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The payments ecosystem is undergoing a major transformation as the industry aims to transition to a more instant, transparent and 24/7 payments experience while also adapting to increasing regulatory requirements and the emergence and incorporation of Digital Assets and new technology.

These changes will have wide-ranging impacts across messaging standards, operational models, market infrastructure and payments capabilities. The challenges of implementing change on such a scale are significant; however, this change will be necessary to create a payments ecosystem fit for purpose for future business models and evolving end-user expectations. Citi's position as a bank in 90+ markets with connectivity to over 270 Payments Market Infrastructures, 28 of these being Instant Payments schemes, around the globe and memberships in many industry committees and working groups gives us a unique view into many of the key industry initiatives in flight.

In this series, we will share updates and insights on payments transformation work underway across the globe with a specific regional focus each quarter. We encourage all Industry participants and clients to engage in this dialogue with the collective aim of building an environment where we will be able to make payments instantaneously as if there are no borders, no currencies and no constraints.

If you are short on time be sure to read over the "In other words" call out box in blue after each section for a quick takeaway.

Amit Agarwal and Debopama Sen
Global Co-Heads, Payments and Receivables, Treasury and Trade Solutions, Citi

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This issue of Citi Payments Perspectives will focus on industry developments including:

- Progress on the Financial Stability Board (FSB) Enhancing Cross-Border Payments initiative with new updates regarding extended operating hours and data frameworks
- Key industry updates in the Digital Asset space with the latest on CBDCs, stablecoin consultations, the Regulated Liability Network (RLN) concept, regulatory guidance and more
- Current global view of the migration to ISO 20022 including latest migration timelines and strategy
- SWIFT's transformation program and strategic roadmap progress
- The expansion of instant payments schemes and financial market infrastructure (FMI) interlinkage initiatives
- Key developments in North America including progress on the Immediate Cross-Border Payments (IXB) initiative, Request to Pay (RTP) developments and the latest on the Fed and CHIPS ISO timelines

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International Industry Initiatives:

Financial Stability Board (FSB) Enhancing Cross-Border Payments Roadmap

In 2020, the G20 asked the FSB to coordinate a three-stage roadmap for improving cross-border payments. As a part of Stage one, the FSB released an assessment report[1] of existing arrangements and challenges for cross-border payments. **The four main areas of this work were determined to be improving: cost, speed, transparency and accessibility of cross-border payments.**

Following this assessment, the Committee on Payments and Market Infrastructures (CPMI) released a report[2] outlining 19 building blocks where both the public and private sector could collectively enhance cross-border payments and support a global approach to address the identified frictions. Building on the FSB's Stage one report and the CPMI's Stage two report, the FSB, in coordination with CPMI, developed a roadmap[3] which provides a high-level plan, with achievable goals, to enhance cross-border payments.

Published in the summer of 2021, Citi's FSB and CPMI roadmap[4] provides a practitioner's perspective and synthesizes the work underway. We provide our views against each of the 19 building blocks in this initiative along with examples of past and current payments industry initiatives that offer valuable lessons or guidance to shape this important work.

The four main areas of this work were determined to be improving: cost, speed, transparency and accessibility of cross-border payments.

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Building Blocks

A Public and Private Sector Commitment

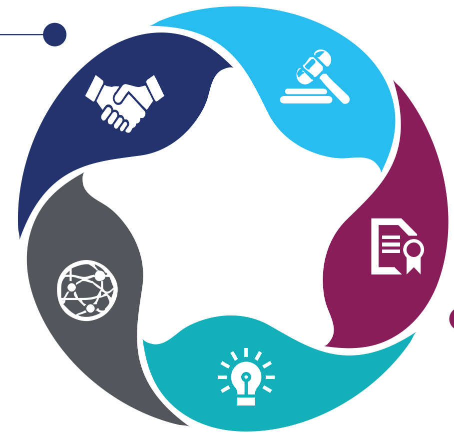
1. Develop common cross-border payments vision and targets
2. Implement international guidance and principles
3. Define common features of cross-border payment service levels

B Regulatory, Supervisory and Oversight Frameworks

4. Align regulatory supervisory and oversight frameworks
5. Apply AML and CFT consistently and comprehensively
6. Review interaction between data frameworks and cross-border payments
7. Promote safe payment corridors
8. Foster KYC and identity information sharing

C Existing Payments Infrastructures and Arrangements

9. Facilitate increased adoption of PVP
10. Improve direct access to payment systems
11. Explore reciprocal liquidity arrangements
12. Extend and Align operating hours
13. Pursue interlinking payment systems



D Data and Market Practices

14. Adopt a harmonized version of ISO 20022 for message formats
15. Harmonize API protocols for data exchange
16. Establishing unique identifiers with proxy registries

E New Payment Infrastructures and Arrangements

17. Consider the feasibility of new multilateral platforms and arrangements for cross-border payments
18. Foster the soundness of global stablecoin arrangements
19. Factor an international dimension into CBDC

Figure: FSB Building Blocks (Source: FSB Cross-Border Payments Roadmap).

In Other Words

- Initiative could reshape cross-border payments infrastructure, regulation and the end-user experience.
- Global targets established, addressing cost, speed, transparency and access for wholesale, retail and remittances markets.
- By end-2027, 75% of cross-border payments is anticipated to provide availability of funds within one hour of payment initiation.
- All FIs and end-users to have access to one or more infrastructures for sending/receiving cross-border payments by end-2027.

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FSB Target Metrics

A foundational step in the FSB roadmap for enhancing cross-border payments consists of setting quantitative global targets for addressing the challenges of cost, speed, transparency, and access faced by cross-border payments.

In May 2021, the FSB issued a consultation setting out targets which:

- Describes the principles and key design features underpinning the targets and target metrics
- Proposes three market segments (wholesale, retail, and remittances) for which targets will be set
- Considers factors in setting the targets
- Proposes a small number of high-level simple targets that are focused on end users

	Challenge	Payment	
	Wholesale	Retail (e.g., B2B, P2B/B2P, other P2P[3])	Remittances
Cost	No target set.	Global average cost of payment to be no more than 1%, with no corridors with costs higher than 3% by end-2027.	Reaffirm UN SDG: Global average cost of sending $200 remittance to be no more than 3% by 2030, with no corridors with costs higher than 5%.
Speed	75% of cross-border wholesale payments to be created within one hour of payment initiation or within one hour of the pre-agreed settlement date and time for forward-dated transactions and for the remainder of the market to be within one business day of payment initiation, by end-2027. Payments to be reconciled by end of the day on which they are credited by end-2027.	75% of cross-border retail payments to provide availability of funds for the recipient within one hour from the time the payment is initiated and for the remainder of the market to be within one business day of payment initiation by end-2027.	75% of cross-border remittance payments in every corridor to provide availability of funds for the recipient within one hour of payment initiation and for the remainder of the market to be within one business day, by end-2027.
Access	All financial institutions (including financial sector remittance service providers) operating in all payment corridors to have at least one option and, where appropriate, multiple options (i.e., multiple infrastructures or providers available) for sending and receiving cross-border wholesale payments by end-2027.	All end users (individuals, businesses (including MSMEs) or banks) to have at least one option (i.e., at least one infrastructure or provider available) for sending or receiving cross-border electronic payments by end-2027.	More than 90% of individuals (including those without bank accounts) who wish to send or receive a remittance payment to have access to a means for cross-border electronic remittance payment by end-2027.
Transparency	All payment service providers to provide at a minimum the following list of information concerning cross-border payments to payers and payees by end-2027: total transaction cost (showing all relevant charges, including sending and receiving fees including those of any intermediaries, FX rate and currency conversion charges); the expected time to deliver funds; tracking of payment status; and terms of service.		

Figure: Targets for the Cross-Border Payments Roadmap (Source: FSB).

