

► Final report to the G20

**Linking fast payment systems across
borders: governance and oversight**

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Table of contents

- Executive summary 1
- 1. Introduction 2
- 2. Scope of the report and definition of key terms 3
 - 2.1 FPS and FPS interlinking arrangements 3
 - 2.2 Stylised models of FPS interlinking arrangements 4
 - 2.3.1 Governance 6
 - 2.3.2 Oversight 6
- 3. Design of interlinking arrangements and potential risk implications 8
 - 3.1 Interlinking design aspects 8
 - 3.1.1 Ownership and membership 8
 - 3.1.2 Participation and contracts 8
 - 3.1.3 Settlement and liquidity management 9
 - 3.1.4 Functioning and operation 9
 - 3.2 Potential risks relevant for governance and oversight 10
 - 3.2.1 Legal risk 10
 - 3.2.2 Financial risks 10
 - 3.2.3 Operational risk 11
- 4. Governance approach for linking FPS across borders 13
 - 4.1 Planning phase 13
 - 4.1.1 Guiding considerations for the FPS interlinking arrangement 13
 - 4.1.2 Choice of interlinking model 15
 - 4.2 Design phase: corporate aspects 15
 - 4.2.1 Legal setup 15
 - 4.2.2 Ownership structure 16
 - 4.3 Design phase: operational aspects 16
 - 4.3.1 Governance bodies 16
 - 4.3.2 Conduct of operations 17
 - 4.3.3 Risk management 17
 - 4.3.4 Stakeholder engagement 17
- 5. Oversight approach for FPS interlinking arrangements 19
 - 5.1 Oversight analysis 20
 - 5.1.1 Identification of elements of the FPS interlinking arrangements relevant to oversight 21

5.1.2	Pragmatic and proportionate approach in terms of risk management and oversight...	21
5.2	Oversight design: oversight recommendations.....	21
	Management of link-related risks	22
	Legal basis.....	22
	Governance.....	22
	Operational resilience.....	23
	Financial risk.....	23
	Access and participation	24
	Efficiency.....	24
5.3	Cooperation framework	24
6.	Conclusions	25
	References.....	26
	Annex 1: Summary of the interim report considerations and public consultation response.....	27
	Annex 2: Description of other key terms used in this report.....	30
	Annex 3: Guiding questions for FPS overseers	32
	Annex 4: Further details on governance	33
	Annex 5: Composition of the Governance and Oversight Workstream	35

Executive summary

Fast payment systems (FPS) interlinking arrangements across borders are supported by contractual agreements, technical links and standards and operating procedures between two or more FPS from different jurisdictions. Interlinking arrangements allow the payment service providers (PSPs) participating in an FPS to send and receive fast payments safely and efficiently to PSPs in another jurisdiction's FPS without being a participant in that FPS or opening settlement accounts with correspondent banks. FPS interlinking arrangements can bring the domestic end user experience of instant funds availability to cross-border payments. As such, FPS interlinking offers potential to enhance cross-border payments, by improving their cost, speed, access and transparency while maintaining their safety.

Opportunities to foster FPS interlinking have grown with the proliferation of FPS in many jurisdictions across the globe and the trend towards greater interoperability at the technical level. Practitioners and authorities involved in FPS interlinking have noted that determining workable governance and oversight arrangements can be more challenging than solving operational and technical issues, especially when interlinking with more than one FPS abroad because of the multi-jurisdictional, cross-border and/or cross-currency nature of these arrangements. This report by the Bank for International Settlements' Committee on Payments and Market Infrastructures (CPMI) aims to inform owners and operators of FPS as they are developing the governance and risk management elements of their FPS interlinking arrangements and overseers as they are defining their oversight approach.

Adequate governance and oversight can work together to help mitigate risks in payments, clearing and settlement and related arrangements. The establishment of FPS interlinking arrangements generally does not introduce new types of risks, compared with risks already borne by the FPS that is a component of the interlinking arrangement or those inherent to traditional cross-border payment arrangements. FPS interlinking arrangements may, however, result in different levels of risks and forms how risks materialise compared to those already managed and mitigated at the level of each component FPS. Interlinking arrangements and component FPS are not necessarily subject to the *Principles for financial market infrastructures* (PFMI). Still, the PFMI can be helpful in analysing risk implications for interlinking arrangements, their participants and individual component FPS. This report particularly focuses on two specific interlinking models, the bilateral link and the hub and spoke link.

Governance determines the decision-making process and authority within an organisation, as well as where the accountability lies for decisions. The report focuses on the governance of the FPS interlinking arrangement itself and not that of individual component FPS. It discusses the main decisions to be taken by operators in developing the governance approach for FPS interlinking arrangements. These decisions include questions of legal setup, ownership and operational structure, governing body type and stakeholder engagement. The report also discusses how these decisions may be affected by differences in interlinking models, particularly when a separate legal entity is established, as in a hub and spoke model.

While the scope of *oversight* differs between central banks, it can cover FPS and their interlinking arrangements, with oversight conducted both domestically and through international cooperation. This report sets out oversight recommendations that overseers should consider when developing an oversight approach for the respective component FPS or a separate entity. There is no one-size-fits-all approach when it comes to oversight of FPS interlinking arrangements. The establishment of a link between two (or more) FPS does not necessarily require a change in the expectations that the respective overseer applies to their overseen FPS. As such, the oversight recommendations provide overseers with a baseline for the review and design of jurisdictional oversight frameworks and they can inform operators.

1. Introduction

Fast payment systems (FPS) enable funds to be transferred to end users near-instantaneously on a 24/7 basis. Currently, FPS are mainly designed and used for domestic retail payments. Interlinking FPS from different jurisdictions could expand this user experience to cross-border payments. Given the large number of FPS already operating, interlinking FPS is a promising approach to enhance safe cross-border retail payments in the near to medium term. Links with other FPS can be motivated by commercial, policy or other considerations. For example, preferred partner FPS may be identified based on the expected volume of payments in the corridor, regional economic integration initiatives and/or technical and operational interoperability. The decision to establish an interlinking arrangement relies heavily on coordination between component FPS and must be informed by the political, legal and regulatory frameworks of the jurisdictions involved. Establishing an interlinking arrangement between jurisdictions can benefit from early engagement with public authorities, including central banks and possibly other financial sector authorities with responsibility for oversight or regulation of payment systems as well as authorities with responsibility for competition or consumer protection, national security, and market integrity and conduct.

Previous Bank for International Settlements' Committee on Payments and Market Infrastructures (CPMI) and World Bank reports lay out the benefits of FPS interlinking and highlight several questions that may require attention when establishing links between FPS.¹ Potential benefits include reduced costs, easier access, increased speed and enhanced transparency of cross-border payment services. Among the key challenges identified were the governance and oversight for these arrangements given their cross-border and multicurrency nature as well as the different design choices available to interlink the two (or more) FPS.

The CPMI made a commitment to the G20 Presidency to develop a governance and oversight framework for cross-border FPS interlinking arrangements. As a first step, the CPMI published an interim report on governance and oversight of FPS interlinking arrangements in October 2023 (CPMI (2023)). The interim report described 10 initial considerations on the complexities and experiences in this area resulting from a series of CPMI workshops with global stakeholders and asked for feedback on 10 questions. Stakeholders responding to the public consultation supported several of the initial considerations and shared their views, which have informed this report. Respondents generally indicated that the report should avoid a one-size-fits-all approach given the different design choices for FPS interlinking arrangements. In particular, they noted that the governance framework should be flexible and allow operators to make the choices that best meet their business needs. Respondents emphasised the importance of leveraging existing oversight frameworks, especially if the domestic FPS are already overseen, and considering whether new or different risks posed by interlinking could require new or separate oversight considerations. Annex 1 summarises the initial considerations in the interim report and the responses received. To collect additional insights for this final report, the CPMI organised a webinar, workshops and (in cooperation with the G7 Presidency) a conference to foster the implementation of FPS interlinking arrangements. Finally, together with the G20 Presidency, the CPMI organised an event held at the sidelines of the October G20 meeting to discuss the report.

This report aims to inform owners and operators of FPS when they are developing the governance and risk management of their FPS interlinking arrangement as well as overseers when they are defining their oversight approach. The considerations set out in this report have benefited from insights from concrete interlinking projects and build on the interim report (CPMI (2023)). This report clarifies definitions and concepts relevant for the governance and oversight of FPS interlinking arrangements (Section 2), discusses design choices and risk implications (Section 3), sets out the key decisions in developing the

¹ Examples include CPMI (2022b) and several World Bank publications available via fastpayments.worldbank.org.

governance approach (Section 4), outlines oversight recommendations that overseers may find useful when developing their framework (Section 5) and provides conclusions (Section 6).

2. Scope of the report and definition of key terms

This section defines the main concepts used in this report, including FPS, FPS interlinking arrangements, governance and oversight. Additional key terms are defined in Annex 2.

2.1 FPS and FPS interlinking arrangements

An FPS is a retail payment system² that allows for the transmission of the payment message and the final crediting of funds to the payee in real time or near real time. Final crediting in this context means that the payee has unconditional and irrevocable access to the funds, even if settlement among payment service providers (PSPs) is deferred. FPS typically operate around the clock or very close to 24 hours a day, every day of the week throughout the year (24/7/365).

An interlinking arrangement between two or more FPS from different jurisdictions is supported by contractual agreements, technical links and standards, and operating procedures.³ The FPS that form part of the interlinking arrangement are referred to as “component FPS” in this report. Component FPS can establish a direct link between each other or connect via a “hub”. The interlinking arrangement enables the PSPs participating in a component FPS to send and receive fast payments safely and efficiently to PSPs in another component FPS without participating in that FPS or opening settlement accounts with correspondent banks. FPS interlinking arrangements can bring the domestic end-user experience of instant funds availability to cross-border payments. Technical and operational interoperability and compatibility of governance and oversight frameworks may facilitate the establishment of FPS interlinking arrangements.

The practical implementation of FPS interlinking arrangements requires the establishment of these technical links for data and message exchange, and potentially the creation (or alteration of existing) operational procedures for processing, clearing and settlement of the cross-border fast payments.

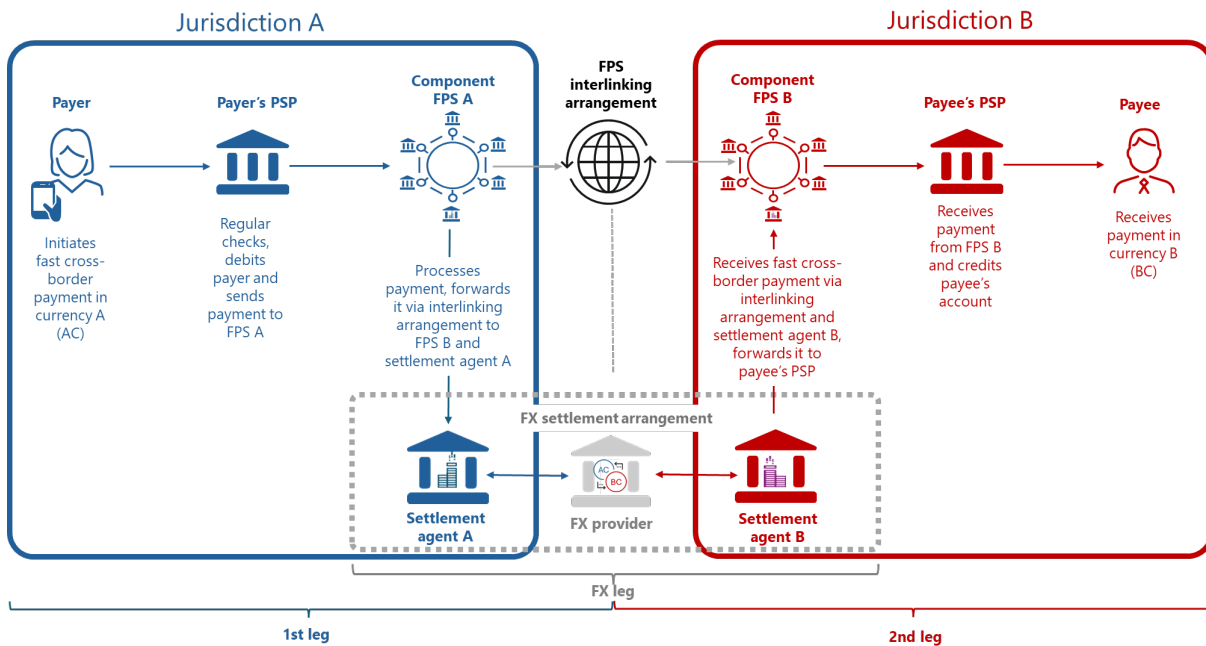
A single payment from payer to payee through FPS interlinking arrangements typically involves two payment legs: debiting the payer’s PSP in one component FPS and crediting the payee’s PSP in another component FPS. A separate foreign exchange (FX) transaction to provide currency conversion may also be needed. Those linked flows would follow the normal settlement models of each component FPS and the FX settlement model of the FX provider (see Graph 1).

