



Market initiatives in cross-border real-time payments

THOUGHT LEADERSHIP

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Understanding the global real-time cross-border payment landscape

Mastercard's expert and skilled Advisors are here to support clients as they seek to navigate a real-time cross-border payment solution

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For many years, the options for sending funds cross-border were limited to wire transfer (bank to bank), remittance service (such as Western Union or Moneygram), cheque or money order or, in more recent years, payment transfer services (such as Wise or Transfermate). Each type of approach has its own pros and cons, but cost, speed, transparency and access are generally important considerations.

Demand by consumers and businesses, and by global organisation such as the Financial Stability Board (FSB), has highlighted the need for faster and more transparent cross-border payments. In response to this there have been various market and industry responses – many of them in the real-time domestic platform space.

In October 2021 the G20 financial authorities set ambitious targets for the retail (individuals and businesses) and wholesale (between financial institutions) cross-border payment markets. As a result, the Committee on Payments and Market Infrastructures (CPMI) within the Bank for International Settlements (BIS) has developed a program for cross-border payments, whose objective is to safely and securely expedite the settlement of international payments while also making the process more economical, transparent, and accessible. This work is driving the Nexus blueprint initiative. Other initiatives are being devised in parallel with this work, such as Immediate Cross Border Payments (IXB) and Swift gpi Instant. In addition, a number of bilateral and regional initiatives have also been agreed or already implemented.

These different initiatives make it difficult to identify what the next steps forward should be: bilateral to meet an immediate need, global to provide scalability or a combination of different initiatives to meet specific needs.

This document highlights some of the main initiatives, while later publications will explore the implications of the different approaches with a view to the challenges of cross-border payment flows.

Bilateral and regional initiatives

There are a number of ongoing bilateral and regional initiatives. Some are looking to meet an immediate need – due to cross-border flows between neighbouring countries or countries where there is a large volume of payment flows. Others are part of a proof of concept or pilot aimed at further extending interconnectivity.

The Middle East and European Union

- ➔ Buna¹ and TIPS² have done a feasibility study looking at interlinking their platforms to support processing cross-currency instant payments across different technical platforms
- ➔ Both platforms work in similar ways, including in terms of speed of execution. They also share a number of connectivity and security infrastructures provided by Swift, a messaging network widely used to transmit information and payment instructions securely.

- ➔ At the G20 Summit (Nov 2022), the banking service provider in the Philippines signed a deal with its counterparts from Indonesia, Malaysia, Singapore and Thailand to deepen cooperation on payment connectivity

- ➔ The 10 members of the Association of Southeast Asian Nations, or ASEAN, have a shared vision of a multilateral network of payment linkages across ASEAN by 2025 – they see Nexus as helping to achieve this goal.

Africa

Asia-Pacific

- ➔ The Monetary Authority of Singapore has finalised the linkage with India's Unified Payments Interface. The linkage with Malaysia's DuitNow has been delayed due to interoperability issues needing to still be resolved
- ➔ PayNow-PromptPay (Thailand), PayNow-UPI (India) and PayNow-DuitNow (Malaysia) will enable users in their respective countries to transfer funds using the recipient's mobile number

- ➔ PAPSS has a pan-African scope, aiming to cover the entire continent. It was established by African Export and Import Bank (Afreximbank) which is a public-private partnership
- ➔ Mobile Financial Solutions (MFS) Africa³, which enables PSPs (e.g., mobile money operators, money transfer operators, banks and other financial service providers) to leverage a single relationship with MFS Africa to send and receive cross-border payments to and from multiple jurisdictions via domestic or regional payment rails.

1. Buna is a cross-border payment system, supported by Arab central banks and fully owned by the Arab Monetary Fund. Buna enables financial institutions and central banks in the Arab region and beyond, to send and receive payments, in Arab currencies as well as key international currencies, in a safe, cost-effective, risk-controlled, and transparent environment.