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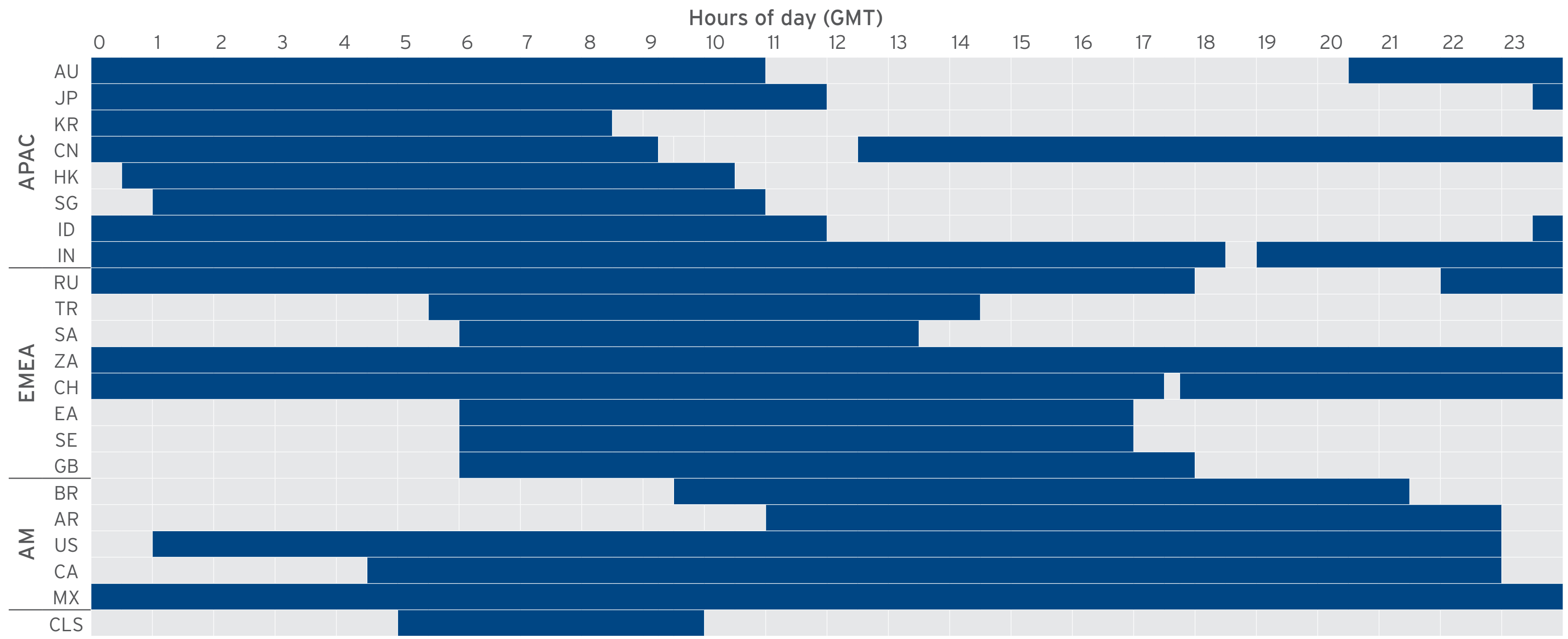
FSB/CPMI Consultation on Extending and Aligning Payment System Operating Hours

In November 2021, the Committee on Payments and Market Infrastructures (CPMI) issued a consultation document looking to extend and align payment system operating hours for cross-border payments. One of the proposals is for a global settlement window that will operate at the optimal time of day when the largest number of national real-time gross settlement (RTGS) systems operate.

The consultative report was issued as part of the FSB cross-border payments program, focused on enhancing cross-border payments. The CPMI says an extension of RTGS operating hours across jurisdictions could help address current obstacles, thereby increasing the speed of cross-border payments and reducing liquidity costs and settlement risks.

Real-time gross settlement operating hours on working days (GMT) for Committee on Payments and Market Infrastructures jurisdictions per region



AM = Americas; APAC = Asia-Pacific; AR = Argentina; AU = Australia; BR = Brazil; CA = Canada; CH = Switzerland; CLS = CLS Bank; CN = China; EA = Euro area; EMEA = Europe, Middle East and Africa; GB = United Kingdom; HK = Hong Kong SAR; ID = Indonesia; IN = India; JP = Japan; KR = Korea; MX = Mexico; RU = Russia; SA = Saudi Arabia; SE = Sweden; SG = Singapore; TR = Turkey; US = United States; ZA = South Africa.

Source: CPMI survey.

Figure: RTGS Operating Hours from CPMI Survey (Source: CPMI).

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Highlights of Citi's Response

A key objective of Citi is the enablement of 24/7 payments that are instant and support our clients' domestic and cross-border needs. To that end, we have communicated the following views to the CPMI:

- **Citi is very supportive of major market infrastructures and countries moving to a 24/7 model as we see this as being key to enable end-to-end 24/7** instant domestic and cross-border payments to our clients.
- **Regulators need to start preparing now for 24/7 RTGS** as these systems come up to end-of-life or renewal. While the industry may not be able to adopt this immediately, forward-looking plans need to support the 24/7 operations.
- Paths to 24/7 for market participants should take into consideration broader infrastructure transformation initiatives. **A balance should be struck between movement to 24/7 and overburdening the community by allowing for optionality** when participating in RTGS extended operating hours.

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FSB/CPMI Consultation on Expanding Payment versus Payment (PvP) Settlement

In October 2021, the CPMI put out a call for ideas on solutions on payment-versus-payment (PvP) settlement. Cross-border payments frequently involves the settlement of an FX transaction that requires payment of one currency and receipt of another, giving rise to FX settlement risk exposure. The key objective of a PvP settlement is to combat this exposure, limiting settlement risk. As one of the 19 building blocks for improving cross-border payments, the CPMI is developing proposals for increased PvP adoption by encouraging enhancements 1) to existing PvP arrangements and/or 2) development of a new public and/or private sector solution.

In response to the call, Citi proposed the creation of a new FMI through a global public/private partnership that tokenizes "regulated liabilities" to support broader adoption of PvP mechanisms for any regulated liability that exists in the network (i.e., the Regulated Liability Network (RLN)). In essence, RLN tokens will be digital records of the liabilities of central banks, commercial banks, and e-money issuers, based on existing national currency units.

The RLN is envisaged as a distributed ledger technology (DLT) network representing the liabilities of different institutions without changing the underlying legal instruments. The independence of legal instruments and technological representation will be held across a network of regulated institutions. Tokenization of such liabilities will support "always on," programmable and instant settlement. Interoperability of RLNs, each founded on national currencies and supervised by local regulators, will support PvP through the agency of institutions that participate in multiple currency networks acting as a bridge between them and providing foreign exchange services.

In Other Words

- CPMI initiative expands PVP settlement to help reduce FX settlement risk, support global financial stability and lower cross-border payment costs.
- Proposals include enhancements to existing PvP arrangements and/or development of a new public and/or private sector solution.
- Proposed creation of new FMI that tokenizes "regulated liabilities" to support broader adoption of PvP mechanisms.
- Tokenization will support "always on" programmable and instant settlement.

The RLN is envisaged as a distributed ledger technology (DLT) network representing the liabilities of different institutions without changing the underlying legal instruments.

