FNALITY GLOBAL PAYMENTS

ENHANCING THE SAFETY AND EFFICIENCY OF CROSS-BORDER INTERBANK PAYMENTS: AN OVERVIEW

THE FNALITY TEAM

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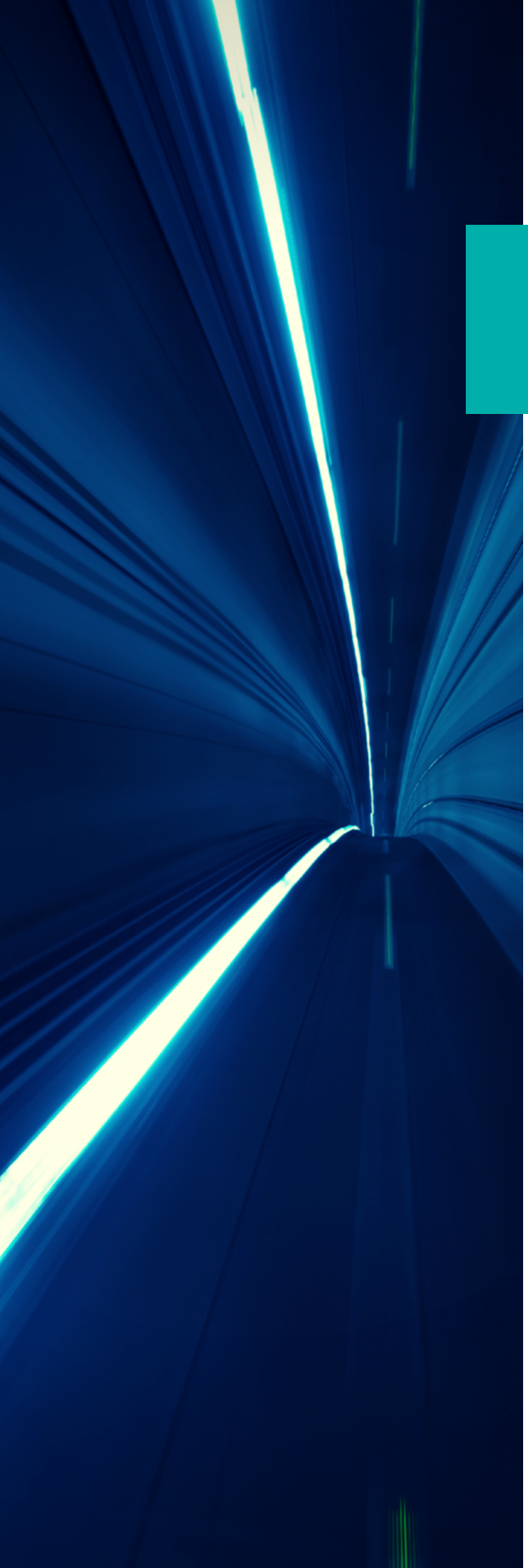


CONTENTS

SECTION 1: INTRODUCTION

Global finance has led to unprecedented flows of cross-border transactions that are processed and ultimately settled in a complex network of financial institutions and Financial Market Infrastructures (FMIs). Today, settlement processes are highly concentrated in FMIs such as payment systems, securities settlement systems and central counterparties (CCPs).

Although the current settlement arrangements work reasonably well, many risks have not yet been eliminated, and numerous inefficiencies persist despite various efforts by market authorities and the industry. Centralised FMIs typically concentrate operational risks (and, in the case of CCPs, financial risks) in a single entity. And although the two legs of a securities or foreign exchange transaction are generally settled simultaneously (i.e., without credit risk), settlement typically takes place two days after trade execution, giving rise to the risk that settlement might fail (so-called 'replacement cost risk').

In addition to FMIs, correspondent banks play a crucial role in the global settlement architecture. Foreign financial institutions often lack direct access to important FMIs, such as the central bank operated large value payment system (in most cases, a Real-Time Gross Settlement (RTGS) system) in a given jurisdiction. These foreign financial institutions typically have to rely on domestic correspondent banks to settle their financial obligations in foreign currency. This exposes them to credit risk on their deposits held with correspondent banks and makes it difficult to manage liquidity effectively. In turn, correspondent banks prefund the settlement of their clients' payment obligations by providing them with intraday credits (BCBS 2013; Ransome 2017).

