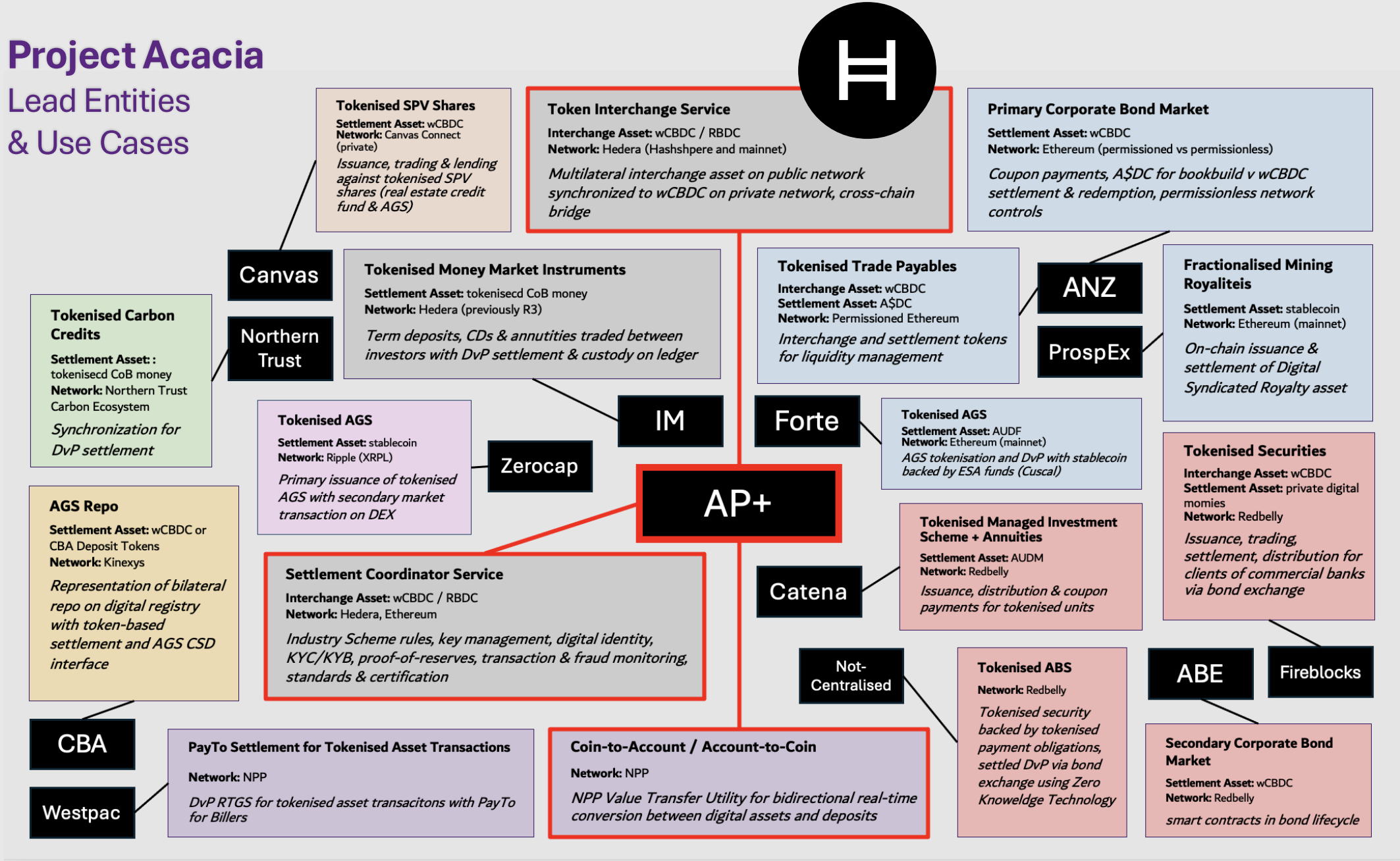
AP+ Industry Project

Background

October 2025

Project Acacia

Lead Entities & Use Cases



Multinational CBDC / DLT Projects

PROJECT STELLA (2016-20)

