

# Implementation Considerations for Fast Payment Systems

June 2021



Ministry of Foreign Affairs of the  
Netherlands

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Washington DC 20433  
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## Acknowledgements

The lead authors of the paper are Balakrishnan Mahadevan (Payments Consultant), Holti Banka (Financial Sector Specialist, World Bank) and Nilima Ramteke (Senior Financial Sector Specialist, World Bank). The team is grateful to Peter Møller Jensen (Legal Consultant, World Bank) and Ivan Mortimer-Schutts (Senior Operations Officer, IFC) for their inputs. Overall guidance was provided by Harish Natarajan (Lead, World Bank).

This paper would not have been possible without the generous support of the Ministry of Foreign Affairs of the Kingdom of the Netherlands and the Bill and Melinda Gates Foundation. The support is provided through the Financial Inclusion Support Framework program.

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## 1. Setting the Context

The World Bank (WB) has been monitoring closely the developments of Fast Payment Systems (FPS) by central banks and private players across the globe.<sup>1</sup> This comprehensive study of FPS implementations across the world has resulted in the design of a policy toolkit on the implementation of FPS, in order to guide countries and regions on the likely alternatives and models that could assist them in their policy and implementation choices when they embark on their respective FPS journeys. The FPS Toolkit can be found at [fastpayments.worldbank.org](http://fastpayments.worldbank.org) and consists of the below components:

- Main report entitled: Considerations and Lessons for the Development and Implementation of Fast Payment Systems.
- A set of country case studies that have already implemented fast payments.
- A set of short focus notes on specific technical topics related to fast payments.

This Note is part of the third component of the Toolkit and aims to provide inputs on several critical implementation aspects of FPS such as infrastructure, settlement, ownership, legal/regulatory, oversight, among other.

## 2. Background

Retail payment markets are changing rapidly due to a number of factors such as new technologies, evolving domestic market demand (i.e. use cases and overlay services), the need for fast and efficient cross-border payments, the need for interoperability among payment service providers, the need to reduce cash usage and cash dependency, and the need to ensure broader access to digital financial services (i.e.

financial inclusion).<sup>2</sup> In addition, central banks are increasingly playing a more prominent role in retail payments, including as operators of retail payment systems. The digital economy is evolving and is changing both the supply and demand side in relation to growing expectations. Several countries face the dilemma of how to deal with legacy retail payment systems as well as the challenge of defining the particular needs and requirements for retail payment system modernization and concrete steps toward meeting those needs.

The widespread implementation of Real Time Gross Settlement (RTGS) systems in the 1990s and early 2000s has been considered a critical point in the evolution process of payment systems. RTGS systems are viewed as a backbone of national payment systems – even though RTGS primarily process large value payments, in principle they can process any value payments including, retail payments. In terms of purely retail payment systems, the development of Automated Clearing Houses (ACHs) for direct debit and credit transfer processing, and card switches for debit and credit card processing, marked the initial development of the domestic and cross-border retail payment markets. The majority of such payment networks are mainly owned by commercial banks (in some cases central banks) that are also participants in these systems, with the notable exceptions of the international payment card majors. In many countries, there was - and often still is - more than one retail payment system, serving different groups of banks and/or different user segments and payment needs.

Different objectives, policy and/or business, are often articulated as driving the decision behind fast payment system implementation.<sup>3</sup> Some of those include achieving general efficiencies, having new functionalities, allowing broader

access, improving security, and achieving interoperability. The World Bank has formulated several general policy principles which are also relevant for retail payment systems.<sup>4</sup>

- Ensuring operations of a safe and efficient payment and settlement system and expanding the coverage in a cost-efficient way
- Ensuring full interoperability of all payment services including, card payments and mobile payments
- Adopting widely accepted international standards for technical infrastructure
- Settling domestic transactions in domestic currency and in a safe and efficient settlement system – in general the Real Time

Gross Settlement (RTGS) system operated by the central bank

- Promoting wide adoption of electronic payment mechanisms – which often translates into ensuring an appropriate level of pricing to achieve balance between right incentives for payment service providers and efficient service for consumers.
- Processing arrangements for all payment services in the country should be in the full oversight of the payment system overseer – often the national central bank

As part of the new types of retail payment systems, the emergence of fast payments over the last 10 years in particular, has been prominent around the world.

Figure 1. Fast Payments Emergence Across Time



Source: World Bank

Fast payments have supported innovation in the wider payment landscape. They have enabled completion of time-sensitive payments quickly and with finality, thereby increasing end-user confidence in digital payment methods. Immediate transfer of payment tends to give fast payments a near-cash-type characteristic, thereby increasing consumer confidence in it as a mode of payment, in particular for small value retail payments. To facilitate a near-cash,

seamless experience for all types of users, focus has increased on the interoperability of payment systems and types. Technical innovations have helped support interoperability. In many countries, third-party service providers have used the fast payments infrastructure to design and provide innovative payment solutions to the end customers. They have provided the basis for service enhancements and value-added services. Emerging economies have used the fast payments

infrastructure to transfer subsidy and welfare payments in real time, resulting in reduced transfer costs and losses and improved social indicators. Online payments have equipped operators and participants with data and analytical tools that allow them to understand payment patterns and offer innovative, customized solutions.

The COVID-19 pandemic has also highlighted the growing relevance of fast payments. Countries that have implemented fast payments have seen a surge in adoption and usage. For example, Thailand's PromptPay system has become quite popular among the masses for safe, secure, and convenient transactions. It has also been used by the government to provide relief measures to the citizens. In India, the National Payments Corporation of India launched a fast payment system, Unified Payment Interface (UPI) in August 2016. Between March and August 2020, UPI processed transactions amounting to almost one-third of the total amount transacted on UPI since its launch. In Kenya, the central bank mandated that all participants waive transactions charges for its fast payment system, PesaLink, for the first three months of the COVID-19 pandemic.