The model of the current global settlement infrastructure is unsatisfactory for financial market authorities and regulators, as well as for financial institutions.

Regulators are concerned with systemic risk and financial stability (see, for instance, CPMI-IOSCO 2012; CGFS 2010a, CGFS 2010b, CGFS 2020, FSB 2020). Time and time again, it has been seen that funding markets (which are essential for smooth settlement) dry up in times of stress, potentially leading to adverse systemic spill overs. For financial institutions, the current post-trade arrangements lead to unnecessary credit exposures, inefficient liquidity management and excess buffers of liquid assets that cannot be easily used when and where needed.

Fnality International, a consortium of global financial institutions[1], is developing a novel type of payment infrastructure for wholesale transactions (Fnality Global Payments or 'FnGP') that will overcome many of the weaknesses of today's post-trade landscape. FnGP consists of (initially) five interlinked wholesale payment systems (so called Fnality Payment Systems or 'FnPS') for each of CAD, EUR, GBP, JPY and USD.

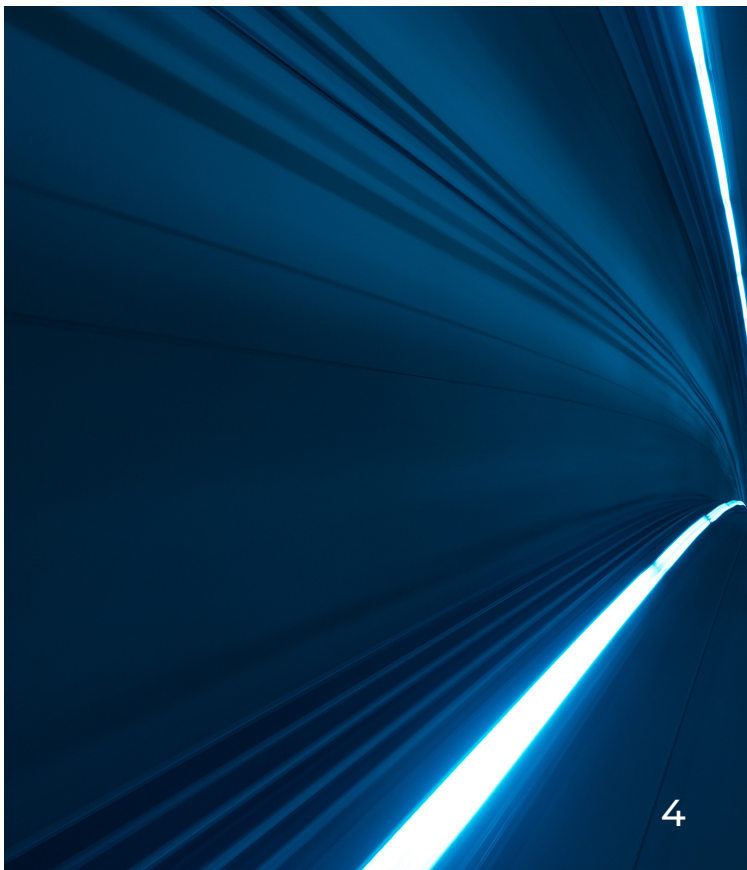
Fnality Global Payments:

1. provides unprecedented levels of operational resilience and availability (24/7/365), thanks to the use of distributed ledger technology ('DLT');

2. reduces concentration risk by enabling peer-to-peer settlement without the need for a settlement agent; and

3. reduces credit risk exposures among participating financial institutions by enabling settlement in an asset with credit qualities similar to that of central bank money and by providing near instant settlement of FX transactions on a Payment versus Payment (PvP) basis in major currencies and allows them to manage their liquidity more efficiently.

This paper is structured as follows. The next section provides background information on the history and motivation for FnGP. The third section sets out the key design features of the FnPS. The fourth section discusses how FnGP makes liquidity management and funding of globally active banks more efficient and how it reduces systemic risk at the same time. Section five presents an overview of the initial use cases. Finally, the paper concludes with an outlook onto the future post-trade FMI landscape.