² Some FPS can be integrated payment systems, processing both wholesale and retail payments, or can be operated as a service on the technical platform of a wholesale payment system. The focus of this report is on retail fast payments and retail FPS.

³ The term “FPS interlinking arrangements” in this report refers to interlinking arrangements between FPS from different jurisdictions, unless otherwise specified.

Interaction between the entities involved in FPS interlinking arrangements – stylised overview

Graph 1



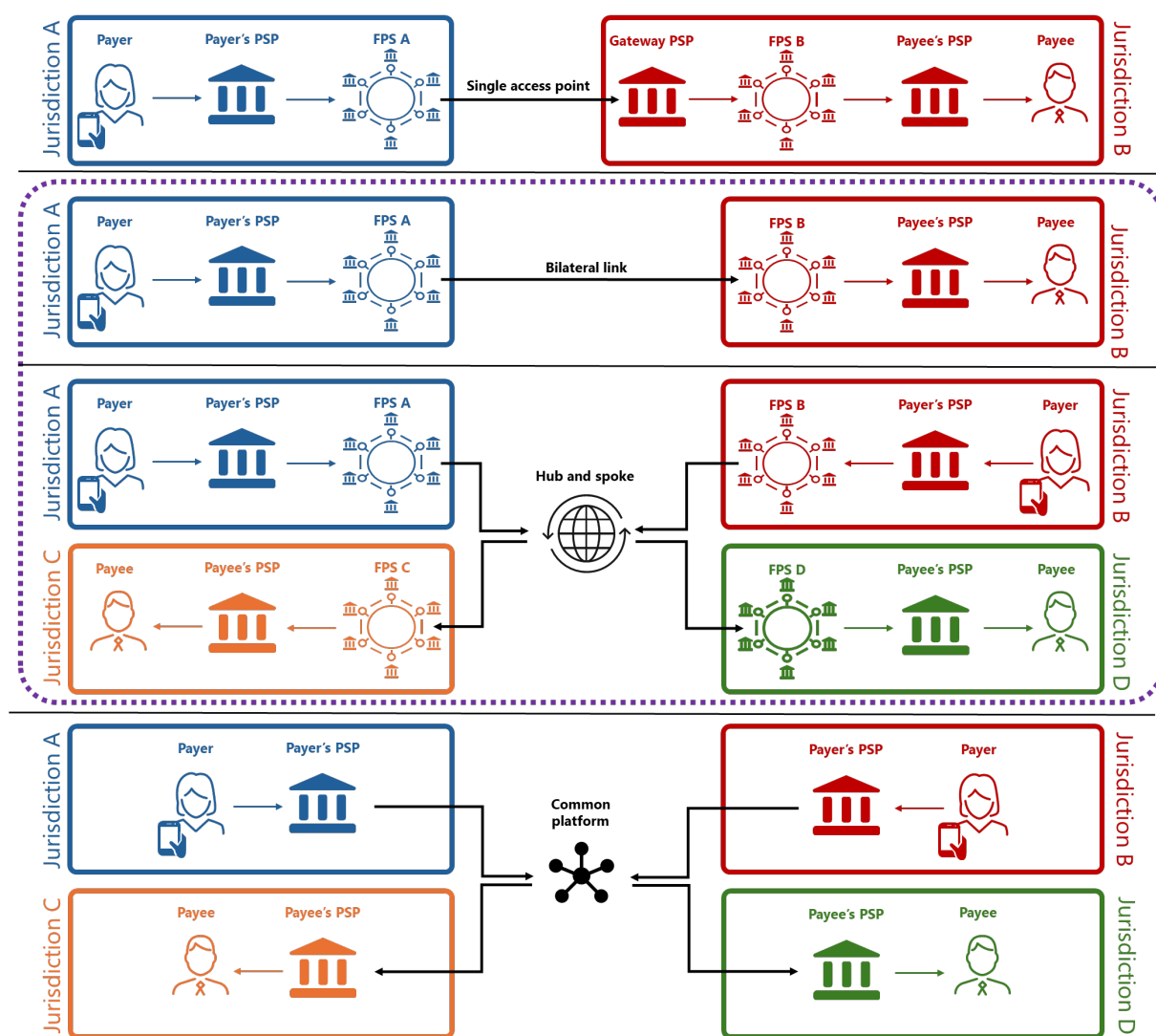
Depending on the interlinking arrangement, the same entity can fulfil different roles (eg the role of settlement agent and FX provider). FX settlement between the currencies of jurisdiction A (AC) and jurisdiction B (BC) can take place in the form of traditional correspondent banking or another FX settlement arrangement (eg a payment-versus-payment mechanism). The FPS interlinking arrangement can follow a bilateral interlinking model or a hub and spoke model. For a description of the entities involved, see the definition of key terms in Annex 2.

Source: CPMI.

2.2 Stylised models of FPS interlinking arrangements

FPS interlinking arrangements can be classified into different stylised models based on their main design features (CPMI (2022b), CPMI et al (2023)). The key differentiating factor is whether FPS interlinking arrangements are direct bilateral links between two component FPS or multilateral links that connect a component FPS with several other FPS through a hub. The resulting stylised models, which form the core of this report, are:

- **The bilateral link model:** in this model two component FPS establish a connection to enable each other's participants to send and receive payments. An FPS can have bilateral links with several other (foreign) FPS, which could give participating PSPs an experience similar to a hub and spoke or a common platform model.
- **The hub and spoke model:** in this model two or more component FPS are connected multilaterally through a hub, which is a separate entity. Depending on the functionality of the hub (eg whether the hub itself clears and/or settles payments, or synchronises messages), authorities might consider the hub itself to be a payment system, or rather a technical service provider to the FPS or PSPs.



Source: Adapted from CPMI (2022b) and CPMI et al (2023).

..... focus of this report

Graph 2 includes two additional stylised models that can enable end users to exchange fast payments across borders. While these models could also be referred to as interlinking arrangements, they have more commonalities with correspondent banking (in the case of the single access point)⁴ and a single cross-jurisdictional payment system (in the case of the common platform).⁵ As such, they are not the focus of this report and will only be discussed to a limited extent.

⁴ In the single access point model, participants in one domestic payment system have access to a foreign system through a single “gateway” entity that directly participates in the foreign system. This entity bears a resemblance to correspondent banking arrangements but differs in that it ensures access to the foreign systems based on common rules, service level agreements and access criteria that are common to all participants (including the gateway entity) of the respective payment system.

⁵ A common platform model refers to a payment system that is multi-jurisdictional by design. PSPs from one jurisdiction can directly reach PSPs in other jurisdictions through one common payment system, which runs on a single integrated technical platform. While the common platform model can lead to the same results as interlinking, it is not technically interlinking since

2.3 Governance and oversight

Governance and oversight are distinct concepts that interact with each other. Generally speaking, governance embeds the rules and processes for a payment system that enables it to meet relevant oversight expectations from authorities. Conversely, one of the focus areas of oversight is the effectiveness of the governance structure and processes. Governance and oversight frameworks for FPS interlinking arrangements will depend on the model chosen (bilateral vs hub and spoke), the domestic oversight frameworks of the jurisdictions involved and the risks posed by the FPS interlinking arrangement, among other factors. Therefore, no one governance or oversight approach works for every type of arrangement. Interlinking arrangements and domestic FPS are not necessarily subject to the Principles for financial market infrastructures (PFMI) (CPSS-IOSCO (2012)), unless they are systemically important.⁶ The PFMI are still helpful in clarifying how the governance and oversight terminology and concepts can also be applied to FPS interlinking arrangements.

2.3.1 Governance

Governance, as defined in the PFMI, is “the set of relationships between an FMI’s owners, board of directors (or equivalent), management and other relevant parties, including participants, authorities, and other stakeholders [...]. Governance provides the processes through which an organisation sets its objectives, determines the means for achieving those objectives, and monitors performance against those objectives” (CPSS-IOSCO (2012)).

Governance applies to component FPS and generally addresses the exercise of decision-making power or authority within an organisation and the accountability of risk decisions. *The focus of this report, however, is not the governance of component FPS, which have their own specific governance rules, but rather the governance of the FPS interlinking arrangement* (Graph 3). The scope of governance depends on the interlinking model. Governance for the bilateral model conceptually applies to the relationship between the two component FPS. The collective decision-making, including risk decisions, is limited to the cross-border operations supported by the interlinking FPS arrangement. For the hub and spoke model, governance applies to the relationship between the component FPS and the hub as well as to the hub itself if it is a separate entity with its own internal governance. Section 4 provides a toolkit for relevant stakeholders to draw on when establishing the governance for FPS interlinking arrangements.

2.3.2 Oversight

Oversight is defined as “a central bank function whereby the objectives of safety and efficiency are promoted by monitoring existing and planned payment, clearing, settlement and related arrangements, assessing them against these objectives, and where necessary, inducing change. These arrangements include FMIs and other payment, clearing, settlement and reporting arrangements and activities, both within and across jurisdictions [...]. The scope of oversight differs between central banks but usually

PSPs are participating in one and the same payment system. The hub and spoke and common platform models differ from each other in two notable ways. First, in the hub and spoke model the domestic systems (the spokes) are connected to the hub, while in the common platform model PSPs (from different jurisdictions) are usually directly connected to the platform and must adhere to a common rulebook. Second, hub entities are often built solely to enable cross-border payments, while common platforms can be built to enable domestic as well as cross-border payments (CPMI et al (2023)).