When it comes to the implementation of fast payment systems, jurisdictions have chosen different paths. Some jurisdictions have upgraded legacy systems to accommodate new capabilities while others have chosen to build entirely new stand-alone systems.<sup>5</sup> In the former case, the focus has mainly been on technical infrastructure and platform modernization of existing systems, while in the latter case additional aspects such as ownership, governance and operation have also been of importance.

Modernization efforts of retail payment systems, including fast payment implementations, are

often part of national payment strategies for stakeholder readiness and buyin. The growing market needs for the capabilities that a fast payment system offers has been a sufficient motivator for central banks and private sector actors to move ahead with the modernization of their retail payment system (in this case implementing a fast payment system). The main dilemma has not been if modernization should occur but rather if it should be based on upgrading existing payment systems (e.g. RTGS, ACH, card switch, e-money switch) and converting it into a full-fledged fast payment system or creating a dedicated new fast payment system which stands on its own as both these approaches have been seen successfully implemented across multiple countries.

Eight overarching objectives are presented in terms of retail payment system modernization (including fast payment system implementation) and a list of potential outcomes attached to each objective (Figure 2). Depending on the country context, not all objectives and/ or reasons listed might be applicable to a country that is implementing a fast payment system. It is up to the central bank (as a regulator, catalyst and system operator, where applicable), payment service providers (PSPs), payment system operators (PSOs), and other relevant stakeholders to identify as a first step the priorities and objectives that would necessitate the implementation process. Moreover, it is worth emphasizing that even though implementation of fast payments might be a necessary condition to achieve the identified objective(s), it might not necessarily be sufficient in that other types of parallel interventions might be needed (e.g. legal/regulatory, financial education).

Figure 2. List of Overarching Objectives for Decision Making and Desired Outcomes Driving Introduction of Fast payments



Source: World Bank



### 3. An Empirical Framework for Fast Payment System Implementation

In addition to examining the policy and/ or business objectives (which is more of a qualitative framework) to determine the path forward, a basic quantitative framework presented below can be a starting point. The framework, developed by Balakrishnan (2016),<sup>6</sup> using quantitative metrics, allows authorities to determine whether they should proceed with modernizing their payment system, and if yes, if they should upgrade a legacy system or build a new one. While the framework focuses on fast payment systems (in the framework referred to as real time retail payment system), in principle the logic could also be extended to other types of retail payment systems. An enhancement to the framework developed by Natarajan and Balakrishnan (2020)<sup>7</sup> provided additional implementation considerations on messaging standards, and settlement models.

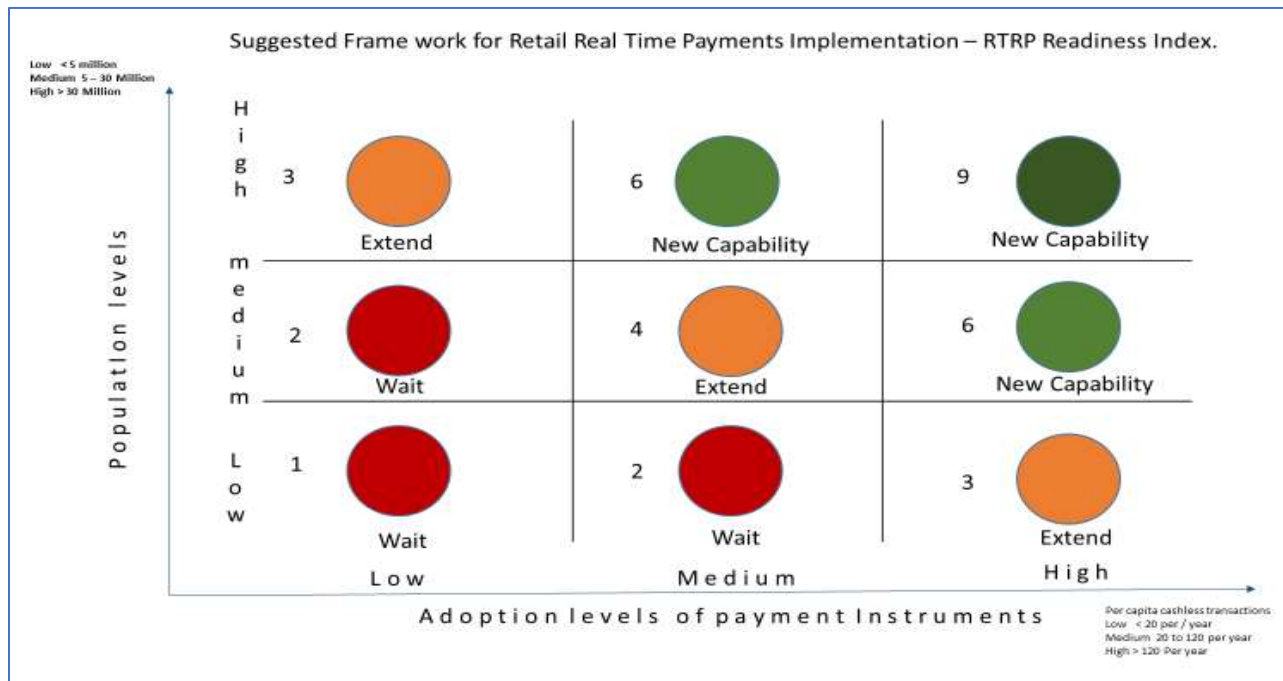
The framework has two components. The first component is the construction of real-time retail payment (RT-RP) readiness index (Figure 3) and the second component consists of a decision tree based on the readiness index (Figure 4). The readiness index for a country is constructed taking into consideration the current level of penetration / adoption of digital payments by using the per capita cashless transactions as a proxy for this purpose and the population in the country. The population of the country and the current level of digital payments usage would provide the potential for a country for digital payments in the coming years. The readiness index would measure that as high, medium, and low. Then, the second component, a decision tree based on the readiness index, provides the

options / choices of implementation for a given country with a given readiness index.