2. TIPS is a fast payment system (FPS) for the euro among Eurosystem countries, run by the European Central Bank and is evolving from a single to a multicurrency platform

3. MFS Africa can be characterised as a payment aggregator. Payment aggregators serve as bridges between domestic or regional payment, clearing and settlement infrastructures by acting as single access points to foreign PSPs. Payment aggregators thus facilitate interoperability and enable PSPs to gain access to large payment networks at low cost. In some cases, payment aggregators also offer value added services such as currency conversion and real-time transaction monitoring, as well as front-end solutions such as apps for remittances or business portals for payroll and vendor payments

Swift gpi instant

Speed record:

41
seconds

from Singapore via Germany
to Spain

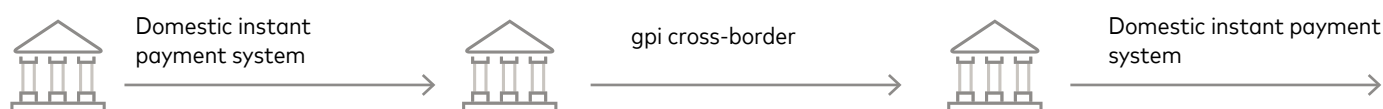
Swift gpi instant payments service combines the power of gpi with domestic real-time payment networks to make cross-border payments as fast and as seamless as domestic ones.

It enables participating banks and market infrastructures to send and receive cross-border payments in near real-time and beyond their regular hours of business. It includes information on fees and FX transparency as well as end-to-end traceability of payments.

Harnessing the globally interoperable standard of Swift gpi enables the banking community to build bridges with new markets to attract more business, investment and economic activity.

More than 55 payment market infrastructures are already exchanging gpi payments.

gpi tracker



Use case 1 – Instant international payment, between gpi banks

Use case 2 – Instant international payment, via gpi banks into domestic instant payment system

Use case 3 - Instant end-to-end payment, from one domestic instant payment system to another, via gpi banks
(For later consideration)

gpi = global payments innovation

European Union "one leg out" Instant Credit Transfer

From November 28, 2023, payment service providers (PSPs) outside the European Union will be able to benefit from SEPA Instant Credit Transfer (OCT Inst.) both incoming (from outside the E.U. to an E.U. beneficiary) and outgoing (from the E.U. to outside the E.U. beneficiary). This is part of a European Payments Council (EPC) initiative.

This will give PSPs outside the E.U. the opportunity to offer their customers a faster execution of such transactions, more up-front transparency on costs and parties involved, and a better payment status traceability.

The arrangement also permits processors, such as Clearing and Settlement Mechanisms (CSMs), to participate as an entry or exit PSP. CSMs such as EBA Clearing and The Clearing House in the U.S. are showing interest in this development, as well as country or region based CSMs, such as Iberpay.

In the future this may be extended to SEPA Credit Transfer (batch).

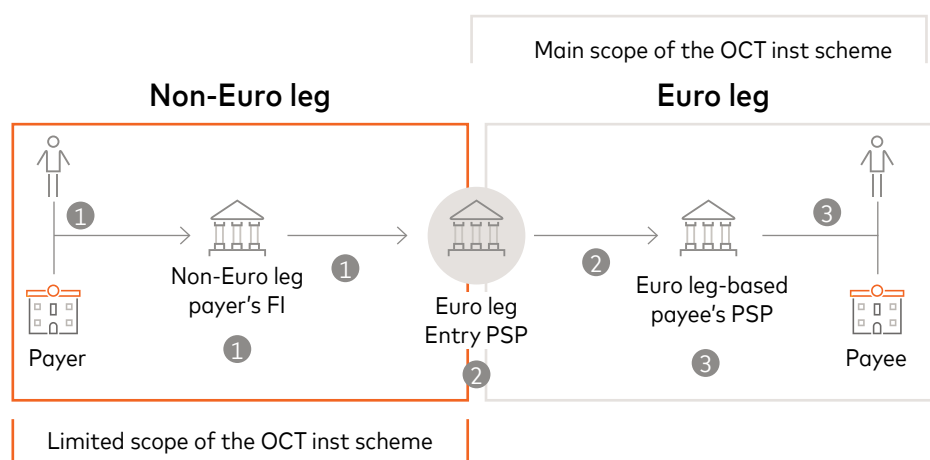


High level overview

OCT Inst works through the concept of an entry or exit payment service provider — a party that provides access to and from the market.