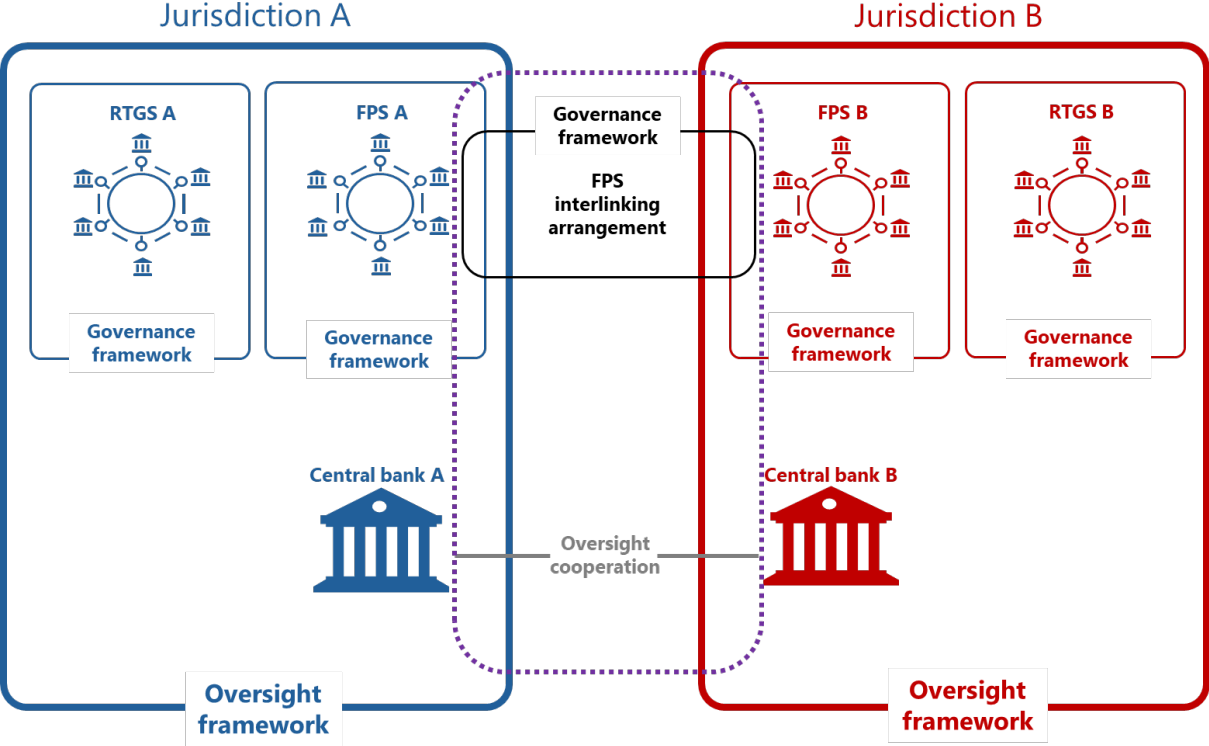
⁶ The PFMI are “broadly designed to apply to all systemically important payment systems, CSDs [central securities depositories], SSSs [securities settlement systems], and CCPs [central counterparties].” While financial market infrastructures (FMIs) “that are determined by jurisdictional authorities to be systemically important are expected to observe these principles [...], [a]ll FMIs are encouraged to observe these principles” (CPSS-IOSCO (2012)). Some jurisdictions apply (a subset of the PFMI) also to non-systemically important payment systems.

includes FMs, with oversight being conducted domestically and through cross-border cooperation” (CPMI glossary and CPSS (2005)).⁷

The domestic overseer of the FPS, typically the central bank, is responsible for determining the domestic oversight approach for the component FPS, including any FPS interlinking arrangements.⁸ The respective domestic oversight framework applied to the component FPS could well differ across jurisdictions and could also be separate from the oversight applied to the hub. As a result, oversight of FPS interlinking arrangements is likely to benefit from cooperation among overseers of the component FPS.

Relationship between governance and oversight of FPS interlinking arrangements

Graph 3



Source: CPMI.

■■■■ focus of this report

⁷ CPMI provides a glossary of payments and market infrastructure terminology as a reference to the standard terms and definitions used in connection with payment, clearing, settlement and related arrangements. The glossary is available at: www.bis.org/cpmi/publ/d00b.htm.

⁸ Throughout the report, “central bank” will be used for readability. Where other authorities are relevant to oversight, they are specifically mentioned.

3. Design of interlinking arrangements and potential risk implications

The establishment of FPS interlinking arrangements generally does not introduce new types of risks compared with risks already borne by the FPS that is a component of the interlinking arrangement or those inherent to traditional cross-border payment arrangements. For example, individual FPS already bear the financial and operational risks associated with operating a 24/7/365 payment system. Traditional cross-border payment arrangements already bear the legal and FX risks associated with multi-jurisdictional and cross-currency service offerings. These are not new risks that emerge due to the establishment of a link. The PFMI provide an overview of key risks faced by FMIs, such as systemically important payment systems, and CPMI (2016) and World Bank (2021) discuss the specific risks in FPS.⁹

FPS interlinking arrangements may, however, result in different levels of risks and forms how they can materialise. This section gives an overview of some of the changes to risks that result from establishing a link between FPS. This risk analysis is not meant to be exhaustive given the differences in models, design choices and uptake (in terms of number of jurisdictions, participants, transaction volumes and values). Annex 3 complements this section with guiding questions that can help overseers to better understand the characteristics and potential risk implications of the interlinking arrangement in focus.

3.1 Interlinking design aspects

This section discusses selected key design features of an interlinking arrangement that may affect its risk profile.

3.1.1 Ownership and membership

The interlinking arrangement can be owned by a public sector entity (typically a central bank), a private sector entity (eg a consortium of banks), a hybrid public-private partnership or a supranational entity. The owner, operator and governing entity can be the same or different organisations. FPS will need to agree on the type of payments that can be processed via the interlinking arrangements (remittances and retail payments, with or without value limits). A multilateral arrangement would need to consider protocols for expanding the arrangement to additional FPS; if a new FPS joins the interlinking arrangement, FPS already connected may be linked with the new FPS immediately and automatically, or may need to opt in.

3.1.2 Participation and contracts

Access to cross-border payment services offered by an interlinking arrangement will depend on the PSPs' eligibility to have access to the component FPS, whether direct or indirect.¹⁰ The access rules of the component FPS, including whether the FPS permits non-bank PSPs as participants, and the responsibilities of participants, might differ across FPS. For example, payments sent through an interlinking arrangement would need to be screened in accordance with applicable laws and regulations (eg sanctions, anti-money laundering and countering the financing of terrorism (AML/CFT) requirements), and non-bank participants could be subject to different compliance requirements.

Because component FPS are typically subject to different legal and regulatory frameworks, the processing of cross-border payments will usually be based on contractual agreements applicable in and across multiple jurisdictions. The interlinking arrangement itself and the relationship with other involved entities (eg participants, FX providers, technical service providers and settlement agents) will often be organised in the form of bilateral or multilateral contractual agreements (the latter can also be referred to

⁹ The PFMI provide a basic description of risks in FMIs, including payment infrastructures (in particular CPSS-IOSCO (2012, Chapter 2). Risks in retail payments have also been described in CPSS (2000) and more recently in CPSS (2012) and CPMI (2014a, 2016).

¹⁰ For a discussion on payment system access see CPMI (2022a) and World Bank (2023, 2024).

as a “scheme”). These contractual agreements are likely to specify the responsibilities for adherence to regulations such as data protection and financial crime compliance across the jurisdictions between which payments move. Clarity on the responsibilities for cyber resilience and fraud management are an important component of such payment arrangements (CPMI (2024)).

3.1.3 Settlement and liquidity management

The interlinking arrangement needs to determine how the settlement of transactions between PSPs of different component FPS takes place. Typically, component FPS retain their existing inter-PSP settlement model (deferred net settlement (DNS) or real-time gross settlement (RTGS)) and the type of settlement funds (commercial bank or central bank money). This will affect the design of the settlement process between PSPs in the interlinking arrangement too. As such, it will be important to define a process, which is compatible with the existing inter-PSP settlement models of the component FPS and identify (a) settlement agent(s) for the cross-border fast payments. Interlinking arrangements need to have at least one settlement agent for settlement of these transactions between component FPS.

FPS might offer their participants liquidity management features that can help reduce liquidity risk. Among these features are central bank intraday liquidity facilities (typically limited to direct participants in central banks’ wholesale payment systems) or central bank guarantees, collateralisation of net debit positions, value and volume limits, prefunding of positions by individual participants and automated tools for replenishing funds once a certain minimum balance or threshold is reached.¹¹

Given the cross-jurisdictional nature of interlinking arrangements, they typically cover two or more currencies. Hence, the processing of multiple currencies (without conversion (multicurrency) or with conversion (cross-currency)) would be more common than FPS interlinking arrangements processing a single currency only (CPMI (2022b), CPMI et al (2023)). The key difference between a multicurrency and a cross-currency arrangement is that in the former, PSPs would need to maintain a separate settlement account for each currency with the payment system in order to transact in more than one currency, resulting in higher liquidity requirements for PSPs.¹² Cross-currency arrangements would require a framework for currency conversion, which could include FX providers offering services to PSPs. Factors influencing the choice of currency arrangement include (i) the location of the arrangement and relevant currency (or currencies) used;¹³ (ii) the liquidity and volatility of the currency (or currencies) used; and (iii) the exchange rate regime(s) in the relevant jurisdictions, including any FX restrictions or other capital flow management measures related to the relevant currencies.

3.1.4 Functioning and operation

FPS interlinking arrangements can offer different retail payment use cases. The most common retail payment services for fast (cross-border) payments are person-to-person payments (including remittances), person-to-business payments and business-to-business payments. The rules for the execution of payments and the roles and responsibilities for processing, clearing, settlement and exception management of cross-border payments will typically be defined in a rulebook. This rulebook would form part of the contractual agreement and be updated regularly. The level of standardisation (eg for account identification (eg IBAN), message formats (eg ISO 20022) and financial messaging channels) affects the complexity of establishing and operating an interlinking arrangement. Generally, less standardisation is associated with more complexity.

¹¹ World Bank (2021) offers a detailed elaboration of these aspects.

¹² However, the lines between a multicurrency and a cross-currency link or arrangement might sometimes be blurred. For example, participants in a multicurrency payment system may be able to exchange currencies with the platform when funding and defunding their accounts.

¹³ The majority of transactions could even be in a currency other than the domestic currency of the location chosen for the arrangement.

3.2 Potential risks relevant for governance and oversight

This section reviews the potential risks specific to FPS interlinking arrangements. It does not aim to provide an in-depth analysis of risks in fast payments or payment systems in general.¹⁴ As retail payment systems, FPS typically process transactions of relatively small individual value. Hence, for the time being, FPS may not qualify as systemically important payment systems in some jurisdictions. Nonetheless, the prominence of FPS for certain use cases or segments of the population could mean that any adverse incidents could have significant implications for the real economy.

This section primarily focuses on risks that are within the scope of the financial sector and payments. Due to its cross-border nature, an interlinking arrangement may entail political risks that are outside the control of the financial sector and financial sector authorities. Shared strategic goals and economic policies across jurisdictions foster an environment conducive to collaboration. In contrast, political differences could complicate cross-border cooperation in payments in general and the establishment or maintenance of interlinking arrangements in particular. Financial sector implications beyond payments, eg capital outflows via FPS or any other payment arrangement from a single PSP or an entire economy have their root cause outside payments and are hence not within the scope of this report.

3.2.1 Legal risk

Cross-border payments may carry heightened legal risks relative to domestic arrangements due to uncertainty that can arise from the interplay of different laws and regulations governing transactions, activities and participants in the jurisdictions involved. Ambiguity surrounding the hierarchy of specific laws and regulations applicable to interlinking arrangements can result in potential conflicts of law and regulation. Differing legal interpretations across jurisdictions add another layer of complexity to cross-border payment interlinking. Differences in applicable legal frameworks may include – but are not limited to – settlement finality regimes,¹⁵ access rules,¹⁶ limits on foreign investments and residents' currency holdings,¹⁷ data protection and privacy.

The execution of payments within seconds on a 24/7/365 basis is a key characteristic of FPS that can complicate timely fulfilment of legal and regulatory requirements in the cross-border context. If the payee is credited before settlement at the level of the PSPs, it is particularly important to have clear rules on payment finality and the post-transaction resolution of fraudulent or erroneous transactions. Differing data protection and privacy laws and regulations can also make certain fraud prevention measures, such as account/name pre-validation or lists of suspicious accounts, difficult to implement. Component FPS should consider these complications and mitigate them, among other steps, by defining interlinking arrangements based on clear and transparent agreements.

3.2.2 Financial risks

Reversing the underlying transactions between payers and payees may not be feasible if problems arise in the inter-PSP settlement (eg if the payer's PSP fails to settle the payment, but the payee has been credited, typically in irrevocable form). The user experience of FPS interlinking arrangements is "instant" (ie the debiting of the payer account and crediting the payee account take place within seconds or

¹⁴ The PFMI provide an overview of key risks faced by FMIs, such as systemically important payment systems, and CPMI (2016) and World Bank (2021) discuss the specific risks for FPS.

¹⁵ A transfer may be deemed final in one system or jurisdiction but not recognised as such in another, creating conflicts and uncertainties regarding the enforceability of obligations within interlinking arrangements. This type of conflict challenges the principle of settlement finality, which is crucial to maintaining confidence in payment systems.

