Project Meridian FX APAC: Policy Report

This page summarises the policy findings of Project Meridian FX APAC, a joint experiment on synchronisation in FX between the Bank of England, Monetary Authority of Singapore and Bank of Thailand, with the Reserve Bank of Australia and Bangko Sentral ng Pilipinas as observers. It sets out the key policy conclusions from the experiment and considerations for a live service.

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1. Introduction

Project Meridian FX APAC examined whether synchronisation could support PvP settlement across heterogeneous central bank test settlement systems and enable multilateral net FX PvP across three test systems. The Technical Report describes the SO prototype, central bank wholesale settlement test environments and experimental findings. Concurrent with the technical experimentation, a policy workstream examined the implications that could arise if an FX synchronisation service were implemented in a live cross-border environment.

The findings from the experiment informed this analysis. Differences in the architectures and capabilities of the test settlement systems affected how settlement was co-ordinated, where responsibilities sat and which functions the SO needed to perform. Some functions and design choices, including the escrow arrangement, were specific to the experiment and are not inherent to synchronisation. The report therefore considers the SO's functions and responsibilities against an expected non-custodial model, while recognising that their nature and materiality may inform the relevant policy considerations.

Against this background, this report sets out the legal, governance, and regulatory considerations that may arise from the implementation of synchronisation arrangements. It first examines the functions performed by the SO and how these may vary across different operating models. It then identifies the main risk and policy considerations, assesses relevant existing frameworks and concludes by identifying questions for domestic, cross-border and potential international discussion.

2. Functions of an SO

In the context of Meridian FX APAC, the SO prototype co-ordinated PvP settlement across different infrastructures and ledger technologies. Through a series of co-ordination activities, which include the earmarking[1] of funds, an SO helps ensure that linked payment legs proceed together or not at all. The SO does not need to operate the underlying settlement systems, maintain settlement accounts or hold participants' funds.

a. Core co-ordination functions

In the Meridian FX APAC experiment, the SO performed four co-ordination functions:

- **Instruction processing:** receiving and matching settlement instructions.
- **Funding co-ordination**: co-ordinating the earmarking or other securing of funds across participating central bank RTGS systems.
- **Readiness monitoring:** tracking the status of each leg and determining when all required legs were ready.
- **Settlement and exception co-ordination:** instructing settlement, releasing reservations where appropriate, and applying retry or unwind logic to preserve the integrity of the PvP workflow.

Although the SO does not operate the underlying central bank test settlement system or hold participants' funds, its actions can directly affect whether linked payments proceed, are delayed or are unwound when necessary. By matching instructions, assessing readiness and co-ordinating settlement, the SO becomes an integral part of the process through which PvP outcomes are achieved. The relevant policy, legal, and regulatory considerations therefore depend on the legal and practical effect of those actions, as well as the scale and criticality of the service and use case.

b. Interoperability across different systems

The experiment demonstrated that a common synchronisation workflow could be executed across the test environments of three central bank settlement systems with materially different architectures and processing models. Interoperability did not require central bank test settlement systems to implement identical capabilities or adopt common technical architecture. Where capabilities differed, the SO used system-specific adapters[2] or alternative operating arrangements to achieve equivalent functional outcomes.

Adapters accommodated differences in connectivity arrangements, access controls and status reporting formats across participating central banks' test environments. For example, where earmarking was not implemented within the test environment, alternative arrangements were used to reserve funds, which could require the SO to perform additional functions. The experiment demonstrated that while interoperability could be achieved across central bank test settlement systems with different capabilities, the arrangements used to achieve it could affect the functions performed by the SO and the allocation of responsibilities between the SO and connected infrastructures. The extent of implications would depend on the central bank settlement systems and design used in practice.

c. When the SO performs additional functions

The SO prototype also performed two functions that extended beyond the SO's co-ordination functions described above. First, within MAS' test environment, it used a dedicated escrow account to replicate funds reservation. Second, as part of the multilateral net settlement workflow, the SO prototype calculated net settlement positions across the participating central bank test settlement systems. These arrangements reflected the design and capabilities of the central bank test settlement systems and are not inherent features of synchronisation or of a future SO model.

