DFCRC Response to

Regulating Digital Asset Platforms Proposal Paper

1 December 2023

DFCRC DIGITAL FINANCE CRC
THE FUTURE OF FINANCE

Executive Summary

The impact of Digital Assets on the Australian economy could be profound as the next iteration of financial markets infrastructure. But the potential impact and regulatory implications vary substantially across the different use cases of these technologies.

It is important to differentiate between the use of Digital Assets in the context of cryptocurrencies as a new asset class, and the Digital Asset representations of existing "real-world" assets (RWA).

(i) In cryptocurrencies, the asset class itself is the innovation, and the key regulatory questions largely centre around consumer protection.

(ii) In the digitisation of existing financial assets, the innovation is in the new transaction flows and marketplaces that this approach facilitates. Here, the key regulatory questions are about the financial infrastructure operational and licensing requirements, primarily in a wholesale context.

Moreover, the economic implications of digitising real-world assets are substantially larger because they involve modernising the financial infrastructure across asset classes that are an order of magnitude greater in scale than cryptocurrencies.

Our key recommendation is that the tokenisation of real-world assets requires a separate, additional workstream to iteratively resolve a different set of regulatory challenges. Landscape, problem settings, commercial drivers, and regulatory needs between cryptocurrencies and real-world assets are all so fundamentally different that they cannot be united under the same regulatory development effort. This applies notwithstanding the crossover in technology used.

While some regulation is about risk and harm mitigation, a second important role of regulation is an enabler of economic activity and beneficial innovation. The Proposal Paper is firmly rooted in the problem setting of cryptocurrencies, where the key issues are about mitigating known risks illustrated by platform failures and other concerning events.

A separate regulatory track for RWA tokenisation could be a catalyst for the substantial economic gains that are on offer from transformational developments. This regulatory track would benefit from a close working relationship with industry and experts, grounded in use cases, and prepared to be a longer-horizon, dynamic process that allows the regulation to evolve along with the developing area of real-world asset tokenisation.

1. Problem setting and the need for an additional regulatory track

1.1 Real-world asset tokenisation and cryptocurrencies are two different problem settings

The topic of Digital Assets has received a boost in prominence through the development of cryptocurrencies and related tokens on public blockchains. These emerged as a new asset class, with properties not previously seen in (digital) financial products - they were created *without* an issuer, and without representing any kind of contractual claim on any other asset or service.

As a result, cryptocurrencies (taken hereafter to include related tokens on public blockchains) have existed in somewhat of a regulatory vacuum, because they did not fit easily into the definitions of existing financial assets. In turn, that caused various issues from consumer protection to financial stability concerns. Addressing these issues is the subject matter of the Proposal Paper we are commenting on.

But the topic, and impact, of Digital Assets is much wider. It is about a change in how assets are digitally represented, in such a way that the transactional structure and flows within the financial system as a whole will change fundamentally. This is the topic of 'Real World Asset' (RWA) tokenisation, which is the topic of the Digital Finance CRC.

The Proposal Paper 'Regulating Digital Asset Platforms' impacts on both – cryptocurrencies and RWA tokenisation and the resulting changes to the financial system. And that is problematic.

There are of course technological commonalities between both cryptocurrencies and RWA tokens. And some of the technological and transactional mechanism developments used in cryptocurrencies and decentralised finance form an additional toolset that is starting to be adopted to RWA trading.

But there are also very fundamental differences:

1. Economic impact potential. In our assessment, the economic impact potential of RWA tokenisation is by orders of magnitude bigger than that of cryptocurrency services. For some perspective, RWAs are at least 1,000 times greater in scale (market value).[1]

2. Target market. We see the highest and nearest term economic impact potential from Digital Assets in marketplaces that are predominantly wholesale, whereas cryptocurrencies have attracted a substantial retail following. The key issues and inhibitors in wholesale or institutional markets are not the same as the consumer protection and other issues identified in the Proposal Paper.

3. Recourse and compliance potential. Centrally issued Digital RWA have different potential for compliance solutions than those for cryptocurrencies.

[1] See Appendix A.

	Cryptocurrencies	Real-World Asset Tokenisation
Primary Issues	Consumer protection (losses from platform collapses, scams, etc)	• When does a token inherit the legal status of the underlying asset? • Legislative mapping of different forms of asset tokenisation • Framework for non-custodial digital asset services like atomic settlement
Market value (globally)	$1 trillion	> $1,000 trillion
Sector maturity	10+ years, witnessed platform collapses, key risks, and adverse effects	Early stage of institutional adoption, use cases growing, not yet at scale

The Proposal Paper introduction illustrates well the differences in problem settings. The issue of failure of intermediaries in the cryptocurrency space, being rightly identified in the Proposal Paper as a key issue for consumer protection in the context of cryptocurrencies, is simply not a prominent issue in RWA tokenisation, in particular wholesale-focused RWA tokenisation.

In wholesale RWA tokenisation, Digital Assets are used to pinpoint precisely where asset holdings and risks are at any point in time. This is used to improve clearing and settlement infrastructure, increase efficiency, and allow participants to track their exposure to counterparties.

Noting we will elaborate on the key issues in RWA tokenisation later, the point is that they are fundamentally different from the issues addressed in the Proposal Paper.

1.2 Real-world asset tokenisation needs an additional regulatory workstream

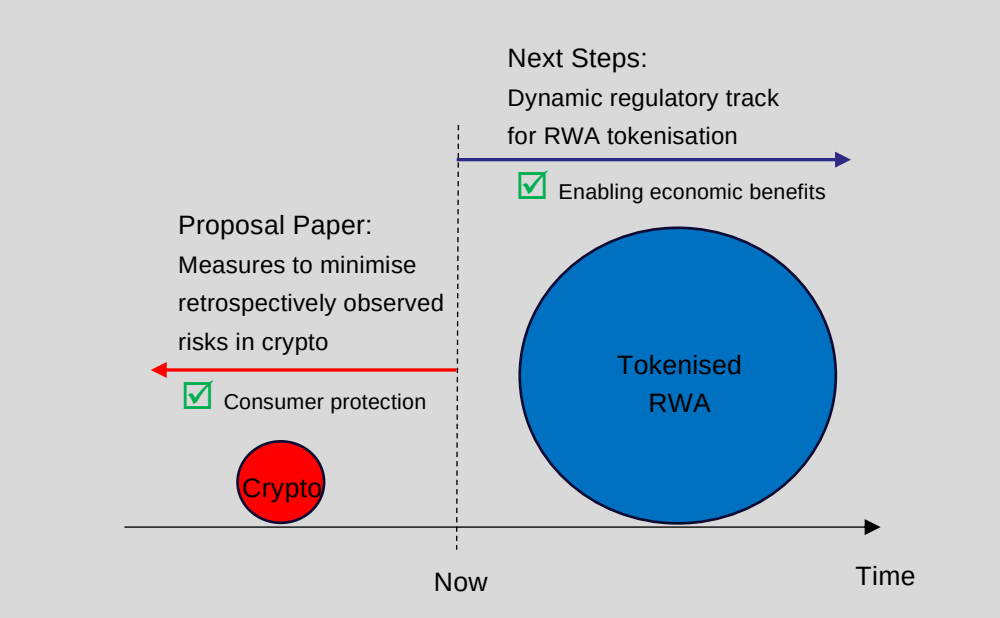
The problem setting addressed in the Proposal Paper is firmly rooted in the cryptocurrency space. That is understood and accepted.