¹⁶ Eg there can be competitive advantages to certain PSPs in the jurisdiction with less stringent access rules.

¹⁷ Such restrictions can hinder the free flow of capital between interconnected systems, leading to delays, compliance issues and potential legal disputes. Moreover, limits in accessing and managing foreign currency liquidity may result in increased liquidity risks.

minutes). However, the final settlement of obligations between the PSPs that are direct participants of the FPS can occur either on a real-time or a deferred basis (CPMI (2016)). Real-time gross settlement and deferred net settlement systems may have different credit and liquidity risk profiles for FPS and PSPs. The credit and liquidity risks associated with the component FPS may not necessarily change in interlinking FPS arrangements, unless there are changes in settlement models or risk mitigation tools in relation to cross-border payments. FPS themselves are usually not affected by credit risk as they are not party to obligations in the transaction.

As with domestic payments, the credit and liquidity risk to various parties involved in each leg of the end-to-end payment (between payer and payee) will depend on the settlement models of the two component FPS, the settlement model of the FX provider and the risk mitigants in place. For example, if all parties in the transaction chain employ a real-time settlement model without any intraday credit extension, then credit risk of the interbank settlement for each leg of the payment in the interlinking FPS arrangement (eg in the event of a PSP's default) does not exist. For FPS that use a deferred net rather than a real-time settlement mechanism, the involvement of an intermediary could alter the credit risk exposure of one or more parties.

There are several options to manage and mitigate any residual credit and liquidity risk, should it exist. For example, as part of its design, the interlinking arrangement could follow the typical design of a domestic FPS so that the payee is only credited once the payer has been debited (ie the second leg of the payment happens after the first leg). Also, an interlinking arrangement could alter the timing, value and volume of cross-border payments sent or received in an FPS, requiring PSPs to adjust their liquidity management practices. As with domestic FPS payments, the credit risk borne by the payee's PSP can be managed, for example, through limits (to the aggregate net positions of PSPs), frequent settlement cycles, loss-sharing agreements, collateralisation and/or prefunding arrangements.

FX market and settlement risks could arise in a multicurrency or cross-currency FPS interlinking arrangement, which involves an FX transaction that converts the currency between payments from the first and the second component FPS. For both the bilateral and hub and spoke model, a dedicated set of financial service providers (eg PSPs of the component FPS or other FX providers) may provide FX currency conversion for settlement of the separate domestic payments. Such providers are important to the smooth operation of the arrangement. The FX providers might have to manage FX market, settlement and liquidity risks, which could be particularly challenging if an interlinking arrangement operates 24/7/365, and if component FPS send payments in less liquid currencies.

3.2.3 Operational risk

FPS interlinking arrangements may entail higher operational risks than those already managed and mitigated at the level of each component FPS. A purely domestic operational incident or outage in a component system could affect cross-border payment flows and thereby affect the domestic operations of other component FPS. Due to the speed of FPS, any operational incident that results in a delay or interruption could be immediately noticeable by end users.

The impact of an operational incident varies across different interlinking arrangements and the number of FPS and jurisdictions linked. A broader geographic scope results in a larger attack surface and hence increased operational risk. Impacts of this kind could in principle be mitigated by measures similar to those used by any type of payment system, including cyber resilience, redundancy and business continuity arrangements, to ensure the timely recovery of services in the event of disruption. Still, if there is an operational failure in a component FPS that affects the FPS interlinking arrangement, PSPs could potentially revert to traditional means to send cross-border payments. However, these other means might not be instant or might be more expensive and operationally complex if payments have already migrated to the new arrangement.

Third-party risk

An additional source of operational risk comes from third-party providers that may be involved in interlinking arrangements and can play a critical role in their smooth functioning. Interlinking arrangements may include the use of multiple service providers, offering traditional (eg connectivity and messaging services) as well as more customised services (eg FX conversion mechanism, AML/CFT screening tools and message format translation) depending on their features and design. Typically, third-party risk stems from operational issues and disruptions at the service provider level that can lead to downtime, delays or interruptions in the service offered, which in turn may affect seamless cross-border activity.

The exposure of an interlinking arrangement to third-party risk primarily results from the cross-border dimension, which introduces new actors along the transaction chain from which additional risk may arise. The risk may be exacerbated in a highly concentrated market with little competition due to limited choices or available substitutes (eg lock-in risk). Finally, as for other risks, third-party risks could materialise at the “micro level”, impacting only certain cross-border transactions or specific parties, as well as at the “macro level”, either affecting all transactions or component FPS due to spillover effects.

Fraud risk

Fraud risk, a subset of operational risk, encompasses various situations, including the manipulation of the payer or payee by a fraudulent actor resulting in the issuance of a payment instruction by the payer acting in good faith. Real-time processing of fast payments requires sophisticated and efficient processes to identify, investigate and, if necessary, delay or prevent settlement of suspicious transactions. For interlinking arrangements, if funds are immediately and unconditionally available to the payee abroad, a fraudulent actor could attempt to quickly withdraw the funds in another country before the fraud is detected.

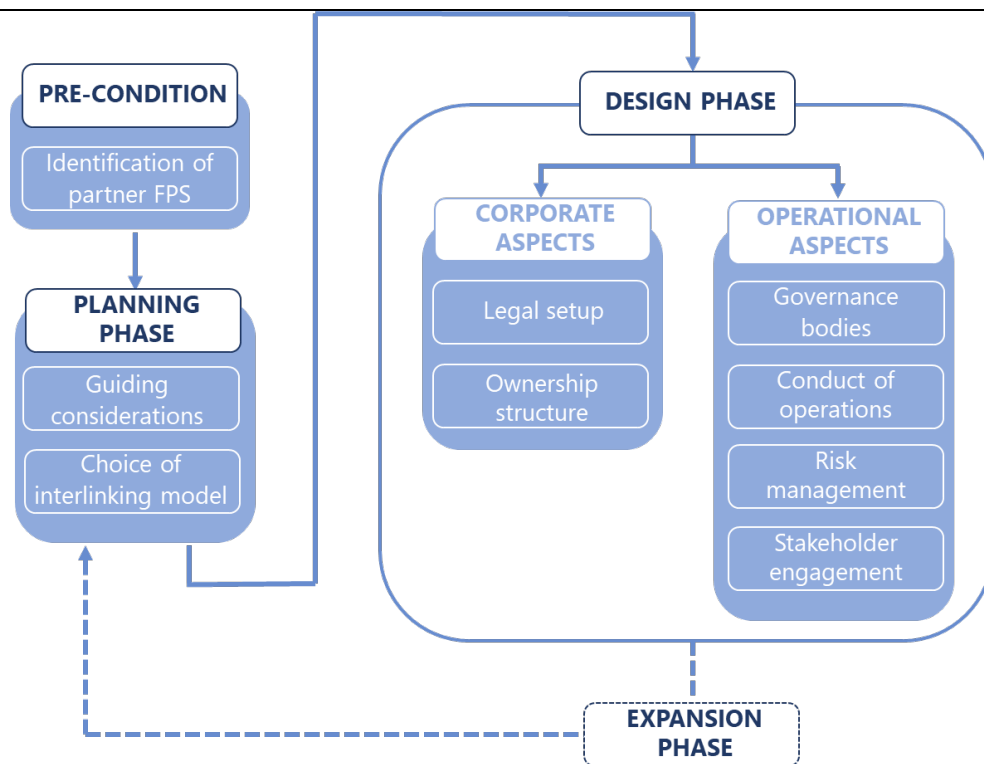
Fraud risk requires special attention when establishing and operating interlinking arrangements because fraud mitigation measures may be more difficult to implement on a cross-border basis. Moreover, different legal frameworks may make it more difficult to trace, recover and reimburse funds or enforce the law after fraud has occurred. Agreement on minimum baseline security controls and robust security and anti-fraud measures such as transaction screening and text message alerts for users can help to mitigate risk.

4. Governance approach for linking FPS across borders

This section discusses the main options available for developing the governance approach for an FPS interlinking arrangement, once the decision to interlink two or more FPS has been taken (Graph 4). These considerations should not be considered to be comprehensive or to be oversight requirements. For the bilateral model, the governance conceptually applies to the relationship between the two component FPS for their cross-border operations based on the interlinking arrangement. For the hub and spoke model, the governance applies to the relationship between the component FPS with the hub as well as the hub itself if it is a separate entity with its own internal governance. This section also discusses how these decisions may be affected by differences in the selected interlinking model. It is important for operators to maintain and review aspects of the governance approach once the interlinking arrangement is in place and as it evolves over time.

Governance-related key decisions

Graph 4



Source: CPML.

4.1 Planning phase

4.1.1 Guiding considerations for the FPS interlinking arrangement

During the planning phase, component FPS will likely need to agree on common objectives for the interlinking arrangement. Objectives may include which market segments and use cases will be served, whether it aims to make a profit or only to cover costs, and whether there are plans for expansion into additional markets. The strategic objectives agreed upon during the planning phase will likely inform the design of the arrangement and aspects of governance. The alignment of political and economic perspectives across the participating jurisdictions can promote agreement on common strategic

objectives. Shared strategic goals and economic policies foster an environment conducive to collaboration and mutual benefit within interlinked systems.

Establishing guiding considerations at the outset may in turn assist component FPS and other relevant stakeholders in making decisions that enable the interlinking arrangement to reach its objectives. Box 1 provides examples of guiding considerations that component FPS and other relevant stakeholders could consider during the planning phase while assessing strategic objectives and key aspects of governance.¹⁸ These guiding considerations are not meant to be exhaustive and may not be relevant for all interlinking FPS arrangements, and some of these considerations may have inherent tensions with one another (eg support for public policy objectives vs business viability, and flexibility vs inclusivity). Accordingly, it is important to understand the trade-offs and determine which considerations to prioritise at specific stages of the interlinking arrangement planning that would best position it to achieve the desired objectives.

Box 1

Examples of guiding considerations for the design of the governance framework

Neutrality

A decision-making process based on fairness and impartiality should ensure that decisions are not discriminatory and not bound to a particular jurisdiction or technology. There should be a level playing field between the parties involved, and conflicts of interest should be properly identified and managed.

Flexibility

The arrangement will operate in an intrinsically dynamic environment and its governance structure must enable it to adapt. Decision-making should support potential changes in the arrangement's objectives. For example, the governance arrangement of a privately operated interlinking arrangement could accommodate an evolution of the central bank's role during the life cycle of the interlinking arrangement, from potential active involvement in the early stages (eg in the initial design of the arrangement), in some cases also through the provision of initial financial and human resources, to a less direct role (eg focus on oversight) when the interlinking arrangement matures and becomes self-sustaining.

Inclusivity

Relevant stakeholders may go beyond the arrangement's immediate participants, operators and owners, and include other payment systems and end users. Each group may have specific needs and concerns regarding cross-border payments. Financial institutions of different sizes possess varying capabilities and resources. An inclusive framework creates a level playing field where concerns of different stakeholders can be addressed in a way that is effective and compatible with the robust long-term strategy for the interlinking arrangement. The presence of the central bank and/or other regulators could help to foster cooperation and alignment of national and international frameworks in this direction. A number of options can be considered for incorporating the views of a wide variety of stakeholders into the governance of the arrangement (eg requirements for the composition of the board or advisory committees). In some cases, industry associations or consortia may appropriately represent diverse private sector players.

Scalability

Future expansion into other use cases or corridors could be part of the objectives of the interlinking arrangement. In these cases, it is important for the governance frameworks to be scalable by design. Multilateral solutions are easier to scale than bilateral arrangements and might require the establishment of a separate legal entity acting as a governance entity with a mandate to ensure the coordination, efficiency and adequate governance of the linkage.

¹⁸ For example, flexibility and scalability may help component FPS decide on a design and governance arrangement that "future-proofs" the addition of FPS to the arrangement. Business viability may help the interlinking FPS assess use cases, pricing and cost recovery, where relevant.

The establishment of such a separate entity would provide a more formal and structured framework for the management of the linkage.