The readiness index is computed by making use of a 3 X 3 matrix and by placing the population levels and digital payment adoption levels (using the per capita cashless transactions) in two axes for a country to get a readiness index score between 1 and 9. The population of the country is taken as low if it is < 5 million; medium if it is between 5 million and 30 million; and high if it is > 30 million. With respect to adoption levels of digital payments, this is taken as low if the per capita cashless transactions in the country < 20; medium if the per capita cashless transactions are between 20 and 120 and high if the per capita cashless transactions are > 120. *(It may be noted that while the population levels are classified by World Bank as indicated, the digital payment adoption levels are calculated by arranging the per capita cashless transactions in an ascending order and by dividing them into three equal buckets. World Bank Global Payment Systems Survey (GPSS) data was used for per capita cashless transactions.)*<sup>8</sup>

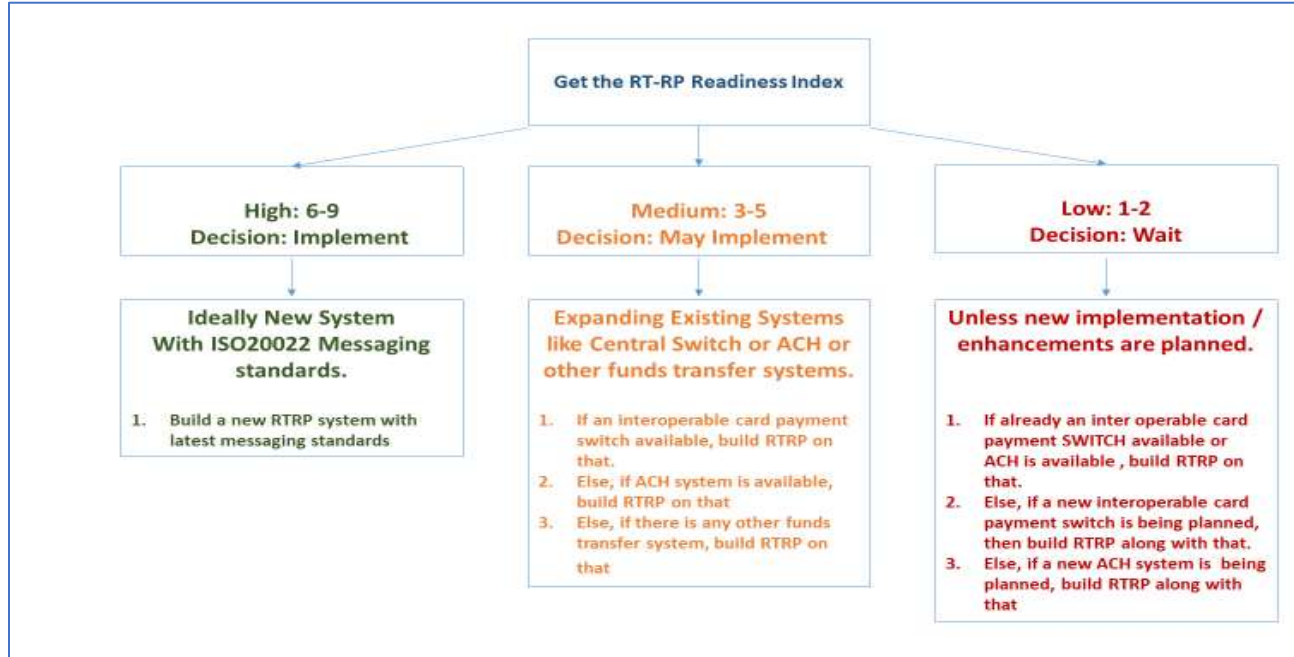
The readiness index could be high (values 6,9), medium (values 3,4) or low (1,2) for each of the countries depending on which grid they fall into on the two parameters. A country that is high in population and high on digital payment adoption level would achieve a score of 9, and a country that is low in population and low on adoption levels would score 1, with other countries falling in between. A high score on readiness index indicates that the country has the required financial infrastructure and hence the potential for fast payments are also high. A lower score on the index is perhaps an indication of rather low levels of financial infrastructure in the country and hence low potential for fast payments, and a medium score is perhaps an indication of relatively better levels of financial infrastructure and hence medium potential for fast payments.

Figure 3. Readiness Index



Source: Balakrishnan (2016)

Figure 4. Decision Making Tree



Source: Balakrishnan (2016)

## 4. Evaluation of Implementations Against the Framework

The robustness of this framework for decision making on fast payment system can be tested by looking at some of the countries that have already implemented fast payments. By placing those countries in this framework and looking the decisions they have taken and how they have implemented (i.e., new, or expand existing system or wait / implement fast payments along with other new system implementation), one can obtain a clear picture about the robustness of this framework.

### 4.1 Examples of high readiness index countries

The countries with medium readiness index (scores of 3,4) have population between 5 million and 30 million and per capita cashless transactions between 20 and 120. Such countries have the potential for implementing a fast payment system by upgrading an existing legacy system.

**Australia:** It implemented a new fast payment system (NPP) in 2018. Australia has medium population and a high per capita cashless transaction, giving a medium score in RT-RP readiness index. The RT-RP implementation framework suggests Australia should ideally implement a fast payment system as a new system.