SECTION 2: BACKGROUND

The Fnality project (originally, the 'Utility Settlement Coin' or USC project) was conceived in 2015 to facilitate the development of a new, distributed financial market infrastructure (dFMI). It was rooted in the realisation that tokenised financial assets will require a safe, digital cash settlement asset on a distributed ledger in order to achieve maximum benefit. Against this background, Fnality has been working towards developing a payments infrastructure that enables settlement of wholesale transactions in a risk-free asset between eligible participants on a peer-to-peer basis, i.e., without a settlement agent. Distributed Ledger Technology (DLT) is the best option to implement this vision as it provides all the necessary features. Additionally, this approach ensures that the dFMIs are systems that are 'resilient by design', both on a technical and organisational level.

The immediate objective of Fnality is to establish a real-time wholesale payment system for the U.S. Dollar, the Euro, the U.K. Pound Sterling, the Japanese Yen, and the Canadian Dollar. FnPSs for other currencies are expected to be launched later. Collectively, these FnPSs will form a network of interoperable (but essentially independent) payment systems, referred to as Fnality Global Payments or FnGP. The operator of a FnPS is a locally incorporated legal entity ('Fnality Local'). It is responsible for compliance with all applicable legal, regulatory and oversight requirements, in particular the relevant national implementation of the CPMI-IOSCO Principles for Financial Market Infrastructures (PFMI). In the second stage, the FnPSs will be linked with each other laying the foundation for Payment versus Payment (PvP) settlement of foreign exchange transactions.

Fnality International was established as a private company limited by shares in England and Wales in May 2019, with the aim of facilitating the establishment of an FnPS for each of the initial five in-scope currencies. The current shareholders include fifteen of the world's largest financial institutions. In mandating Fnality International to deliver Fnality Global Payments, these institutions share a common belief in the significant benefits that are made possible by distributed financial market infrastructures. In preparation to submit central bank account applications in each of our initial in-scope currencies, we are currently in the process of testing the technology and drafting the necessary documentation – including the initial drafts of the FnPS Rulebooks and PFMI self-assessments.

SECTION 3: KEY DESIGN FEATURES OF FNPS

Ideally, the participants in each FnPS will initially include banks (credit institutions or deposit taking institutions), their branches and subsidiaries as well as other regulated financial institutions (including broker-dealers and FMIs) that are eligible to hold overnight funds with one or more of the following six central banks: Bank of Canada, Bank of England, Bank of Japan, European Central Bank, Federal Reserve, and the Swiss National Bank[2]. As access policies differ among central banks, the eligibility criteria for participation may not be entirely harmonised across FnPSs.

Participants who do not hold an account with the central bank in the jurisdiction or currency area of a given FnPS (e.g., local branches of foreign banks) will Fund and Defund their settlement balances via third-party institutions (or correspondent banks or a another branch of the same parent company) that hold accounts in the relevant RTGS system. That said, all participants will be direct participants in the relevant FnPS: no settlement balances will be held by participants on behalf of, or for the benefit of non-participants. Consequently, there will be no indirect or tiered participation in the FnPS.

Settlement asset

Participants in each FnPS will settle wholesale payments in a settlement asset referred to as '**Funds**'. The common design objective of all FnPSs is that Funds will be a claim, entitlement or interest (as the case may be) that corresponds to a pro-rata amount of a deposit (denominated in the currency of the relevant jurisdiction or currency area) held in an account at the relevant central bank (the '**System Account**'). Depending on the arrangements governing each FnPS, the System Account may be held by the Fnality Local entity, or a subset of eligible Participants jointly (on behalf of all Funds holders), as the case may be. For this reason, the claim, entitlement or interest held by a Participant may (but will not necessarily) be against the relevant central bank.

Funds will be fungible and will have a credit risk profile similar to that of central bank money. To that end, the arrangements under which Funds are held in each System Account will ensure that Funds can never form part of the insolvency estate of the relevant Fnality Local entity or that of any individual legal entity holding the System Account on behalf of Participants. Funds therefore will not carry the credit risk of any individual commercial entity. Moreover, the technical functionality of the Ledger, being the mechanism by which Funds are transferred, will ensure that Participants can never transfer more Funds than are held at any given time in the System Account.

Funding, Payments and Defunding

FnPS Participants will '**Fund**' and '**Defund**' their '**Funds Balances**' and make Payments to other Participants according to the following principles:

- A Participant's Funds Balance will at any given time be equal to the balance of:
  (i) all Funding Transfers made by the Participant; plus
  (ii) all Payments received by the Participant; minus
  (iii) all Payments made by the Participant; minus
  (iv) all Defunding Transfers made by the Participant.