The distinction matters because additional functions come with technical trade-offs – as they may require additional integration logic or changes to operating model – and may change the SO's legal characterisation and risk profile. An arrangement under which the SO temporarily holds or controls funds could raise custodial, credit, liquidity, safeguarding and insolvency-related questions that do not arise in the same way when funds remain in participants' accounts and are merely earmarked. Similarly, calculating offsetting positions and determining net instructions may increase the SO's responsibilities over participants' settlement obligations and bring its role closer to functions associated with clearing.

Whether the SO needs to perform such functions may depend on the capabilities and processing models of the participating systems. Authorised third-party access and earmarking can support a co-ordination model in which the SO instructs and monitors settlement without holding funds. For multilateral settlement, the capabilities of the participating central bank test settlement systems could affect whether netting is performed within the central bank settlement system or by the SO. More granular status and failure information can help the SO identify and remove transactions that cannot be executed. Where such capabilities are not available or implemented differently, alternative arrangements may be required, potentially expanding the SO's functions and responsibilities.

For the purposes of the remaining analysis, the report uses a non-custodial SO as a baseline. Where relevant, the report identifies how the considerations may change if the SO holds funds, calculates settlement positions or performs other additional functions. Policy treatment should depend on the functions performed by the SO in practice rather than how the SO is classified or described.

3. Risks and policy considerations

As set out in Section 2, the analysis focuses on a non-custodial SO that co-ordinates linked transactions without holding funds or maintaining settlement accounts. Compared with arrangements in which an intermediary holds or transfers funds directly, this model may avoid some risks such as direct credit and liquidity exposures. However, it does not eliminate risk from the end-to-end arrangement. The use of an SO introduces a co-ordination dependency across systems, participants and jurisdictions. The nature and significance of that dependency will reflect the extent and structure of the SO's functions, the capabilities of connected infrastructures and the legal effect of the actions taken at each stage of the workflow. The four risk and policy considerations arising from this dependency are set out below.

Table 1: Risks and policy considerations

Consideration	Application to FX synchronisation service
Operational risk	• Matching, earmarking, readiness monitoring and settlement co-ordination create a dependency on the SO and its connections to each system. A failure could delay or prevent linked settlement even where the underlying central bank settlement systems remain available. • Cyber security, capacity, change management, recovery and contingency arrangements therefore form part of end-to-end resilience. • The Technical Report's exception tests illustrate the importance of idempotency,(a) reliable status information and event delivery, while also noting that non-overlapping operating hours and earmark expiry were outside the test scope.
Settlement integrity and finality	• Technical atomicity does not by itself establish a common, legally recognised moment of finality across participating systems. • Each domestic system may define its own final settlement event, while the synchronised arrangement must explain how domestic events combine to produce a definitive outcome for the linked FX transaction, including during outages or other exceptions.
Governance and accountability	• Rulebooks, contracts and operating procedures need to allocate decision rights and responsibilities across the SO, participants and infrastructure operators. This includes who may approve, pause, cancel or retry transactions; how exceptions and persistent failures are handled; and how losses or liabilities are allocated. • These questions become more significant where the SO holds funds, calculates net positions, or otherwise exercises greater control over settlement outcomes.
Legal, data and cross-border dependencies	• A synchronisation service spans different legal, regulatory, data and technical environments. • It must address applicable law, enforceability, confidentiality and cross-border information sharing, while supporting sufficient data exchange for matching, status monitoring, settlement and exception handling.

(a) Idempotency ensures that if the same instruction is received more than once, it is only processed once.

a. From risk considerations to policy lenses

The considerations outlined above give rise to a set of broader policy questions. Table 2 groups these into five policy lenses that provide a structure for the analysis that follows. The lenses build on, and in some cases cut across, the risks and considerations in Table 1. They are used in Section 4 to consider relevant existing approaches and in Section 5 to identify areas for further consideration.

Table 2: Policy lens and key questions

Policy lens	Key question
Access and assurance	Can an SO interact safely and reliably with domestic settlement infrastructure, and what capabilities or evidence should an infrastructure operator require before permitting access to the SO?
Regulatory perimeter and oversight	Do the SO's functions, scale, criticality or influence over settlement outcomes bring it within existing regulatory frameworks, or justify a different approach?
Settlement finality	How can the arrangement establish a legally robust and commonly agreed settlement outcome across separate systems?
Governance and accountability	How should responsibilities, decision rights, exception handling and liability be allocated across the SO, participants, infrastructure operators and relevant authorities?
Data and information sharing	What information does the SO need to perform its functions, and how should access, use, retention, confidentiality and cross-border sharing be governed?