**Hong Kong SAR, China:** It implemented a new fast payment system (FPS) in 2018. Hong Kong SAR, China has a medium population and a high per capita cashless transaction giving a high score in RT-RP readiness index. The RT-RP implementation framework suggests Hong Kong SAR, China should

ideally implement a fast payment system as a new system.

**Malaysia:** It implemented a new fast payment system (RPP) in 2018. Malaysia has a high population and medium per capita cashless transaction giving them a high score in RT-RP readiness index. The RT-RP implementation framework suggests Malaysia should ideally implement a fast payment system as a new system.

**Mexico:** It implemented a fast payment system (SPEI) in 2004 with restricted business hours and converted it into a full-fledged fast payment system by making it 24\*7\*365 in 2015. Mexico has a high population and medium per capita cashless transaction, giving a high score in the RT-RP readiness index. Mexico could have gone ahead and implemented a new system for fast payments as the RT-RP implementation framework suggests. However, Mexico chose to implement the fast payment capability as part of its legacy large value payment system and implemented a combined system that would have RTGS capabilities as well as fast payment capabilities. By doing so, Mexico ensured that the country could reuse many of the existing capabilities to provide them with the much-needed economies of scale and scope.

**Poland:** It implemented a new fast payment system (Express Elixir) in 2012. Poland has a high population and a medium per capita cashless transaction, giving them a high score on the RT-RP readiness index. The RT-RP implementation framework suggests Poland should implement a fast payment system as a new system.

**Thailand:** It implemented a new fast payment system (PromptPay) in 2016. Thailand has a high population and a medium per capita cashless transaction, giving them a high score in RT-RP readiness index. The RT-RP implementation framework suggests Thailand should ideally

implement a fast payment system as a new system.

**USA:** It implemented a new fast payment system (RTP) in 2017. USA has a high population and a high per capita cashless transaction, giving a high score in RT-RP readiness index. The RT-RP implementation framework suggests USA should ideally implement a fast payment system as a new system. Another new fast payment system (FedNow) is expected to be launched soon by the Fed in the country.

## 4.2 Examples of high readiness index countries

The countries with medium readiness index (scores of 3,4) have population between 5 million and 30 million and per capita cashless transactions between 20 and 120. Such countries have the potential for implementing a fast payment system by upgrading an existing legacy system.

**India:** It implemented its first fast payment system (IMPS) in 2010. India has a high population and a low per capita cashless transaction, giving a medium score on RT-RP readiness index. The RT-RP implementation framework suggests India should implement the fast payment system by upgrading one of its legacy systems. The IMPS solution in India was indeed built on top of the National Financial Switch – the inter operable ATM transaction switch – using the ISO8583 message format. IMPS leveraged existing system, the connectivity, message formats to implement a highly cost-effective solution for the country and achieved economies of scale and scope. This was followed by UPI, another (new) fast payment implementation, which was motivated by mobile phone penetration in the country and a clear articulation of a future vision for payments. Both IMPS and UPI co-exist and are growing.

**Kenya:** It implemented its fast payment system (PesaLink) in 2017. Kenya has a high population and low per capita cashless transaction, giving them a medium score on RT-RP readiness index. The RT-RP implementation framework suggests Kenya should implement the fast payment system by upgrading one of its legacy systems. Kenya implemented PesaLink on top of their existing inter operable card switch to which most of the banks were connected. This provided Kenya economies of scale and scope and an efficient solution that makes use of many of the existing features.

## 4.3 Examples of low readiness index countries

The countries with medium readiness index (scores of 1,2) have population < 5 million and per capita cashless transactions < 20. Such countries would typically need to wait for further development of the market before implementing a fast payment system according to the framework.

**Albania:** It is yet to implement a fast payment system. Albania has a low population as well as low per capita cashless transaction, giving a low score in the RT-RP readiness index. The RT-RP implementation framework suggests Albania wait for the implementation of the fast payment system. A new fast payment system could turn out to be relatively expensive for the country given the low population and the current low levels of digital payments usage as the number of possible transactions may not be sufficient to cover the operating expenses. Therefore, if Albania identifies the need for a fast payment system to further the digital payments in the country, it might consider extending and upgrading its ACH system, which is already supporting credit transfers.

**Bahrain:** It implemented its fast payment system (FAWRI+) in 2015. Bahrain has a low population and medium per capita cashless transaction, giving it a low score on the RT-RT readiness index. The RT-

RP implementation framework suggests that Bahrain should ideally wait to implement a new fast payment system, unless there is already a plan to implement any other payment system in the country, and in which case, the implementation of the fast payment system could be done along with that implementation. Bahrain had already implemented an International Bank Account Number (IBAN) in 2012 and was planning an implementation of a batch file based electronic funds transfer system FAWRI through Bahrain Electronic Network for Financial Transactions (BENEFIT) company. Therefore, as the framework suggests, the fast payment capability was added to the same system. Thus, the batch based electronic funds transfer system FAWRI and the fast payment capability, FAWRI+, got implemented together in 2015. As a matter of fact, the same system also has a third component, FAWATEER, a digital bill payment feature. This provides Bahrain economies of scale and scope and efficiency of the payment systems.