Within the SEPA zone the payment is in Euro, conversion from or to other currencies which could either be done by the entry or exit PSP or the payment could remain in Euro end-to-end. Any FX conversion agreement is part of a bilateral agreement.

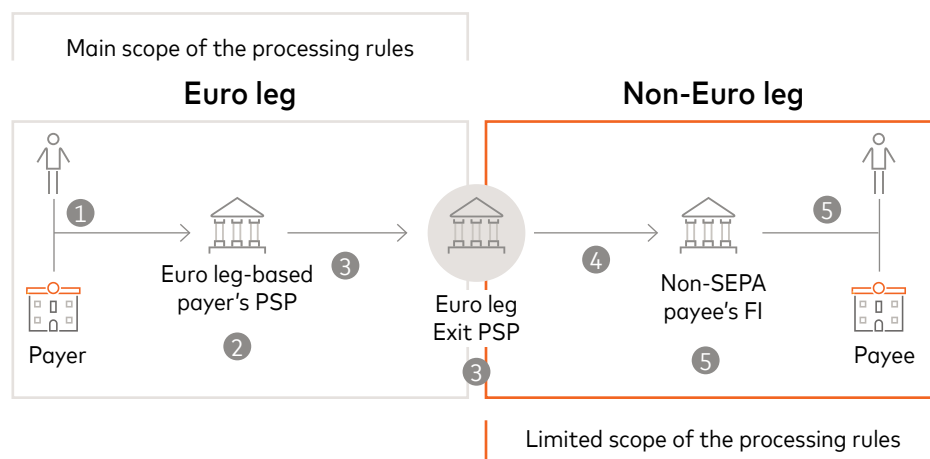
The scheme applies only the Euro leg of the transaction, covering the maximum execution timelines and deadlines for such instant payments as well as related exception handling, and also the maximum transferable amount per OCT Inst.



Step 1: the Euro leg entry PSP receives an OCT Inst transaction from the non-Euro leg payer's FI in accordance with the agreement between those two actors.

Step 2: the Euro leg entry PSP receives and instantly validates the incoming OCT Inst transaction and if successful, instantly passes on the Euro amount of this OCT Inst Transaction through the Inter-PSP Space to the Euro leg-based payee's PSP

Step 3: the Euro leg-based payee's PSP receives and instantly validates the OCT Inst Transaction for further internal processing and if successful, instantly makes the funds available on the payee's payment account. These funds may be in Euro or another currency - the conversion is outside of this scheme



Step 1: the Euro leg-based payer's PSP receives an international Euro instant payment instruction from the payer to instantly transfer funds to the payee at a non-Euro Leg Payee's FI.

Step 2: the Euro Leg-based payer's PSP decides to submit this international instant payment instruction as an OCT Inst Transaction. The Euro leg-based payer's PSP then instantly executes all processing conditions and funds availability checks and debits the payer's payment account. Currency conversion happens outside this scheme.

Step 3: the Euro leg-based payer's PSP Instantly transfers the OCT Inst transaction to the Euro leg exit PSP of its choice. The Euro leg exit PSP receives and instantly validates the outgoing OCT Inst transaction.

The Euro leg-based payer's PSP and the Euro leg exit PSP have a separate agreement in place on the concrete processing conditions of the non-Euro Leg of the OCT Inst transaction. This agreement is out of scope of the OCT scheme.

The Steps 4 and 5 concern the non-Euro Leg of an OCT Inst Transaction. The descriptions of these two steps are assumptions.

Step 4: if the validation of the outgoing OCT Inst transaction is successful, the Euro Leg Exit PSP instantly transmits this OCT Inst transaction to the non-Euro Leg Payee's FI according to the stipulations of an Instant Payment System (directly or indirectly) commonly used by both. The clearing and the settlement (as well as any currency conversion) for the non-Euro leg of the OCT Inst transaction between the Euro leg

exit PSP and the non-Euro leg payee's FI are out of scope of the scheme.