The lenses are closely connected – decisions in one area may influence outcomes in another. For example, access conditions and system capabilities may affect the functions performed by an SO, particularly whether it can remain non-custodial. These functions may in turn affect the applicable regulatory, governance and accountability arrangements. The next section therefore considers existing approaches as potentially relevant principles and arrangements, rather than complete solutions to synchronisation.

4. Existing frameworks and approaches

The policy considerations identified in Section 3 are not unique to synchronisation. Authorities already have frameworks addressing issues such as access to settlement infrastructure, operational resilience, settlement finality and cross-border oversight. The challenge is determining how these approaches apply when such considerations converge within a synchronisation arrangement.

Existing arrangements therefore provide useful reference points for considering specific policy questions. The examples below illustrate how insights may be drawn from existing approaches, as well as the limits of their application to synchronisation.

a. Access and assurance – RBA Batch Administrator framework

A practical starting point is how an SO could interact with domestic settlement infrastructure without necessarily becoming a direct participant or holding central bank money.

The Reserve Bank of Australia (RBA)'s framework for Batch Administrators provides one example. A Batch Administrator submits net interbank obligations for simultaneous settlement through the Reserve Bank Information and Transfer System (RITS) Australia's central-bank operated high-value interbank settlement system. The RBA applies eligibility, application and ongoing operational requirements intended to provide assurance that entities performing this role can support safe, efficient and reliable settlement. Batch Administrators may support either settlement-only batches or reservation batches, the latter enabling synchronised settlement by co-ordinating the reservation and release of funds.

The RBA has also considered how this type of arrangement could apply to new settlement models in its consultation on **The Role of RITS in Supporting Settlement in a Tokenised Ecosystem**.

For an SO, this illustrates how access to settlement infrastructure can be separated from access to central bank money, while giving the central bank assurance over the operator's operational, governance, resilience and technical capabilities. This is relevant to the Meridian FX APAC findings: where central bank test settlement systems supported third-party access and funds reservation, the SO's duties could remain relatively lightweight; where they did not, alternative arrangements increased integration complexity and, in some cases, the SO's responsibilities.

In the case of Meridian FX APAC an SO could operate across jurisdictions or be incorporated outside the jurisdiction in which it accesses settlement infrastructure. The RBA framework accommodates this possibility by requiring assurance, prior to granting access, that its legal and contractual framework can be enforced in the operator's home jurisdiction. Similar considerations may arise for other authorities.

b. Regulatory perimeter and oversight – Swift co-operative oversight

If an SO were to become material to settlement activity across several jurisdictions, a further question may be how oversight could be co-ordinated across authorities.

Swift provides an established example of co-operative central bank oversight of a globally important service provider. The National Bank of Belgium acts as lead overseer, working with the G10 central banks, while the Swift Oversight Forum provides a mechanism for engagement and information sharing with a wider group of central banks.

The model illustrates how authorities could organise oversight of a service that operates across jurisdictions and creates dependencies for multiple financial infrastructures, including through a lead overseer and structured co-operation between interested authorities.

There are, however, important limits to the comparison. While a messaging provider primarily enables the transmission of information between participants and infrastructures, an SO may play a more active role in the execution of linked settlement. It matches settlement instructions, co-ordinates earmarking of funds across connected systems, assesses whether all payment legs are ready to proceed, initiates settlement and manages retries or unwinds when exceptions occur. Its actions can therefore directly affect whether linked transactions proceed, are delayed or fail.

The appropriate oversight arrangements would therefore depend on the SO’s actual functions, scale, criticality and influence over settlement outcomes, as well as relevant domestic frameworks.

c. Settlement finality – Continuous Linked Settlement (CLS)

Settlement finality is a core safeguard for payment and settlement systems. Principle 8 of the Principles for Financial Market Infrastructures (PFMI) requires a financial market infrastructure (FMI)’s rules and procedures to define clearly the point at which settlement becomes final. A clear definition of when settlement is final helps in resolution scenarios as the positions of the participants in resolution and any other affected parties can be quickly established.

CLS provides a useful reference point for considering a cross-border FX arrangement that produces a clear and legally recognised PvP settlement outcome across currencies and jurisdictions. Participants fund through domestic payment systems, while the corresponding FX obligations settle simultaneously on the CLS ledger.