Business viability

One of the specific objectives to be defined for an FPS cross-border interlinking arrangement is whether or not it will be profit-driven. Even if not, a minimum level of business viability still needs to be ensured (eg by adopting a cost recovery principle), otherwise shareholder and/or broader stakeholder support for the arrangement could be adversely affected and other potentially more efficient initiatives could be crowded out. Stakeholder feedback suggests that catering to a wide variety of use cases and stakeholders can be important for attracting the necessary demand for cross-border fast payment services. Any public sector contributions in the start-up phase to the initial funding and/or ongoing operational costs should not be regarded as an open-ended mandate to provide public good services irrespective of business viability. Business considerations, including pricing policy, capital base, funding or the commercial model, can influence the choices made for the governance arrangement.

Source: CPML.

4.1.2 Choice of interlinking model

The common objectives, as agreed upon between the component FPS, and the prospects for expansion of the arrangement, affect the choice of interlinking model. If an FPS plans to connect with more than one FPS over time, it may choose a hub and spoke model over a bilateral model. If the potential partner FPS already has bilateral links with other FPS and/or is connected to a multilateral solution, any new connection it establishes may follow a similar approach. The choice of the interlinking model in turn affects the design and implementation of the governance framework for the interlinking arrangement (Table A4.1 in Annex 4).

4.2 Design phase: corporate aspects

4.2.1 Legal setup

The choice of interlinking model and corporate setup interacts with the legal setup, which in turn will have implications for other aspects of the governance arrangement (eg agility in decision-making, dispute resolution, ability to raise capital and scale). Accordingly, the legal setup forms the basis for an interlinking arrangement's current design and future development.

In addition, the decision on the legal structure is closely linked to that of ownership (fully public, fully private or hybrid public-private, as discussed in Section 4.2.2) because the ownership structure may broaden or constrain options available for the legal setup (eg supranational entity, company limited by shares or company limited by guarantee). As a result, one possible approach is to begin by developing a clear understanding of which owners would exercise control as well as shape the direction of an interlinking arrangement and then consider which legal structure would help the owners achieve their desired outcomes.

Contractual arrangements between the involved parties versus creating a new legal entity

The bilateral contracts and agreements between the two component FPS of a bilateral link can have different degrees of formality. A multilateral hub and spoke arrangement will typically involve the establishment of a separate legal entity. The hub entity will set the rules for the arrangement (typically through a rulebook) and monitor compliance with those rules by the component FPS. The formation of a new legal entity could slow down the initial time to market but make future expansion easier. Where an interlinking arrangement may require the establishment of a separate legal entity, understanding the associated features and trade-offs between the different legal structures is critical (see Table A4.2 in Annex 4 for examples of different legal structures that could be adopted for a separate legal entity).

Home jurisdiction of the new legal entity

For a separate legal entity, selecting the home jurisdiction requires careful evaluation, since it has interdependencies with several other aspects of the arrangement's design. The home jurisdiction determines the legal and regulatory framework under which the legal entity operates, covering aspects including consumer protection, AML/CFT, data privacy, and oversight and supervision requirements. The overall reputation of the chosen jurisdiction for corporate governance practices can influence the arrangement's credibility and attractiveness to potential participants.

4.2.2 Ownership structure

The stated objectives of the arrangement, including whether or not it will be a for-profit venture, will shape its ownership structure and management. The choice of interlinking model will also affect these decisions (Table A4.3 in Annex 4).

Public or private ownership (or a mix thereof)

Ownership of the interlinking arrangement will primarily depend on the ownership of the component FPS. If one or more of the component FPS are themselves publicly owned or public authorities strongly back the interlinking arrangements in support of their public policy objectives, some level of public sector ownership of the link is likely. If an interlinking arrangement is fully owned by the public sector, private sector involvement could be realised via different mechanisms (eg in the form of user groups or independent directors). If the component FPS are private sector-owned, public-sector ownership of the interlinking arrangement is unlikely. The governance arrangement plays an important role in balancing between commercial objectives and the public policy goals, including safety, efficiency and security.

Evolution of ownership structure over time

Interlinking arrangements may evolve over time, in terms of volume, corridors and business model. For example, some bilateral link arrangements might evolve into a hub and spoke model and change their ownership structure. Alternatively, an interlinking arrangement launched to meet certain public policy goals could evolve into a profit-seeking venture in the steady state or it might want to raise funds to expand further. Some of these potential changes can be anticipated from the outset in the governance arrangements. Periodic reviews of the ownership structure could prove to be useful to identify whether changes are needed.

4.3 Design phase: operational aspects

4.3.1 Governance bodies

Typically, the governance arrangement of a private payment system has a dedicated board of directors that supervises its activities. The governance of an FPS owned and operated by a central bank may be different. In addition, central bank-operated payment systems are usually governed by central bank regulations rather than by corporate law provisions. If a separate legal entity is created, the home jurisdiction will have (legal) requirements for members of the board of directors. The board of directors, together with the general assembly of shareholders/members, forms the top authority of the organisation. In contrast, if the interlinking arrangement consists of a bilateral link between two domestic FPS, a more informal and lighter governance arrangement might be adopted.

The responsibilities of the board of directors and of any other governance bodies (eg board committees or the general assembly of shareholders) will be defined by the articles of association or articles of incorporation and will have to observe the relevant statutory provisions.¹⁹ The responsibilities

¹⁹ For details on the responsibilities of a board of directors based on experience from retail payment systems worldwide, see World Bank (2021), in particular Section 4.5.

and accountabilities of the board should be clearly documented and should be assessed regularly in terms of their appropriateness and effectiveness. In some cases, the articles of incorporation (or equivalent) will also establish consultative committees that have no formal powers as such, but that are required to be consulted as part of the decision-making process of the board, or of the dispute resolution bodies. The purpose of these additional committees is typically to broaden stakeholder representation. This point is analysed in further detail in Section 4.3.4.

4.3.2 Conduct of operations

Another relevant aspect for a governance arrangement with clear impacts on information flow, decision-making and accountability is the relationship between the owner and the operator if they are separate entities. A robust governance arrangement outlines who has decision-making power in which areas and their responsibilities and accountability. The operator should be able to make decisions about the day-to-day operations of interlinking arrangement in an effective and timely manner. The owner would be involved in or take commercial and strategic decisions. If governance stipulates that all decisions require the owner's approval the linked system would be vulnerable to delays and additional risks. The arrangement should avoid potential conflicts of interest (eg by a clear separation of roles between overseer and operator in central bank-owned interlinking arrangements).

4.3.3 Risk management

As discussed above, interlinking arrangements generally do not introduce new types of risks but may change the risk profile of the linked systems. Developing a detailed and comprehensive risk management framework is essential for managing the different types of risks appropriately.

An effective governance arrangement clarifies roles and responsibilities in the form of a dedicated risk management framework or by reference to existing frameworks. Relevant aspects of such a framework might include the roles and responsibilities of the board and management, procedures to be followed and tasks to be undertaken, and a dedicated independent risk management function and structure. In the case of a bilateral link or hub and spoke model, all of these aspects will require some form of coordination and agreement between the FPS of the different jurisdictions that already have risk management frameworks in place. It is also essential that the governance agreement identifies who is responsible for ensuring the effectiveness and appropriateness of the risk management framework.

4.3.4 Stakeholder engagement

FPS interlinking arrangements can have mechanisms to assess the impact of their decisions on a broader set of stakeholders. These mechanisms can include participants and sometimes even the general public (Box 2). Interlinking arrangements may use a variety of mechanisms and channels for involving stakeholders and ensuring that their views are appropriately considered in the decision-making process. Some examples of stakeholder engagement mechanisms include broad stakeholder representation on the board of directors and board committees (eg including non-shareholders), or in user committees and public consultation processes. For those arrangements that do not provide for such involvement in the decision-making process, it is important to promptly and regularly inform its owners as well as participants, other users and, where appropriate, the general public, of the major decisions and the expected and actual outcomes.

Seeking broader and more inclusive stakeholder representation may come with some potential drawbacks. First, there may be adverse effects on the performance of the governance arrangement. For example, a larger board of directors may support representativeness and inclusion but at the expense of agility. Second, a greater range of stakeholders is likely to give rise to more conflicts within the organisation and the need for a robust conflict resolution framework. Problems of this type may require ad hoc mechanisms designed to reduce the risk of decision-making gridlock, eg by agreeing on a majority criterion.

A cross-border FPS interlinking arrangement also has an interest in considering its effects beyond the circle of its immediate users, participants, overseers and owners. Over time, broad stakeholder engagement could assist interlinking arrangements in reaching new or emerging user communities, which could in turn generate greater scale in payment flows. Moreover, broad engagement could improve understanding of the interlinking arrangement's interconnectedness with other payment systems.

Box 2

Including end-user perspectives in governance: challenges and opportunities

While the importance of including all stakeholders in governance is widely recognised, incorporating the perspectives of end users, who are often individuals with diverse needs and limited participation experience, presents unique challenges. But their inclusion can offer three types of valuable benefits.

First, decisions made within the system, especially decisions regarding fees, accessibility and security directly affect end-users' experience and trust. Including end users in governance ensures their needs are at the forefront, leading to a more relevant and user-friendly system.

Second, end users represent a vast spectrum of experiences and perspectives. They come from varied backgrounds, have different levels of financial and digital literacy, and use diverse payment methods. Engaging with them addresses the financial realities of the population, fostering a more equitable system. For example, a payment system could be designed primarily for tech-savvy urban citizens, neglecting the needs of rural communities. User inclusion in governance could help bridge such gaps.

Third, end users can act as early problem identifiers. Their first-hand experience can illuminate pain points, potential fraud vulnerabilities and areas for improvement before issues escalate. For example, a security flaw may not be easily visible or identifiable for developers, but user feedback can act as an early warning system, leading to a more secure system.

However, including end users in governance presents some challenges. Bridging the knowledge gap between complex governance processes and everyday user experiences requires clear and accessible communication strategies. Including end-user opinions via the formal governance mechanism is not the only solution available. For example, regular research on user behaviour and/or surveys can also capture needs and preferences, informing decision making.

Source: CPMI.

5. Oversight approach for FPS interlinking arrangements

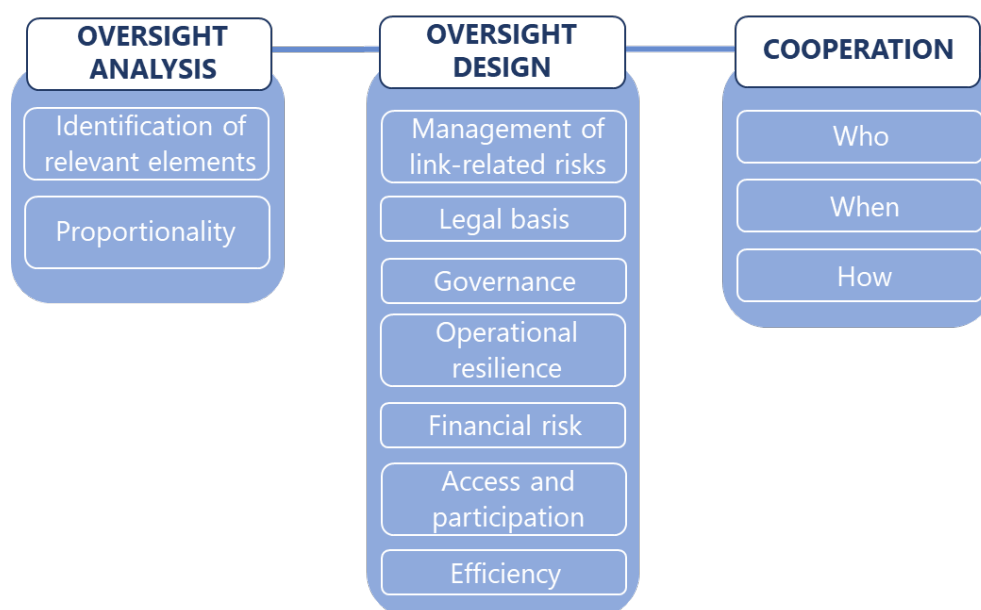
The oversight function of central banks promotes the objectives of safety and efficiency of existing and planned payment, clearing, settlement and related arrangements. Overseers monitor these arrangements, assess them against these objectives, and where necessary, induce change (see Section 2.3.2 for the full definition). While the scope of oversight differs across central banks, it can cover FPS and their interlinking arrangements, with oversight being conducted domestically and through cross-border cooperation.