However, addressing that problem setting does not produce suitable guidance for RWA tokenisation regulation. In fact, referring to our point 1 above, developing a regulatory framework for RWA tokenisation based on the problem setting of cryptocurrencies would be like the proverbial tail wagging the dog.

This is not to say that what is proposed in the Proposal Paper should not apply to RWA. Much of it is in fact be quite workable and not contradictory to the regulatory needs of RWA tokenisation, subject to more specific comments we make later. We, therefore, welcome the proposals overall.

However, to adequately address the key issues in RWA tokenisation requires an additional regulatory workstream, with its own key focus areas, rather than being blended in with regulatory solutions for cryptocurrencies. Capturing the economic growth potential from the significant transformation of financial systems through RWA tokenisation and Digital Asset technologies needs a range of different issues to be addressed (as set out later in this submission). These are too substantial to address through an iteration of the Proposal Paper, and instead would be better addressed through a structured and dynamic regulatory track focused on RWA tokenisation.

The regulatory track focused on RWA tokenisation would likely need an iterative approach that evolves along with developments in RWA tokenisation. That is because, unlike cryptocurrencies where one can look back over past events and identify the key risks and the ways in which cryptocurrencies are being used and traded, RWA tokenisation is still in the relatively early stages of evolution. Regulation for RWA tokenisation would have to in the first instance focus on issues that are impediments, and then evolve along with it.



An example of such an iterative, dynamic regulatory process being applied to RWA tokenisation, with a real focus on enablement rather than prosecution is in the collaborative efforts between Singapore's Monetary Authority (MAS), other international regulators, and industry. For example, Project Guardian[2] is a collaborative initiative with policymakers, the financial industry, and experts that seeks to evolve policy in line with use cases in asset tokenisation and DeFi, while managing risks to financial stability and integrity. Its objectives include assessing and enabling the longer-term transformational impact of asset tokenisation. It aims to deliver a safe development of ecosystem and through learnings from industry pilots, establish suitable policy guidelines and regulatory framework.

[2] https://www.mas.gov.sg/schemes-and-initiatives/project-guardian and
https://www.mas.gov.sg/news/media-releases/2023/mas-partners-financial-industry-to-expand-asset-tokenisation-initiatives

We strongly believe that a similar approach in Australia could help unlock the billions of dollars per annum in economic gains from RWA tokenisation.[3] It would also minimise the tendency for Australian innovators to be attracted by overseas jurisdictions.

Next, we will outline where important disconnects are between the background and problem setting in cryptocurrencies as described in the Policy Paper, and key issues or problem settings in RWA tokenisation. To be as constructive as we can, we then elaborate in more detail on the applicability of the proposed approach to RWA tokenisation and respond to the specific questions asked in the Proposal Paper.

2. Key issues in Real-World Asset tokenisation

To elaborate on the need for an additional regulatory track focused on RWA tokenisation, we will highlight some of the key issues in RWA tokenisation that are outside the scope of the Proposal Paper:

1. There are different methods of creating "asset-backed" or asset tokens – because they provide different forms of entitlements and risks, they likely need separate regulatory considerations. We categorise these methods later.

2. The adoption and assurance of legal title based on digital assets. This is unsolved, across almost all asset classes. Cryptocurrencies are an exception, for the simple reason that no centralised entity exists for any form of recourse.

3. Regulatory issues surrounding circulation of digital asset tokens and non-custodial digital asset services. This includes more fundamental legal questions, such as settlement finality, and appropriate regulations for digital asset services that do not involve holding an asset (e.g., facilitating transactions through atomic swaps).

One issue that is in common for RWA tokenisation and cryptocurrencies is mitigating the identified risks for asset custody and therefore that issue can be addressed through the proposed approach. However, even on the issue of custody risks, we note that the problems are quite different for cryptocurrencies where the predominant risk is that of intermediaries misappropriating cryptocurrencies held in custody, vs RWA tokenisation, where more commonly it is real-world assets (not digital tokens) that are the custodied asset.

We elaborate on issues (1), (2), and (3) below, illustrating that they are not addressed in the current proposals and addressing them is not as simple as tweaking the existing proposals. This is why we propose that an additional workstream is needed to address them.

[3] DFCRC research estimates that the economic impacts of tokenisation in Australia's existing financial markets are in the order of tens of billions of dollars per annum, with potentially even more substantial impacts from enabling new markets and trading of other asset classes.

We then offer constructive comments on the proposals (largely custody focused) in this proposal paper to ensure that they are fit for RWA tokenisation at the same time as mitigating cryptocurrency risks.

2.1 The many different ways to tokenise an asset

The Proposal Paper predominantly assumes one simple way of performing asset tokenisation, namely via a custody model where an entity holds "real-world" or "off-chain" assets and issues digital tokens representing claims or rights to those custodied assets. This certainly is one way to tokenise an asset.

However, we note that even in this case open questions on legal title relative to tokenised registries need to be addressed.

In addition, there are other ways to tokenise assets, and not all involve holding assets in custody or a simple 1:1 custody arrangement. For these other means of tokenisation, it is important to provide regulatory clarity about the requirements and how they fit into the Australian regulatory frameworks.

Appendix B describes a number of methods of asset tokenisation. In summary, the spectrum of asset tokenisation methods, ranging from those with the most direct link between token and asset to those with the least direct link, include:

(i) Direct title. The digital token ***is*** the record of title. There is no custodial arrangement. There is only one ledger (possibly distributed), which is the ledger for the digital tokens. For example, when tokenising equities, rather than an entity holding an account or subregister in the current share registry and then issuing tokens backed by the holdings in that share register, instead the share registry could itself be tokenised. The tokens themselves could be the ownership records, in which case there is no custodianship or dual registries. While this method of tokenisation could be implemented using a distributed ledger, it doesn't necessarily require that the registry becomes distributed.[4] Another example is if the land title registry replaced entries in its centralised ledger with a token-based account of title. Again, no custodianship, but tokenised asset title. We note that a legally complete implementation even for this tokenisation model is not fully available at this time, for many asset classes. As such, the regulatory framework for this form of tokenisation too still requires development work.