The relevance for synchronisation is the need to identify and govern a legally agreed outcome for the linked transaction as a whole. The architecture is nevertheless different: CLS records settlement on a common ledger, while an SO would co-ordinate settlement occurring directly in separate domestic central bank settlement systems under their respective rules and legal frameworks. A synchronisation arrangement would need to establish the point at which transactions become irrevocable in each connected system, and how this translates into a commonly understood and agreed cross-border outcome. The technical workflow's point of commitment and retry logic can support operational integrity but cannot resolve that legal question by themselves.

d. Governance and accountability – PFMI Principle 2, Global Layer One Market Infrastructure Toolkit and related initiatives

Principle 2 of the PFMI establishes clear and transparent governance as a core requirement for FMIs. It emphasises clear lines of responsibility and accountability, including arrangements that support the safety and efficiency of the infrastructure and the broader public interest.

For an SO and central banks, these principles provide a useful reference point for considering how responsibilities should be allocated between the operator, participants and connected settlement infrastructures, particularly for settlement decisions, exception handling and operational disruption. These questions become more significant where the SO takes on additional functions, such as temporarily holding funds or calculating net positions.

The Global Layer One (GL1) Market Infrastructure (MI) Toolkit provides a supplementary reference point. Drawing on internationally recognised principles and standards, including the PFMI, alongside emerging industry practices relevant to new forms of market infrastructure, the Toolkit illustrates an approach to assessing controls, responsibilities, and governance arrangements across different forms of market infrastructure. It can be used as a tool to guide market participants assessing suitability of market infrastructure or when designing infrastructure.

Meridian FX APAC illustrates why governance arrangements cannot be assessed independently of system design. Differences in capabilities of connected central bank settlement systems may affect the functions performed by the SO and the responsibilities it assumes. As the SO's role evolves, the corresponding governance and accountability arrangements may need to evolve accordingly.

Work under Project **Agorá** and **Nexus** on legal, regulatory, governance and oversight implications of new cross-border payment arrangements may provide further reference points. The principles and initiatives discussed in this section are intended to inform consideration of governance and accountability issues relevant to synchronisation, rather than prescribe a particular governance model for an SO.

e. Data and information sharing – ISO 20022 and applicable data frameworks

An SO also depends on receiving sufficient information about the transactions and central bank settlement systems it co-ordinates. This raises two related questions: how information is exchanged and how access to that information is governed.

ISO 20022 provides a common framework for financial messaging and could support interoperability between an SO and connected infrastructures. Meridian FX APAC also showed the practical value of sufficiently granular status information. In the multilateral net settlement use case, for example, more detailed failure information could help the SO identify problematic transactions and make cross-system negotiation more efficient.

Common messaging standards can reduce technical frictions, but they do not determine what information an SO should receive, the lawful basis for sharing it or the safeguards that should apply. A live service would therefore require the SO to define the data model and minimum information it needs, alongside arrangements for access, use, retention, confidentiality and cross-border sharing.

f. What these frameworks tell us

Taken together, these examples suggest that authorities would not be starting from a blank page. Existing approaches provide practical insights across areas such as access and assurance, co-operative oversight, settlement finality, governance and data sharing. However, none provides a complete basis for addressing synchronisation.

Three conclusions follow:

- **Existing frameworks provide a foundation for considering the policy, legal and**

regulatory considerations arising from the functions of a non-custodial, cross-border SO. However, none of these frameworks address the full combination of cross-border settlement co-ordination and operational dependency, and further work could help determine how these different approaches can be applied or developed.

- **The appropriate treatment would depend on the functions and responsibilities performed by the SO, their materiality, and the degree of cross-border integration**. Meridian FX APAC reinforces this point: interoperability was possible across central bank test settlement systems with different capabilities, but the adaptations required could expand the SO's role and responsibilities, and technical complexity.
- **Domestic and cross-border arrangements would need to be appropriately co-ordinated**. Access, assurance and regulatory perimeter questions may principally be addressed domestically, while settlement finality, accountability and co-operation between authorities arise from the cross-border nature of the service.

The practical question is therefore not whether any existing framework should be applied, but what insights may be drawn from existing approaches, and where additional cross-border arrangements may be needed.

5. Outstanding policy questions

Meridian FX APAC has identified a number of policy questions that authorities may wish to consider if exploring a synchronised FX settlement service in the future. These questions emerge from the five policy lenses in Section 3 and the limitations of the existing approaches examined in Section 4. The grouping below reflects the level at which the questions may most appropriately be considered, while recognising that the categories are interconnected and that any response would depend on the service design and participating jurisdictions.