Four-phase ECB-BoJ research on DLT for FMIs: liquidity-saving; DvP; cross-border synchronization via HTLC; confidentiality v auditability

PROJECT JASPER-UBIN (2019)

Joint design paper following MAS Project Ubin and BoC Project Jasper. Atomic cross-border transfer using HTLC across different currency ledgers. BoC initiatives discontinued; MAS initiatives led to Partior launch.

PROJECT ABER (2019-20)

One-year proof-of-concept by central banks of Saudi Arabia and UAE for dual-issue wCBDC for cross-border PvP settlement (Hyperledger Fabric)

EASTERN CARIBBEAN DCASH (2021-24)

Eight-nation ECCB live retail CBDC pilot using Hyperledger Fabric. Major outage in 2022. Closed in 2024 with preparations for future commercial-grade Dcash 2.0 launch

PROJECT JURA (2021)

BIS-BdF-SNB test of atomic PvP forex (CHF-EUR wCBDC) and atomic DvP (wCBDC vs tokenised Commercial Paper). Dual-notary signing for legal finality.

PROJECT DUNBAR (2021-2022)

BIS project with four central banks (Australia, Malaysia, Singapore, South Africa) building multi-wCBDC prototypes (Corda & Partior platforms) for cross-border payments

PROJECT M-BRDIGE (2021-)

Multi-wCBDC corridor for real-time cross-border payments and FX transactions. Pilot in 2022, advancing to MVP stage in 2024. BIS originally involved but withdrew in 2024. Project discussed at 16th BRICS Summit in regard to SWIFT and US sanctions enforcement

PROJECT GUARDIAN (2022-)

MAS-led tokenisation program (tokenised deposits, funds, bonds) involving a multinational industry cohort including leading global banks. **Joined by Australia's ANZ (in partnership with Chainlink) in 2024.**

PROJECT ICEBREAKER (2022-23)

BIS project with central banks of Israel, Norway and Sweden linking pilot retail CBDCs (digital shekel, NOK-CBDC & e-krona prototypes) in hub-and-spoke model with FX routing

PROJECT CEDAR PHASE II x UBIN + (2023)

MAS + FRBNY experiment for multi-currency wholesale cross-border atomic settlement using DLT

PROJECT MARIANA (2023)

BIS, MAS, BdF and SNB proof-of-concept for global interbank spot FX market using AMM exchange, with cross-platform bridges between domestic and transnational networks for wCBDC interchange (ERC-20 token standards)

DIGITAL EURO (2023-)

Design / preparation phase for retail CBDC with workstreams for privacy, offline functionality and scheme rules. Decision on issuance to be made following preparation phase.

PROJECT AGORA (2024-)

BIS project for cross-border wholesale public and private money and tokenised asset **unified ledger** prototype, involving a multinational industry cohort

PROJECT MERIDIAN FX (2024-)

BIS project on Synchronisation Operator (SO) concept for interoperability between wholesale payment infrastructures (both RTGS and DLT systems) to orchestrate PvP FX transaction settlement. The project compared three Eurosystem interoperability synchronisation solutions

Public and Private Money

The distinction between public & private money is essential context for Project Acacia

Public money (currency)

Central bank (CeB) money a.k.a. **M0** or **MB** (Money Base)

- Sovereign **fiat liabilities:** issued as currency by a central bank
- Settles tax obligations but not convertible to any reserve
- Supported by central bank assets including repo, forex and bond holdings.