Step 5: in accordance with the stipulations of the Instant Payment System through which it received the payment, the non-Euro leg payee's FI receives and validates the OCT Inst transaction for further internal processing and if successful, instantly makes the funds available on the payee's account. The funds instantly made available may be in euro or in another currency depending on the currency of the account of the payee. Any possible currency conversion in this step is out of scope of the scheme.

Immediate Cross Border Payments (IXB)

Immediate Cross-Border Payments (IXB) aims to link together real time payment platforms through synchronizing the settlement and converting messages. It has been developed by The Clearing House (TCH¹) in the U.S, EBA Clearing (RT1²) in Europe and Swift with the aim of creating a 24/7 USD-EUR payments corridor.

Proof of concept has been successful, a pilot has been running and it is planned to be operational in 2023 but there are delays due to conflicting priorities within the U.S. banking community.

IXB approach

- Use existing mature functioning payments systems as building blocks to create cross-border offering
- Leverage existing investments
- Using existing technologies that regulators understand – help improve speed to market

IXB activities

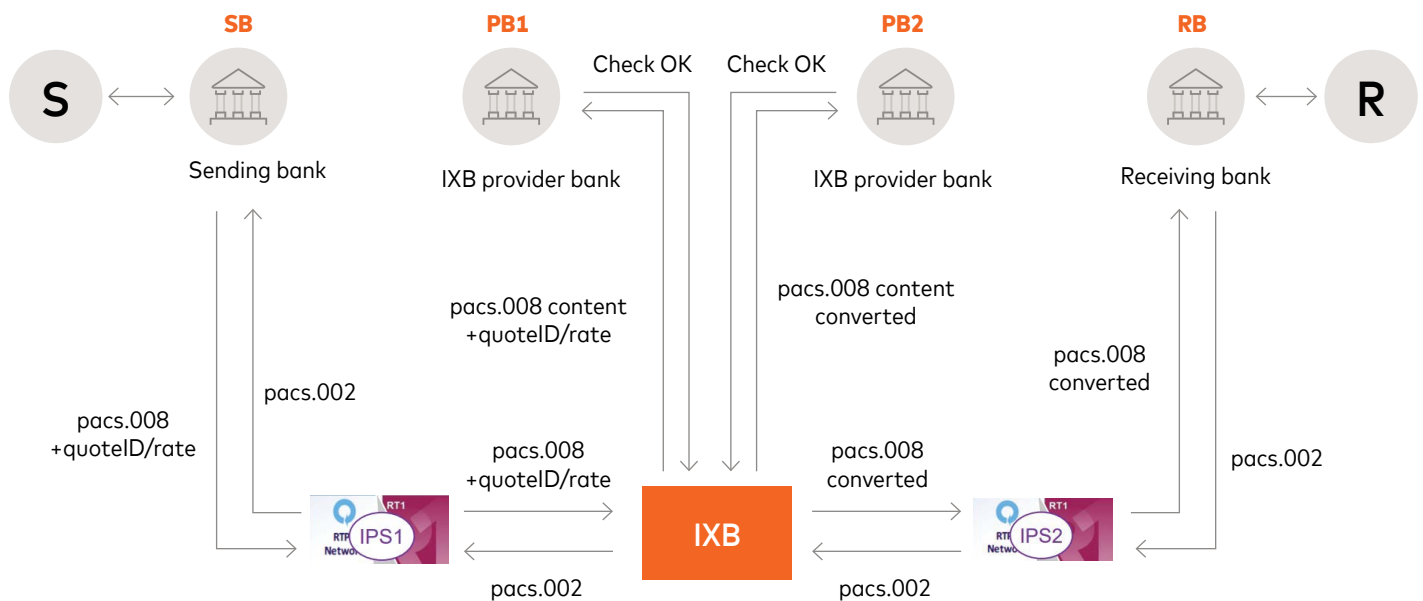
- Convert real-time messages between both systems
- Introduce the concept of synchronized settlement³
- Settle within 10 seconds 24 hours a day, seven days a week
- Converts the source currency amount based on provided FX rate