The blockchain technology underpinning the Ledger, as well as the FnPS's operating model, is designed to ensure that the Funds Balances will never be negative and will be accurately calculated in real-time. The sum of all Funds Balances will (by definition) at all times be equal to the total amount of Funds held in the System Account. The total amount of Funds in the System Account will (by definition) not be affected by the execution of Payments between Participants.

A Participant increases its '**Funds Balance**' by paying an amount into the System Account from its account in the relevant RTGS system (or, if a Participant does not hold an account in the relevant RTGS system, from the account of a third party acting on its behalf (e.g., a correspondent bank)). This '**Funding Transfer**' occurs when the relevant amount is credited to the System Account. Payments received by a Participant from other Participants in the FnPS will likewise increase its Funds Balance.

- A Participant may use any amount of its Funds Balance to make Payments, or to withdraw such Funds from the System Account through a '**Defunding Transfer**'.

- A Participant (the payer) will be able to make a Payment to another Participant in the same FnPS (the payee) by submitting to the FnPS an electronic Payment instruction. A Payment instruction will be executed subject to validation, provided that the Payment amount does not exceed the Funds Balance of the payer (using, if necessary, liquidity saving mechanisms and any related queueing). The execution of a Payment instruction will simultaneously: (i) reduce the payer's Funds Balance and (ii) increase the payee's Funds Balance, in each case by the amount specified in the Payment instruction and as recorded on the Ledger. These adjustments to the payer and payee's respective Funds Balances will constitute a Payment.

- Payment instructions will settle in real-time and, in theory, on a 24/7/365 basis (though it is anticipated that the hours of operation of a FnPS will be slightly shorter and will be determined by market practices and relevant risk management considerations).

- To make a Defunding Transfer, a Participant will instruct Fnality Local to instruct the relevant RTGS system operator to transfer an amount of Funds from the System Account to an RTGS account (either the Participant's own, or that of a third party). Defunding Transfers will be executed as instructed on an automated basis, subject to validation and the Defunding Transfer not exceeding the instructing Participant's Funds Balance. A Defunding Transfer will occur when the relevant amount is debited from the System Account.

- Funding Transfers and Defunding Transfers will be limited to the operating hours of the relevant RTGS system.

The validation of all instructions in respect of Fundings, Defundings, and Payments is recorded on the Ledger.

Record keeping

The design goals for the FnPS's technical architecture are to distribute the core operational functions of a payment system across a network of participating entities. These core operational functions can be summarised as: (1) validating Payment, Funding and Defunding instructions submitted to the FnPS; and (2) maintaining the distributed Ledger that records the execution of instructions.

No individual entity is solely charged with fulfilling either of these functions; indeed, the running of technology and operational arrangements in order to achieve these functions is intentionally designed to be fulfilled by an adequate number of legal entities with a common vested interest in the safe and efficient operation of the payment system. This ensures the resiliency of the FnPS and minimises the concentration of failure risks.

The Ledger is distributed across a network of Nodes (known as the '**Node Network**'), each of which is operated by a legal entity that is also an FnPS Participant (each, a 'Node Operator'). Each Node maintains a complete copy of the Ledger, which is updated periodically as a result of the 'Validation process'.

The Validation Process is performed by a rotating subset of Node Operators, known as the '**Validator Node Operators**'. All Payment, Funding and Defunding instructions are subject to the Validation process, and the Ledger is designed so that it cannot be altered except as a result of Validation. The output of the Validation process (i.e., validated instructions) is broadcast continuously by the Validator Node Operators to all other Node Operators through a process known as 'propagation'. This ensures that the Ledger is maintained by the Node Network in real-time.

The 'Validation process' of the FnPS corresponds to the settlement process of a typical payment system. It is referred to as the 'Validation process' because all FnPS instructions must be validated in precisely the same fashion, as this is a fundamental DLT design feature. In the context of the FnPS, 'Validation' therefore includes settlement and isn't a process that precedes settlement like in conventional payment systems.