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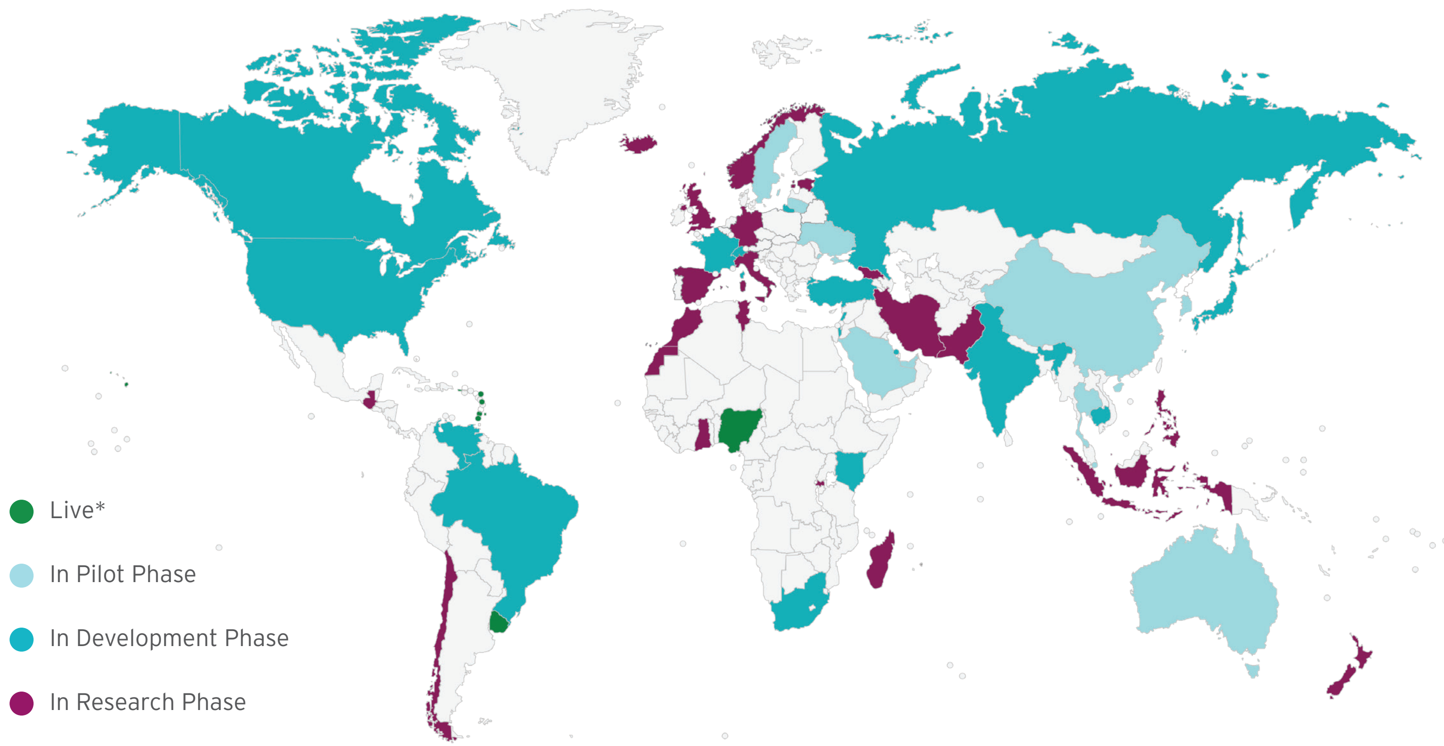
Emerging Payments and Digital Assets

A great deal of work is underway across central banks and regulators around the world as they pursue exploring Central Bank Digital Currencies (CBDCs) and digital asset technology. There are currently 87 countries around the world exploring, experimenting and in the process of implementing these structures. Efforts by Bank of England and Federal Reserve Bank (among others) to consult the industry in this area will help to ensure that the design has the maximum benefit for the industry and limits any second order unintended consequences and disintermediation.

CBDC Exploration



* To date, there are 9 nations that have so far reached the point where they're actually launching their own CBDC, with Nigeria being the latest one to make the move. The e-Naira is the first to originate outside of the shores of the Caribbean, with the other 8 being made up of 7 ECCU countries and the Bahamas.

The EC Dollar is the CBDC launched by the Eastern Caribbean Central Bank (ECCB), which has been in existence since March of 2021. This was in collaboration with DCash, bringing the currency to the islands of Antigua, Grenada, Barbuda, Saint Lucia, Saint Kitts, and Nevis.

Around 5 months later, this was expanded to include the Grenadines and St Vincent, with December 2021 seeing the system being rolled out to the Commonwealth of Dominica and Montserrat. As of this point, this particular CBDC now serves a total of 7 countries.

Source: https://www.atlanticcouncil.org/cbdctracker

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White House Executive Order on Ensuring Responsible Development of Digital Assets, March 09, 2022

The White House has issued a much-anticipated Executive Order ("Ensuring Responsible Development of Digital Assets") setting the tone for the US government's strategy for digital assets, defined to include cryptocurrencies and other forms of exchange that are recorded on the blockchain. The Executive Order represents the first whole-of-government approach to the benefits and risks of digital assets. It is a general policy statement that reflects the views of the administration, as opposed to a specific proposal for regulation. It also prompts the Federal Reserve to step up the pace on exploration of the case for a central bank digital currency (CBDC).

The Order acknowledges the exponential growth and opportunity that the digital asset ecosystem presents and outlines a policy interest in "responsible financial innovation" and the need for evolution and coordination to help ensure that US continues to be a leader in the space. It also lays out a number of perceived general risk areas that digital assets can pose on issues ranging from consumer protection to national security to the environment. To address these risks, the Executive Order tasks various federal agencies, working in coordination, to draft a host of reports, frameworks and action plans to evaluate the various perceived challenges and opportunities presented by digital assets. Watch this space for more on the topic in the coming months.

OCC: Acting Comptroller Michael J. Hsu's remarks before the America Fintech Council "Leveling Up Banking and Finance"

In this speech[5] given on November 3rd at the 2021 Fintech Policy Summit, Mike Hsu from the OCC summarized the nature and potential risks of Synthetic Banking Providers (or "SBP"). He also wrote about how regulators and traditional banking providers need to "level up" as a result. He previewed that the financial community, including SBPs should be expecting chartering decisions, interpretive letters, and a "crypto sprint" in coming months from U.S. regulators. This may include universal/holding company-like supervision of firms that may provide "banking" like services across multiple unregulated or loosely regulated entities. Finally, he also noted an increased focus on banks that provide services to large fintechs as this may facilitate synthetic banking outside of the bank regulatory perimeter.

FRB: USD Update

The Federal Reserve Board published a discussion paper titled "Money and Payments: The U.S. Dollar in the Age of Digital Transformation" on January 20, 2022. The paper examines the pros and cons of a potential U.S. CBDC and requests comments from the public on benefits, risks, policy considerations, and design. The Federal Reserve's initial analysis suggests that a potential U.S. CBDC, if one were created, would best serve the needs of the United States by being privacy-protected, intermediated, widely transferable, and identity-verified.

In Other Words

- White House Executive Order sets the scene for whole-of-government approach to digital assets, Fed exploration of the case for CBDCs, and the creation of frameworks to evaluate risks and rewards.
- OCC tells market to anticipate crypto chartering decisions, interpretive letters, and a "crypto sprint" from U.S. regulators.
- ECB confirms plan to issue digital euro and sets two-year timetable for investigation of challenges and opportunities.

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ECB: Speech on designing a digital euro for the retail payments landscape of tomorrow

Fabio Panetta, European Central Bank (ECB) Executive Board member gave a speech[6] to the European Parliament's ECON Committee. He focused on why the ECB would issue a digital euro before outlining how the investigation phase will be structured to help ensure that the design is attractive to consumers. He stated that a digital euro "would enable people to continue using central bank money as a means of exchange in the digital era." He referred to a risk "for some debit card schemes" and their "use in cross-border settings" being dependent on "the continued willingness of the international card schemes to provide such services." He also highlighted concerns that "traditional payment services could be crowded out" by stablecoins and Big Tech. Over the next two years, the ECB "will investigate the key issues related to the design and distribution of a digital euro." They "expect to narrow down the design-related decisions by the beginning of 2023 and develop a prototype in the following months."

Citi: Digital Money Index 2022

Developed by Citi and Imperial College London, the Digital Money Index was created as a yearly study of how the adoption of digital money has tangible benefits for governments, businesses, and consumers. The index reveals insights on how both the public and private sectors can improve and benefit from their state of digital money readiness. There are three substantial benefits from driving digital money adoption: increased adoption could allow for 220 million individuals enter the formal financial sector shifting an additional $1 trillion to the formal economy, cost reductions could lead to up to $350 billion to $400 billion in annual savings to public and retail sectors, and for up to $1 trillion in share gains for businesses. As digital money adoption accelerates, Citi and Imperial College have revamped the digital money index (DMI). The DMI now assesses digital money readiness in 110 countries, up from 84 in the previous iteration, in addition to new indicators to acknowledge the progress made by several developing countries.

Key insights from this year's analysis show that recent technology developments, regulatory mandates and pandemic induced change in customer behavior towards digital are providing a significant impetus to digital money readiness. Driving readiness requires all economic actors – Governments, Corporates, Financial Institutions, and Households to work harmoniously, in order to address the many challenges currently preventing the digital revolution from reaching its full potential. A holistic policy should bear in mind four pillars: digital infrastructure, digital adoption, service innovation, and digital trust, all driven by a clear vision and supported by robust regulations and governance. Case studies in countries including Malaysia, United Arab Emirates, Estonia, and Uruguay that have augmented a holistic digital policy with targeted investments, have performed well on digital money readiness, as well as driven economic growth.