Australian public money exists in two forms:

- ***electronic:*** ESA balances in **RITS**. *Held by institutions*
- ***physical:*** banknotes / coins. *Held by the public*

CBDC would be a new digital form of public money outside RITS.
*Project Acacia is considering only a **wCBDC** held by institutions*

Private money (deposits)

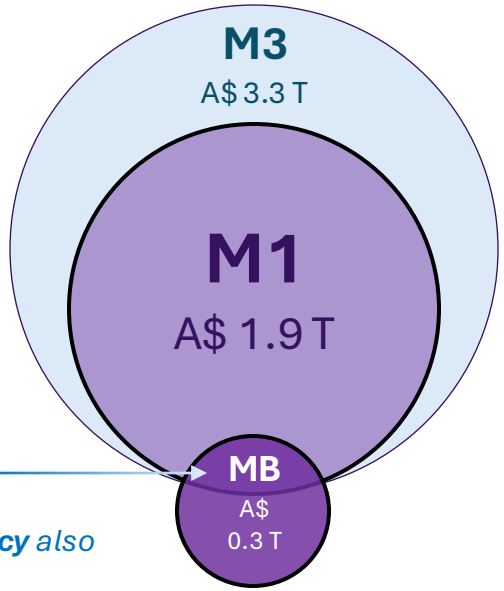
Commercial bank (CoB) money a.k.a. **M1** *although "M1" includes **physical currency** also*

- Commercial bank **cash liabilities:** an interest-bearing *debt* issued by a bank to a depositor
- Supported by commercial bank assets, including ***reserves*** and ***loans***

  Reserves are ESA Balances (M0), which settle interbank payments in **RITS** (real-time gross or batch netted)

  *Fractional-reserve banking generates M1 as a multiple of M0**: bank loans (of M0) create new bank deposits (M1)***

M1 deposits are **call deposits:** transferrable (convertible to M0) at par value **on demand / without tenor**
Less ***liquid*** deposits (e.g. term deposits) are included in **M3**



Most **Authorised Deposit-Taking Institutions (ADIs)** are commercial banks, although some non-banks are also authorised to issue deposits (e.g. Cuscal Limited)

A "deposit-taker" (ADI) is also called deposit *issuer*, since deposits are financial instruments issued to depositors.

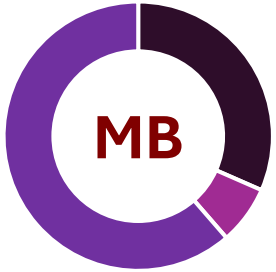
Only ADIs can issue deposits, but non-ADIs can issue **Stored Value Facilities (SVFs),** instruments allowing customers to store funds for the purposes of making **future payments**, including prepaid cards and mobile 'wallet' or online account balances (e.g. PayPal, Alipay). These are money-like claims on a private issuer, but not M1.

Monetary Aggregates

- **M1:** ***physical currency*** **+** *transferrable (a.k.a. call / cash / demand) deposits at ADIs*
- **M3:** ***M1*** **+** *all other deposits at ADIs including* ***term deposits*** *and* ***certificates of deposit***
- **Broad Money:** ***M3*** **+** *short term liquid liabilities issued by non-ADIs*

The RBA refers to central bank money as **MB** rather than **M0**

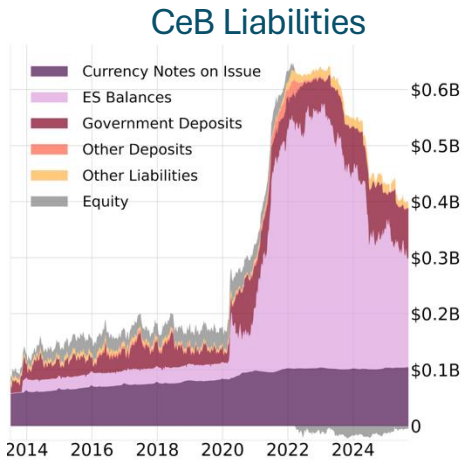
ES balances *(in RITS) are part of MB but not M1*