(ii) 1:1 asset-backed tokens. This is where a custodian holds an asset and issues a token that represents a claim or right to that underlying asset. That token may have the right to be swapped for the underlying asset (redemption) or swapped for the cash equivalent of the asset, or not carry rights to be swapped but nevertheless be backed 1:1 by the

[4] As highlighted in the Treasury's Token Mapping proposals, the key element of a digital token is that it provides a person exclusive use and control of the token despite that person not controlling the host hardware where that token is recorded, with the token authenticity established through cryptographic techniques.

underlying asset. An example would be a financial institution issues bond tokens against bonds that is holds in a trust account, or a commercial bank issues fiat stablecoin tokens against a 1:1 backing of commercial bank money in a dedicated bank account.

(iii) Collateralised tokens. It is possible to issue an asset token that is backed by assets that are different to the asset that the token is intended to represent or give rights to. Typically, because of the mismatch between the collateral and the asset that the token is intended to represent, the token would be over-collateralised to provide a buffer against the possibility that the asset backing falls in value relative to the token's intended asset value. For example, the stablecoin Tether, which allows holders to redeem each token on issue for exactly $1, is backed not by cash, but by a mix of cash and other assets such as fixed income securities. Similarly, one could in principle create an Australian government bond token backed by commercial bank bonds, or a BHP equity token backed by an over-collateralised portfolio of mining stocks, one could create a Lithium token backed by fixed income securities and a futures contract position, and so on.

(iv) Under-collateralised asset tokens. It is also possible to issue a token intended to track the value of an asset, but that is not fully collateralised. Similar to fractional reserve banking, maintaining the token value requires active management of the fractional reserve asset portfolio and open market operations to control the supply of the token. This is a much riskier form of asset token, and history has shown many failures of such tokens. For example, in an extreme case the collapsed Terra/Luna stablecoin had no independent asset backing but was algorithmically stabilised through supply control algorithms. However, less extreme fractionally backed tokens have also been issued.

The Proposal Paper primarily deals with tokenisation method (ii) 1:1 asset-backed tokens. It is desirable to expand the proposals to provide regulatory clarity over all methods of asset tokenisation. Some of these tokenisation methods, such as (i) Direct title, and (iv) Under-collateralised, do not necessarily involve asset custody and therefore fall outside of the proposed "Asset holdings as the regulatory anchor point" regime. Others, such as (iii) do involve asset holdings, but are more complex and involve additional risks from active management of the assets backing the tokens and the possibility of the token becoming under-collateralised.

Therefore, the regulatory framework should be expanded to include all current methods of tokenisation, but with varied requirements given the methods are different in nature and risk.
We note that this is expected to be considerable work, which realistically needs to be implemented in an iterative process, such that commercially pioneering work provides supporting input into the development of the framework, rather than being held up pending the development of the framework.

What should be apparent from the above examples is that these methods of tokenisation differ in complexity and risks. Therefore, there may be additional safeguards required for some of these methods of tokenisation than is anticipated in the proposal paper (e.g., approaches (iii) and (iv)).

At the same time, the proposed regulatory requirements (aimed at tokenisation method (ii)) are excessive for very simple, non-custodial forms of tokenisation, such as (i) Direct title.

2.2 Adoption and assurance of legal title based on digital assets

A key issue in asset tokenisation is: under what conditions, or for which of these tokenisation methods, do the legal rights, responsibilities, and title of the underlying asset apply to the token holder? This is the issue of assurance of legal title when changing the digital representation of the asset.

It is also important to clarify under what conditions, or for which of these tokenisation methods, does the legal classification of the underlying asset carry through to the token? For example, if the base asset is a share in the company (equity) or a ton of a mineral (commodity), for which of these tokenisation methods is the asset token still regarded as an equity or a commodity, as opposed to taking some other form (such as a derivative or a share in a managed investment scheme)? Put differently, when does the *method* of tokenisation change the legal classification of the asset?

We propose the following categorisation approach to address the questions raised above, and develop a more holistic framework encompassing all current and emerging methods of asset tokenisation:

(i) Direct title. The digitisation or tokenisation of the registry does not change the underlying asset, nor does it introduce custodianship risks as there is no separate asset custody – it is merely a change in the asset ownership recordkeeping system. Therefore, there should be no additional regulatory requirements imposed and the legal classification of the underlying asset carries through to the token.

(ii) 1:1 asset-backed tokens. This method of tokenisation is dealt with by the proposal paper. While we broadly agree with the proposed framework, being some additional controls and requirements to address the additional risks that may be associated with asset custody in the course of tokenising an asset, we make a number of additional suggestions on the proposals in later comments. For example, given there are existing regulatory requirements for asset custody, is there a need to deviate from these when tokenising a real-world asset (as opposed to holding digital tokens in custody, which is more novel). However, additional to the proposed regulatory framework, we suggest that an important clarification for this form of tokenisation is that because of the direct 1:1 link between the token and the underlying asset held in custody, the legal classification of the underlying asset carries through to the token.

(iii) Collateralised tokens. Given the role of active management of the underlying asset portfolio, and the possibility that due to asset value fluctuations (not just custody risk) the token can become under-collateralised, this method of tokenisation is perhaps most similar to a managed investment scheme. Subject to further legal analysis, the

Australian requirements for managed investment schemes or structured financial products may be appropriate. This would also imply that that token may not retain the legal classification of the asset it is designed to represent.

(iv) Under-collateralised asset tokens. This form of tokenisation carries additional risks of losses to a token holder. Subject to further legal analysis, it may be closest to a structured financial product or derivative security. This would also imply that that the token may not retain the legal classification of the asset it is designed to represent.

2.3 Non-custodial Digital Asset services and circulation of Digital Asset tokens

The proposals take the approach of "Asset holdings as the regulatory anchor point". This is an appropriate way to deal with many of the risks of digital assets such as the FTX collapse which was very much one of inappropriate execution of custodial duties.

However, this approach leaves "out of scope" digital assets and digital asset services that do not involve asset custody.

Digital assets that do not involve asset custody are discussed above, where we propose how to handle tokenisation of assets where there is no custodianship (e.g., tokens directly representing title).

But what about non-custodial digital asset services? For example, a smart contract that facilitates the exchange/trading of digital assets without ever taking custody of those digital assets. Or, related, an asset settlement service that facilitates the settlement of assets without taking custody. In effect, these services are software used by others to deal in assets, which in the proposals is defined as "custody software" and is deemed not an asset holding arrangement. Therefore, in our interpretation of the proposals, such non-custodial digital asset services would be exempt from the proposed additional regulatory framework.

This, however, leaves open the question of are such non-custodial digital asset services exempt from any regulation or existing regulation, and if the latter, then what are the requirements?
We propose that some existing regulation may need adjustment to be fit for purpose because non-custodial digital asset services produce a different risk profile than when similar services are provided in a different manner, such as with custody of the assets.

For example, the existing framework for licensing clearing and settlement facilities is developed in the context of how most existing clearing and settlement facilities operate, which is with deferred batch settlement. Such services exposed to counterparty risks, settlement failures, clearing participant default risks, and so on. In contrast, a non-custodial, real-time prefunded atomic settlement facility eliminates these risks. Such a system can ensure that settlement failures are not possible, and in doing so, remove counterparty and default risks. They may, however, have other risks such as platform downtime or cyber risks.