**Belize:** It implemented its fast payment system (IFT) in 2016. Belize has a low population and a low per capita cashless transaction, giving a low score on the RT-RP readiness index. The RT-RP implementation framework suggests that Belize should wait for a fast payment system implementation unless there is already a plan to implement any other payment system in the country, and in which case, the implementation of the fast payment system could be done along with that implementation. In 2014, Belize was planning the implementation of an Automatic Transfer System (ATS) covering RTGS, image-based cheque clearing as well as a batch-based credit transfers and direct debits. The implementers reviewed the decision and decided to add a fast payment capability also along with other capabilities, and eventually implemented an ATS+ (ATS plus fast payment capability) in 2016. This approach not only provided a fast payment system for the country, but also provided economies of scale and

scope. Now in Belize, one single system provides RTGS, image-based cheque clearing, ACH and fast payments in a cost-efficient way.

## 5. Considerations Regarding Messaging Standards

Fast payment systems typically make use of messaging standards such as ISO 20022, ISO 8583 and proprietary message standards. The decision on messaging standards is based on several considerations such as use cases being considered, cost of implementation, interoperability, among other.

While in majority of cases, the decision to use an underlying system (such as ATM switch or ACH or other Credit Transfer System) may automatically determine the messaging standards, this consideration is more relevant if a new system is being built for fast payments. While the use of ISO 20022 messaging standard could be appropriate and future-proof, countries should consider offering some flexibility in the messaging formats for participating institutions. While the new system could be completely run using ISO 20022 message formats internally, providing the options for financial institutions to send/receive in ISO 8583 format or any native or ACH formats used in the country could be of help. As part of a new system, countries could build message conversion functionality to convert ISO 8583 or ACH or native formats to ISO 20022 and vice versa based on mapping, so long as the other messaging format has enough data to cover the minimum requirements for ISO 20022 messaging (for example PromptPay in Thailand). If the capability is there, then institutions can join the scheme with their existing messaging formats as they can send and receive the message in those formats. Over a period, when they must move to ISO 20022 for other systems, they could migrate their fast payment systems as well. Such an approach would

also reduce the learning curve for participating institutions and would also reduce the implementation timelines and perhaps even the complexity of fast payment system implementation.

Table 1 provides details of the messaging standards used by select countries that have implemented fast payment systems.

**Table 1. Messaging Standards Adopted in Select Fast Payment Systems**

Country/Jurisdiction	System name	Method of implementation	Message standards
Australia	NPP	New system	ISO20022
Bahrain	FAWRI+	New system	ISO20022
Chile	TEF	New system	ISO8583
China	IBPS	New system	ISO20022
European Union	SEPA Instant	New system	ISO20022
Hong Kong SAR, China	Faster Payment System	New system	ISO20022
Kenya	PesaLink	Upgraded legacy system	ISO8583
Malaysia	Real time Payment Platform (RPP)	New system	ISO20022
Mexico	SPEI	Upgraded legacy system	Proprietary
Nigeria	Instant payment	New system	Proprietary
Poland	Elixir	New system	ISO 20022
Thailand	PromptPay	New system	ISO20022/ISO8583
UK	FPS	Upgraded legacy system	ISO8583
USA	RTP	New system	ISO20022

Source: World Bank

## 6. Considerations Regarding Settlement Options

The CPMI 2016 publication on Fast Payments<sup>9</sup> describes two settlement models for system participants: (1) deferred - net settlement (DNS) and (2) real-time gross settlement (RTGS). In the first model, the settlement between the payment service providers is conducted on a deferred net settlement basis. In most cases, there is more than one settlement cycle per day and in many instances, there are risk mitigation measures like net debit caps which may also be collateralized, partially or fully. It must nevertheless be noted that for the end recipient, funds clear instantly,

and the deferred settlement is only for the settlement between the service providers. In the latter model (i.e., real-time settlement model), the settlement among service providers is conducted at the same time of the successful processing of the transaction. In this mode, transactions are settled in real time and on a gross basis. In both cases, the settlement could be carried out in central bank or commercial bank money. Thailand’s PromptPay, India’s IMPS and UPI, Malaysia’s RPP, Kenya’s PesaLink, Bahrain’s FAWRI+ are examples of fast payment systems using the deferred net settlement model. Australia’s NPP, China’s IBPS are examples fast system using the real time settlement mode. Mexico’s SPEI is a hybrid model where deferred net

settlement is done every 3 seconds of when 300 transactions are in the queue. USA's RTP achieves the real time settlement by making use of the joint account concept. In all these examples, the settlement is in central bank money.

Conceptually, in the RT-RP implementation framework discussed earlier, the 'extend' paradigm is for extending / upgrading the services of an existing system to also offer fast payments capability. In this regard, the extension/upgrade of services need not change the existing settlement model of the underlying system. For example, if the system being extended is an ACH or payment card system — then going with the first settlement model (i.e., DNS) is considered; if the system being extended is a large value real time gross settlement (RTGS) - like system then going with the second settlement model (i.e., RTGS) is considered; and if a completely new system is being planned, evaluation of both options is considered. Where net settlement options are used, given that the funds are made available to end users immediately, additional risk mitigations measure such as a net debit cap that is fully or partially collateralized are also observed in many countries.

While the decision on settlement models will depend on the intensity of usage and scale of adoption of payment services in general, it would also depend on other aspects such as the availability of liquidity tools for market participants to track and the feasibility of real-time linkage with the country's large value payment system or the equivalent. In the absence of robust liquidity tools like inter-bank markets or collateralized overnight facilities, using the second model could pose liquidity risks and potentially also impact market confidence. The other aspect to consider is the scalability of an existing large value payment system and its ability to handle the larger volume of retail transactions that will come through for

settlement. Of late, many countries are thinking in terms of making their large value RTGS system available 24\*7<sup>10</sup> for a variety of needs, including to facilitate fast payment settlements, more frequent settlement of net payment obligation files during normal days and during the weekend, and to reduce the risks.

