

## LIQUIDITY MANAGEMENT AND TOKEN INTERCHANGE SCHEMES

Industry Partner: Australia Payments Plus

### Research Question

*How will the emerging digital token economy affect the management of institutional liquidity?*

- What are the liquidity requirements of digital token interchange systems? How do these requirements affect integration with existing financial market infrastructures?
- How can institutional *schemes* support resilient and efficient systems for digital token interchange?

### Motivation

**Australian Payments Plus (AP+)** is the industry-owned body operating Australia's critical Payment Schemes; NPP, eftpos, and BPAY. These Schemes are unified multilateral arrangements that define rules and governance for the use of domestic electronic payment systems by Australian banks. Institutional liquidity management in the Australian banking system depends on Scheme design for settlement across **central-bank money (M0)**, which currently exists only in the form of:

- *Exchange Settlement Account (ESA) balances*: central bank liabilities held by direct participants in the Reserve Bank Information and Transfer System (RITS). Balances are used to settle payments between 100 ES Account holders – mostly banks, with some other Authorised Deposit-taking Institutions and key clearing and settlement facilities.
- *Physical currency*: (banknotes and coins), held by the public, settling payments outside the banking system.

The Reserve Bank of Australia (RBA) is currently undertaking **Project Acacia**, a joint research project with the Digital Finance Cooperative Research Centre, to explore the design of systems for tokenised money and assets. The institutional adoption of token-based systems has potentially significant implications for liquidity management, financial intermediation, and monetary policy implementation. Token economies introduce new requirements for instant liquidity to support atomic settlement in asset transaction, but may fragment liquidity supply across multiple token networks and smart contracts. Private stablecoins – the currently prevailing form of token-based 'money' – efficiently settle cross-border payments outside of correspondent banking networks, and may redirect liquidity away from domestic deposits. Institutional liquidity management may also be affected by programmable token-based money and its fungibility, as well as the introduction of a proposed new form of tokenised (and potentially programmable) digital M0 – **Central Bank Digital Currency (CBDC)**.

Under alternative policy options, CBDC could be made available for retail use by the public – similarly to physical cash – or restricted in its availability to wholesale use by approved institutions – similarly to ESA balances. With concerns over liquidity-related implications of retail CBDC access, the Reserve Bank has limited the scope of Project Acacia in its current phase to the introduction of a wholesale CBDC. The experiment is one of numerous CBDC initiatives

underway internationally, including China's e-CNY CBDC that was first introduced into circulation in 2022, the digital euro CBDC currently in development by the European Central Bank, and multiple ongoing research projects for wholesale cross-border payments being undertaken collaboratively by multiple central banks and the Bank for International Settlements. The United States is an exception among major economies in rejecting CBDC development, instead legislating to establish fully collateralised private stablecoins as the preferred form of tokenised digital money. Stablecoin regulations introduced in the 2025 GENIUS Act aim to confidence in US-dollar-denominated stablecoins and their international wholesale and retail adoption. Stablecoin integration and related technologies are currently being pursued by Visa and MasterCard, the primary international competitors to AP+ operating in Australia.

In response to these developments, AP+ is exploring possibilities for a **Future Payments Scheme** that will support the adoption of token interchange systems by Australian financial institutions. A Future Payments Scheme would bridge Australia's traditional payment systems with novel digital platforms supporting **tokenised money** (CBDCs, regulated stablecoins and tokenised deposits) and potentially other tokenised assets, including:

- **quasi-money assets:** unregulated stablecoins and non-cash payment facilities (e.g. reward points)
- **financial assets:** tokenised bonds, repos, equities, ETFs, commodities, derivatives
- **non-financial assets:** real estate titles, access rights, intellectual property rights, collectables