INCLUSION: Enabling broader societal participation	**1.7B**	To gain access to financial services with a digital ID
COMMUNITY: Improving government-to-citizen experience	**4.4B**	Hours saved by people in the U.S. with e-government services
EFFICIENCY: Making financial flows more transparent	**$1T**	In tax collections with a 10% increase in e-money adoption
ECONOMY: Positive for citizens and public fiscal balances	**6%**	In economic value, unlocked in India with full digital ID coverage
SECURITY: Strengthening defenses against cyber threats	**80%**	Of cyber attacks can be prevented by UK government's cyber scheme

(Source: Citi)

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Regulated Liability Network (RLN) update

The Regulated Liability Network (RLN) is a proposal for a new multicurrency Financial Market Infrastructure (FMI) that encompasses central bank money, commercial bank money and e-money from regulated nonbanks.

Traditional payment systems consist of messaging between institutions – the money is in the ledgers of the institutions at the edges of the network. In bitcoin the value is on the network itself. To fix frictions in payments, both domestic and cross-border, we need to solve for settlement, not just messaging. The RLN proposal is developed as an alternative to "narrow" CBDCs that are only denominated in central bank money, and much better than a situation in which every bank creates its own "coin."

In a white paper[7] published in December and discussed at a recent LinkedIn webcast event[8] SETL and AWS have provided early evidence of the technical feasibility of constructing a viable RLN. Previously, Citi, SETL, AWS and others demonstrated working prototypes of the RLN as part of the Global CBDC Challenge[9] hosted by the Monetary Authority of Singapore which recently released a report[10] on the initiative. The RLN community will continue to review, enhance, and socialize RLN concepts and testing in 2022.

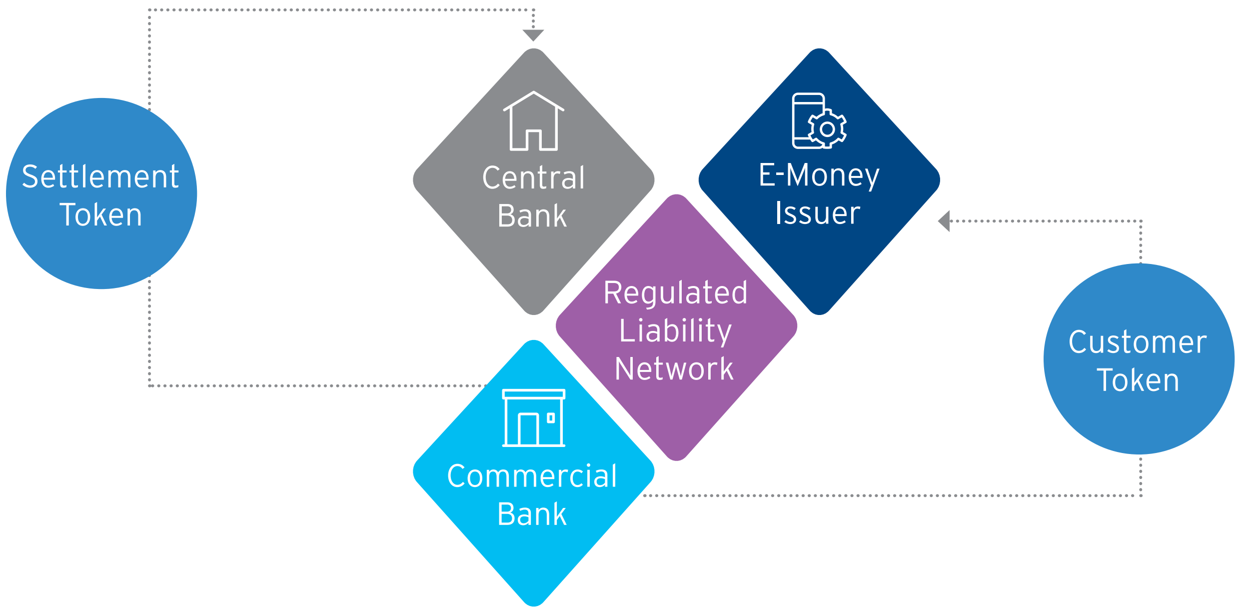

Figure: RLN (Source: Citi).

In Other Words

- New multicurrency FMI developed through a global public/private collaboration developed as an alternative to CBDCs and bank coins.
- Tokenized regulated liabilities include central bank money, commercial bank money, and e-money from regulated nonbanks.
- RLN would enable settlement between tokenized assets on a domestic and cross-border basis.

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CPMI-IOSCO Consultation on Application of the Principles for FMIs to Stablecoin Arrangements

In October 2021, the CPMI and the International Organization of Securities Commissions (IOSCO) issued a public consultation preliminary guidance[11] intending to confirm and clarify that stablecoin arrangements should observe the Principles for Market Infrastructures (PFMI), international standards for payment, clearing and settlement systems.

Citi is supportive of the full application of the PFMI to stablecoin arrangements that are, or are likely to become, systemically important, and participated in the comment letter drafted and submitted by The Clearing House (TCH).

Key recommendations proposed within the TCH comment letter:

- Clarify handling of stablecoin arrangements that do not align to the PFMI (i.e., may face the risk of being prohibited or become systematically important).
- Revise the considerations for determining the systemic importance of a stablecoin arrangement to include whether there is an existing regulatory framework in place to appropriately address risks posed by the stablecoin arrangement.
- Amend guidance to remove an authority's "discretion" of using potential growth and future state of stablecoin arrangements to determine the systemic importance.
- Include a requirement that when settlement is conducted with a stablecoin instead of central bank money, the issuer of that stablecoin should be 1) a bank or other appropriately regulated financial institution, or 2) deposit funds at a bank or other appropriately regulated financial institution, which is regulated, supervised, and maintains sufficient controls to manage risks arising from the stablecoin arrangement.

Project Helvetia: Bank of International Settlements (BIS), Swiss National Bank (SNB), and SIX Joint Exploration on Wholesale CBDC

Project Helvetia is a multiphasic investigation by the BIS Innovation Hub, SNB, and SIX (Swiss FMI Operator) to demonstrate how wholesale CBDC (wCBDC) can be integrated with existing core banking systems and processes of commercial and central banks by leveraging tokenization and distributed ledger technology (DLT). The project has gone through two phases and included participation from five commercial banks including Citi.

Phase one of the project was completed in 2020 and showed that wCBDC can be used to settle tokenized assets in central bank money. Phase two of the project was completed in January 2022 and expanded on practical complexities, legal questions, and policy implications of issuing wCBDC. In particular, Phase two expanded the work carried out in Phase one but (i) adding commercial banks to the experiment, (ii) integrating wCBDC into the core banking systems of the central bank and commercial banks, and (iii) running transactions from end-to-end.

Specifically, from a payments flow perspective, settlement instructions for financial transactions were entered by the commercial banks or the SNB, instructions were matched and subsequently settled in wCBDC with finality on the SDX platform, and finally booked and reconciled in core banking systems.

