viable, interoperable, and open access e-payment solution for Housing & Development Board (HDB) coffee shops, Jurong Town Corporation (JTC) industrial canteens and National Environment Agency (NEA) hawker centers.



5. Acknowledgements

Co-authored by



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Supported by



SGQR+ POC acknowledgement

Name	Organization	Title
Jo Yeo	Monetary Authority of Singapore (MAS)	Head, Payments Development & Data Connectivity Office
Terence Tang	Monetary Authority of Singapore (MAS)	Assistant Director & Team Lead, Payments Development & Data Connectivity Office
Neo Hui Min	Monetary Authority of Singapore (MAS)	Assistant Director, Payments Development & Data Connectivity Office
Ricky Lim	Banking Computer Services (BCS)	Chief Executive Officer
Seow Chow Wei	Banking Computer Services (BCS)	Senior Vice President & Head, Business Support, Commercial
Jeremy Tan	Liquid Group	Chief Executive Officer
Denis Lau	Liquid Group	Chief Operating Officer
Lawrence Chan	Network for Electronic Transfers (NETS)	Group Chief Executive Officer
Ang Sok Hong	Network for Electronic Transfers (NETS)	Head, Merchant Business
Kenneth Ching	Network for Electronic Transfers (NETS)	Senior Vice President, Merchant Acquisition and Payment Partnership
Andre Toh	Ernst & Young Solutions LLP (EY)	Partner
Bhavna Monga	Ernst & Young Solutions LLP (EY)	Partner

SGQR+ POC participants

	Organization
Merchant acquirers	Fave, FOMO Pay, Liquid Group, NETS, UQPAY
Payment schemes	ActiveSG, Alipay, Alipay+, Changi Pay, Diners, Discover, DuitNow, EZ-Link, GLN, Google Pay (via XNAP), GrabPay, iAPPS, LiquidPay, Mastercard, Moolahgo, NETS, PromptPay, ShopeePay, Singtel Dash, UnionPay, Visa, WeChat, XNAP
Local issuers	ActiveSG, Changi Pay, DBS PayLah!, Diners, EZ-Link, Fazz, GrabPay, iAPPS, LiquidPay, Moolahgo, NETS, NETSPay, OCBC Digital, SCMobile, ShopeePay, Singtel Dash, UOB TMRW, XNAP
Issuers of participating international schemes	Alipay, Alipay+, Diners, DuitNow, GLN, Google Pay (via XNAP), Mastercard (via XNAP), PromptPay, UnionPay, Visa (via XNAP), WeChat

Annexure I: Singapore FinTech Festival (SFF) activities

15-17 November 2023

1

SGQR+ POC showcase

- ▶ SGQR+ POC showcase at Liquid Group's and NETS' booths.
- ▶ Both booths will display the SGQR+ POC concept and information on the lucky draw.
- ▶ Each booth will feature a F&B merchant for customers to make live transactions with SGQR+.

2

SGQR+ presentation by the EY organization

- EY will conduct a presentation on the SGQR+ concept twice daily at the following locations:
- ▶ Liquid Group's booth from 11:00am-11:20am, located in Hall 3.
 - ▶ NETS' booth from 3:00pm-3:20pm, located in Hall 2.