In addition, generally, while the retail payment transactions volume tends to be large, the value may not be as high in comparison with the values that get settled in a large value payment system. Indeed, many of the retail payment net settlements are done on a large value payment system in line with the Principles for Financial Market Infrastructures (PFMIs). Therefore, one must also consider at what level of value will a retail system become systemically important and will transactions have to settle on a real-time basis. It may also be noted that the DNS mode has been the norm for settling existing retail payments till the advent of fast payments.

## 7. Ownership Considerations

A key aspect of fast payment system implementation is the decision on the ownership of the implementation and operations of the system on an on-going basis. Country examples are provided first to get a perspective on the different kinds of ownership approaches adopted in implementing and operating fast payment systems and then a broader categorization is provided.

### 7.1 Examples of central bank ownership

**Belize:** The Central Bank of Belize implemented its fast payment system along with the Automatic Transfer System, resulting in an ATS+ system. The ownership and operation of the ATS+ lies with the Central Bank of Belize.

**Bhutan:** The Royal Monetary Authority (RMA) of Bhutan has been operating all of the country's payment infrastructures, including the inter operable Bhutan National Switch. Therefore, RMA decided to implement the fast payment system for Bhutan – Bhutan Instant Payment Service – by upgrading the Bhutan National Switch. Since Bhutan National Switch was already owned and operated by RMA, the fast payment system built on top of it is also owned and operated by RMA.

**Mexico:** The fast payment system (SPEI) was built on top of the RTGS system operated by the central bank. Therefore, the ownership and operation of fast payment system lies with Banco De Mexico – the central bank of Mexico.

## 7.2 Examples of private sector ownership

**Bahrain:** The Bahrain fast payment system (FAWRI+) was implemented by the Bahrain Electronic Network for Financial Transactions (BENEFIT). BENEFIT company was formed by 17 banks in the country back in 1997 as a national ATM and POS switch of Bahrain. The Central Bank of Bahrain (CBB) also licensed BENEFIT to be 'the provider of ancillary services for the financial sector'. BENEFIT's range of services include the operation of Automated Teller Machines (ATM), Point of Sale (POS), Bahrain Credit Reference Bureau (BCRB), Electronic Fund Transfer System (EFTS), Telecom Bill Payment (Tele BP), Payment Gateway (PG), Bahrain Cheque Truncation System (BCTS), BenefitPay as a national e-wallet across Bahrain and Know Your Customer Electronically (EKYC). As of now, because of mergers / acquisitions, 13 banks in the country are the shareholders of the company.

**India:** India National Payment Corporation of India (NPCI) owns and operates the fast payment systems – both IMPS and UPI. NPCI, a not-for-profit company, when setup, was owned by 10 large

commercial banks in the country. The shareholding has subsequently been made more widespread with many more banks and non-banks that are part of the payment ecosystem now having shareholding in NPCI. NPCI remains a not-for-profit company.

**Kenya:** The fast payment system (PesaLink) in Kenya has been implemented and operated by Integrated Payments Service Limited (IPSL), Kenya. IPSL was established by the Kenya Bankers Association (KBA) in 2012 as a wholly owned limited liability company of KBA under the National Payment Systems Act to address the challenge of integrating retail payments in the country. The shareholders of IPSL are the commercial banks in the country.

**Thailand:** The fast payment system in Thailand (PromptPay) has been implemented and operated by the National Inter Bank Transaction Management Exchange (NITMX). The Company was founded under the name ATM Pool Company Limited in 1993 and was renamed 'National Interbank Transaction Management and Exchange (ITMX) Company Limited' in July 2005 in order to expand and extend the Company's business scope as per Bank of Thailand Strategic Payment Roadmap. NITMX is set up to be the key inter-bank payment infrastructure and central data processing operator that exchanges, manages, and processes data across member banks/organizations to support e-payments. The shareholders of National ITMX are major domestic commercial banks in Thailand.

**USA:** The fast payment system (RTP) implementation and operation in the US has been under The Clearing House (TCH). TCH is a banking association and payments company that is owned by some of the largest commercial banks in the country. While the TCH is owned by large commercial banks in the country, non-owner banks also participate in the various payment



schemes managed and operated by the TCH. TCH owns and operates core payments infrastructures in the US, and it is the only private sector ACH and wire operator in the United States. It may be noted that the second fast payment system implementation in the USA – FedNow- is spearheaded by the Federal Reserve with an implementation timeline of 2023. FedNow will be owned and operated by Federal Reserve.

### 7.3 Examples of central bank and private sector co-ownership (hybrid)

**Australia:** The fast payment system (NPP) in Australia was implemented and operated by NPP Australia. NPPA was formed in 2014 as a separate company and 13 financial institutions in Australia are the shareholders of NPPA. The Reserve Bank of Australia is also a shareholder in NPP. Most non-central bank implementations do not mandate the shareholding in the operating company to participate in the fast payment scheme. However, in Australia, the organizations that wish to connect directly to NPP to clear and settle payments are required to join NPP Australia Limited as a shareholder.

**Hong Kong SAR, China:** The fast payment system (FPS) in Hong Kong was developed jointly by the Hong Kong Monetary Authority & Hong Kong Interbank Clearing Limited (HKICL). HKICL was entrusted with the responsibility to operate the system in the country. HKICL was established in 1997 as a private company jointly owned by the HKMA and the Hong Kong Association of Banks (HKAB). HKICL provides interbank clearing and settlement service to all banks in Hong Kong.

**Malaysia:** The fast payment system (RPP) in Malaysia has been implemented and operated by PayNet. PayNet, the operator of shared payment infrastructures was formed by a

merger of MEPS (Malaysian Electronic Payment System) - an interbank network service provider in Malaysia, and MyClear (Malaysian Electronic Clearing Corporation Sdn Bhd) - a wholly owned subsidiary of Bank Negara Malaysia. Bank Negara Malaysia (BNM), the Malaysian Central Bank, is PayNet's single largest shareholder, with 11 other Malaysian's financial institutions as joint shareholders.