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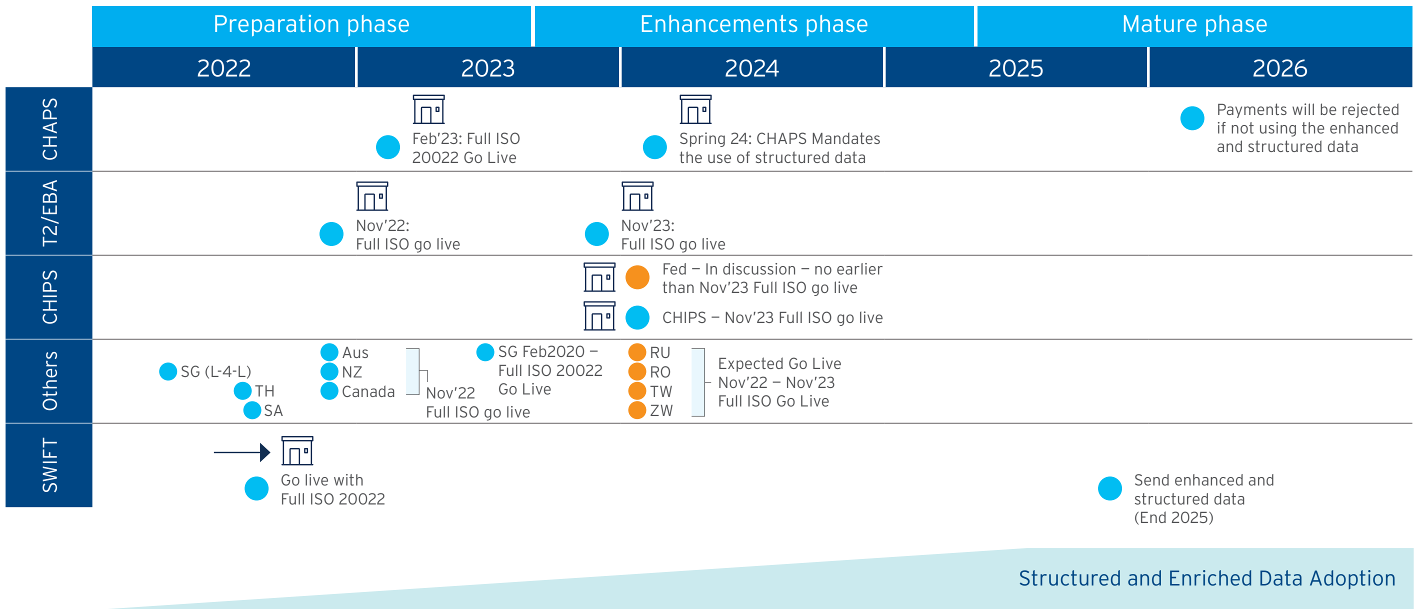
Overview

By the end of 2025, it is anticipated that the majority of high value payment systems (HVPS) will have migrated to the ISO 20022 format for financial messaging. This is complemented by SWIFT's own migration to ISO 20022 for payment messages starting in November 2022 and ending in November 2025, which means moving payments messages from what we know as traditional "MT" messaging formats into the ISO 20022 formats.

Latest Migration Timelines for 2022/2023



Planned

In discussion/TBD

Source: Citi.

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PMPG Core Principles for a Successful Industry Migration to ISO 20022

The **Payments Market Practice Group (PMPG)** published "Core Principles for a Successful Industry Migration to ISO 20022." The aim of the publication is to reiterate the need to transport data without loss across the cross-border payments chain and also provide the industry with a guide to navigate some of the biggest issues with interoperability that the payments ecosystem may face during the ISO 20022 transition period.

Some of the key areas raised in this publication are around risk minimization during the coexistence period to avoid loss of data.[12] One of the risk-mitigants being proposed is through proper usage of payments messaging standards in addition to SWIFT's central inflow translation, which is designed to help non-ISO ready banks to operate until they are ready to transition to the ISO 20022 data model. Further, the document advises banks to support their clients with legacy MT message formats until they are ready to consume ISO 20022 for reporting purposes.

Citi ISO White Paper on Better Data Structure

A successful migration to the ISO 20022 format for financial messaging has the potential to create significant efficiencies in payments, leading to greater speed, digitization, automation and an improved client experience. In Citi's ***ISO whitepaper on Better Data Structure***, we explore some of the potential benefits of moving to this new enriched data model for both banks and corporates as well as potential use cases with focus on compliance, operations/investigations and reconciliation.[13]

In Other Words

- Adoption is crucial for the cross-border ecosystem due to enhanced data structure and greater interoperability across financial market infrastructures and the SWIFT network.
- ISO 20022 enables faster processing, improved visibility, greater automation and higher STP rates as well as an improved end-user experience.
- PMPG report proposes proper usage of payments messaging standards in addition to SWIFT's central inflow translation to help ensure risk minimization during coexistence period.

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SWIFT Transformation

SWIFT has continued its transformation agenda throughout 2021 as they execute on their ambition to create a payment messaging network that is instant, frictionless and 24/7. On December 14, they put out a press release (PR) with an update on the progress of their multiyear Payments Strategic roadmap. The press release is notable in that it highlights SWIFT's position as an innovation leader in the cross-border payments space and touches upon the key focus areas of SWIFT's strategy.

All 10 of the largest SWIFT Payments institutions by volume have contributed quotes to this PR, further endorsing SWIFT's leadership and a community-wide approach to innovation. The press release can be found here.[14]

SWIFT Platform and ISO 20022

The **Transaction Management Platform** (TMP) seeks to fundamentally transform the current SWIFT model and move beyond store and forward messaging services to provide comprehensive transaction management services. The key platform features include dynamic API connectivity, ISO 20022 standards, upfront payment validation details (gpi pre-validation) and central management of exceptions (gpi case resolution) with a centralized data model that enables settlement orchestration. This new architecture has the potential to enable a truly instant, certain and near 24/7 cross-border payments experience enabling dynamic interaction between banks and other players across the payments chain.

In Other Words

- SWIFT transformation could facilitate instant, frictionless 24/7 cross-border payments and enhance end-user experience.
- Key features of Transaction Management Platform include dynamic API connectivity and ISO 20022 standards.
- Innovations such as gpi Instant, pre-validation and SWIFTGo could deliver significant improvements for end users.

All 10 of the largest SWIFT Payments institutions by volume have contributed quotes to this PR, further endorsing SWIFT's leadership and a community-wide approach to innovation.

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In addition, the TMP incorporates the inflow translation feature which is a tool that will help non-ISO-ready members to receive MT embedded MX messages during the coexistence period between November 2022 and November 2025. This TMP technology, which is targeted for early 2023, will be focused on implementing transaction data integrity and transaction copy visibility rules. Subsequent releases will help drive future developments supporting new settlement methods, data driven enhanced automation and ecosystem interoperability. This is presently being defined as part of the SWIFT payment "blueprint" expected to be published in Q2 2022 which will set out the vision, end state, and define the strategic initiatives and roadmap for the platform.

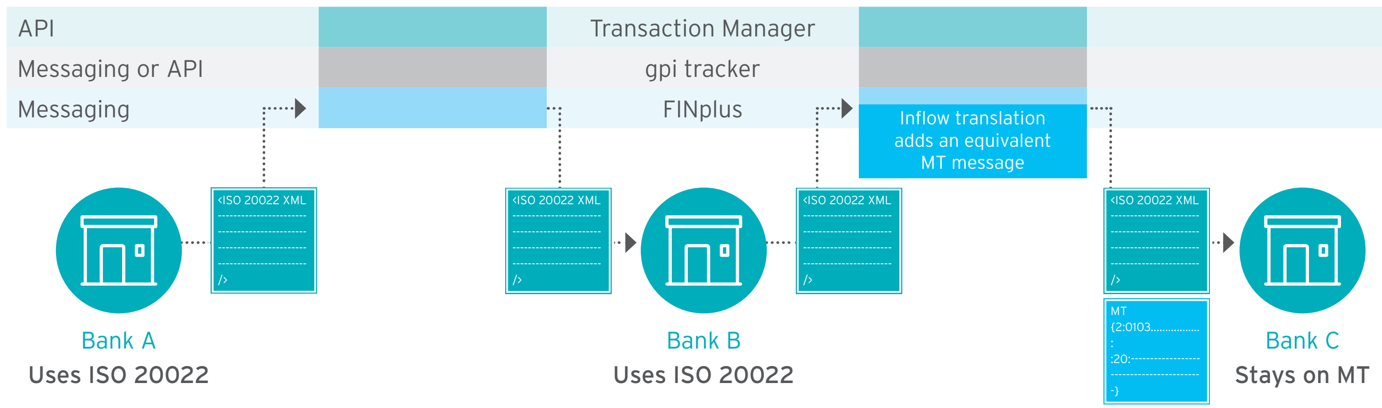

Figure: State-of-the-Art Platform: Transaction Manager (Source: SWIFT)

Additional key SWIFT Platform Strategy Components to Watch:

GPI instant	Pre-validation	SwiftGo
Gpi instant is establishing a globally scalable model to define the standards and rules to integrate gpi flows onward & inward via domestic Instant Payment schemes globally. Service is currently live in UK-Faster Payments and India-IMPS and in pilot mode with Australia-NPP and Singapore-Fast.	SWIFT's pre-validation service helps to ensure that issues with payments are identified before the payment leaves the initiating institution by pre-validating key payment information, making cross-border payment execution on the whole more efficient and cost effective.	SWIFTGo leverages the principles of SWIFT gpi to make simple, low value cross-border payments for SMEs and consumers as easy, predictable, transparent and low cost as domestics payments. Over 120 banks have signed up since launch.