1. The Clearing House is a banking association and payments company that is owned by the largest commercial banks
2. The RT1 System is a real-time gross settlement payment system for the execution of SEPA Instant Credit Transfers (SCT Inst) at a pan-European level, run by EBA Clearing.
3. Conditionally settle the payment in the originator system until the final settlement in the destination system. At this point, the instruction in the originator system will go from conditionally settled to final settlement

High level overview

- Provider banks segregate IXB traffic from their domestic traffic, using a separate routing and account number (TCH)/BIC & IBAN (RT1).
- Provider banks maintain separate liquidity positions for IXB flows
- Provider Bank 1 provides the sending bank with an FX rate
- Sending bank informs sending customer about fees, FX rate, amount to be debited, target currency amount to be credited
- IXB payment instruction sent to Provider Bank 1 includes FX rate quote and the amount as per the IXB spec. Where this is carried in the instruction differs per IPS (instruction for the creditor agent (TCH), unstructured remittance information field (RT1))
- Partner Bank 1 validates the FX rate used and approves it
- IXB converts the source currency amount based on Partner Bank 1 FX rate

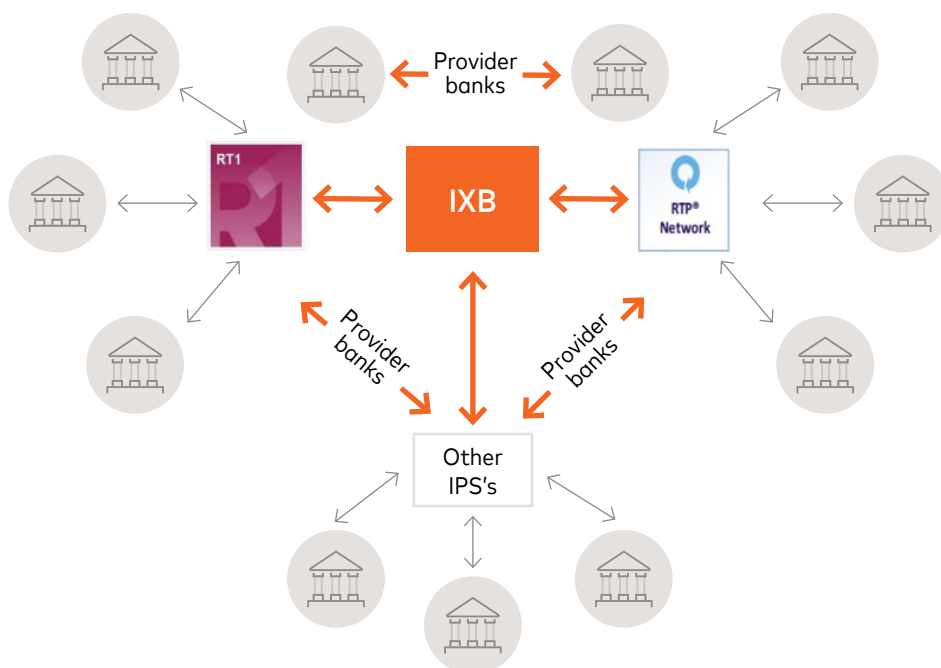


Future vision: Connecting payment systems bridged by provider banks

Potential currency corridors for near and long-term expansion are evaluated against three primary criteria:

- Current volume of payments/trade
- Compatible infrastructure and readiness
- Other factors (e.g., existing relationship with TCH/EBA Clearing/Swift, geopolitical risk)

Real-time payment systems with the most compatible infrastructure and readiness have mostly been implemented in the past decade using ISO 20022 messaging. These include Australia, Singapore, Thailand, Malaysia, Saudi Arabia and Hong Kong. Others in development with near term launch dates include Canada and Switzerland. The U.K.'s real-time service doesn't yet use ISO 20022 but meets other criteria for IXB integration.