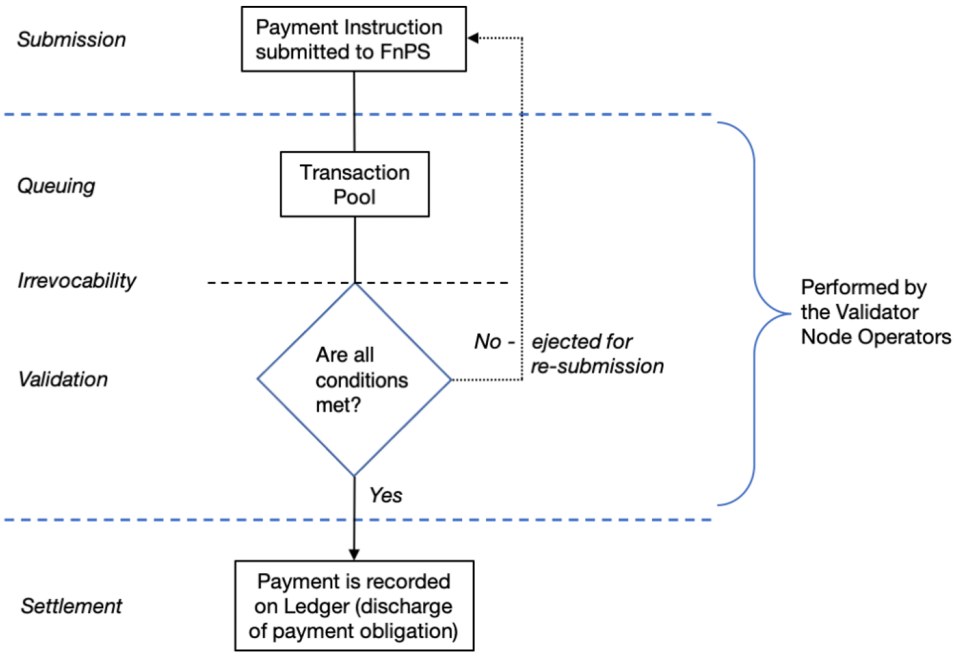


Figure 1. Validation of a Payment Instruction in FnPS

The Validation process begins with the submission of a Payments instruction to the FnPS (see *Figure 1.*). All instructions must be submitted to a Node. Upon receipt by a Node, an instruction is placed into the '**Transaction Pool**' of that Node and broadcast throughout the Node Network. When the instruction reaches a new Node, it is placed into that Node's Transaction Pool. The Transaction Pool functions as a queuing mechanism, as it is where instructions are held pending Validation.

Next, a group of instructions are selected for Validation by the Validator Node Operators. High-priority instructions include Funding instructions and Payments for PvP settlement, as well as instructions for which a Participant has paid a higher transaction fee. Once an instruction has been selected for Validation, it can no longer be cancelled or revoked by the instructing Participant (this being the point of 'irrevocability').

Validation consists of a number of pre-determined checks that are performed by the Validator Node Operators, including checks of the identity of the entity submitting the instruction, and, for Payments, checks to confirm that the instructing Participant has sufficient Funds to settle the Payment. An instruction that fails any of these checks is rejected by the FnPS. Rejected instructions must be re-submitted.

'**Consensus**' is reached in respect of an instruction when a prescribed quorum (i.e. two-thirds) of Validator Node Operators have independently Validated that instruction. At this point a Payment is settled unconditionally, i.e. settlement is final (irrevocable and unconditional). To update the Ledger accordingly, the Validated instruction is broadcast to the rest of the Node Network.

There is unavoidably a brief delay between the entry of an instruction into the FnPS and the execution of that instruction upon the completion of the Validation process.

Foreign Exchange settlement

The technical and legal arrangements that facilitate the settlement of FX transactions are designed in a way that both legs (currencies) are exchanged simultaneously (Payment versus Payment or PvP), so that there is no credit risk for either side of the transaction during the settlement.

In each FnPS, the technical basis for PvP settlements is the '**Interoperability Protocol**', which is a co-ordination mechanism that ensures that, in respect of a PvP settlement, the Payment leg on any given FnPS will settle if, and only if the corresponding Payment leg on the other FnPS is guaranteed also to settle.

The Interoperability Protocol consists of: (i) an '**Earmarking**' mechanism that places a hold on Funds that are to be transferred in the FnPS (where that FnPS is the Lead Ledger, as explained below) and (ii) the ability of each FnPS (where that FnPS is the Follow Ledger, as explained below) to technically verify that an Earmark has been placed on Funds in the other FnPS.