There is no one-size-fits-all approach for oversight of FPS interlinking arrangements. FPS operators should first analyse the extent to which the novelty represented by the (planned) interlinking arrangement with or without a separate entity (eg a hub entity) alters the risk profile of the FPS itself, and overseers of component FPS should review this analysis and consider whether it requires separate oversight.

However, the establishment of a link between two (or more) FPS does not necessarily require a change in the oversight expectations that the respective overseer applies to their overseen FPS. If the existing oversight framework applied to the component FPS is assessed to be comprehensive and captures all relevant link-related risks, continuing to apply the same oversight expectations would be sufficient.

This section discusses relevant elements for overseers to consider when: (i) analysing the comprehensiveness of their existing oversight expectations; (ii) defining the oversight approach for FPS interlinking arrangements; and (iii) deciding on any oversight cooperation. This section also helps FPS operators to understand the general expectations overseers may have for the safety and efficiency of FPS interlinking arrangements, and around engagement with overseers at an early stage and on an ongoing basis. The overall process for overseers can be broken down into three areas, which are not necessarily sequential (Graph 5):

- *Analysis:* the respective overseers analyse the proposed interlinking model, features and other relevant aspects, and work with the component FPS operators to understand the additional, if any, risks deriving from the FPS interlinking arrangement. Based on that, the respective overseer assesses the comprehensiveness of existing oversight expectations. Section 3 above provides an overview of the possible risk implications of interlinking FPS.
- *Design and organisation:* the risk analysis of the proposed FPS interlinking arrangement, as well as the existing oversight framework for the component FPS, will help overseers determine an appropriate oversight approach going forward and whether changes to the oversight of the component FPS are needed.
- *Cooperation:* effective cooperation among the respective oversight authorities of the component FPS can contribute to the safety and efficiency of the FPS interlinking arrangement, especially in relation to cross-border payment flows. FPS interlinking arrangements with a separate entity may also necessitate cooperation around oversight matters related to the hub.



Source: CPMI.

5.1 Oversight analysis

Respective overseers of the component FPS should define the overall scope of their oversight activities based on the risk analysis of the FPS interlinking arrangement and the assessment of their current oversight approach. Before an FPS establishes a link, respective overseers and FPS operators should analyse potential risks and risk mitigants. In particular, respective overseers should assess the “additional risk”, if any, posed by the FPS interlinking arrangement. They should evaluate whether and to what extent the oversight framework and expectations currently in place accounts for the potential changes in risks due to interlinking. Finally, overseers should determine whether the scope of oversight captures all relevant components and actors of the interlinking arrangement.

In some jurisdictions, the oversight frameworks in place for the component FPS and other entities supporting the link (eg the hub), could be adequate in addressing these additional risks. In those cases, overseers might decide to apply their oversight framework to exploit synergies and avoid redundancies. Other overseers, however, may find it necessary to change their approach or expectations.

Ultimately, it is the responsibility of the FPS and hub operators to understand risks and their relevance to the safety and efficiency of the respective component FPS and the interlinking arrangement itself. Overseers and operators should identify any potential mismatches or conflicting oversight expectations between the jurisdictions involved and any relevant implications when engaging with their respective FPS operator and, where relevant, the hub. The relevance of the interlinking arrangement can be different for the involved jurisdictions, and the degree of importance and risk profile can change over time due to changes in the scale of operations (eg increases in the value and volume of processed cross-border transactions or the number of component FPS that form part of the interlinking arrangement). Therefore, a universal and static oversight approach might not be feasible. Hence, the oversight approach should be tailored and may need to evolve over time, commensurate with the risks (eg introducing stricter oversight requirements if a component FPS or the hub becomes systemically important, see Section 5.1.2).

5.1.1 Identification of elements of the FPS interlinking arrangements relevant to oversight

The models, scope and design choices for interlinking FPS are numerous and may have differential impacts on the specific risk profile for the component FPS as well as the interlinking arrangement overall. It is critical for respective overseers to understand the interlinking model and design choices that support the arrangement (see Annex 3 for questions overseers could ask to operators). Operators should engage with their overseer at an early stage and on an ongoing basis to facilitate this understanding.

- *Model*: risks can be affected by the interlinking model. Legal and regulatory differences are, for example, more likely in a multilateral setting than a bilateral one.
- *Scope*: the component FPS objectives will affect the scope of the interlinking arrangement. The higher the number of FPS connected and the greater the variety of types of PSPs participating in the component FPS, the bigger the potential efficiency gains, but also the larger the potential risks the arrangement could entail.
- *Functional design*: features already used by the component FPS, such as liquidity saving measures and prefunding solutions, might also be used for the interlinking arrangement. In addition, solutions specific to the interlinking arrangements, such as embedded FX conversion mechanisms, might be introduced as part of the arrangement. Third-party service providers could be of special interest from an oversight perspective if they are critical for the functioning of the interlinking arrangement. Financial risks can depend on the role of private or central bank liquidity providers.

5.1.2 Pragmatic and proportionate approach in terms of risk management and oversight

Oversight should be proportionate to the importance of the interlinking arrangement. Risk-proportionate oversight can be a more efficient and effective way to oversee cross-border interlinking arrangements than a one-size-fits-all approach, especially in the early stages of an arrangement's development. This importance can be assessed based on quantitative indicators, such as (i) the size of the end user and/or the participant base, considering all component FPS; (ii) the degree of market penetration in terms of volume or value, considering all relevant markets; and (iii) geographic relevance from the perspective of each component FPS. The oversight approach could differ depending on a predefined threshold (agreed upon between the overseers) and interlinking below a certain threshold could be exempted entirely.

Links can involve FPS which have different levels of importance in their respective home jurisdictions (eg a link between a systemically important and a non-systemically important FPS). As such, the same interlinking arrangement might be assessed against a more extensive set of oversight expectations from an overseer that assigns more importance to the component FPS or the interlinking arrangement, but only against some (if any) expectations from another overseer. Authorities should ensure that their oversight is proportionate to the risks (eg size and complexity) and that it is effective in mitigating and managing those risks.

5.2 Oversight design: oversight recommendations

Based on foregoing risk analysis, this section sets out oversight recommendations that overseers should consider when developing an oversight approach for the respective component FPS or hub entity.²⁰ The recommendations, which are further detailed with key elements (KEs), form a baseline to help overseers for the review and design of jurisdictional oversight frameworks for the FPS interlinking arrangement. These recommendations and the key elements can also inform operators and help them to understand the aspects overseers might focus on to promote the safety and efficiency of interlinking arrangements.

²⁰ Recommendations issued by the CPMI generally describe best practices, with the goal of promoting common understanding and improving oversight or market practices. CPMI members are expected to promote these recommendations and relevant arrangements are encouraged to observe them (CPMI (2014b)).

As noted above, some domestic oversight frameworks may already capture these oversight recommendations and KEs, while others may not. Overseers may decide to continue applying their current specific FPS oversight expectations to the extent that they capture all relevant risks stemming from the interlinking arrangement (discussed in Section 3.2).²¹

Management of link-related risks

Recommendation 1: An FPS and/or the hub entity that establishes an interlinking arrangement with (an) other FPS should identify, monitor and manage link-related risks.

- *KE 1.1:* An FPS should identify, monitor, assess and manage all potential sources of additional risks arising from an interlinking arrangement before entering into it and on an ongoing basis once the arrangement has been established. The hub entity (as appropriate) should do the same before connecting new FPS and on an ongoing basis. These risks include credit exposures, liquidity, operational and, if applicable, FX risks related to the FPS interlinking arrangements for its participants as well as potential spillover effects.
- *KE 1.2:* A hub entity should be able to meet all its obligations to the component FPS and to their participants in accordance with its operating agreement.
- *KE 1.3:* An FPS that establishes multiple links should ensure that the risks generated in one link are adequately managed so as to contain and mitigate any potential negative impact on other interlinking arrangements or the component FPS.
- *KE 1.4:* An FPS should ensure that the interlinking arrangements in which it participates allow the FPS to observe the specific oversight expectations it is subject to at the jurisdictional level.
- *KE 1.5:* FPS and (as appropriate) the hub entity that uses a technical service provider to operate the interlinking arrangement with another FPS should measure, monitor and manage the risks (including legal, financial and operational risks) arising from the use of provider(s).

Legal basis

Recommendation 2: An interlinking arrangement should have a well-founded, clear and transparent legal basis that is enforceable in all relevant jurisdictions, supports its design, and provides adequate protection to the component FPS and their participants.

- *KE 2.1:* Component FPS should ensure that the interlinking arrangement mitigates risks arising from any potential conflicts of law across jurisdictions.
- *KE 2.2:* The terms of interlinking arrangements should clearly define the rights and obligations of the linked FPS, the law that will govern each aspect of the link, settlement finality and, where necessary, the participants. They should be readily available as appropriate for all parties with a legitimate interest.
- *KE 2.3:* The rules, procedures and contracts governing the interlinking arrangement should be complete, valid and enforceable in all relevant jurisdictions.

Governance

Recommendation 3: The governance of the interlinking arrangement should be clear and transparent, support enhancing the efficiency of cross-border payments while maintaining their safety and advance the objectives of relevant stakeholders.

²¹ Specific oversight expectations refer to the concrete jurisdiction-level oversight requirements that the FPS or hub operators must meet.

- *KE 3.1:* Component FPS and (if applicable) the hub entity should formulate a strategy on the establishment of interlinking arrangements, which should be shared with owners and relevant authorities.
- *KE 3.2:* Component FPS and (if applicable) the hub entity should place a high priority on the safety and efficiency of the interlinking arrangement.
- *KE 3.3:* The interlinking arrangement should foresee mechanisms for sharing relevant information with the relevant stakeholders and consulting them when needed.
- *KE 3.4:* The interlinking arrangement should have clear and direct lines of responsibility and accountability, which should be disclosed to all relevant stakeholders.

Operational resilience

Recommendation 4: Component FPS and (as appropriate) the hub entity should carefully assess the operational risks related to their links to ensure a high level of cyber resilience and information security, as well as scalability and reliability of IT and related resources.

- *KE 4.1:* The interlinking arrangement should have agreed-upon operational service levels that are communicated to all relevant stakeholders.
- *KE 4.2:* The design of the interlinking arrangement should minimise and mitigate operational risk exposures from the links to the component FPS.
- *KE 4.3:* The functioning of the interlinking arrangement should be appropriately tested and monitored. Component FPS and (as appropriate) the hub entity should determine the processes, roles and responsibilities for addressing adverse operational incidents involving the link. Technical service providers supporting the interlinking arrangements should be aware of these processes and understand their responsibilities in such incidents.
- *KE 4.4:* Interlinking arrangements should ensure they are resilient to a wide range of threats and risk events. These efforts could include stress tests, the result of which should be reported to the relevant authorities.
- *KE 4.5:* Component FPS and (as appropriate) the hub entity should ensure that risk management arrangements and processing capacity are sufficiently scalable and reliable to operate the interlinking arrangement.
- *KE 4.6:* Component FPS and (as appropriate) the hub entity should work jointly as well as in collaboration with participating PSPs, to prevent, detect and manage fraud risk arising from the arrangement.

Financial risk

Recommendation 5: Component FPS and (as appropriate) the hub, should closely monitor, measure and manage financial risks arising from the interlinking arrangement.