**Nigeria:** The fast payment system is owned and operated by the Nigeria Inter Bank Settlement System (NIBSS). NIBSS is a key financial infrastructure provider to the banking sector in Nigeria providing various services relating to the operations of payment systems. NIBSS is jointly owned by all licensed banks and the Central Bank of Nigeria.

**Poland:** The fast payment in Poland (Express Elixir) has been implemented and operated by Krajowa Izba Rozliczeniowa S.A. (KIR) which is a key infrastructure institution of the Polish banking sector, providing clearing and settlement services. KIR is a company in the private sector owned by the major banks in the country. The Polish Central Bank Narodowy Bank Polski (NBP) has a significant shareholding in the company<sup>11</sup>.

### 7.4 Ownership structures and correlation with readiness index

An analysis of several select countries (as shown above) indicates that ownership of fast payments has taken different forms in different countries. Ownership could be broadly categorized in three ways: central bank ownership; private sector<sup>12</sup> ownership; hybrid ownership (co-ownership between central bank and the private sector).

There is a correlation between the RT-RP readiness index and ownership of fast payment systems. In countries with low RT-RP readiness score, generally central banks taking the role of

implementation and operation is observed (Belize, Bhutan are examples) and in countries where RT-TP readiness index is medium or high, the preference seems to be of private sector ownership (Australia, India, Kenya, Malaysia, Nigeria, Poland, Thailand and USA are examples).

The decision on ownership of implementation and continued operations also depends on the method of implementation. If the fast payment is implemented on top of an existing system, generally the owner of the same system also owns the payment system implementation and operation. If it is a new system and there is already a private sector firm, other than central bank, running any retail payment system, then the choice becomes easier to use that entity to implement and operate the fast payment system. Only when one of these conditions are not met, the real ownership question would need to be addressed.

## 8. Other Considerations

It is important that both, the private sector and the central bank (in its different roles as regulator, overseer, catalyst, operator) work together to ensure the efficiency and safety of retail payment systems, including in the case of fast payment system implementations. The outcome should be aiming to: (a) ensure a thorough and inclusive implementation process; (b) foster innovation (c) establish effective oversight; (d) support the development of effective standards and infrastructure arrangements; (e) provide central bank services in the manner most effective for the market<sup>13</sup>.

### **a. Ensure a thorough and inclusive implementation process**

- i. There needs to be a strategic approach that defines the vision for the national payment system and sets clear priorities,*

*based on the needs of users and the capabilities of the economy.*

- ii. The process should be inclusive and stakeholders and their roles from the conceptualization of the design of the system should be defined.*
- iii. The plan should consider which elements of the existing system can be an avenue for future development.*
- iv. The implementation process should be considered as a critical part of the plan. This involves commitment of all stakeholders, project governance, defining the deliverables and milestones, resources and financing strategy, and a rollout strategy. This to be coupled with effective oversight of the central bank.*
- v. The implementation management team should have the appropriate qualifications for the task both technical and project management/implementation.*
- vi. Timing and milestones regarding the implementation and up-start need to be defined.*
- vii. Procedures for documentation of and communication regarding the implementation process should be in place.*

### **b. Foster innovation**

- i. The legal and regulatory framework can at times inhibit innovations and developments in retail payments and at times restrict opening of market to non-bank operators/ service providers. The efforts regarding modernization have to be supported by an appropriate legal and regulatory framework and such efforts should include an assessment of the existing legal and regulatory framework leading to relevant changes.*
- ii. The issue is equally applicable for cross-border payments. The inconsistency or legal and regulatory regimes in different jurisdictions may impede modernization of*

cross-border payments. Such justifications should identify the issues and consider measures for addressing, including cooperation between central banks and other authorities.

- iii. Central banks should make relevant changes to aspects of the legal and regulatory framework, and at times using their discretionary powers.
- iv. Regulations should facilitate the opening up of the payment markets and allowing new players to enter the market with the aim of increasing competition through establishing a level-playing field between the incumbent and new providers of payment services. The Payment Services Directive 2 (PSD2)<sup>14</sup> has led the way for how the payments markets in Europe are evolving and PSD2 is also being used as the basis for developing or inspiring payments legislation outside the EU. Third-party payment initiation has also been facilitated in India through NPCI operated UPI by changes to the Procedural Guidelines of UPI on lines of PSD2 in Europe and equivalent in UK and Brazil.

**c. Establish effective oversight**

- i. Encouraging transparency in pricing and access policies should be encouraged by all providers of payment systems and service.
- ii. Cooperation with the market as catalyst or facilitator can be an important adjunct in designing and providing appropriate services.
- iii. Oversight can be set-up over payment systems and infrastructures which are established in a country. As the

domestic infrastructure may have links/ dependence to cross-border systems/ infrastructures, establishing oversight over infrastructures which are not legally or physically established in the country, but which are used for processing of in-country transactions needs to be explored by way of coordination and cooperation with other regulators and with the relevant international payment system operator as well.

- iv. As part of the assessment, the availability of the payment infrastructure established outside the country in case of any eventuality needs more attention. The potential impact on operations of the national retail payments market which could be potentially hampered also needs attention from a business continuity planning angle.