Because the PvP settlement process is asymmetric, there will, in each settlement of a FX transaction, be a '**Lead Ledger**' and a '**Follow Ledger**'. The Lead Ledger is the FnPS in which Funds are first Earmarked for Transfer (but it does not matter which FnPS acts as the Lead Ledger). Upon completion of Earmarking:

i. The Follow Ledger receives and verifies a 'Proof of Earmark' from the Lead Ledger.

ii. The relevant Funds are Transferred on the Follow Ledger, at which point, simultaneously, each Payment leg is settled pursuant to the terms of its FnPS's Rulebook. The records of the Follow Ledger are updated accordingly.

iii. The Lead Ledger receives and verifies a 'Proof of Transfer' from the Follow Ledger, and the records of the Lead Ledger are updated accordingly.

Because the two payment legs of an FX transaction are settled simultaneously, no credit risk arises at any point in the settlement process. To ensure that each Payment leg is settled with finality, each Fnality Local in the pair of interoperating FnPSs is required to confirm that the legal basis for its FnPS demonstrates a high degree of legal certainty that finality will be achieved in its jurisdiction in respect of the relevant PvP settlement leg.

SECTION 4: IMPACT ON RISKS AND EFFICIENCY

The Fnality Locals as the operators of the FnPSs are never counterparties to transactions. Also, the balances in the System Accounts held at the central banks are entirely owned by the participants. Thus, the Fnality Locals are not exposed to liquidity or credit risks unlike CCPs. All post-trade risks are borne by the participants, i.e. by those who created the risks.

Credit risk

Credit risk is the risk that a counterparty will not settle an obligation for full value, either when due or at any time thereafter. In the context of FnGP credit risk for participants could potentially arise in two areas: in the settlement of FX transactions, and in respect of the settlement asset.

As outlined above FX transactions are settled through linked FnPSs in real-time on a PvP basis using a protocol that guarantees atomicity. Hence, credit risk in FX settlement is fully eliminated. Unlike other FX settlement platforms FnGP doesn't reintroduce credit risks through so called in-out swaps[3].

The other type of credit risk relates to the settlement asset itself (and deposits in general). As explained above, the settlement asset in the FnPS carries negligible credit risk and is very similar to balances held at the central bank. FnPS settlement balances therefore do not generate any new credit risks for participants.

Moreover, the design of the FnPS goes some way toward mitigating credit risks generated elsewhere in the payments chain, particularly in the correspondent banking network. Correspondent banks provide intraday credit to their clients to enable smooth settlement of their payment obligations. These clients hold overnight cash balances (uninsured deposits) with their correspondent banks. FnPSs reduce both of these vulnerabilities by (i) reducing the need for intraday credit, as FnPS participants can manage their liquidity directly and in real-time, and (ii) by lowering the overnight cash balances held by clients at correspondent banks.

Operational Resilience

There are three primary reasons for why decentralisation, as proposed in the DLT space, will ultimately result in greater resilience:

1. Fault Tolerance: the basic rationale is that many computers – each fulfilling the functions of a Validator Node Operator - are less likely to fail simultaneously than are a few. Fault tolerance involves not just a diversity of multiple computers, but also a diversity of other features such as location, power sources, hardware, operating systems, software implementations of the DLT protocol, and so on. Fnality will measure the diversity of the Validator Nodes with a 'diversity score'.

2. Attack Resistance: from a cyber-security perspective, the cost of attacking multiple independent computers is greater than attacking just a few. This model is quite different from the standard corporate model, that emphasises either protection (often using multiple strategies which themselves create complexity and thus weakness) and/or detection and remediation which accepts successful attacks happening. In addition to the diversity noted in point 1, attack resistance will also come from a diversity of system administrators and the concomitant diversity of administration procedures.

3. Collusion Resistance: the final weakness is the possibility of collusion, which also, theoretically, becomes harder with more Participants. In addition to the factors listed in points 1 and 2, the Validator Node Operators should also have diverse goals for their use of the network and will therefore be incentivised to avoid collusion.

The risks arising from the technical operations of the FnPS are inherently very limited and are confined to the interface between the FnPS and the RTGS system (the 'RTGS interface', operated by Fnality Local). Even in the case where the RTGS interface is non-operational, this will only delay Funding and Defunding operations, but will not halt settlement of Payments in the FnPS. The implication would just be that aggregate settlement balances in the FnPS could be neither increased nor decreased.