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Citi Instant Payments Best Practices White Paper

With the widespread drive to faster payments and continuous availability, instant payments (IP) schemes are uniquely positioned to play a key role in the evolving payments landscape to potentially enable cross-border transactions as well as help drive financial inclusion and economic progress. Our recently released Instant Payments White Paper[15] provides policy makers and central banks with a comprehensive view of best practices, standards, and capabilities considerations to enable alignment and drive adoption globally. Citi has found that while the mechanics of instant payments are generally standardized, for it to become the go-to payment method, all actors must agree on the focus areas most critical to strategy alignment and industry harmonization. Specifically, our experience has shown that there are four foundational elements of a "best in class" scheme:

- 24/7 scheme and processing availability
- Global harmonization of standards: including ISO 20022 and capabilities that allow for one-leg-out transactions
- Speed of processing
- Transaction limits

In Other Words

- Emergence of instant payments (IP) schemes is driving financial inclusion and economic progress.
- Alignment of national IPs is crucial to help ensure widespread adoption for domestic and cross-border payments.
- Criteria for best-in-class scheme: 24/7 availability, speed, global harmonization of standards and transaction limits.

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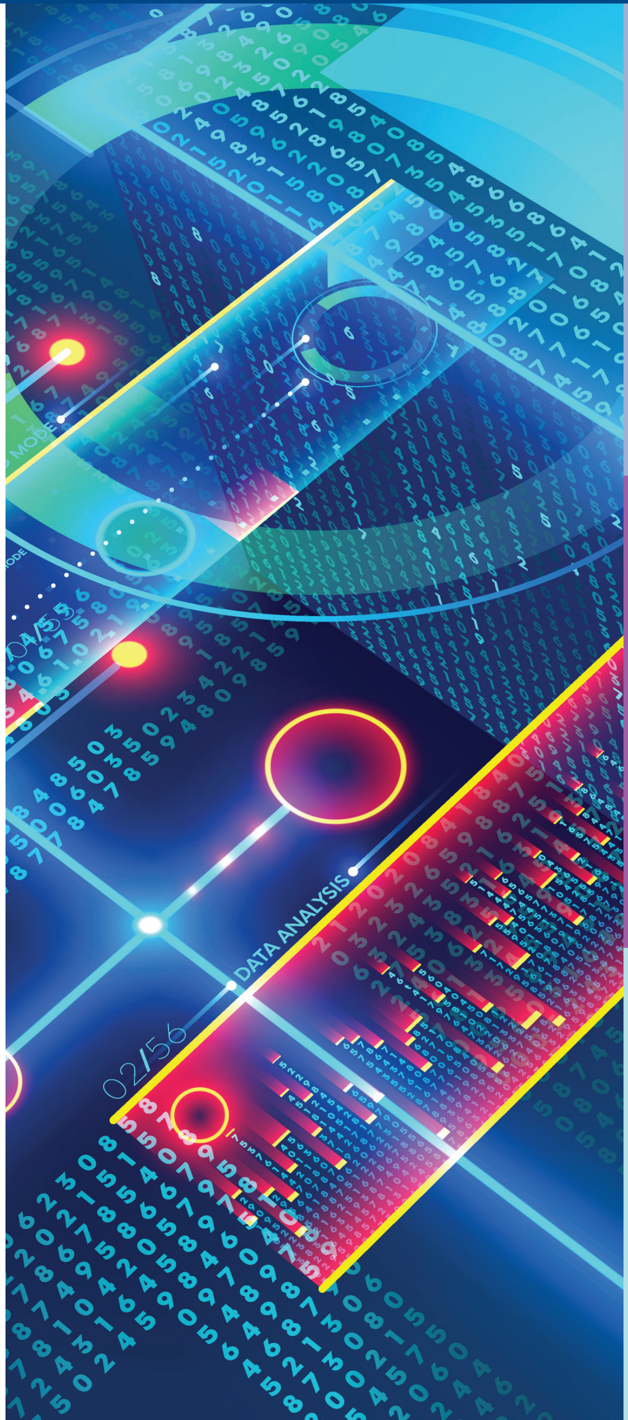

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Instant Payments Emergence

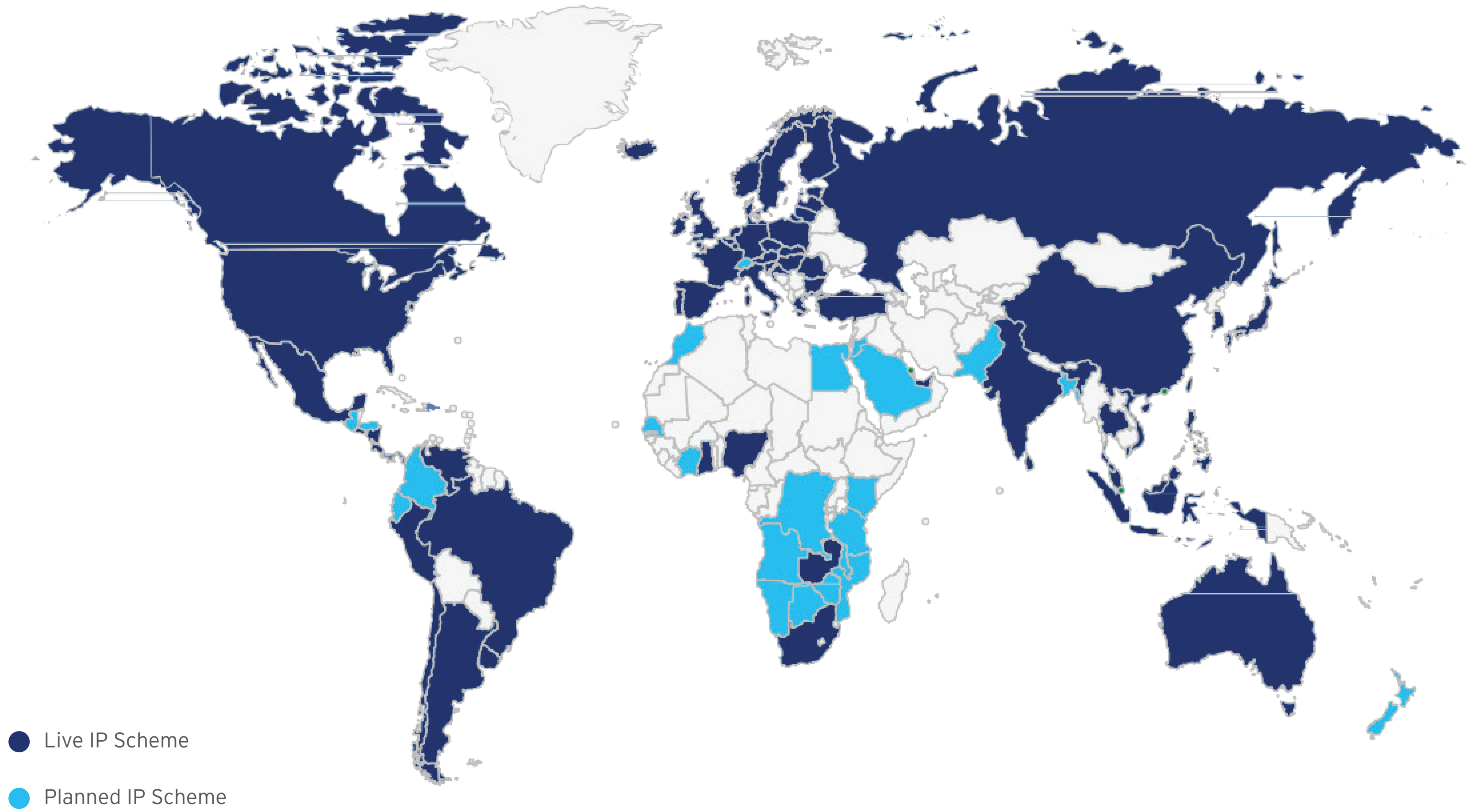

Figure: Instant Payments Emergence (Source: Citi).