The risks and activities are different. So, applying the regulatory principle of "similar risk, similar activity, same regulatory outcome" suggests that it is therefore inappropriate to simply apply the existing licensing framework to such non-custodial digital asset services. But they are also not covered by the proposed new framework. Therefore, these remain as a regulatory gap.

We therefore propose that a separate regulatory track is required (as per above suggestions) to assess the types of non-custodial digital asset services, their risk profiles, and to develop an appropriate regulatory regime for them.

3. Consistency of the requirements in the proposed framework

Noting the earlier discussion that most of the key issues in RWA tokenisation are different to those of cryptocurrencies and thus not addressed in the Proposal Paper, the proposed requirements for asset custody do have implications for some methods of RWA tokenisation. We therefore provide two comments below about the consistency of these requirements with the principles of "similar risk, similar activity, same regulatory outcome" and "technology agnostic".

3.1 Custody of RWA vs custody of digital tokens have different risks, yet the proposals treat them the same. A regulatory framework for custody of RWA already exists

The regulatory principle of "similar risk, similar activity, same regulatory outcome" which appears in the Proposal Paper, is useful but requires a thorough consideration of the underlying risks.

Application of this principle would require recognising that custody of RWAs has a different risk profile to custody of digital assets. For example, with digital assets, loss, theft, or misappropriation of the assets can in many cases be irreversible due to the immutability of ledgers for cryptographically secured tokens. In contrast, errors made in custody of RWAs can often be corrected through ex-post modifications or reversions of a centralised registry.

However, the proposals do not distinguish between these two different scenarios in imposing the additional regulatory requirements such as AFSL requirements. In that sense, the precautions built into the proposals that are motivated by risks such as the FTX collapse that involved a large-scale loss of digital tokens, are applied disproportionately/inappropriately to the lower-risk activities of tokenising an asset through a 1:1 RWA backing.

The existing Australian regulatory framework has requirements, standards, and guidance for asset custodians. In our view, these are sufficient for covering the basis for scenario in asset tokenisation method (ii), where an entity holds RWAs on behalf of token holders[5]. The process of converting a RWA into a tokenised form of that asset, using method (ii) (1:1 asset backing), does

[5] The problem of ensuring 'digital title equals legal title' still needs solving, and is an important legal framework development issue. But it is somewhat structurally separate to transactional circulation of tokenised assets.

not in itself introduce substantial additional risks other than the risks of RWA custodianship, which are covered in existing requirements for custodians.

The risks associated with how those tokens are subsequently used (e.g., providers of token staking/lending/trading/custody) should be dealt with through appropriate regulations of those services. Similarly, any risks associated with the asset issuance itself should be dealt with through appropriate regulations of the asset issuer, not the entity that merely converts between a traditional registry accounting system and a token-based accounting system.

3.2 Proposed requirements for "financialised" non-financial products are inconsistent with the "tech agnostic" / "tech neutral" principle.

The Proposal Paper (pages 14-15 and Part 5) proposes that non-financial products (e.g., wine, collectables, commodities), when tokenised, do not become financial products. This proposal is sound in principle, where tokenisation is not intended to directly create financial products and marketplaces.[6]

However, the paper then proposes that the tokenisation of non-financial products can "financialise" them by enabling trading, staking, and so forth, triggering additional standards and requirements for financialised functions (e.g., transparency in the trading process, protocols for engaging market makers, etc). Additionally, the paper suggests that a facility that holds a substantial value of non-financial product tokens on behalf of customers, using the example of a gaming business, would be considered a 'digital asset facility' and should seek an AFSL, even though the tokens themselves are not financial products.

There is an inconsistency here with the principle of "technology agnostic". In particular, these new requirements appear to only apply to financialisation in *token-based* accounting systems and *not* to financialisation of non-financial products in centralised, *account-based* systems. Financialisation can, and does, occur for non-financial products using account-based systems. Why are tokens treated differently?

Similarly, facilities exist that hold non-financial products on behalf of customers, in some cases in large values. Again, why is the holding of tokens representing what may be highly valuable but non-financial products treated differently?

We propose that there is a need for consistency in the requirements for financialised non-financial products that does not discriminate against token-based systems. We further propose there is a need for consistency in the requirements for platforms that hold non-financial products on behalf of customers so that again there is not a discrimination against token-based systems.

[6] An exception, as discussed in the different tokenisation methods, may be complex schemes of tokenisation that do not retain a 1:1 link between the token and underlying assets, but rely on active management of asset and/or derivative portfolios.

Further, several of the market requirements (p. 37) for trading of tokenised non-financial products, such as the transparency requirements, do not appear to be based on a systematic approach or review, and inconsistent with (more stringent in some regards) requirements for trading facilities that trade financial products (e.g., equities).

Additionally, we note that in practice, the "cut-off point" for a tokenised non-financial product to be deemed financialised will be a very difficult, and very dynamic matter. Even some of the examples used in the Proposal Paper as "non-financial items" in some cases already form objects of speculation and investment: relatively liquid marketplaces exist for virtual and in-game items, which trade at vast multiples to the license value of the game itself. These developments are likely only the start of a trend, illustrating that this is going to be a highly dynamic space that will need a similarly dynamic regulatory approach for these kinds of digital assets. We therefore propose that the distinction between "financialised" and "non-financialised" needs to be clearly defined, yet subject to regular review and, when necessary, adjustment.

4. Definitional issues and concept clarifications in the Proposal Paper

4.1 Definition of account-based vs token-based systems

For RWA tokenisation, this account- vs token-based systems is an insufficient distinction (page 10-11). In many cases in RWA tokenisation, tokens are bearer instruments with a holder identified. An analogy could be bank cheques with "or bearer" crossed out or share certificates with the holder name specified. One could also illustrate this kind of tokenisation as "token based fractional access to an account".

It is not immediately clear from the Proposal Paper whether the kind of Digital Asset tokens in RWA tokenisation are intended to be "all included" or "all excluded": from the proposed approach. It does however illustrate a very important distinction:

(i) An "unconditional" digital bearer instrument, like Bitcoin, is a (relatively) true digital bearer instrument – the holder of the cryptographic key can spend/transact.

(ii) A "conditional" tokenised bearer instrument can be different: the holder of the cryptographic key can transact/spend subject to the current T&Cs of the issuer, who can otherwise reject the transfer by controlling the registry rules (whether held on blockchain or otherwise).

The conditional situation is prevalent in centrally issued instruments with centrally controlled registers (including private distributed blockchains), and it leads to a fundamentally different compliance situation.

In turn, this illustrates that for the purposes of RWA tokenisation, a more differentiated definition for “Token Based Systems” is required, and more differentiated compliance and regulatory options are available on the basis of the differentiated definition.