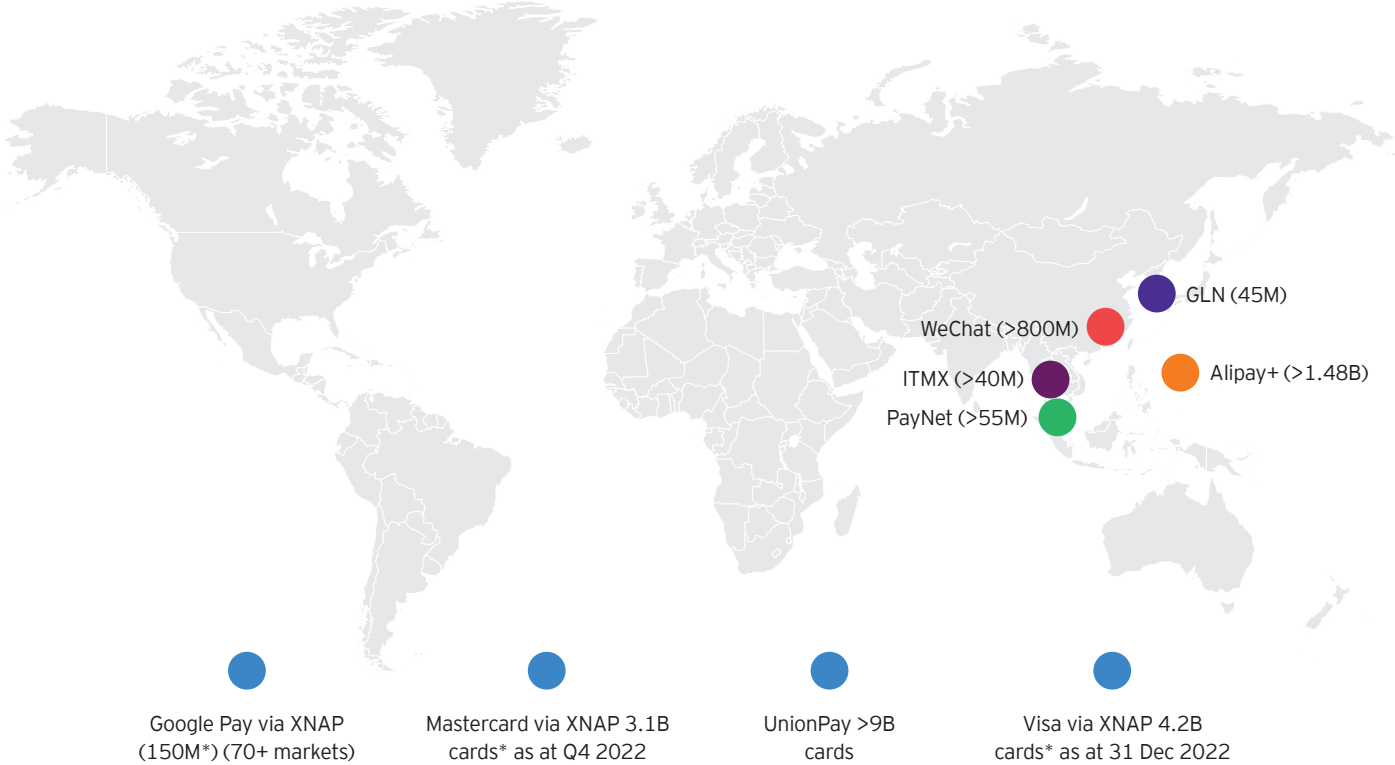
17 November 2023

3

Panel discussion: Interoperable QR payments for Singapore and beyond

Panel discussion on "Interoperable QR Payments for Singapore and Beyond" will be held at the Technology Zone Stage in Hall 3. (Refer to www.fintechfestival.sg for panel schedule information)

Annexure II: Global issuance acceptance coverage for SGQR+ POC



Legend
● China Mainland ● Malaysia ● South Korea ● Thailand ● China Mainland, Hong Kong, Malaysia, Philippines, South Korea ● Worldwide
 () Number of users

Acceptance coverage	Participating payments scheme	Number of users**
China Mainland, Hong Kong, Malaysia, Philippines, South Korea	Alipay+	>1.48 billion
South Korea	GLN	45 million
Thailand	ITMX	>40 million
Malaysia	PayNet	>55 million
China Mainland	WeChat	>800 million
Worldwide	Google Pay via XNAP	150 million* (70+ markets)
	Mastercard via XNAP	3.1 billion cards* in circulation worldwide as at Q4 2022
	UnionPay	>9 billion cards in circulation worldwide
	Visa via XNAP	4.2 billion cards* in circulation worldwide as at 31 Dec 2022

Note: * Figures presented refer to cards/users with the potential to enable XNAP app payments. Cardholders are required to download the XNAP app and have the card on file to enable XNAP app payments.
 ** Figures presented may pertain to either unique or non-unique users.

Annexure III: Collaborative endeavor – joint track initiative

Liquid Group's card acceptance QR solution emulates the existing pass-through of card credentials (Pull payment model) from digital wallets to participating licensed acquirers of card schemes such as Visa and Mastercard, so as to ensure that the acquirers do not have to heavily revise their current acceptance construct and infrastructure.

Liquid Group's solution is made possible where the digital wallet partners can use the stored account information in their wallet to allow their customers to initiate transactions to merchants who are supported by their acquirers for transactions processing purposes, mirroring a chip or tap transaction flow. However, these cardholder-initiated transactions will require features of an appropriate payment mode (POS Entry Mode 03 in a card present environment for QR payments or POS Entry Mode 10 for e-commerce transactions) sent by the acquirers in their authorization message to the card schemes for processing of transactions.

NETS' solution leverages on the Push payment model via SGQR which allows participating wallets (local and cross-border) and merchants to have a common standard interface to send/receive payment notifications. The customer journey remains the same, and users can continue to scan with their preferred app. There is also no change for existing wallet issuers who are currently capable of consuming the NETS QR payload. NETS will extend the master merchant acquirer model under the CFC initiative to retail and F&B businesses within the scope of the SGQR+ POC.

NETS and Liquid Group intend to undertake further discussions to work out a mutually acceptable solution.

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