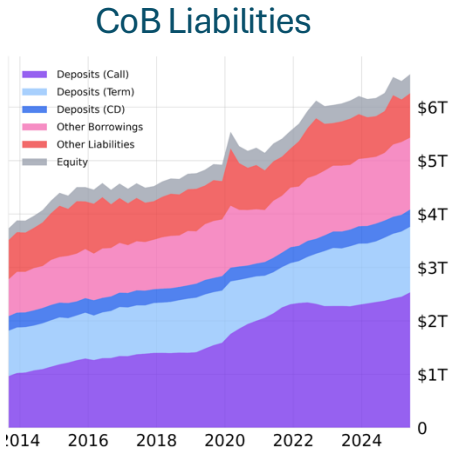


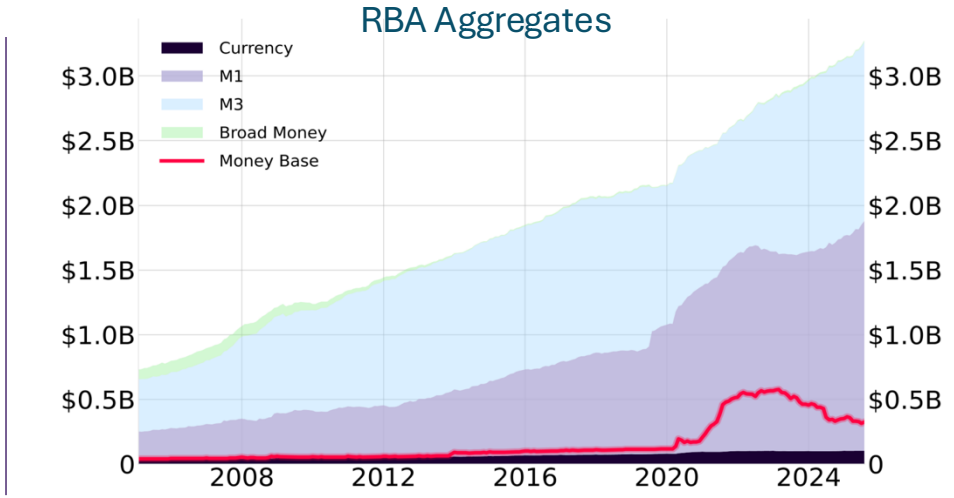
Physical currency *(banknotes + coins) are included in MB & M1*

Other RBA liabilities to private non-banks (not in M1)

A future legislated CBDC (retail or wholesale) would be a new MB component







Tokenised Private Money

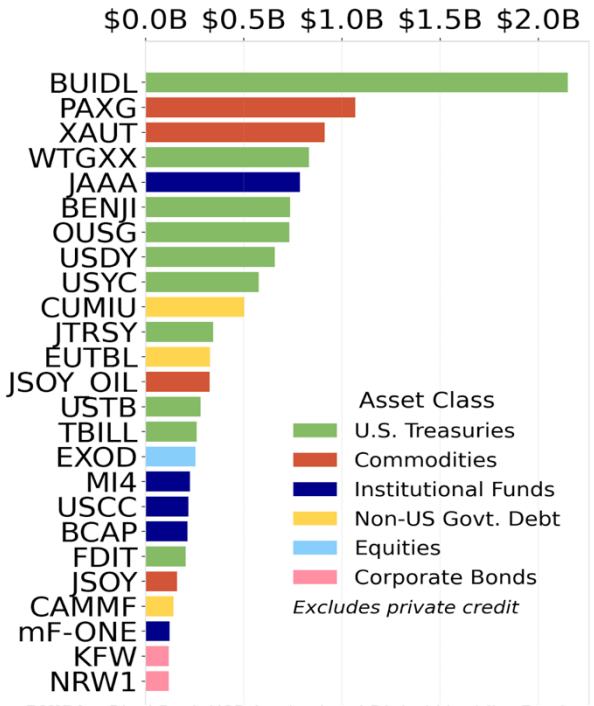
- **Deposit tokens** issued by domestic ADIs would be legally equivalent to deposits. Deposit tokens without tenor would be categorised with call deposits in monetary aggregates (M1). Project Acacia experiments will feature tokenised term deposits & CDs; **tokenised M3.**
- **Stablecoins** can be issued by non-ADIs and are not included in any monetary aggregate. Treasury's proposed regulatory framework classifies stablecoins as a special type of **SVF** that is *"used [for payments] without the direct involvement of the issuer"*. Including SVFs in monetary aggregates would 'double count' the issuer's liability along with the deposits held by the issuer as its necessary liquid backing assets.
- **Tokenised MMFs** are shares in regulated mutual funds investing in short-term low-risk assets, issued as **stable-value yield-bearing tokens** and useful as **programmable collateral**. Tokenised MMFs are issued by BlackRock, Franklin Templeton, UBS, Fidelity International & Circle. Goldman Sachs & BNY Mellon also recently announced a MMF tokenisation initiative.