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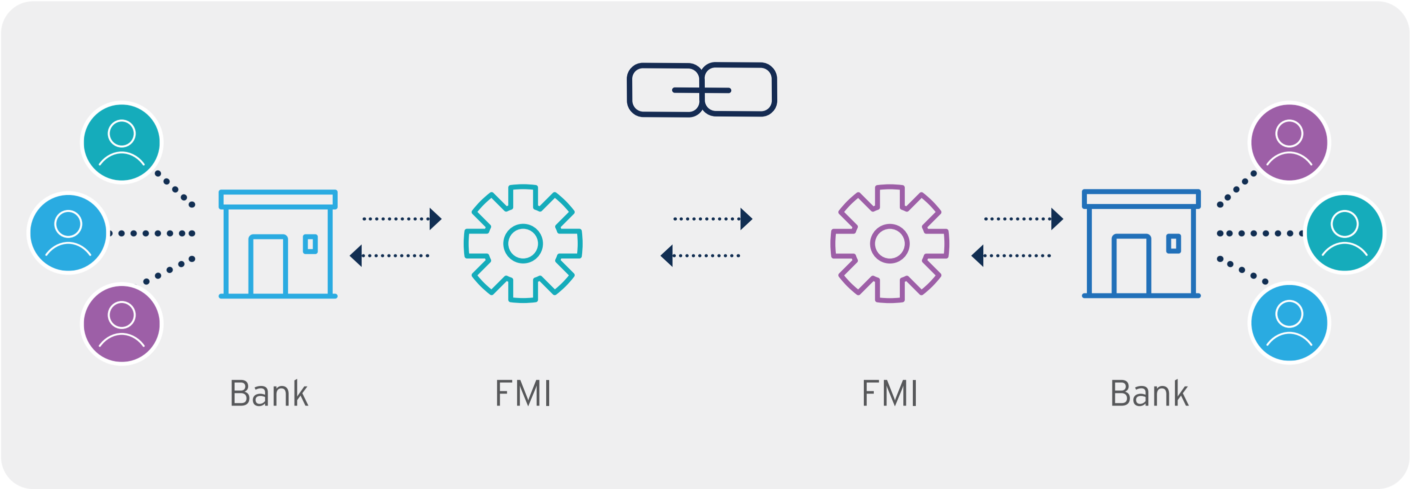
Financial Market Infrastructure (FMI) Interlinkage Initiatives

Interconnectedness is an important part of the global financial landscape, which can be achieved through both direct and indirect linkages among FMIs. FMI interlinkages are bilateral or multilateral arrangements across two or more FMIs in different jurisdictions aimed at facilitating cross-border payments. These interlinkages have the potential of increasing financial connectivity for emerging market countries as well as enhancing services for payments, clearing, and settlement.

Although predominantly developed as domestic payment infrastructures, instant payments are positioned to be a key enabler for lower friction cross-border payments through the interlinkage of instant payments schemes.

In Other Words

- Interlinked payment systems, particularly IPs, across two or more jurisdictions may be the first step toward achieving 24/7 cross-border payments.
- Strategy alignment and industry harmonization, i.e., ISO 20022 and one-leg capabilities, are essential to help achieve frictionless cross-border payments.



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Below are a few notable developments in the FMI interlinkage space:

Immediate Cross-Border Payments (IXB)	BIS Nexus	Real-time payment systems linkages in Asia-Pacific	BUNA-TIPS
In January 2021, EBA CLEARING (Pan-European payments), SWIFT and The Clearing House announced a joint initiative called IXB (Immediate Cross-Border Payments) to speed up and enhance payments across the USD/EUR corridor. With the support of seven banks, including Citi, the IXB team executed a successful proof of concept (POC) to support testing across the test environment of the RTP and RT1 schemes to demonstrate the viability of synchronizing cross-border settlements across two existing instant payments systems. Please ***see*** the IXB Press Release and refer to the NAM Regional Developments section for more details.[17]	The Bank for International Settlements (BIS) Innovation Hub launched Project Nexus, which provides a blueprint on how to link domestic instant payment systems operated by central banks to enable cross-border transactions through a single network. This project looks to leverage the benefits offered by instant payments – speed, 24/7 availability, access, cost efficiency, and transparency – to create interoperability between payment infrastructures globally and improve the overall cross-border payment experience. Please see the Nexus Press Release ***here***.[18]	The Monetary Authority of Singapore has established separate bilateral agreements with the Bank of Thailand, the Reserve Bank of India, and Bank Negara Malaysia to enable cross-border payments and support growing remittance traffic between their respective countries. PayNow-PromptPay[19] (Thailand), PayNow-UPI[20] (India), and PayNow-DuitNow[21] (Malaysia) will enable users in their respective countries to transfer funds using the recipient's mobile number.	Banca D'Italia and the Arab Regional Payments Clearing and Settlement Organization (ARPCSO) announced the successful completion of a joint experiment aimed at linking for the first time their respective instant payment settlement platforms (TIPS and BUNA IPS) with multicurrency features. Experiments simulated several cross-currency transactions settled in both TIPS and BUNA IPS, by debiting the EUR TIPS account and crediting JOD BUNA IPS account, and vice versa. Please see the BUNA-TIPS announcement ***here***.[22]

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In early 2021, The Clearing House (TCH) and the Euro Banking Association (EBA) Clearing launched their joint "Immediate Cross-Border Payments" taskforce. The goal of this taskforce is to improve payments across the USD/EUR corridor by creating a blueprint for an immediate, frictionless cross-border payment model. This blueprint was shared with the payments community during the summer of 2021.

The blueprint defined three "models":

- **Improved Intermediated model –** leveraging existing intermediary model but creating a more "instant" and certain payments process through synchronized settlement, SLAs, pre-validation and potentially a 24/7 operating model
- **Cross Participation model –** building on capabilities of the previous model but adding the ability for players to choose to be "indirect" participants in a reciprocal scheme leveraging a liquidity provider for settlement – focused on one-leg out RTP payments
- **Cross-Border Integration model –** fully integrating TCH and EBA systems and allowing full cross participation

In October, the IXB working group successfully executed a test environment POC of "model 1" across the TCH RTP and EBA RT1 instant payment systems.[23] Citi was one of the participants in this POC, leveraging our connectivity to RTP to support the TCH side of the transaction. The test was a success and included the SWIFT Platform as the connectivity bridge/rules engine between both RTP and RT1, providing pre-validation, synchronized settlement and real-time information exchange.

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TCH Request for Pay (RFP) Bill Pay

There is growing interest from corporates and nonbank financial institution clients in leveraging Request for Pay for bill collection as retail bank adoption slowly comes online, the key driver of creating the necessary network effect to achieve adoptions. In September 2021, Citi and BNY Mellon joined forces[24] with wireless network provider Verizon to offer the ability to send request-for-payment messages to Citi banking customers. Through this partnership, Citi became the first bank enabled to support round-trip RFP. While real-time payments were previously available for bank-to-bank transactions for large organizations, this is the first at-scale use of the technology in production with retail customers. This innovative functionality revolutionizes the bill pay experience for both the biller and the customer, connecting BNY Mellon as the billing bank, Verizon as the biller and Citi as the customer's bank, with the transaction transmitting in real time over The Clearing House's RTP® network.

Latest on Fed/CHIPS ISO Timelines

In October of 2021, the Federal Reserve announced[25] their revised ISO 20022 adoption plan and invited public comment (90-day comment period) for migrating the Fedwire Funds Service to the ISO 20022 message format. The proposal was for a single implementation date (no earlier than November 2023) rather than a three-phased approach. Since then, the Federal Reserve changed the implementation timeline for ISO2022, to Q1 2025.

Although, industry participants (including TCH) support aligning the implementation for Fedwire and CHIPS in November 2023, uncertainty remains on a same-day migration for both systems due to maintenance of safety, soundness, and efficiency of payment systems that is critical for both the public and private sector. TCH and other industry governance bodies such as the Payments Risk Committee (PRC) encourage continuous dialogue and coordination between the Federal Reserve, TCH, and participants of both Fedwire and CHIPS throughout the payment systems' respective ISO 20022 migration programs to mitigate risk migration that ISO 20022 may pose to the resilience of USD payments.

