

Scaling DLT-based Capital Markets

A Policy Roadmap for the UK

July 2024



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The Association for Financial Markets in Europe (AFME) is the voice of Europe's wholesale financial markets.

AFME works to promote a robust, connected and competitive financial system in the EU, UK and globally, providing expertise across a broad range of regulatory and capital markets issues.

We represent the leading global and European banks and other significant capital market players. AFME's members are the lead underwriters of 89% of European corporate and sovereign debt, AFME advocates for deep and liquid secondary market, pursues changes that enable the European green and digital transformations, supports the completion of the Banking Union and Capital Markets Union and connectivity of EU and UK financial markets with the rest of the world.

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Foreword

Distributed Ledger Technology (DLT) holds great potential to expand access to capital markets, improve their efficiency, and promote innovation. Implemented at scale, DLT can make a significant beneficial contribution to the functioning and depth of capital markets, and in doing so, to the real economy.

As highlighted by AFME's complementary *Roadmap Strategy for European Issuers*, market developments are moving beyond proof-of-concept initiatives in DLT-based issuance of bonds, towards issuances with demonstrated liquidity and benefits throughout the security lifecycle. An increasing number of investors, issuers, and other market participants are becoming a part of the DLT-based markets ecosystem.

Key to ongoing scaling DLT-based capital markets are policy and regulatory frameworks that enable – in a sound and secure way – the inclusion of innovative DLT-based business models in financial markets. Indeed, European policymakers have begun to build such a framework by enabling experimentation, including through the DLT Pilot Regime and ECB wholesale CBDC trials and experiments. As DLT in capital markets are now moving into a new phase, Europe has a great opportunity to further develop a more permanent policy framework that helps Europe lead the development of DLT-based capital markets and shape DLT-based market practices and regulatory standards globally.

This Roadmap document was created in collaboration with a variety of stakeholders across the financial ecosystem. The objective of the Roadmap is to unlock outstanding regulatory barriers to the scaling of DLT-based capital markets. It sets out the benefits of DLT-based capital markets and an 8-point plan for policymakers and regulators to pursue a regulatory regime that fully enables the use of DLT.



Adam Farkas

CEO

Association for Financial Markets in Europe

**“DLT can make a significant
beneficial contribution to
the functioning and depth of
capital markets, and in doing
so, to the real economy”**



Executive Summary

The recent years have witnessed an acceleration of the development of Distributed Ledger Technology (DLT) and its use in capital markets. It is widely acknowledged that the use of DLT can bring many transformative benefits and efficiencies for capital markets, through decentralised processing, validation and authentication of transactions and other types of data exchange.¹ **Policymakers and regulators have acknowledged and highlighted the benefits of the use of DLT to capital market** (see Part I – Benefits), and created Sandbox regimes to test the deployment of new technologies.²

However, **the current European financial regulatory regime** – which follows the G20 reform programme introduced after the 2009 global financial crisis – **is based on a largely centralised system of financial transactions and data recordings**. While this was appropriate for the aftermath of the crisis, it has also given rise to the concentration of critical market and post-trade operations in few actors that can lead to single-points-of-failures. DLT offers a vision for a more innovative, accessible and resilient *decentralised* financial market infrastructure.

While Europe has been a frontrunner in enabling DLT-based experimentation, the development of DLT-based markets towards scaling has to some extent overtaken the current regulatory regime, which in part inhibits the full deployment of DLT in the financial sector and the further scaling of DLT-based capital markets, including the tokenisation of sovereign, supranational and agency bonds (SSA bonds). These developments, however, also provide Europe with an opportunity now to be a leader in developing a more definitive policy and regulatory regime that enables the secure scaling of DLT-based capital markets. This report focuses on **the policy and regulation changes that are necessary to enable that development and growth of DLT-based capital markets**.

Overview of policy and regulatory changes required and desired policy outcomes

In updating and adjusting the regulatory and policy framework in light of developments in DLT-based capital markets and to enable further scaling, four key principles should be considered:

1. Achieving full technological neutrality
2. Achieving economic equivalence between DLT-based securities and traditional formats
3. Balancing benefits from technology with new risks
4. Enabling innovation

“The development of DLT-based markets towards scaling has to some extent overtaken the current regulatory regime, which in part inhibits the full deployment of DLT in the financial sector and the further scaling of DLT-based capital markets”

¹ GFMA [Report](#) on Impact of DLT in Global Capital Markets (2023) and AFME [Issuer Roadmap](#) for Scaling DLT-based SSA Bond Markets

² European Commission DLT Pilot Regime [Impact assessment](#)



Executive Summary

Bearing in mind these principles, the following policy and regulatory change are recommended:

Key themes	Desired policy outcomes
1. Finalising the Digital Securities Sandbox	Enhance attractiveness through flexible limits and broadening eligible assets to foreign currency denomination, and provide certainty on successor regime
2. Future proofing settlement functions	Allow for the development of decentralised settlement where core CSD services (e.g. settlement, central maintenance of securities accounts, notary) are regulated by function and can be performed by different eligible actors
3. Security record-keeping requirement	Security record keeping requirements should be compatible with the use of DLT, so as to allow DLT-based securities to be eligible for key economic functions
4. Settlement finality	DLT-based securities should benefit from settlement finality
5. Central bank collateral eligibility	DLT-based securities should qualify as central bank collateral
6. Cash solutions	Availability of broad array of cash settlement solutions, including wCBDCs, commercial bank money and qualified stablecoins, and moving towards issuance of tokenised central bank money on asset chain
7. Prudential treatment	Allow banks to explore the use of permissionless blockchains provided they have robust governance, controls, and risk mitigation solutions. DLT-based securities should not be precluded from receiving the same liquidity treatment (including high-quality liquid asset classification) as equivalent traditional instruments
8. Custody of security tokens	Rules on custody of security tokens should be consistent with traditional financial instruments

Full Roadmap Preview

This roadmap focuses on identifying and unlocking policy and regulatory barriers to the adoptions of DLT in markets for bonds issued by European sovereigns, supranational institutions and public-sector agencies.

For further details, please see the following parts of the roadmap document:

- **Part I – Benefits of DLT** setting out how DLT can help policymakers achieve their objectives.
- **Part II – Policymaker Roadmap Strategy** summarising a strategy for European policymakers to implement recommended policy and regulatory actions, including immediate changes (0-2 years) and medium- to long-term changes (2-5 years), followed by a thematic discussion explaining each area of policy and regulatory changes required to facilitate the growth of DLT-based capital markets.



This roadmap uses the following definitions throughout the report:

Distributed ledger technology (DLT) is a database construct that enables the recording of state updates and transactions of assets between participants in a network. The record of transactions exists on a networked, distributed peer-to-peer system, ensuring simultaneous access, validation, and record updating. The networked database is linked by a collection of nodes operated that verify transactions through a consensus mechanism or protocol.

DLT Platform: DLT-based infrastructure with capabilities to facilitate issuance or representation of assets including financial instruments like bonds on distributed ledger.

Tokenisation: the representation of assets including financial instruments and cash on a distributed ledger, reflecting an ownership right of the underlying asset.

Tokenised bond: a tokenised bond is a bond issued using traditional infrastructures, subsequently immobilised and then represented on a distributed ledger in token form.

Bond token: in contrast to “tokenised bond”, “bond tokens” refers to bonds that have been issued solely (‘DLT-native’) on a DLT platform without any underlying bond in existence on traditional infrastructure.

DLT-based bond: refers to the use of DLT as the underlying technology for a bond and encompasses both tokenised bonds and bond tokens.

Smart contracts: computer code that, following an “if-then” logic, automatically executes all or parts of an agreement between parties when certain preconditions are met.



Part I – Benefits

As discussed in the separate AFME report on *Scaling DLT-Based SSA and Government Bond Markets – A Roadmap Strategy for European Issuers*³, which is intended to be read jointly with this publication, **there are a number of significant benefits in the use of DLT for capital markets.**

Not only is it critical for European issuers and policymakers to support the growth of and innovation in DLT-based capital markets, **the full deployment of DLT can in turn help European policymakers meet their broader objectives** for financial stability, making capital markets more efficient and deeper, technological innovation, sustainability and international competitiveness (discussed in more detail below). It is therefore imperative that **the policy framework should accommodate the use of DLT and promote innovation.**

Figure 1: **How DLT in Capital Markets can help achieve key policy objectives**

Policy Objective	Benefit provided by DLT	Benefit materialises
1. Financial stability and resilience of market structure	Operational resilience: reduction of single-point-of-failure risk in financial market infrastructures Risk reduction: reduction in settlement failure and settlement-related risks due to automated, programmable and atomic settlement	Immediately Immediately
2. Efficiency and growth of capital markets	Strengthening wholesale markets: offering ability to streamline issuance process and compress execution and settlement time (to T+1, T+0)	Over time
	Strengthening wholesale markets: increasing access to capital markets by streamlining issuance process for smaller corporate issuers	Over time
	Developing intraday repo markets: removing trapped capital through faster mobilisation of collateral compressing execution and settlement	Over time
	Facilitating transition away from paper-based securities (under CSDR)	Immediately
3. Innovation in capital markets	Status as Global Fintech Hub: kick-start innovation ecosystem	Immediately
	Accelerating the Green Transition: DLT-based bonds can embed functionality on proceed allocation and fulfilment of sustainability KPIs	Immediately
	Simplifies issuance process enabling more (and smaller) corporates to finance through markets	Over time
4. International competitiveness of capital markets	Early issuance and engagement can enable the UK to shape the parameters of DLT-based capital markets	Immediately
5. Digital strategy	Early involvement will enable UK policymakers and market participants to shape the outlines of DLT-based capital markets.	Immediately
	In addition, on-chain central bank money can strengthen the UK's digital strategy and take a lead in international monetary transmission through new forms of money	

“The full deployment of DLT can help European policymakers meet their broader objectives for financial stability”

3 This report focuses on the benefits of using DLT primarily from the perspective of policymakers and regulators. For the benefits for issuers, please refer to Annex 1 of AFME's “Scaling DLT-based SSA Bond Markets – Issuer Roadmap” for further background.