Mojaloop

Mojaloop is open-source software for creating digital payments platforms that can be used to connect all customers, merchants, banks, and other financial providers in a country's economy. Rather than a financial product or application in itself, Mojaloop establishes a blueprint for technology that bridges all the financial products and applications in any given market.

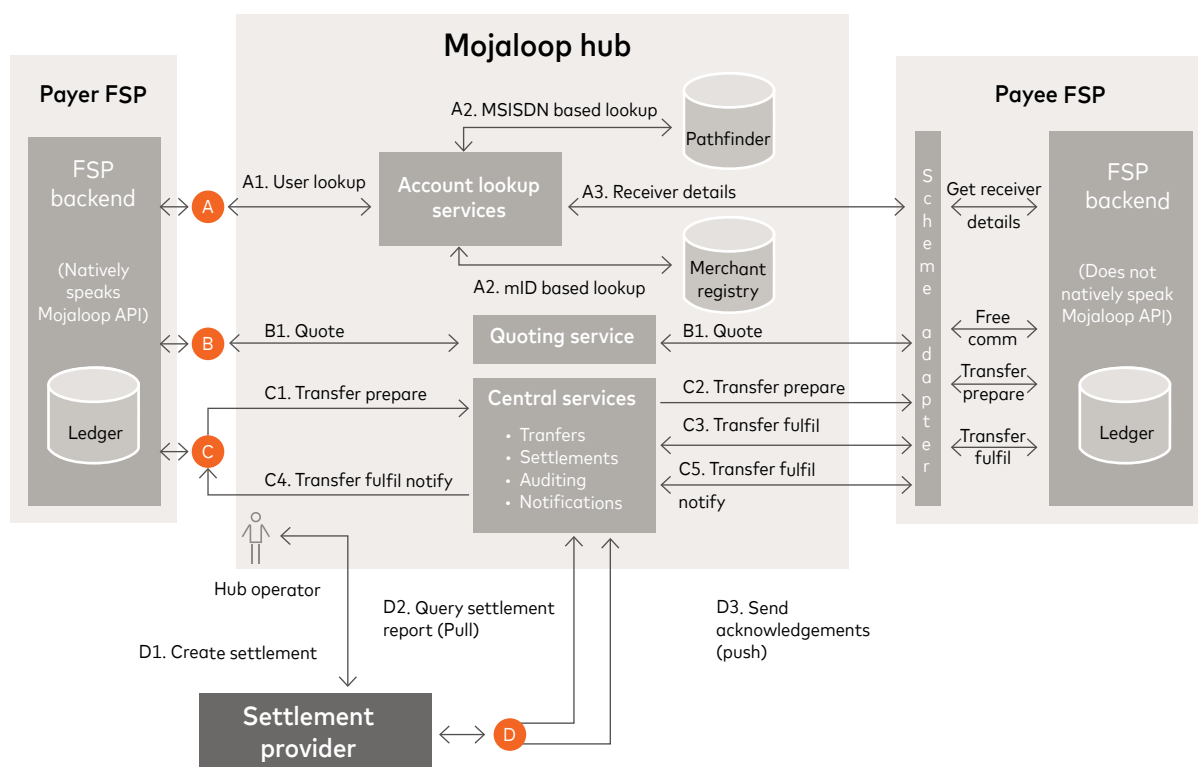
Mojaloop can be used whole, adapted or as a blueprint to build interoperable, digital payment systems that enable seamless, affordable transactions between individual users, banks, government entities, merchants, mobile network operators, providers and technology companies, helping to connect the underserved with the rest of the digital economy.

The initiative, Interoperable Payments for Financial Inclusion (IPFI), needs to be able to operate effectively when individual payments are of very low value, typically averaging less than 1 USD.

By connecting to robust cross-border settlement solutions, such as the blueprint envisioned by BIS (Nexus) this could help to facilitate use cases such as cross-border remittances, regional merchant payments settlement, and business-to-business cross-border trade more simply than is possible today.