Similarly, the Term Digital Asset would need to be more differentiated than what is provided on page 11. A starting point could be the differentiation between (a) a bearer instrument where bearing the instrument represents the entitlement, and (b) a bearer instrument where a combination of bearing the instrument and actions by the issuer represents the entitlement.

4.2 Complexity of token-based system flows

“There is nothing per se about entitlements recorded in token-based systems that makes them more complex to assess against the financial product definitions. The system of record is not a factor.”

Token-based systems facilitate different kind of transaction flows relative to account-based systems, which impacts on a number of items including those relevant to financial services licensing and regulatory compliance. Even if that is not seen as increased complexity, assessment of the transactional flow will therefore be different.

An alternative way to word the intent but provide differentiation here could be:

> ‘There should principally be no difference in regulatory requirements, whether the same financial [contractual] instrument is represented as an account balance or as a collection of tokens/objects. However, the transactional flows between account transfers and object transfers can vary. This can have implications for compliance and risk, on an individual basis for parties involved in the transaction, and on a systemic basis.’

4.3 The custodian of digital asset holdings

“In token-based systems, the responsibility to secure the equivalent records (the tokens) is shifted to the holders of the entitlements.”

We do not see this statement as unconditionally correct, outside the very specific cryptocurrency use case. In the differentiated token-based approach described above, the centralised issuer or registry provider, who is an identifiable organisation, may well still be responsible for the record keeping, in a legal sense.

We note in context of the account/token-based comparisons and their market structure, that Info Box 1 on page 13 is imprecise and makes assumptions about market structure of crypto markets that are not always correct, or not necessarily correct. In as much as this Info Box illustrates assumptions made or relied on for the development of the proposed rules, this could be problematic.

The definition and discussion of staking in Box 2 is too narrow. Yes, staking can be done by becoming a blockchain validator. But staking has a much broader accepted meaning of locking digital assets in a smart contract to facilitate capital provision.

4.4 The process of creating digital assets is not always simple

"The process of creating an asset-backed token is relatively simple."

This is a common and quite detrimental misunderstanding. The creation of an asset backed token is not simple, and there are fundamental legal and regulatory questions yet to be answered.

In fact, an effective regulatory framework addressing this very issue would provide the most important foundation for RWA tokenisation and address the single biggest inhibitor. But it is a very complex task.

5. Responses to some of the specific questions

Question set 2:
Does this proposed exemption appropriately balance the potential consumer harms, while allowing for innovation? Are the proposed thresholds appropriate? How should the threshold be monitored and implemented in the context of digital assets with high volatility or where illiquid markets may make it difficult to price tokens?

> The thresholds are different to non-cash payment facilities. Where such facilities are implemented using digital tokens, which category and thresholds are relevant?

Question set 4:
Does the distinction between total NTA needed for custodian and non custodian make sense in the digital asset context?

> As noted above, the custody of real-world assets is different to that of digital assets including in the risks of asset losses and thefts. Custody of RWA already has regulatory controls that appear sufficient for the context of tokenisation of RWA.

Question set 6:
Automated systems are common in token marketplaces. Does this approach to pre agreed and disclosed rules make it possible for the rules to be encoded in software so automated systems can be compliant?

Automation can be created to implement pre-agreed and disclosed rules, and it is possible that the behaviours of such systems would always comply with those rules. When automation can be assessed to enforce in-process or infrastructure-level constraints on possible behaviours that do partly satisfy regulatory obligations, this should be given some credit or relief in the regime.

Question set 8:
Do you agree with proposed additional standards for token holders? What should be included or removed?

Yes, overall, the additional standards for token holders appear appropriate for the risks. However, the nature of "holding" should be clearly defined including with regards to both positive control (able to action) and negative control (able to deny others' actions) of tokens. In some scenarios, even having only negative control can put digital assets at significant risk of loss for users, for example if the assets become unable to ever be transferred in future.

There are many potential forms of arrangement that must be encompassed by regulation. These include but are not limited to:

(i) Knowledge or control of the private key may be split across multiple parties. In such cases, each of the parties might have negative control, but none will individually have positive control.
(ii) Knowledge or control of the private key may be held entirely by multiple parties. In such cases, each of the parties has positive control, but does not have negative control.
(iii) Holding of a token may be by a smart contract, not itself directly controlled nor clearly owned by any particular legal entity.
(iv) Holding of a token may be effected through a device implemented using tamper-resistant hardware, allowing the anonymous physical transfer of control of a token.

Questions set 9:
This proposal places the burden on all platform providers (rather than just those facilitating trading) to be the primary enforcement mechanism against market misconduct. Do you agree with this approach? Should failing to make reasonable efforts to identify, prevent, and disrupt market misconduct be an offence? Should market misconduct in respect of digital assets that are not financial products be an offence?

Yes, platform providers are the right place for monitoring and enforcement against market misconduct. For centrally issued digital assets the onus for transactional compliance should lie with the registry (issuer, or owner of the register/blockchain) because that is the only place it can be to achieve 100% coverage. However, trading venues also hold additional relevant information for identifying misconduct and therefore should also have a responsibility to identify, prevent, and disrupt market misconduct. Failing to make reasonable efforts in this regard should be an offense.

Yes, subject to appropriate definition and measurement of the thresholds beyond which a non-financial product becomes financialised (whether it tokenised form or not – see earlier comments) it seems appropriate for market misconduct to be an offense in financialised non-financial products.

Question set 10:
The requirements for a token trading system could include rules that currently apply to 'crossing systems' in Australia and rules that apply to non discretionary trading venues in other jurisdictions. Do you agree with suggested requirements outlined above? What additional requirements should also be considered? Are there any requirements listed above or that you are aware of that would need different settings due to the unique structure of token marketplaces?

The characteristics such as non-custodial trade facilitation, open/competitive platform access, fees, trading times, and settlement times are different in emerging digital asset platforms than in many traditional marketplaces. The regulatory framework should allow for this wider space of characteristics, and not restrict token-based ecosystems with the limitations of traditional marketplaces.

It may be useful to differentiate between:

(i) marketplaces that issue the holder with a balance sheet liability denominated in a digital asset token;
(ii) marketplaces that take custody of the instruments for the holder;
(iii) marketplaces that take custody for a limited period of time for the purposes of intermediating transactions only;
(iv) marketplaces that require no custody.

Risk profiles are vastly different between the four market types:

(i) is like a bank, with default risk;
(ii) has intermediary theft risk;

(iii) same as (ii) but for limited time only;
(iv) marketplace that builds up no counterparty risk for the holder.

A key difference between Australian crossing systems and digital asset exchanges is that there is a central, public, transparent reference market for equities that the crossing systems can use to reference prices and subsequently report trades. That is not necessarily the case with digital asset exchanges.