Tokenisation of national currencies and financial assets is expected to facilitate significant new networks for cross-border liquidity to support continuous automated markets enabled by token programmability. In its role as the national Payment Scheme operator, a key strategic objective of AP+ is to manage the coordinated integration of these emerging networks and technologies into Australia's existing domestic banking and payments regime. This objective serves a key national interest by supporting the competitiveness of member institutions, and the stability of the domestic financial system, during a disruptive industry transition driven primarily by international developments. Collaboration with member institutions in the development of a Future Payment Scheme will also allow AP+ to provide regulators and legislators with context and stakeholder recommendations able to advise the policy response to this transition. The essential elements of a Future Payment Scheme are broadly outlined in three AP+ 'use case' submissions accepted by the Reserve Bank for Phase 2 ('Experiment') of Project Acacia:

1. **NPP - Token Integration (Coin to Account / Account to Coin).** Enabled by the 2018 addition of a Fast Settlement Service (FSS) retail component to RITS, the New Payment Platform (NPP) is the national infrastructure for 24/7 real-time interbank retail payments. AP+ proposes the introduction of an NPP on/off ramp for tokenised assets, enabling bi-directional transfer of value between tokens and fiat. This use case explores how the NPP could be utilised to support digital asset settlement through the intermediation of ESA holders and the participation of SWIFT (Society for Worldwide Interbank Financial Telecommunication), the global financial messaging service that provides core infrastructure to the domestic NPP.
2. **Token Interchange.** AP+ proposes to serve as the neutral operator of a public ledger-based platform for Scheme members to atomically swap stablecoins, deposit tokens and other forms of tokenised money, including a foreign exchange capability. The interchange will utilise an EVM-compatible tokenised

representation of M0 as cross-asset ‘hub token’ for settlement and employing Solidity smart contracts for token swapping. The interchange will operate on a permissioned instance of **Hedera Hashgraph**, and incorporate an inter-ledger bridge to Ethereum.

3. **Settlement Coordinator Services.** Supporting services for NPP-token integration and token interchange, including key-management services, digital identity services (for KYC etc), Proof of Reserves, transaction analysis and compliance reporting, tokenised billing and invoicing. This submission proposes to expand the range of wholesale entities utilising Scheme-backed tokenised money and the range of tokenised assets exchanged by these entities, exploring how liquidity for atomic settlement might be managed by Scheme participants across multiple chains and protocols. This proposal includes the introduction of a **Future Payments Sandbox** to encourage innovation by Scheme members.

The industry PhD project sponsored by AP+ aims to use these experiments as a basis for exploring the liquidity requirements of digital token interchange systems under alternative technical specification and operational rules, with the objective of motivating and informing the design of payment schemes that supporting token interchange.

### Approach

To inform a Future Payments Scheme design, this industry PhD will combine the modelling and simulation of liquidity networks under alternative scenarios with stakeholder consultation and practical experiments building upon the AP+ response to Project Acacia (including utilisation of the Future Payments Sandbox). The project will have four main stages:

1. Review of institutional liquidity management under domestic and international payment schemes; review of the emergence of token-based platforms and protocols and criteria for their evaluation; review of tokenisation-related initiatives by systemically financial institutions; review of relevant cross-disciplinary academic literature.
2. Evaluation of the impact of retail stablecoins (and their regulatory collateral requirements) on domestic and cross-border money markets. Comparison between alternative forms of tokenised money and quasi-money. Scheme options for assessing operational liquidity requirements for token-fiat conversion. Agent-based modelling of liquidity fragmentation between ESA balances and tokenised money platforms.
3. Evaluation of hub-token architectures and the use of common settlement assets for multilateral token exchange. Comparison of distributed ledger platforms (e.g. Hedera) and implementation options. Analysis of costs and risks of alternative bridging mechanisms (lock/release vs burn/mint). Simulating the impact of money tokenisation on systemic liquidity and financial intermediation using networks of agents.
4. Simulations and adaption of financial stress-testing methodologies to multi-chain, multi-asset arrangements for programmable tokens and automated markets. Technical and operational Scheme design recommendations that effectively address failure scenarios and support monetary policy objectives.

The intended outcomes of this research project will include analytical frameworks and tools for liquidity monitoring and optimization adopted for token interchange system, along with Scheme design recommendations that effectively manage financial risks emerging from these systems adoption and their integration with traditional infrastructures.

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