New Regulatory Regimes

Jurisdiction: *Stablecoins Framework*	***Liquidity Requirements:*** *all jurisdictions require 100% backing*
EU **EU:** *MiCA (2024)*	Minimum proportion (30-60%) in CoB call deposits with concentration limits, remainder in HQLA; reserve assets, segregated accounts. No interest permitted.
US **US:** *GENIUS Act (2025)*	CoB call deposits, short term Treasury securities (up to 93 days maturity), overnight repos / reverse repos, MMF shares; segregated accounts, no interest
JP **Japan:** *Electronic Payment Instruments amendments (2023)*	Cash, CoB call deposits, government / municipal bonds; funds segregated and held by legal trust entities
SG **Singapore:** *SCS framework (2023)*	Cash, CoB deposits & government debt (AA- equivalent) up to 3 months maturity; segregated accounts. Max T+5 business day redemption.
HK **Hong Kong:** *Stablecoins Ordinance (2025)*	Cash, CoB deposits with tenor up to 3 months, government issued or guaranteed debt with up to one year residual maturity, reverse repo, funds
AE **UAE:** *Payment Token Services Regulation (2025)*	Domestic currency: 100% escrowed deposits. Foreign currency: 100% HQLA
CH **Switzerland:** *FINMA Guidance (2024)*	Reserves held as CoB deposits covered by Swiss default guarantee
GB **UK:** *Final standards under development (FCA/BoE)*	Under transitional FCA rules, at least 5% CoB call deposits, the rest in HQLA

Tokenised RWA Value (USD)

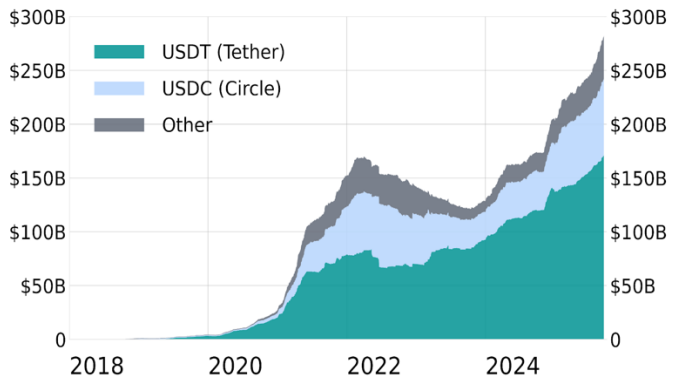
US Treasuries (led by BlackRock) and **gold** are the top tokenised assets, excluding HELOC's ~$12B