Additionally, the proposed requirements for digital asset platforms with a token trading function are overly prescriptive with respect to market design, such as mandating public bid and offer prices and depth. Optimal market design can vary substantially between different asset classes and market participant types – not all markets are based on limit order books, not all markets benefit from high levels of transparency, trade reporting delays in some settings can be justified, and so on.

A further important point regarding the proposal (page 15) that "a single facility would not be able to perform more than one of the financialised functions" is that this is overly restrictive. For example, many decentralised exchanges active today take deposits (a form of staking) of digital assets in "liquidity pools" and issue tokens for the redemption of such assets. But they also issue their own separate "governance tokens" to control the operation and evolution of the exchange and as a strategy to incentivise adoption and use of the exchange. Such facilities perform more than one financialised function, synergistically.

Question set 12:
How can the proposed approach be improved? Do you agree with the stated policy goals and do you think this approach will satisfy them?

(i) Establish a joint regulatory/industry working group for RWA tokenisation, as a separate track to cryptocurrency regulation. See further details of this suggestion in the first part of this document.
(ii) Provide a RWA token categorisation and applicable regulation in the short term. This should include a 'mapping' of RWA categories, and a differentiation between different levels of asset backing.
(iii) Create working streams against the key industry problems in the adoption of RWA tokenisation and new marketplace approaches aimed at unlocking their economic benefits. This should include:
    (a) Market and Clearing & Settlement Licensing for atomically settled digital assets and rules for digital asset settlement finality.
    (b) Digital RWA title regulation, and title transfer regulation (this will likely need to be asset class specific).
    (c) Transactional compliance and enforcement. Framework for stakeholder roles and responsibilities in Digital RWA issuance and circulation (i.e., issuer role, registry role, market role, custodian role, holder role).

The stated policy goals are appropriate for the high-level aims set out at the beginning of the Proposal Paper. They are not adequate if targeting large scale economic benefits from wide adoption of tokenised RWAs in Australia.

Appendix A: Real-world assets present a far greater economic opportunity

Analysis by the Digital Finance CRC indicates that the value of real-world assets that could be tokenised is at least 1,000 times greater than that of cryptocurrencies and existing crypto assets (approx. $1 trillion).

Table 1. *Global market size of real-world assets.*[1]

Asset class	Estimated Size, $ trillion
Real Estate	379.7
Private Debt	146.5
Commodities	128.3
Public Equity	109.0
Public Debt	92.9
Open-ended funds	63.1
Payments / FX	71.0
OTC Derivatives	19.5
Private Equity	11.7
Carbon credits	1.9
Total RWA	**1,023.6**

[1] We acknowledge excellent research assistance by Evita Sondore, Markuss Baltais, and Jonathan Karlsen in performing cross-asset class analysis.

Table 2. *Detailed real-world asset market size analysis.*

Asset class	Estimated Size ($USD trillion)	Percentage of Total
Real Estate	**379.7**	
‣ Residential Estate	287.6	76%
‣ Commercial Estate	50.8	13%
‣ Agricultural Land	41.3	11%
Public debt	**92.9**	
‣ Advanced Economies	58.2	63%
‣ Emerging Economies	31.8	37%
‣ Developing Economies	0.7	1%
Commodities	**128.3**	
‣ Energy Products	40.0	31%
‣ Agricultural Products	30.0	23%
‣ Industrial Metals	33.0	26%
‣ Precious Metals	25.4	20%
Public Equity	**109.0**	
‣ Advanced Economies	67.5	62%
‣ Emerging Economies	31.4	29%
‣ Developing Economies	10.0	9%
Open-ended funds	**63.1**	
‣ United States	29.3	46%
‣ Europe	21.8	35%
‣ Asia-Pacific	8.8	14%
‣ Rest of the World	3.2	5%

(continued)

Asset class	Estimated Size ($USD trillion)	Percentage of Total
Payments / FX	**71.0**	
‣ USD	20.6	29%
‣ EUR	10.5	15%
‣ CNY	8.9	13%
‣ JPY	6.7	9%
‣ GBP	2.8	4%
‣ Other major currencies	1.0	<1%
‣ Exotic currencies	0.5	<1%
OTC Derivatives	**19.5**	
‣ Interest rate	14.6	75%
‣ 0FX	4.8	25%
Private Equity	**11.7**	
‣ North America	6.3	53.7%
‣ Europe	2.3	20.0%
‣ Asia	2.5	21.6%
‣ Rest of the World	0.5	4.6%
Private Debt	**146.5**	
‣ Household debt	55.7	38%
‣ Non-financial corporate debt	90.8	62%
Carbon credits	**1.9**	
Total	**1,023.6**	

Appendix B: Asset tokenisation methods

Tokenisation of real-world assets such as real estate, commodities, stocks, and bonds involves representing these assets as digital tokens, usually on a distributed ledger such as a blockchain. Real-world assets can be tokenised in several ways as described below, and conceptual, economic, and legal questions arise for each method. We group these methods under four categories and discuss each method in turn.

1. **Direct title (or blockchain-native issuance):**

   The most straightforward approach is 1-for-1 ownership that results from a blockchain-native issuance of real-world assets. In this case, each asset is represented by a unique digital token on a blockchain or distributed ledger. The possession of this token directly represents ownership of the corresponding real-world asset. For example, if the land registry moved to a DLT, an issued token can represent land ownership directly, or if the issuing firm registers the tokens as the record of its shareholders, the token can be the equivalent of a stock certificate.

2. **1-for-1 asset-backed tokens (or intermediated issuance):**

   The second approach involves an intermediary depository or custodian institution that keeps the original asset under custody and backs each issued token with the asset under custody. This intermediary effectively links two infrastructures: infrastructure of the original issue and a blockchain or distributed ledger.[7]

   Tokens representing real-world assets are created and destroyed through a process called issuance and redemption or minting and burning. Tokens are created through issuance, where a user exchanges assets with a designated party, such as a custodian or a smart contract. Upon confirmation of the received assets, the issuer mints and allocates an equivalent number of tokens to the user's account.

   Redemptions of tokens follow a reverse process, where users return tokens to the issuer and the issuer withdraws them from circulation, resulting in the transfer of equivalent assets back to the user.

   Token issuers in this approach often promise to redeem the tokens for the real-world assets on demand 1-for-1. The ability to tokenise real-world assets relies on market participants' trust in the issuer's ability to fulfill redemptions. With 1-for-1 custodial model, the issuer can in principle meet all redemption demands and therefore the token represents the value of

[7] This approach is also used for transfer of tokens from one blockchain network to another known as cross-chain bridges. The process begins with locking or burning a certain number of tokens on one blockchain. The tokens are then held in a smart contract on that blockchain, making them unavailable for regular transactions. Once the assets are locked/burned, the bridge generates "wrapped" tokens on the target blockchain. These wrapped tokens are designed to represent the locked assets and are compatible with the target blockchain's standards. To ensure transparency and security, the bridge usually employs a mechanism for users to verify that the assets are genuinely locked in the original blockchain. See, for example, https://chain.link/education-hub/cross-chain-bridge.

the real-world asset. If two values diverge from each other, an arbitrage opportunity emerges.[8]

Examples of successful implementations of 1-for-1 custodial model include stablecoins such as USDC (issued by Circle).