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Lynx – Canadian High-Value Payment System

In September, Citi became a participant[26] in Lynx, Canada's new high-value payment system which launched in August 2021. Citi joined 16 other participating financial institutions that were part of the initial Lynx launch.

As a participant on Lynx, Citi is now able to settle payments directly with other participants, in addition to sending and receiving high-value and time-critical payments.[27] Owned and operated by Payments Canada and overseen by the Bank of Canada, Lynx processes high-value, time-critical payments with real-time settlement finality. Lynx is designated as a systemically important payment system under Canada's 1996 Payment Clearing and Settlement Act.

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ACH	Automated Clearing House	An electronic funds-transfer system that facilitates payments local low value payments.
API	Application Programming Interface	API is a set of definitions and protocols for building and integrating application software.
ARPCSO	Arab Regional Clearing and Settlement Organization	The Arab Regional Payments Clearing and Settlement Organization, is a centralized cross-border payment system owned by the Arab Monetary Fund.
AWS	Amazon Web Services	AWS is a subsidiary of Amazon providing on-demand cloud computing platforms and APIs to individuals, companies, and governments, on a metered pay-as-you-go basis.
BIC	Bank Identifier Code	A BIC is an 8 to 11-character code that identifies banks globally.
BIS	Bank for International Settlements	The Bank for International Settlements is an international financial institution owned by central banks that “fosters international monetary and financial cooperation and serves as a bank for central banks”.
CBDC	Central Bank Digital Currency	A CBDC is a digital form of central bank money that is widely available to the general public.
CHIPS	Clearing House Interbank Payments System	CHIPS is a private sector USD clearing system, which provides clearing and settlement services for high-value payments, through its patented algorithm matches and nets payments.
CLS	Continuous Linked Settlement	CLS is a global settlement infrastructure that reduces systemic risk and provides standardization.
CPMI	Committee on Payments and Market Infrastructures	The Committee on Payments and Market Infrastructures is an international standard setter that promotes, monitors, and makes recommendations about the safety and efficiency of payment, clearing, settlement and related arrangements, thereby supporting financial stability and the wider economy.
CSM	Clearing and Settlement Mechanism	A clearing and settlement mechanism used to transfer funds between banks.
DDA	Demand Deposit Account	A demand deposit account is a bank account from which deposited funds can be withdrawn at any time, without advance notice.
DLT	Distributed Ledger Technology	Distributed ledgers use independent computers (referred to as nodes) to record, share and synchronize transactions in their respective electronic ledgers (instead of keeping data centralized as in a traditional ledger).
ECB	European Central Bank	The European Central Bank is the prime component of the Eurosystem and the European System of Central Banks as well as one of seven institutions of the European Union.
EPN	Electronic Payments Network	TCH's ACH system that handles U.S. commercial ACH transactions.

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ERP	Enterprise Resource Planning	Enterprise resource planning refers to a type of software that organizations use to manage day-to-day business activities such as accounting, procurement, project management, risk management and compliance, and supply chain operations.
EU	European Union	
EWS	Early Warning System	EWS is a network intelligence provider open new accounts, get in front of fraud, and move to faster payments.
FCY	Foreign Currency	
FI	Financial Institutions	FIs are business entities that provide services as intermediaries for different types of financial monetary transactions.
FMI	Financial Market Infrastructure	FMIs are regulated, multi-lateral systems operating among participating financial institutions and markets, for the purposes of clearing, settling, or recording payments, securities, derivatives, or other financial transactions that play an integral role in local market or global financial systems. These include payment systems (PS), securities settlement systems (SSS), central securities depositories (CSD), central counterparties (CCP), and trade repositories or trading venues (TR) or other (OTHER) financial market utility providers or infrastructures where their failure to perform as expected impacts the financial market participants from orderly executing financial transactions.
FRB	Federal Reserve Board	The Federal Reserve board oversees supervising and regulating financial institutions and activities.
FSB	Financial Stability Board	The Financial Stability Board is an international body that monitors and makes recommendations about the global financial system. It was established after the G20 London summit in April 2009 as a successor to the Financial Stability Forum.
FX	Foreign Exchange	
G20	The Group of 20	The Group of Twenty (G20), a collection of twenty of the world's largest economies formed in 1999, was conceived as a bloc that would bring together the most important industrialized and developing economies to discuss international economic and financial stability.
HVPS	High Value Payment System	A HVPS is generally used for wholesale, or high value interbank electronic funds transfers.
IOSCO	International Organization of Securities Commission	It is an association of organizations that regulate the world's securities and futures markets. Members are typically primary securities and/or futures regulators in a national jurisdiction or the main financial regulator from each country.

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IP	Instant Payments	IP schemes are fast becoming the "go-to" payment method, where standardization and industry collaboration between government, central banks, and scheme makers is critical to aid in the adoption of instant payments globally.
ISO	International Organization for Standardization	ISO is an independent, non-governmental international organization with a membership of 167 national standards bodies.
IXB	Immediate Cross-Border Payments	IXB is a blueprint for an immediate, frictionless cross-border payment model.
JMLSG	Joint Money Laundering Steering Group	The Joint Money Laundering Steering Group is made up of the leading UK trade associations in the financial services industry.
LCY	Local Currency	
OCC	Office of the Comptroller of the Currency	The OCC charters, regulates, and supervises all national banks and federal savings associations as well as federal branches and agencies of foreign banks.
NBFI	Non-Bank Financial Institutions	A nonbank financial institution is a financial institution that does not have a full banking license and cannot accept deposits from the public.
NSS	National Settlement Service	The National Settlement Service is a multilateral settlement service owned and operated by the Federal Reserve Banks. The service is offered to depository institutions with Federal Reserve Bank master accounts that settle for participants in clearinghouses, financial exchanges and other clearing and settlement arrangements.
PFMI	Principles for Market Infrastructures	PFMIs contain demanding international standards for payment, clearing and settlement systems. The standards are designed to ensure that the infrastructure supporting global financial markets is more robust and thus well placed to withstand financial shocks.
PMPG	Payments Market Practice Group	The Payments Market Practice Group (PMPG) provides a global forum to drive better market practices which, together with correct use of standards, will help in achieving full straight-through processing and improved customer service.
POC	Proof of Concept	
PRC	Payments Risk Committee	FRB sponsored meeting to discuss major topics related to USD payment risk with major North America banks, plus Goldman Sachs and Morgan Stanley.
PSP	Payment Service Provider	

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PVP	Payment-Versus-Payment	A PvP settlement aims to combat FX settlement risk.
RFP	Request for Pay	Request to Pay is a digital request that the payer receives on their mobile device, usually on a banking application or third-party fintech application.
RLN	Regulated Liability Network	The RLN is envisaged as a distributed ledger technology (DLT) network representing the liabilities of different institutions without changing the underlying legal instruments.
RTGS	Real-Time Gross Settlement System	Real-time gross settlement systems are specialist funds transfer systems where the transfer of money or securities takes place from one bank to any other bank on a "real-time" and on a "gross" basis.
RTP	Real-Time Payments	Real-Time Payments (RTP) network that enable consumers, businesses, and governments to immediately send and receive funds 24/7/365.
SBP	Synthetic Bank Providers	
SETL	SETL	SETL is an initiative to deploy a multi-asset, multi-currency institutional payment and settlements infrastructure based on blockchain technology.
SIX	SIX Interbank Clearing	Swiss FMI Operator.
SNB	Swiss National Bank	
STE	Secure Token Exchange	A security token exchange is effectively a stock exchange that supports the trading, deposit and withdrawals of security tokens.
STP	Straight Through Processing	Straight-through processing is a method used by financial companies to speed up financial transactions by processing without manual intervention.
TCH	The Clearing House	TCH is a private sector, payment system infrastructure that operates an electronic check clearing and settlement system, a clearing house, and a wholesale funds transfer system.
TMP	Transaction Management Platform	The Transaction Management Platform (TMP) seeks to fundamentally transform the current SWIFT model and move beyond store and forward messaging services to provide comprehensive transaction management services.
TPSP	Third Party Service Provider	A third-party service provider is generally defined as an external person or company who provides a service or technology as part of a contract.
TxB	Transaction Banking	
VA	Virtual Account	A Virtual Account (VA) is a reporting tool, a ledger record and not an actual physical bank account.

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