The questions are grouped into three categories:

a. Domestic considerations

- **Access and assurance:** Each jurisdiction would have to determine how an SO could interact safely with its domestic settlement infrastructure. This would include the access model, the functions the SO may perform, the capabilities available through the interface and the assurance required before and during operation. The RBA Batch Administrator framework provides one reference point, but as discussed in Section 4, it does not provide a ready-made model for a cross-border SO. The experiment highlighted how capabilities such as authorised third-party access, funds reservation and reliable status information could facilitate an SO performing only a co-ordination function. Where such capabilities are not available, alternative arrangements may be relevant, depending on policy objectives and risk considerations.
- **Regulatory perimeter and oversight**: Authorities would need to assess whether the SO falls within existing regulatory or oversight frameworks and if so, how regulation and oversight would be treated across jurisdictions. This assessment could take into account the substance of its activities, including whether it holds or controls funds, calculates settlement positions, determines net instructions or creates a material dependency for domestic infrastructure. The appropriate approach would also depend on scale, criticality and influence over settlement outcomes.
- **Operating-hour alignment**: Greater alignment in operating hours across connected systems, and the availability of synchronised settlement facilities could further support the feasibility and resilience of synchronised settlement. Future work could explore the extent to which operating hours, cut-off times and the management of earmarks can facilitate efficient liquidity management, effective exception handling and robust operational resilience.

b. Cross-border arrangements

- **Governance and accountability:** Any future synchronisation arrangement would require clear allocation of responsibilities between the SO, participants, infrastructure operators and relevant authorities. It should address decision rights, exception management, persistent failures, liability, dispute escalation and the co-ordination of oversight. Where the SO performs escrow or netting functions, additional questions regarding decision rights, liability and oversight may arise.
- **Legal certainty:** The arrangement would need to establish how applicable law, system rules and contractual obligations interact across jurisdictions. It would also need to address enforceability, the legal effect of earmarking or escrow, allocation of liabilities, insolvency implications and dispute-resolution mechanisms. The precise questions would depend on whether the SO remains a non-custodial co-ordinator or performs additional functions.

c. Possible areas for international consideration

- **Common principles:** Internationally developed principles or expectations could, if considered useful, provide a more consistent basis for assessing SOs across jurisdictions. Potential areas include governance, operational resilience, accountability, access and assurance, and co-operation between authorities. Any such work would need to remain proportionate to the operator's functions and materiality and avoid assuming a single service design.
- **Data and interoperability**: Greater consistency in messaging, data and selected system capabilities could reduce the cost and complexity of connecting heterogeneous infrastructures. Common messaging standards may facilitate exchange and reconciliation but would need to be accompanied by clarity on the minimum data required by the SO, lawful bases for sharing, confidentiality safeguards and the responsibilities of each party. Further work could also consider how more consistent support for third-party access, earmarking, settlement instructions and status information could affect the feasibility of a non-custodial SO.

6. Conclusion

Meridian FX APAC shows how synchronisation can connect materially different central bank test settlement systems and discusses the resulting policy, legal, operational and governance considerations.

Addressing these questions could help authorities, infrastructure operators and market participants better understand the opportunities, constraints, and trade-offs associated with synchronised settlement arrangements. It could also provide a clearer basis for assessing how connections between central bank settlement systems could be achieved safely and efficiently, and how legal, operational and governance considerations may be addressed. Where risks and responsibilities extend across jurisdictions, appropriate cross-border co-ordination would be needed.

Meridian FX APAC demonstrated technical synchronisation across different central bank settlement test environments. The legal, policy, operational and governance considerations for any live arrangement would depend on the design, the functions and responsibilities of the SO, and the jurisdictions involved. These considerations would need to be assessed together in any future exploration, without presuming a particular implementation pathway or commitment to live deployment.

1. For the purposes of this report, ‘earmarking’ refers broadly to the mechanism of ensuring funds are set aside or ‘locked’ so they cannot be used for other purposes before a transaction settles.
2. Adapters refers to a technical layer used to accommodate technical interface and functional differences across systems, enabling support for the capabilities required for synchronised settlement. For more information see the ‘Integration with settlement infrastructures’ in the Technical Report.