When the token is not fully backed (i.e., undercollateralized as in fractional reserve), the issuer's ability to fulfill all redemptions can be jeopardized, potentially leading to a “bank-run” on tokens and breaking the above arbitrage mechanism. Even when the token is fully backed as in 1-for-1 custody model, custody-related risks still exist that can potentially trigger bank runs.[9]

The following analogy is helpful to differentiate between the 1-for-1 ownership and 1-for-1 custodial approaches. Consider the shares of a foreign company from the perspective of U.S. investors. The U.S. investors can purchase shares of a foreign company if they have an account in that foreign jurisdiction or if the foreign company lists its shares directly on a U.S. exchange. A foreign company listing its share directly in a U.S. exchange is akin to the blockchain-native issuance or 1-for-1 ownership.

Alternatively, depository receipts allow private institutions such as U.S. depository banks with foreign representation to bridge the gap between the foreign and domestic settlement ledgers, making it possible for U.S. investors to purchase shares of a foreign company without having to open an account in that foreign jurisdiction. The 1-for-1 custodial approach of tokenisation resembles the issuance of depository receipts such as American Depository Receipts (ADRs).

An ADR represents the shares of a foreign company held by a U.S. bank outside of the U.S. The ADR process works as follows. To create an ADR, the foreign firm (in the “sponsored” deal) or an investor (in the “unsponsored” case) delivers the shares to a depositary bank or its custodian in the firm’s home jurisdiction. The U.S. bank then issues the ADRs to investors in the U.S., allowing investors to trade the securities further in the U.S. The SEC governs a registration process for ADRs: Form F-6 contains information about the original deposit, and there are additional forms, rules, disclosure and reporting requirements, and regulations if the foreign firm seeks to raise financing with ADRs.[10]

---

[8] Market participants who believe the token represents the real-world asset have an incentive to keep the token price close to the price of the asset. If the market price of the token is above the asset price, potential holders can profit by buying tokens from the issuer and then selling those tokens on the secondary market for a higher price. On the other hand, if the token price is below the asset price, token holders can profit by redeeming their tokens with the issuer and using the proceeds to buy more tokens at the lower market price. In both cases, the arbitrage actions of token holders work to bring the market price of the token closer to the price of the real-world asset. Thus, 1-for-1 custodial method relies on this arbitrage mechanism following from the trust in the issuer's ability to fulfill redemptions.

[9] For example, when Silicon Valley Bank collapsed, USDC lost its $1 peg, falling as low as 86 cents due to $3.3 billion cash reserves held at SVB. An internationally agreed set of principles for custody risk management are maintained by the Bank for International Settlements Committee on Payments and Market Infrastructure and the International Committee of Securities Commissions as the "Principles for Financial Market Infrastructures".

[10] ADRs are generally classified into three “levels”, depending on the extent to which the foreign company has accessed the U.S. markets. Level 1 ADR programs is the only type of facility that may be unsponsored and, as a result, may be traded only on the over-the-counter market. Level 2 ADR programs establish a trading presence on a national securities exchange but may not be used to

3. **Collateralised tokens:**

The key distinction between 1-for-1 asset-backed tokens and a collateralised tokens approach lies in the *nature of the collateral* held (whether the collateral used to tokenise a real-world asset is the same asset or different assets) and the *degree of collateralisation* (whether the token is over-, exactly-, or under-collateralised, referring to cases where the collateral value divided by the asset value is greater than 1, equal to 1, and less than 1, respectively). While the 1-for-1 custodial model is exactly-collateralised with the same asset, the collateralised pool model is generally over-collateralised with a different asset (or a set of assets).[11]

This approach also relies on the option of the token holders to redeem the token for the real-world asset on demand. It requires users to adjust their holdings to meet a minimum collateral ratio set by the issuer. Protocols demand users either provide additional collateral or reduce the number of tokens held to meet the minimum collateral requirement. Some protocols use smart contracts and economic incentives of users to ensure that all circulating tokens are appropriately collateralised. The smart contract needs to find sufficient resources to buy back circulating tokens and burn them. This may involve buying back and burning tokens using resources like transaction fees, collateral auctions, or the collateral buffer. These measures ensure that, at a given point in time, the collateral value exceeds the value of the real-world asset being tokenised.

4. **Under collateralised algorithmic/synthetic tokens:**

This approach aims to tokenise real-world assets through algorithmic rules without relying on a full collateral backing. Applications of this approach often use smart contracts to dynamically adjust the token supply to have the token price mirror the price of the real-world asset. As a result, this model is typically uncollateralised or under-collateralised. If the token price goes above the asset price, new tokens are issued to decrease the price of each token. Conversely, if the price falls below the asset price, tokens are withdrawn from circulation to increase the price of each token.

While increasing the supply can be implemented by simply distributing new tokens, decreasing the supply is more challenging. Decreasing the supply can be done through auxiliary tokens (or bond tokens) that grant holders future rights over governance or newly issued tokens once the token price converges to the asset price.

raise capital. Level 3 ADR may be used not only to establish a trading presence, but also to raise capital for the foreign issuer. See the SEC Investor Bulletin about ADRs: https://www.sec.gov/investor/alerts/adr-bulletin.pdf

[11] FTX, along with Mirror Finance by Terra and the Synthetix protocol, tokenised prominent stocks like Apple, GameStop, and Tesla. FTX employed a 1-for-1 custody approach to create tokenised equity, while Mirror and Synthetix also accepted stablecoins and other synthetic assets as collateral with predetermined collateral ratios. Therefore, their approach of tokenising equity fits into the over-collateralized pool model.

The algorithmic method of tokenising real-world assets is generally classified into two models: the rebase model and the coupon model. Both approaches have been used to tokenise fiat currencies.[12]

a. **Rebase model:** This model adjusts the token supply based on its price relative to the price of the real-world asset. The total supply is decreased or increased at regular time intervals across all wallets that hold the token, and it is proportional to the percentage of price increase or decrease relative to the real-world asset. Tokens with the rebase model possess dynamic supply that can inflate or deflate based on market conditions. When the token price is greater (resp. less) than the asset price, the rebase mechanism decreases (resp. increases) the token supply.[13] The token holding across all wallets adjusts proportionally until the token price is equal to the price of the asset.[14]

b. **Coupon model:** The coupon model aims to tokenise a real-world asset by incentivising token holders to adjust their token holdings. It uses rewards and bond tokens to encourage token holders to exchange tokens when the token price deviates from the real-world asset price. If the token price is greater than the asset price, new tokens are issued, and if it's below the asset price, (interest-bearing) bond tokens are sold. The former expands the token supply and the latter contracts the supply, bringing the token price back to the asset price. The coupon model is also sometimes referred to as the seigniorage model, as it involves issuing new coins and selling bond tokens, like central bank open market operations.