In order to minimise the risk of the RTGS interface being disrupted, the FnPS ensures an appropriate level of redundancy: the FnPS is committed to ensuring that the RTGS interface can be available and operational at least 99.95% of the time during the normal operating hours of the relevant RTGS system. This uptime estimate includes unexpected downtime as well as planned downtime.

In order to meet this level of service, Fnality Local will ensure that:

- the RTGS interface is compliant with relevant cyber security frameworks for FMIs; and

- the RTGS interface is run in High Availability ('Hot-Hot') mode and there will be at least two cloud providers, each of them placed at sufficient geographic distance from one another to ensure their respective risk profiles are sufficiently distinct.

Replacement cost risk

Replacement cost risk is the risk that a counterparty to an outstanding transaction for completion at a future date will fail to perform on the settlement date. This failure may leave the other counterparty party with an unhedged or open market position or deny it unrealised gains on the position. The resulting exposure is the cost of replacing, at current market prices, the original transaction. Replacement risk occurs because of the time gap between the moment of trade and the settlement of the trade (also called 'settlement lag'). In order to minimise replacement cost risk, the obvious solution is to shorten the time between the trade and final settlement.

Each FnPS will be able to settle FX trades almost immediately whilst retaining the ability to settle on a PvP basis. It is expected that FX trading venues will quickly emerge that allow for instantaneous settlement in FnGP. This will not only eliminate replacement cost risk for FX transactions, but it will also greatly enhance Participants' ability to manage their short-term liquidity (see below). Of course, these venues will also provide the option for counterparties to a trade to settle later, be it 'same day', T+1 or T+2. Every FnPS participant is responsible for providing the currency it has sold in a timely manner.

Instant settlement are theoretically achievable within centralised settlement systems. However, this would come with several drawbacks as compared to FnGP. Most significantly, an even greater burden would be put on the correspondent banks to facilitate the settlement of their clients' transactions, leading to even higher intraday credit exposures than exist today.

Liquidity risk

Liquidity risk is the risk that a counterparty will have insufficient funds to meet its financial obligations as and when they are due to be performed, although it may be able to do so in the future. Liquidity risk is not the same as having a loss on a transaction due to the failure of the claim on the payor (credit risk). It is simply the inability of the payor to make a payment at a particular moment, despite the fact the payor may be capable of honouring the obligation at some later point in time. This may also lead to lead to knock-on effects to other participants. A financial market participant that does not receive funds when expected may then itself not be able to meet its obligations when due.

As is the case for any operator of a real-time gross payment system, Fnality Local has no control over whether or not participants honour their obligations when due. All liquidity risk issues are bilateral between the relevant counterparties and need to be managed ahead of settlement in an FnPS.

FnPS participants will, however, have access to relevant real-time information about settlement activity which will allow them to react quickly, if the need arises. Also, the option of instant settlement in the FX market will provide an important additional tool to cover unexpected liquidity short falls.

We anticipate two possibilities for participants to reduce their need for intraday liquidity when using the Fnality Payment System. First, Fnality or other third parties will offer compression and/or offsetting services linked to settlement instructions. Their effect will be comparable to liquidity saving mechanisms deployed in many RTGS systems. Secondly, it is possible that the nature of settlement will change, with smaller amounts being settled either same day or even instantly. This will allow smaller amounts of liquidity to be recycled through the payments system at a higher velocity, improving overall efficiency.

Benefits to Participants

The chief benefits of FnGP to participants are threefold. First, FnGP supports them in increasing the efficiency in their liquidity management. FnGP offers relief to the known challenges of fragmentation of liquidity and obstacles to cross-border movement of collateral.

Today, internationally active banks hold their cash liquidity, in particular in foreign currencies, in a large number of places with correspondents and custodians without being able to access and manage it efficiently. FnGP is a means to significantly reduce fragmentation and increase control of liquid cash holdings. It will enable its participants to control their liquidity much more directly and to defragment their liquidity holdings while also lowering operational costs.

Secondly, correspondents and their clients will have to rely much less on mutual credit provision which should lead to a less risky balance sheet and thus lower capital requirements. Risky claims on other financial institutions will – to some extent – be substituted with holdings of safe settlement balances in FnPS.