BUIDL: BlackRock USD Institutional Digital Liquidity Fund
PAXG: Paxos Gold
XAUT: Tether Gold
WTGXX: WisdomTree Government Money Market Digital Fund
JAAA: Janus Henderson AAA CLO ETF
BENJI: Franklin OnChain U.S. Government Money Fund
OUSG: Ondo Short-Term U.S. Government Treasuries
USDY: Ondo U.S. Dollar Yield
USYC: Circle USYC
CUMIU: ChinaAMC USD Digital Money Market Fund
JTRSY: Janus Henderson Anemoy Treasury Fund
EUTBL: Spiko EU T-Bills Money Market Fund
JSOY_OIL: Justoken Soybean Oil
USTB: Superstate Short Duration U.S. Government Securities Fund
TBILL: OpenEden TBILL Vault
EXOD: Exodus Movement, Inc. Class A Common Stock
MI4: Mantle Index Four Fund
USCC: Superstate Crypto Carry Fund
BCAP: Blockchain Capital III Digital Liquid Venture Fund
FDIT: Fidelity Digital Interest Token
JSOY: Justoken Soybean
CAMMF: ChinaAMC HKD Digital Money Market Fund
mF-ONE: Midas mF-ONE (Fasanara F-ONE onchain certificate)

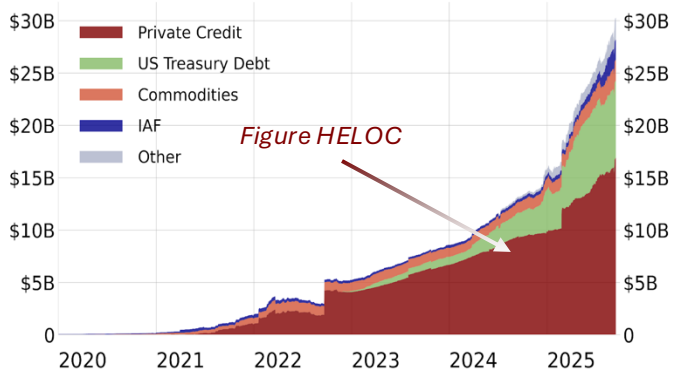
Stablecoin Issuance (USD)

99.8% of issued stablecoins are USD denominated



RWA Issuance

The largest component comes from the US HELOC lender Figure



Monetary Singleness: a case for a national industry scheme

The **AP+ Project Acacia pilots** are designed to highlight the key upgrades necessary for Australia's payments & banking infrastructure to effectively interface with the emerging token-based financial ecosystem. The core mechanism is a **Token Interchange facility** for exchange of par-valued AUD tokens, managed under an **industry Scheme** to enforce the use of a **common multilateral interchange token 100% backed with central bank money.** This can extend the singleness of money to privately-issued AUD tokens on public ledgers. During the pilots, central bank money will take the form of private-network wCBDC. However, the Scheme could also operate without a CBDC, by synchronising the interchange token directly to RITS.

A **Future Payments Scheme** can serve a key national interest in financial stability during an unpredictable transition period for banking and payments industries globally.

Interbank Payments Settlement & Fungibility of Deposits

A buyer purchases an asset from a seller. Unless the buyer is an ESA holder (or paying with physical currency), traditional payment must come from the balance of the buyer's **commercial bank deposit**.

If buyer and seller have accounts with the same commercial bank, payment could be made internally within that bank. The seller receives a **deposit** – a commercial bank liability – without any movement of central bank liabilities (cash). The commercial bank balance sheet is unchanged: the buyer's deposit is now the seller's deposit.

If buyer and seller use different commercial banks, payment must be made *interbank* using RITS. The buyer's commercial bank liquidates the buyer's deposit and sends **"cash"** (ES balances) to the seller's commercial bank, which creates a deposit for the seller (a liability of the seller's bank).

The seller still receives a deposit as payment, but the use of RITS to settle interbank payments makes deposits at different commercial banks fungible (equivalent in value). Banks' exclusive acceptance of ES balances as a multilateral settlement asset secures the **singleness of the currency**. Australia's domestic FMIs are (non-ADI) ESA holders that settle securities & derivatives transactions using central bank money, even when counterparties to trade share the same commercial bank.