Algorithmic mechanisms for tokenising assets revolve around the idea of managing risk and stability, similar to the matching of assets and liabilities in the banking sector. Banks aim to match the duration of their assets (such as loans) with the duration of their liabilities (such as deposits). This helps mitigate interest rate risk. When a bank's assets and liabilities have similar maturities, changes in interest rates have a balanced impact on both sides of the balance sheet. A bank run occurs when many depositors simultaneously try to withdraw their funds from a bank due to concerns about the bank's solvency or stability. Therefore, banks maintain a balance between deposit inflows and loan disbursements and hold a portion of deposits as reserves to manage sudden withdrawal demands.

Both coupon and rebase models rely on market participants' expectations about the token price aligning with the asset price. If confidence in the token's ability to mirror the asset price diminishes, it can trigger self-fulfilling events akin to bank runs for the token. Both algorithmic mechanisms have been widely used in tokenising fiat currencies, but as of now,

[12] See, for example, 2022 FEDS notes 'The stable in stablecoins' by Baughman, Carapella, Gerszten, and Mills.

[13] This relationship simply follows from the 'Quantity theory of money' that states that money supply and price level in an economy are in direct proportion to one another. When there is a change in the supply of money, there is a proportional change in the price level and vice-versa.

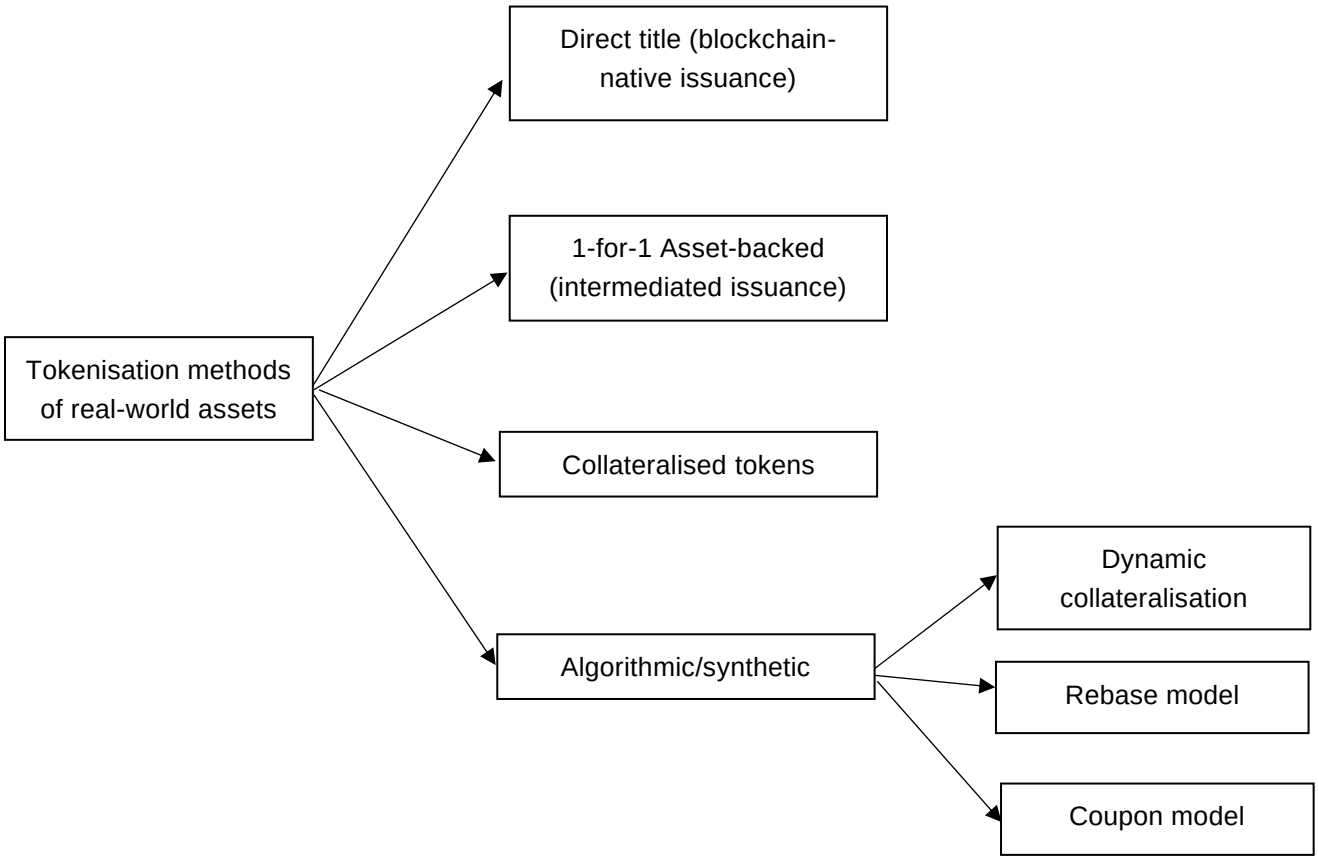
[14] This rebasing mechanism is said to be "non-dilutive" as all wallets automatically have their tokens increased or decreased, resulting in a constant share of the total supply by the wallet owner. An example of tokenising the US dollar with the rebase model is Ampleforth (AMPL).

there is no example of an algorithmic mechanism that is empirically and arguably theoretically “run-proof”.

Some approaches, therefore, combine the features of collateralisation and algorithmic mechanisms to tokenise real-world asset, although they are still under-collateralised. These hybrid models adjust the collateral ratio in response to demand and price fluctuations, aiming to strike a balance between stability and capital optimization. They effectively fall under the algorithmic approach given that it is under-collateralised.

Fundamentally, the hybrid model resembles a banking algorithm that adjusts its balance sheet ratio based on the market's pricing of the token. The collateral ratio is simply the ratio of the protocol's capital (collateral) over its liabilities (issued tokens).[15]

Different ways to tokenise real-world assets.



[15] For an example of a hybrid model, see the Frax protocol whitepaper, Frax: Fractional-Algorithmic Stablecoin Protocol https://docs.frax.finance/.

About the DFCRC

The DFCRC is a 10-year, $180 million research program funded by industry partners, universities, and the Australian Government, through the Cooperative Research Centres Program. The DFCRC's mission is to bring together stakeholders in the finance industry, academia, and regulators to develop and harness the opportunities arising from the next transformation of financial markets – the digitisation of 'real world assets' that can be traded and exchanged directly and in real-time on digital platforms.

Fundamental to the DFCRC's work is the belief that markets are the most powerful mechanisms in modern economies and their continued evolution through the application of new technologies will improve the efficiency of existing markets, enable new markets, and create market mechanisms to drive specific outcomes.

DIGITAL FINANCE CRC

DFCRC receives grant funding from the Australian Government through the CRC Program