- **Mojaloop hub** contains the core central services of mojaloop
- **Account lookup service** covers participant lookup, party lookup and manages participants registry information
- **Quoting service** calculates possible fees and commission so that a total view of all fees and commissions can be provided
- **Central services** cover the transfer of the payment, settlement, auditing and notifications. There are a number of different settlement models including net debit caps or pre-funding



Mojaloop approach

- Terms of execution are agreed upfront: amount (sending or receiving), currency, exchange rate and fees and commission
- A cryptographic lock is placed on the terms of execution. The beneficiary financial service provider knows what has been agreed
- Payment is executed once terms have been agreed
- Foreign exchange is supported
- Beneficiary financial institutions should clear funds to beneficiary on completion of the transfer
- Where settlement is deferred, the payer financial service provider needs to credit the scheme with sufficient funds to guarantee their settlement obligations.

BIS Innovation Hub

The BIS Innovation Hub (BIS IH) has provided a blueprint for a scalable cross-border payments network, Nexus, that would connect real-time payment services in multiple countries, enabling them to offer cross-border payments that reach their destination within 60 seconds.

The blueprint is intended as a starting point, to be further refined and improved through technical research and engagement with real-time payment service operators, banks and payment service providers.

Building a real-world Nexus network, gateway and scheme would require a coordinated effort with these players alongside central banks and regulators.

Existing bilateral approach

The Nexus blueprint starting point is to address the issues that are manageable when linking two real-time payment services but become quickly unmanageable when more are added. Each real-time payment service may have different:

- Data formats, standards and mandatory fields
- Processes and sequence of steps
- Scheme rules around liability, disputes, data protection, privacy etc.
- Functionality, including whether aliases are used and whether there is a confirmation of payee service

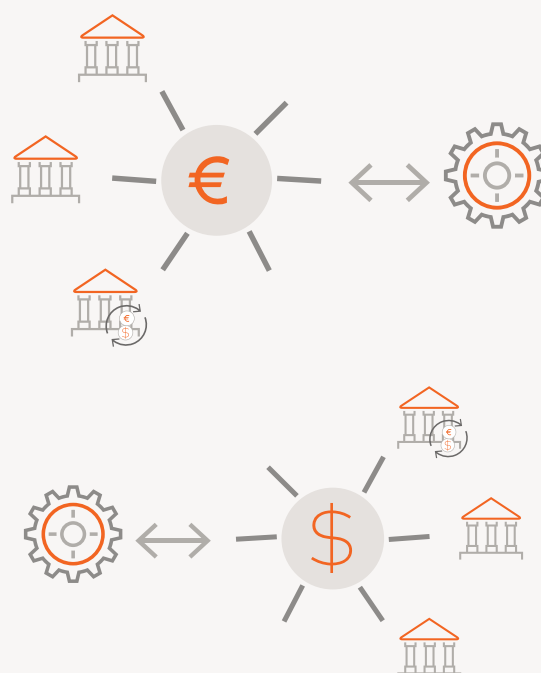


Nexus gateway approach

If each real-time payment service created its own Nexus Gateway many of the problems associated with the existing bilateral approach would be resolved.

The Gateway could handle:

- Currency conversion
- Messaging
- Pre-validation
- Coordination
- Compliance



Nexus Gateways proposal

The Nexus Scheme defines the rules and obligations for instant payment systems, banks and payment services providers who make cross-border payment – supplementing domestic instant payment system schemes.

The **Nexus Gateway** (software component) performs key functions:

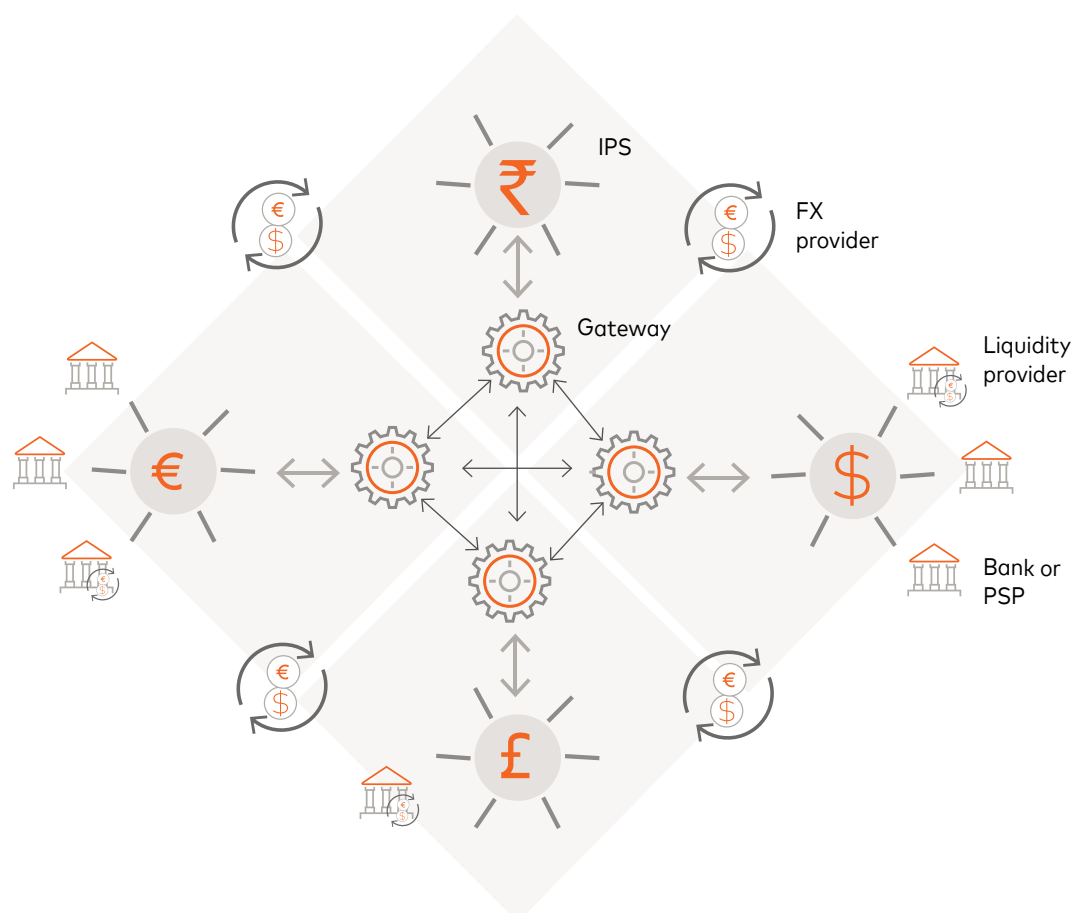
Currency conversion, coordinating with FX providers to ensure that the sender's currency is swapped for the recipient's currency

Messaging to translate between the different message formats used in different Instant Payment Systems, while ensuring that critical data is not lost in translation and transmission

Pre-validation to proactively eliminate the most common sources of delay and cost in traditional cross-border payments, before any money is moved – higher degree of certainty that the payment will go through

Co-ordination of payment across two different instant payment systems and handles any failures

Compliance to enable all banks in a payment ecosystem to request additional information about the sender or recipient if required for sanctions screenings or other compliance checks.



Summary

As a response to the perceived problems with wire transfers and the drive of institutions such as the G20, there are a number of initiatives which look to make cross-border payments faster, more transparent where costs are concerned, cheaper and to provide better access.

These initiatives include a number a bilateral or regional initiatives, in which countries have combined to provide a solution, with the move being driven by national bodies. However, linking two domestic real-time platforms raises many challenges, including aspects such as regulatory requirements (including screening and anti-money laundering), liquidity and settlement, currency conversion and harmonization of services (including messaging, legal agreements and service levels, operational processes and exception handling and security standards and framework). In addition, without addressing the messaging standard, through ISO 20022 harmonization, achieving interoperability is a challenge.

Other initiatives address some of these challenges but raise other concerns. Many still rely heavily on aspects of correspondent banking to be able to operate successfully. Others have a high overhead in terms of new infrastructure needing to be built.

The initiatives outlined in this document, along with how they address the potential challenges, will be explored in more detail in a later publication.



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