And thirdly, FnGP will provide a versatile, digital cash settlement asset in financial markets that are expected to move towards tokenised record-keeping. In this context, obvious use cases are securities that are recorded on distributed ledgers (i.e., tokenised securities). Like settlement balances in FnPS, such securities can be moved very fast and easily, also across borders. Thus, exchanges of securities ('delivery versus delivery' or DvD) or sales of securities ('delivery versus payment' or DvP) can be settled instantaneously after a trade is agreed. Relying on FnPS for the cash leg in securities settlement will only enhance its risk-reducing and efficiency-maximising properties.

SECTION 5: INITIAL USE CASES

The initial use cases for each FnPS are expected to include, among others:

Inter-bank payments: With its real-time settlement capability FnPS can process payments between financial institutions. Such interbank payments in FnPS are expected to be attractive when central bank operated RTGS systems are closed (typically at night and on weekends).

Inter-company payments: Banks typically have many different legal entities. Cash management as a discipline is difficult and is more 'art than science'. Inter-company cash management involves extra degrees of difficulty around managing the impact on overdrafts and the Large Exposure Regulations. Access to the single pool of liquidity in an FnPS will enable instant settlement, and in turn, remove the additional difficulties of inter-company cash management.

Secured funding through FX swaps: Due to a typical settlement lag of two days, FX transactions cannot currently be used to fine-tune liquidity needs that may arise during the day. However, as a result of instant settlement in the relevant two FnPSs, Participants will be able to use FX transactions to efficiently manage their short-term liquidity needs throughout the day and will consequently be exposed to less counterparty risk with their correspondents.

Margin for centrally and non-centrally cleared derivatives: Margin requirements for non-centrally cleared derivatives (BCBS-IOSCO 2020) are resulting in further constraints on liquidity because: (a) actors trading derivatives are required to post an increased amount of collateral, and (b) the set of actors required to post collateral has expanded. Margins paid through the FnPS can be transferred quickly, are highly liquid, and carry no market risk. Obviously, if a CCP is a participant in an FnPS, margins related to its business can also be transferred through FnPS with the same benefits as for non-centrally cleared derivatives.

SECTION 6: THE POST-TRADE INFRASTRUCTURE OF THE FUTURE

A major appeal of DLT, from the perspective of financial market participants, has been the promise of simpler, more efficient and less risky operational processes. But this is only a part of its full potential. Within existing regulatory requirements DLT can change how financial markets are structured and function.

Financial Markets are currently intermediated by FMIs and financial institutions. These infrastructures exist with the purpose of providing shared processes that are explicitly designed to reduce cost and various types of operational complexity and risk. Financial institutions like banks, brokers and fund managers are also all intermediaries. Households and businesses might hold cash deposits or investments via any of these intermediaries directly. Some relationships are even indirect. Pension funds, for instance, are intermediaries, holding the assets on behalf of individuals. In either case, there is an account with that intermediary and the assets are recorded on the ledger of that institution.

Ultimately, the transformative power of dFMIs lies in their peer-to-peer capability. This will greatly reduce (though not eliminate) the need to rely on intermediated financial service providers. Custody, settlement as well as trading can potentially be moved to decentralised, peer-to-peer processes. Thanks to DLT this will not only lead to less costly, more efficient and more resilient post-trade processes, but also to more incentive compatible behaviour of market participants.

FOOTNOTES & FURTHER READING

Footnotes

1 - The shareholders are Banco Santander, BNY Mellon, Barclays, CIBC, Commerzbank, Credit Suisse, ING, KBC Group, Lloyds Banking Group, Mizuho Financial Group, MUFG Bank, Nasdaq, Sumitomo Mitsui Banking Corporation, State Street Corporation, and UBS.

2 - These six central banks have put in place, amongst themselves, standing arrangements (that are currently activated) for bilateral inter-central bank swap lines. These swap lines give regulated financial institutions in one jurisdiction access to liquid funds in a foreign currency through their home central bank if refinancing in these markets proves difficult to them. Thus, these six central banks are closely involved in providing foreign currency to their banking system.

3 - An in/out swap is an intraday swap consisting of two equal and opposite FX transactions that are agreed between two counterparties, in order to reduce the net funding obligations of the participants. One of the 'legs' (the in leg) is settled inside the FX settlement platform reducing their net pay-in obligations in the two relevant currencies. The other 'leg' (the out leg) is settled on the same day, but with credit risk in RTGS systems.

Further reading

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WOULD YOU LIKE TO KNOW MORE?

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