**d. Implement effective standards and infrastructure arrangements**

- i. Regulators should ensure the continued proper functioning of markets, maintain an appropriate level of security and a level playing field without hampering further technological developments. Technology will likely continue to be one of the primary global drivers for changes in the payment markets in more developed markets, and while technology is leading the way in changing the markets, it may also spark disruptions in the markets with new business models combined with a repositioning of the different market players and the regulators need to

- balance to ensure safe and efficient functioning of markets.*
- ii. Regulations framed should help promote more stable, safe, inclusive and promoting innovation in digital payment systems within a given jurisdiction and acting as enabler for cross-border payments.*
  - iii. Reviewing of existing regulations and / or issuance of new regulations as per market conditions needs to be an ongoing exercise.*
  - iv. The regulator should work in tandem and in coordination for ensuring the regulatory framework is in line with the overall objective set.*
  - v. The authorities need to have adequate resources with the requisite expertise for analyzing the ecosystem and decision making.*
- e. Provide access to central bank services**
- i. The appropriate adaptation of central bank services can contribute to the overall objective of safety and efficiency.*
  - ii. Use of central bank settlement services, where appropriate for the settlement of obligations, needs to be encouraged and facilitated.*
  - iii. Policies on access to clearing and settlement services can affect innovation and competition, but these effects need to be balanced against any adverse implications for the central bank, including from the angle of moral hazard.*

## 9. Conclusion

The optimal process guiding the implementation choice of a fast payment system implementation should be dynamic. The exact requirements of a country regarding modernization of existing / legacy payment systems will differ depending on factors such as general market conditions, maturity and the technical state of the existing payments infrastructures. The cost / benefit implications will matter, and so will the ambitions of particular markets as well as the resources available.

Countries need to take a broad view regarding fast payment system implementation and ownership, thereby ensuring that both the immediate and wider aspects are considered. In this context, identifying the policy objectives that call for such a need will be important and will also help answer the question of which approach to take. Moreover, countries should also go over particular steps and considerations regarding the process in order to ensure that it is done in the most efficient way and aligned with market needs.

Modernization initiatives in payment systems should ideally be based on broader strategic plans such as an overall national payments strategy.<sup>15 16</sup> Modernization undertaken by the private sector should be undertaken in conjunction with other relevant stakeholders, including the regulator. A national payments strategy is typically developed in co-operation with a national payments council / committee or similar body comprised of relevant stakeholders spanning regulators, system operators, payment service providers, government agencies and representative bodies of end users (i.e. consumers and businesses).

## ENDNOTES

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- 1 According to the Committee on Payments and Market Infrastructures (CPMI), a fast payment can be defined as a payment in which the “transmission of the payment message and the availability of ‘final’ funds to the payee occur in real time or near-real time on as near to a 24-hour and seven-day (24/7) basis as possible. Fast payments are also referred to as real time, instant, and immediate in the literature.
- 2 A retail payment is defined as a transfer of relatively low value funds (typically not time-critical) between entities that are not financial institutions (could be via physical instruments such as cash and cheques, or electronic instruments such as cards, credit transfer, direct debit, e-money) and a payment system is defined as a formal arrangement based on a private contract or legislation, with multiple membership, common rules and standardized arrangements, for the transmission, clearing, netting and/or settlement of monetary obligations arising between its members.
- 3 Fast Payment System implementation is used to describe two scenarios in this Note: (i) a scenario whereas a new stand along system is implemented (including infrastructure and scheme rules); (ii) a scenario whereas an existing system is simply upgraded from an infrastructure perspective and/or scheme perspective in order to fulfil the criteria of a fast payment system.
- 4 “Developing a National Retail Payments Strategy”. World Bank, 2012.  
<http://documents1.worldbank.org/curated/en/839121469729131991/pdf/84076-REPLACEMENT-FILE-PUBLIC-Developing-comprehensive-national-retail-payments-strategy.pdf>
- 5 In some rare instances, countries have pursued both: upgrade existing infrastructures to accommodate short term needs while planning to build new infrastructures for the medium to long term.
- 6 “Real-time retail payments systems or Faster payments: A quick framework for decision making”. Balakrishnan. Journal of Payments Strategy & Systems, Vol.10, Number 3, 2016.
- 7 “Real-time retail payments systems or faster payments: Implementation considerations”. Natarajan & Balakrishnan. Journal of Payments Strategy & Systems, Vol.14, Number 1, 2020.
- 8 World Bank Global Payment Systems Survey:  
<https://www.worldbank.org/en/topic/financialinclusion/brief/gpss>
- 9 Committee on Payments and Market Infrastructures (2016) ‘Fast payments — enhancing the speed and availability of retail payments’, available at: [https:// www.bis.org/cpmi/publ/d154.pdf](https://www.bis.org/cpmi/publ/d154.pdf)
- 10 India RTGS is now available 24\*7 from December 2020.
- 11 Source: <https://www.kir.pl/en/about-us/shareholders/> accessed on 5 May 2021.
- 12 This is a broad categorization. No difference is made between private and public sector. For example, in India, the majority of ownership of NPCI is with ‘public sector banks’. Since in public sector banks the majority shareholder is Government of India, NPCI can also be classified as public sector. The idea here is to distinguish between Central Bank ownership and non-central bank ownership as a separate company.
- 13 Policy issues for central banks in retail payments: <https://www.bis.org/cpmi/publ/d52.pdf>
- 14 Directive (EU) 2015/2366 of the European Parliament and of the Council of 25 November 2015 on payment services in the internal market.

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15 For more information, see: “General Guidance for National Payment System Development”. CPSS, 2006. <https://www.bis.org/cpmi/publ/d70.pdf>

16 For more information, see: “Developing a National Retail Payments Strategy”. World Bank, 2012. <http://documents1.worldbank.org/curated/en/839121469729131991/pdf/84076-REPLACEMENT-FILE-PUBLIC-Developing-comprehensive-national-retail-payments-strategy.pdf>