⊕ *Central bank money is a government liability & a commercial bank asset used to settle interbank payments by commercial banks' depositors*

Central bank money **deposited** in a commercial bank becomes a **reserve**. The depositor's *commercial bank money* is a **claim** to equal reserves when using the deposit to make interbank **payments** or when withdrawing physical currency.

⊟ *The deposit is an asset of the depositor and a cash liability of the commercial bank*

⊖ *The bank must make reserves (liquidity) available on demand for the depositor's interbank transfers or physical cash withdrawals*

⊞ *Reserves otherwise support acquisition of other bank assets (i.e. loans). The deposit effectively represents a claim on these assets, since the full value in reserves is not held for every depositor*

RITS was launched in 1998, but for two decades RTGS was limited to wholesale payments; Austraclear transactions and transfers made under the SWIFT **High Value Clearing System** managed by APCA (now AusPayNet). With the **NPP** in 2018, domestic retail payments also became real-time, facilitated by the FSS and its **ISO 20022** messaging standard (the NPP Basic Infrastructure is designed, built & operated by SWIFT).

The 120-character ABA file format still used for **direct-entry** electronic payments emerged from 1970s punch-card technology. Deferred batch clearing was managed via various interbank agreements before APCA established a common framework in 1994 (BECS). Household internet access led to the industry launch of **BPAY** as a retail payments scheme (employing BECS) in 1997. **Eftpos** (first introduced with magnetic strip & PIN in the 1980s) was reformed into a multilateral card scheme in 2009, partly to better respond to market competition driven by innovations such as contactless and EMV.

Financial Market Infrastructures

The RBA recognises two FMIs as **Systemically Important Payment Systems** (SIPS) for Australia:

- **RITS:** RBA's internal ESA transfer system for domestic interbank payments
- **CLS:** an international institution operating **multicurrency PvP FX settlement** for wholesale spot FX transactions (responsible for over half of global FX transactions)

The RBA also supervises other FMIs operating in Australia, assessing compliance with **Financial Stability Standards** based on the international **CPMI-IOSCO PFMIs**.

- **SSFs – Securities Settlement Facilities** *(delivery of asset on payment)*
  - **Austraclear:** wholesale OTC debt (government bonds and repo)
  - **ASX Settlement:** exchange-traded equities & debt products (CHESS)
  - **Euroclear** (Belgium)**:** debt and equity securities, government bonds and repo
  - **Clearstream** (Luxembourg)**:** debt and equity securities, government bonds and repo
- **CCPs – Central Counterparties** *(clearing)*
  - **ASX Clear:** equities & debt products, exchange-traded & OTC
  - **ASX Clear (Futures):** exchange-traded equitiy and debt products
  - **LCH** (UK)**:** OTC interest rate & inflation rate derivatives
  - **CME** (US)**:** interest-rate, commodity and energy derivatives

The four Australia-based FMIs are all **ASX Group** entities.

The PFMIs are international regulatory standards published in 2012 to guide supervision of **payment systems, CSDs, SSFs, CCPs and trade repositories.** The Principles arose out of the international policy response to the 2008 financial crisis and cover several broad categories of risk: ***Legal, Credit, Liquidity, Business, Custody & Investment, and Operational.***

A consequence of the financial crisis was a G20-led international policy initiative to mandate the centralised clearing of OTC derivatives. Contracts novated by CCP are collateralised with holdings of **initial margin** (HQLA) set to cover *extreme-but-plausible* stress scenarios, and **variation margin,** to be paid with central bank money "where practical & available".

Wholesale & Retail Money

Millions of **retail** transactions processed daily by RITS collectively account for **less than 5%** of average daily *value* transacted. The other ~95% comes from high-value, low-volume **wholesale** payments, generally associated with institutional securities (DvP) and FX (PvP) markets. **RTGS** was previously reserved for wholesale transactions but was extended to retail with the launch of the **FSS** in 2018 (enabling the NPP).