- *KE 5.1:* The rules and procedures of the interlinking arrangement, and of the component FPS, should allow the FPS, PSPs and relevant service providers to have a clear understanding of the credit, liquidity and, if applicable, FX risk inherent in the arrangement, and an understanding of which parties bear those risks.
- *KE 5.2:* The terms of the interlinking arrangement should ensure adequate management and containment of risks associated with the inability of one of the component FPS's participants or (if applicable) the component FPS to fulfil its obligations promptly, especially if a netting process takes place.

Access and participation

Recommendation 6: Access to and participation in an interlinking arrangement should be based on safety and efficiency considerations, the interlinking arrangement's strategy and broader financial market developments.

- *KE 6.1:* FPS interlinking arrangements operated by a hub should assess the possible entry of other FPS into the arrangement based on objective criteria.
- *KE 6.2:* Access criteria to an interlinking arrangement should be tailored to specific kinds of links (bilateral or hub and spoke) based on the risks each kind of link poses to the component FPS and their participants.
- *KE 6.3:* Exit rules and procedures for cases of withdrawal from an interlinking arrangement should be established and communicated at the outset.

Efficiency

Recommendation 7: The interlinking arrangement should meet the service level requirements agreed upon among the component FPS or (if applicable) determined by the hub entity.

- *KE 7.1:* Component FPS should have clearly defined, measurable and achievable objectives concerning the functioning of the interlinking arrangement, eg in the areas of minimum service levels, risk management and business priorities.
- *KE 7.2:* The establishment of an interlinking arrangement should not place the component FPS's own operations at risk eg in terms of reducing their efficiency, including with respect to domestic payment transactions.

5.3 Cooperation framework

Oversight of FPS interlinking arrangements is likely to benefit from cooperation among overseers of component FPS – particularly on areas of common interest related to the structure and functioning of the interlinking arrangement. Cooperation can help overseers to gain a comprehensive picture of the arrangement, including its risk profile and risk management. Cooperation between overseers can also foster efficient and effective communication and information-sharing on a range of topics, including risk management, incidents affecting the component FPS and/or the link itself, and crisis management related to the operation of the link.

To facilitate cooperation, overseers should identify the oversight authorities responsible for the interlinking arrangement (ie the respective overseers of the component FPS, the hub and third-party providers). Oversight authorities should decide then if, how and when to cooperate with each other. Cooperation at any early stage may be particularly helpful where the establishment of a link requires separate approvals from oversight authorities in several jurisdictions.

Cooperation may take different forms and serve multiple purposes.²² The establishment of an interlinking arrangement between two (or more) FPS does not automatically require formal cooperation. The level of formality may be decided flexibly, depending on the objectives for the cooperation, among other considerations, and may need to change over time as the interlinking arrangement matures. Overseers may seek to formalise their engagement through protocols or a memorandum of understanding. This would support information exchange and set out processes for authorities' engagement. A formal arrangement may become more important when several authorities are involved, such as when the interlinking arrangement is based on the hub and spoke model with several component

²² See Section 1.2 of CPMI (2019).

FPS.²³ In this scenario, the overseers may consider designating a lead overseer, who would accept responsibility for facilitating cooperation among relevant authorities.

For both formal and informal cooperation, overseers could agree on the scope of cooperation depending on their respective mandates. Any cooperation arrangement could benefit from overseers' understanding how they might work in different situations, especially in crisis situations. They may consider whether it could be useful to share some information on a regular basis in a business-as-usual situation (eg data on volumes, values and service quality) and what sort of developments would merit ad hoc exchanges of information (eg new regulatory developments or specific market developments). Overseers may consider undertaking analyses and assessments jointly or sharing their analyses and assessments of specific risks.

Overseers could also consider how they would cooperate during a crisis event related to the operation of the link. In such situations it is important for the operators of the interlinking arrangement to have clear and non-conflicting expectations from overseers. If a lead overseer has been identified, it could be agreed amongst authorities that the lead overseer's role is enhanced in crisis events and even that it becomes the ultimate decision-maker. For example, a lead overseer of the hub could be responsible for engaging with the hub entity during a stress event, providing instructions and sharing information with the other relevant overseers. Where a lead overseer is not envisaged, it could be useful to consider how cooperating overseers would engage with each other during a crisis, how responsibilities would be divided and how they may want to engage with FPS operators.

6. Conclusions

Interlinking FPS across jurisdictions could expand the domestic end user experience to the cross-border dimension and could offer the potential to enhance cross-border payments for all, by improving their efficiency in terms of cost, speed, access and transparency while maintaining their safety. Divergences in legal frameworks, regulations and central bank policies may create challenges when interlinking FPS across jurisdictions. Therefore, understanding the main decisions to be taken when developing the governance approach and oversight framework can support the establishment of such arrangements.

This report on governance and oversight for cross-border FPS interlinking arrangements should support operators and overseers involved in discussions, projects and operational FPS interlinking arrangements. It discusses the main decisions to be taken and reviews how these decisions may be affected by differences in the two prevalent interlinking models, bilateral links and hub and spoke arrangements. This report aims to support authorities in their approach to overseeing interlinking arrangements by examining the main elements that overseers could consider when first defining their approach and ultimately deciding on the related activities. In doing so, the report also informs operators by helping them to understand potential oversight expectations towards interlinking arrangements.

Going forward, the CPMI will engage with stakeholders to disseminate the findings of the report and will provide a forum for industry and central banks to discuss how to advance interlinking arrangements.

²³ In the hub and spoke model, the hub can be owned and operated by a separate legal entity, established in one jurisdiction but has spokes in other jurisdictions. This may result in several authorities involved in the interlinking arrangement.

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²⁴ The Committee on Payment and Settlement Systems (CPSS) changed its name to the Committee on Payments and Market Infrastructures in September 2014. References to reports published before that date use the Committee's old name.

Annex 1: Summary of the interim report considerations and public consultation response

The CPMI report *Linking fast payment systems across borders: considerations for governance and oversight* describes initial considerations on governance and oversight for fast payment systems (FPS) interlinking across borders (CPMI (2023)).

Pre-conditions

Consideration 1: Compatible strategic and economic policy priorities among the involved jurisdictions can create favourable conditions for agreement on potentially sensitive issues related to the design of an arrangement's governance.

Consideration 2: A common long-term vision and objectives for an interlinking arrangement among the private and/or public sector FPS owners can be an important starting point for designing, establishing and maintaining the effectiveness of FPS interlinking governance arrangements.

Consideration 3: The chosen ownership structure and legal setup of the interlinking arrangement can have strong interdependencies with key aspects of the governance framework.

Governance design

Consideration 4: The flexibility and scalability of the governance arrangement can be especially important for a cross-border interlinking arrangement to facilitate future expansion and an evolution of the role of central bank involvement.

Consideration 5: A wide adoption of fast payments at the jurisdictional level can contribute to the business viability of FPS interlinking arrangements. The governance arrangement of the interlinking arrangement can leverage the experience from the interlinked FPS to increase adoption, usage and ultimately its sustainability.

Consideration 6: Representative stakeholder involvement in governance can increase acceptance of the cross-border interlinking arrangement, while keeping governance processes efficient and agile. It can be especially critical for the success of arrangements that may be driven by public interest objectives and operate in a diverse and multi-jurisdictional context.

Oversight design

Consideration 7: Depending on the state of the interlinking arrangement (ie planning, design, implementation or live operation) and the characteristics of its use (eg scale and intended use case), a pragmatic and proportionate approach in terms of risk management and oversight, may contribute to its success.

Consideration 8: Overseers consider clarity and consistency on the oversight expectations for the interlinking arrangement to be crucial to promote the efficiency and safety of the FPS interlinking arrangement.

Consideration 9: Some degree of cooperation among overseers of the FPS participating in an interlinking arrangement can be necessary for overseers when fulfilling their respective mandates. The form, format and scope of cooperation can vary considerably and can be tailored to different circumstances.

Consideration 10: The involvement of overseers during the design and implementation of an interlinking arrangement can contribute to the proper design of the governance arrangement and improve its alignment with other relevant oversight expectations. Both management and overseers may also benefit from open lines of communication for day-to-day management.

The respondents to the public consultation were the Bill and Melinda Gates Foundation, EBA Clearing, Emerging Payments Association Asia (EPAA), Giesecke+Devrient (G+D), International Institute of Finance (IIF), Mastercard and The Clearing House Company (TCH). The detailed responses can be found on the CPMI website.

Q1. What are your views on the working definition of governance laid out in this report?

Respondents agreed that the definition of governance was appropriate.

Q2. Do you think that some specific features of governance should be prioritised and if so, which ones? What would be the basic/simple requirements for a resilient governance arrangement to be adopted by an interlinking arrangement?

Respondents prioritised different topics, but ownership structure, neutrality and inclusiveness emerged as the most cited.

Q3. Can existing governance or oversight frameworks and/or arrangements be leveraged for FPS interlinking? Do you think that different FPS interlinking models should be subject to different governance or oversight frameworks? Please explain.

Respondents shared the view that existing governance and oversight frameworks could be leveraged, but in many cases "starting from scratch" may be necessary. They also generally indicated that governance and/or oversight arrangements may depend on the actual interlinking model.

Q4. Are the 10 considerations learnt from the interaction with stakeholders comprehensive? Is anything important missing or not properly addressed?

Respondents mainly stated that the 10 considerations are comprehensive. The points that respondents thought were not (sufficiently) covered by the considerations include operational and business models, the impact of interlinking on end users, risk management considerations and interaction with existing payment rails.

Q5. Is there any further guidance that would support safe and efficient FPS interlinking arrangements?

Respondents reported that additional guidance could focus on greater regulatory consistency across jurisdictions, a more open approach to data, risk-based oversight, recognition of existing oversight arrangements, technology-neutral governance principles and co-existence with other systems.

Q6. Consideration 1. To what extent is the alignment regarding strategic and economic policy priorities among the involved jurisdictions a pre-condition for the design of an interlinking arrangement's governance?

Respondents generally agreed that strategic and economic alignment are important factors but not necessarily a pre-condition for developing the governance arrangement for FPS interlinking arrangements.

Q7. Consideration 2. What is the best way to identify and define a shared long-term vision in terms of objectives and guiding principles (inclusivity, neutrality, agility etc) of an FPS interlinking arrangement?

Respondents generally agreed on the importance of having a long-term vision for objectives and guiding principles and noted that there is a need to further engage stakeholders to identify a shared vision. Some respondents think that other guiding principles should be added.

Q8. Consideration 3. Do you agree that two key design choices in the governance of an FPS interlinking arrangement are the ownership structure and the applicable legal framework? Are there others?

Respondents generally agreed on the key role of ownership structure and legal framework. Other factors should be considered, such as resourcing, funding and the owner/operator relationship.

Q9. Consideration 4. How can the governance of the interlinking arrangement ensure flexibility, scalability and openness to cope with structural changes, such as new corridors/services or changes in ownership?

Respondents recognised, among other factors, the importance of having clear criteria and mechanisms to add new members to the interlinking arrangement.

Q10. Consideration 5. What are the most important ways in which the governance can help make the FPS interlinking arrangement commercially viable/sustainable?

Respondents recognised the importance for the governance arrangement of setting the pricing model of the interlinked system.

Q11. Consideration 6. What governance mechanisms can FPS interlinking arrangements adopt to involve stakeholders and appropriately consider their views in the decision-making process without adversely affecting its agility?

Respondents stressed the importance of having active engagement with stakeholders. Some of them suggested looking at the Brazil PIX Forum as a good example of industry involvement.

Q12. Consideration 7. What are the most relevant factors to assess the risk profile of such an arrangement (eg type of services, number of jurisdictions, technical complexity)? How can the oversight framework be designed in order to offer sufficient flexibility, avoiding a one-size-fits-all approach?

Respondents reported proportionality as the main factor to avoid the one-size-fits-all approach. The scale and degree of legal/regulatory divergences were considered relevant to a risk assessment.

Q13. Consideration 8. How can the boundaries of the oversight expectations of the interlinking arrangement be set (ie distinct from oversight on interlinked systems)? How can proportionality be ensured?