Central banks distinguish retail and wholesale CBDCs. The RBA has limited Project Acacia's scope to **wCBDC**, arguing that a tokenised form of physical currency is unlikely to improve efficiency of domestic retail payments (which are now instant), but could introduce financial stability risks with a new non-physical public money alternative to bank deposits. By contrast, the RBA has noted various inefficiencies in Australia's wholesale market infrastructure and has suggested that the introduction of wCBDC could help modernise processes relating to clearing & settlement.

ASX Group owns and operates monopoly infrastructure for Australia's core domestic markets. Transactions depending on the SSF **Austraclear** (the AGS CSD) are used to fund the federal government and implement monetary policy, Australclear connects directly to RITS for RTGS & DvP RTGS during business hours. **ASX Settlement** (the other major Australian SSF) operates the **CHESS** system for equities, which settles DvP on a **T+2** net basis – ASX Settlement submits these netted payments to RITS as **batch administrator**. RTGS for equities is technically supported by CHESS but has never been in use. ASX Clear is the equities CCP that novates trades & submits settlement to CHESS. ASX Clear Futures is the CCP for futures & options (interest-rate, equity-index, energy/commodity) traded on the ASX platforms, as well as some OTC derivatives.

ASX Group led an unsuccessful attempt to develop a token-based platform from 2016 to 2022 (hiring **Digital Asset**, creator of the **Canton Network**), eventually abandoning the project after spending A$250 million and misleading regulators on the state of progress. The project's failure means that the aging CHESS system will continue operating for a number of years longer than intended (a non-DLT replacement is planned). In 2024, CHESS suffered a significant operational incident (following a previous one in 2020) drawing unusually strong rebuke from regulators.

Liquidity Issues for Token Interchange

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).** Bi-directional transfer of value between tokens and fiat using ISO20022 and EVM standards. How the NPP can be utilised to support digital asset settlement through the intermediation of ESA holders and the participation of SWIFT.

2. **Token Interchange.** Neutral operator of a permissioned public ledger-based platform for Scheme members to atomically swap stablecoins and deposit tokens. The interchange will utilise an EVM-compatible tokenised mirror representation of Central Bank Money ("M0") as cross-asset 'hub token' for settlement, employing smart contracts for token swapping. The interchange operates on a permissioned instance of Hedera Hashgraph and incorporates an inter-ledger bridge to Ethereum.

3. **Settlement Coordinator Services.** Supporting services for NPP-token integration and token interchange, Another Project Acacia lead entity has since become the lead entity for this use case, with the experiment proposing to tokenise tradeable Certificates of Deposits and Annuities for Australian money markets, settling with a privately issued stablecoin.

Project Acacia Consultation Paper Models

A. Settlement coordinator between tokenised asset market and **RITS** (ES balances)

B. Atomic settlement in asset markets using **tokenised public money** (CBDC)

C. Atomic settlement in asset markets using **tokenised private money** (deposit tokens), settlement coordinator between private money tokens and **RITS** (ES balances)

D. Atomic settlement in asset markets using **tokenised private money** (deposit tokens), token interchange of private monies ***without*** a common settlement asset

E. Atomic settlement in asset markets using **tokenised private money** (deposit tokens), token interchange of private monies ***with*** common 'public money' settlement asset (RBDC / CBDC)

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?
- To what extent does the programmability of tokenised money and assets allow *schemes* to be implemented *as code*?

Project Components

Review of institutional liquidity management, tokenisation-related initiatives by systemically important financial institutions, cross-disciplinary academic literature.

Evaluation of the impact of stablecoins (and their regulatory collateral requirements) on domestic and cross-border money markets. Scheme options for assessing operational liquidity requirements for token-fiat conversion. Evaluation of hub-token architectures and the use of common settlement assets for multilateral token exchange. Comparison of distributed ledgers and synchronisation mechanisms.

Simulation of the impact of money tokenisation on systemic liquidity and financial intermediation using networks of agents. 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.