Respondents highlighted the importance of clearly documenting which aspects are relevant to the interlinking arrangement. Proportionality can be ensured by conducting periodic reviews of the risk management model and its results, and by scaling oversight activities accordingly.

Q14. Consideration 9. How can cooperation among overseers be implemented? How can it vary by form, degree of formalisation and intensity?

Respondents reported that the oversight arrangement should also evolve as the relevance of the interlinking arrangement changes over time. They also stressed the importance, for the effectiveness of oversight, of the choice of jurisdiction in cases in which a separate legal entity to operate the interlinking arrangement is created.

Q15. Consideration 10. Do you see any challenges if overseers are being involved during the design and implementation phase of an arrangement's governance? If so, which ones?

Respondents had varying opinions. On the one hand, having overseers involved in the design and implementation of the governance can be beneficial to the interlinking arrangement as, for example, it can unblock regulatory hurdles. On the other hand, this involvement may introduce undesired blurred lines of responsibility between the management of the arrangement and public sector authorities.

Additional comments on governance: some respondents stressed the importance of having the freedom and flexibility to establish governance for their interlinking arrangements that fits their commercial needs.

Additional comments on oversight: some respondents pointed out that the report does not highlight which additional risks of an interlinking arrangement make a dedicated oversight framework necessary.

Annex 2: Description of other key terms used in this report

Bilateral payment arrangements: contracts between two payment service providers (PSPs) (in the case of individual correspondent banking arrangements) or between two payment systems (in the case of bilateral interlinking arrangements). They can be based on standard templates that the contracting parties agree to use. Typically, no separate governance entity is involved (CPMI (2024)).

Credit risk: the risk that a counterparty, whether a participant or other entity, will be unable to fully meet its financial obligations when due, or at any time in the future.

Cross-currency arrangement: conversion from one currency to another that takes place as part of the interlinking arrangement, allowing one connected PSP to be debited in one currency and another connected PSP to be credited in the other currency. Foreign exchange (FX) rates may be set, and liquidity may be provided, by the payment system itself or by one or multiple competing third-party FX liquidity providers.

Fraud risk: a subset of operational risk that encompasses various situations, including (i) the manipulation of the payer or payee by a fraudster, resulting in the issuance of a payment instruction by the payer acting in good faith; (ii) the initiation of a payment instruction by a fraudster (who has fraudulently obtained the payer or payee's sensitive payment data); or (iii) the modification of an attribute (such as the account number, transaction amount, or name of the payee or payer) of a genuinely issued payment instruction intercepted by the fraudster (World Bank (2021)).

FX provider: entity that allows for currency exchange in a cross-border payment (ie it receives a payment in one currency from the payer and pays out the payee in another currency).

FX settlement risk: the risk of a loss when a party in an FX transaction pays the currency it sold but does not receive the currency it bought and hence settlement fails. FX risk is the risk arising from unexpected exchange rate fluctuations. The risk of illiquid currencies is the liquidity risk due to certain currencies.

Legal risk: the risk of the unexpected application of a law or regulation, usually resulting in a loss. Legal risk can also arise if the application of relevant laws and regulations is uncertain. For example, legal risk encompasses the risk that a counterparty faces from an unexpected application of a law that renders contracts illegal or unenforceable.

Liquidity risk: the risk that a counterparty, whether a participant or other entity, will have insufficient funds to meet its financial obligations as and when expected, although it may be able to do so in the future.

Multicurrency arrangement: transactions processed in multiple currencies in parallel using account structures that are segregated by currency. Currency conversion typically happens outside the payment system; that is, cross-currency transactions within the platform are not possible.

Multilateral payment arrangements (often referred to as payment schemes): formal, standardised and common rules for the execution of wholesale payments, retail payments or remittances. They define the relationship between more than two PSPs or payment systems and they are managed by a governance entity. The governance entity can be a public or private sector institution and is the decision-making entity responsible for the governance of a payment arrangement (CPMI (2024)).

Operational risk: the risk that deficiencies in information systems or internal processes, human errors, management failures or disruptions from external events will result in the reduction, deterioration or breakdown of services provided by a fast payment system (FPS). Operational risks include fraud risks and cyber risks.

Payment system: a set of instruments, procedures and rules for the transfer of funds between or among participants; the system includes the participants and the entity operating the arrangement (CPMI (2016)).

Rulebooks: single sets of rules, practices, standards and implementation guidelines for the execution of payments. While many of these rulebooks focus on a single jurisdiction and/or a single currency, several international and cross-currency multilateral arrangements for remittances and retail payments are being developed or are already operational. The resulting inter-PSP payments can be processed via correspondent banking, payment system interlinking or a common platform (CPMI (2024)).

Settlement agent: an entity that is willing to accept a fast payment in the component FPS of one jurisdiction and pay it out in the component FPS of another jurisdiction. For this purpose, the settlement agent must either be participant in the two component FPS or have at least accounts with PSPs that are participants in the respective component FPS. In case of a cross-currency interlinking arrangement, the settlement agent can also take on the role of the FX provider, accepting a payment in the currency of one jurisdiction and paying out in the currency on another jurisdiction.

Single currency arrangement: transactions are processed in one currency. The conversion from any other currency to the settlement currency is typically provided outside the arrangement by the payer's PSP, the payee's PSP, the central bank and/or an international settlement bank.

Systemic risk: the risk that the inability of one or more participants to perform as expected will cause other participants to be unable to meet their obligations when due. In such circumstances, a variety of spillover effects are possible, and an FPS's inability to complete inter-PSP settlement could have significant adverse effects on the markets it serves and the broader economy.

Technical service provider: provides services, such as format conversion and/or network services, to the entities that form part of the arrangement (eg the PSPs, the FPS or the hub).

Third-party risk: the risk that the operational reliability of an FPS may be undermined by non-adequate functioning of a service provider involved in the FPS operations.

Annex 3: Guiding questions for FPS overseers

These questions can help fast payment system (FPS) overseers to gain a better understanding of the oversight landscape for a specific interlinking arrangement and determine whether existing oversight expectations are adequate or if changes are needed. Further, they can help determine the relevant risk considerations and changes to the risk profile of the domestic FPS stemming from interlinking.

- What oversight expectations are in place for the institutions and stakeholders involved in the interlinking arrangement (and their respective functions) and in which jurisdiction?
- Are there oversight expectations for a possible new entity?
- Are there functions and/or institutions that are not covered by the current oversight frameworks?
- Does the geographic scope, cross-currency and/or cross-jurisdictional nature of the interlinking arrangement affect oversight expectations?
- Do existing oversight standards cover all risks originating from the interlinking arrangement? Are there any risks not covered appropriately?
- Do the risks change with the scale/complexity of the interlinking arrangement or when new features are added to the service? Which risks would be more affected, and how?
- Do the risks change in view of the use of (third-party) service providers and/or other intermediaries? Which risks would be more affected, and how?
- Beyond the component FPS, are there any other entities involved in the interlinking arrangement? If so, what is their role (both for domestic and cross-border aspects)? Is there a central governance/rule-setting body for the interlinking arrangement? Is the governance body a separate legal entity? Is there an institution operating as service provider for any technical aspects? Where are the institutions located? Which authority handles incidents/crises? What are the coordination and decision-making processes?
- What roles does each entity involved in the interlinking arrangement perform in the payment flow from end to end? Which entity is responsible for clearing and/or settlement? Which entity is responsible for messaging? Which entity is responsible for the foreign exchange (FX) conversion? Which entity is responsible for anti-money laundering and countering the financing of terrorism checks?
- What are the key differences in the clearing and settlement process between a domestic-only payment and a cross-border payment?
- For arrangements that support cross-currency payments, how is the FX conversion designed, priced and settled (real-time gross or deferred net)? Which parties are exposed to FX risk? What happens to the payment if the FX conversion fails? What is the impact to participants and end users? Is there an alternative arrangement in place in case of the failure of the FX conversion service? Does the FX conversion mechanism provide competitive pricing?
- What technical and operational changes to the component FPS are needed to support cross-border fast payments? In particular, are changes to the messaging format and/or data fields necessary? How are messages communicated between the FPS in real time and how are messages communicated to other intermediaries or third parties, where relevant (eg for the settlement of FX transactions)?

Annex 4: Further details on governance

Governance structure of bilateral link vs hub and spoke model

Table A4.1

Bilateral link	Hub and spoke
<p>Governance arrangements tend to be less complex and formalised, involving direct communication and decision-making between the two component fast payment systems (FPS). For example, the two FPS might decide to set up a sort of joint “dedicated committee” to manage the link, with flexible degrees of formality. In some cases, regulators from both counterparties are invited to observe the governance/management meetings of the link.</p>	<p>Often there is a dedicated and separate legal entity, which is responsible for overall governance and management of the link. Governance is typically more formalised, involving decision-making bodies like a formal board of directors and assemblies representing the various stakeholders. In some cases, central banks (as owner and/or operator) may have a seat on the board of the legal entity. When the hub is not set up in the form of a legal entity but acts more as a common technical platform, governance can be less formalised to some extent, but will likely include solutions for decision-making and conflict resolution among the stakeholders (eg committees or user groups).</p>

Source: CPMI (based on BIS Innovation Hub elaborations).

Features of different legal structures for a separate legal entity

Table A4.2

	International organisation or supranational entity	Company limited by shares	Company limited by guarantee
Purpose	<ul style="list-style-type: none"> • May be established to address global or regional issues, and promote cooperation amongst jurisdictions • May operate under international or regional treaty or contract/agreement 	<ul style="list-style-type: none"> • Used for commercial purposes • Established to conduct business activities, generate profits and distribute dividends to shareholders 	<ul style="list-style-type: none"> • May be used for non-profit or charitable purposes
Ownership and funding	<ul style="list-style-type: none"> • May be owned by member states or governments or supranational entities • May be funded by contributions from jurisdictions and/or supranational entities or grants 	<ul style="list-style-type: none"> • Owned by shareholders • Funded by shareholder subscriptions in return for shares in the company 	<ul style="list-style-type: none"> • No shareholders, but members who provide a guarantee amount • May be funded through membership fees, donations or other revenue sources
Legal framework and application	<ul style="list-style-type: none"> • Operate under specific international treaties or agreements, possibly with immunities granted by jurisdictions • May require internal set of rules and regulations that bind participating entities • Can require ratification of laws and parliamentary sign-off in respective jurisdictions to set up 	<ul style="list-style-type: none"> • Governed by national laws and regulations specific to country in which it is incorporated • May need to comply with company law, tax regulation and other applicable laws 	<ul style="list-style-type: none"> • Governed by national laws and regulations specific to country in which it is incorporated • May need to comply with company law, tax regulation and other applicable laws

This table is intended to show some of the possible differences between the various options for legal structures. Concrete features will depend on the legal and regulatory frameworks of the jurisdictions involved.

Source: CPMI (based on BIS Innovation Hub elaborations).

Ownership and control of bilateral link vs hub and spoke model²⁵

Table A4.3

Bilateral link	Hub and spoke
Ownership of the interlinking arrangement generally remains with the owners of the component FPS, and control is exercised jointly based on pre-defined agreements. Shared control over the interlinking arrangement is likely.	Multiple entities, often representing different countries or institutions, jointly own and govern the interlinking arrangement.

Source: CPMI (based on BIS Innovation Hub elaborations).

²⁵ Actual ownership models of cross-border payment arrangements do not usually fall fully in one or the other category but rather lie somewhere in between.

Annex 5: Composition of the Governance and Oversight Workstream

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Bank of Italy Claudio Impenna

Members

Members (CPMI)

Bank of Canada	Peter Youngman
People's Bank of China	Changchun Mu Yuan Lyu
European Central Bank	Patrick Papsdorf Stefan Antimov
Bank of France	Claudine Hurman Marie-Aline Vives
Hong Kong Monetary Authority	Christine Wong
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Federal Reserve Bank of New York	John Rutigliano Heidy Medina

Members and observers (international organisations and non-CPMI central banks)

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Central Bank of the Dominican Republic	Fabiola Herrera
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