Part II – Policymaker Roadmap





Europe is among most attractive and competitive regions globally for experimentation with the use of DLT in financial markets, not least because European policymakers have acknowledged that “*the existing regulatory framework was not designed with DLT in mind*”⁴. The UK authorities have launched key initiatives to address barriers to using DLT, including:

- **Sandbox regimes**, testing temporary regulatory modifications
- **Regulatory guidance** to qualify security tokens as specified investments, including MiFID II financial instruments
- **Experimentation with DLT-based central-bank money solutions**

However, despite these reforms, there are a number of outstanding legal and regulatory changes required to fully allow DLT-based capital markets to reach their full potential and make Europe an even more attractive jurisdiction for DLT development and innovation.

8-Point Policy Roadmap

An **8-Point Policymaker Roadmap** is proposed below, in line with the following principles:

	<p>Achieving full technological neutrality: following the “substance over form” principle, the use of technology should not impact the regulatory treatment of the relevant service or product. Regulation should not create inappropriate barriers for the development of DLT-based financial instruments, payments or business models.</p>
	<p>Achieving economic equivalence between DLT-based securities and their traditional counterparts: the regulatory framework should treat DLT-based securities as economically equivalent to traditional financial instruments in order for DLT-based securities to be attractive to and adopted at scale by underwriting banks and investors. This crucially includes DLT-based securities’ eligibility as collateral.</p>
	<p>Balancing benefits from technology with new risks: the use of DLT bears multiple benefits from the regulatory perspective, including the reduction of Single-point-of-Failure risks through distributed validation. However, not only does the regulatory regime generally not recognise these benefits, there also remain structuring incompatibilities between the current regime and the use of DLT.</p>
	<p>Enabling innovation: the regulatory regime should enable regulated financial institutions to develop new and innovative DLT-based business models in the UK, including on public blockchains. Frameworks - including prudential requirements - that are prohibitive to innovation should be avoided or reassessed.</p>

⁴ European Commission DLT Pilot Regime [Impact assessment](#)



8-Point Policy Roadmap

	Phase 1: Immediate changes	Phase 2: Medium-term changes
1. Finalising the UK Digital Securities Sandbox	<ul style="list-style-type: none"> - A more flexible approach to firm-specific go-live limits and Sandbox-wide scaling limits - Broaden assets eligibility to include those denominated in non-GBP currencies - Provide clarity on a permanent successor regime 	<ul style="list-style-type: none"> • Introduce and implement permanent changes by end of the DSS (January 2029)
2. Future proofing settlement functions	<ul style="list-style-type: none"> • Targeted regulatory changes to facilitate technological neutrality: <ul style="list-style-type: none"> - Clarify that 'book entry' form of security can be held on DLT outside of the DSS • Consult on permanent regulatory changes on: <ul style="list-style-type: none"> - Separation of CSD core services by function - Regime for non-systemic digital FMIs - Settlement finality for DLT settlement systems 	<ul style="list-style-type: none"> • Implement permanent regulatory changes, depending on DSS developments and consultation outcome • Explore how to enable settlement finality on public blockchains
3. Making CSD record keeping requirements compatible with use of DLT		
4. Supporting Settlement finality		
5. Achieving collateral eligibility	<ul style="list-style-type: none"> • Assess how to achieve the eligibility of DLT-based securities issued outside of the DSS as central bank collateral 	<ul style="list-style-type: none"> • Operationalise central bank collateral eligibility
6. Providing cash settlement solutions	<ul style="list-style-type: none"> • Continue synchronisation of the Real Time Gross Settlement (RTGS) with other (DLT-based) ledgers and also experiment with the creation of a wholesale CBDC, and provide clarity on when solutions will be available • Provide regulatory clarity on the use of privately created on-chain payment means, including tokenised commercial bank money, stablecoins and private solutions for tokenised central bank money, issued by DLT platforms outside of the DSS 	<ul style="list-style-type: none"> • Move towards asset-chain issuance of tokenised central bank money
7. Proportionate prudential treatment	<ul style="list-style-type: none"> • Allow for banks to make assessment of exposures to transactions executed on public permissionless ledgers for Group 1A treatment⁵ • DLT-based securities should be eligible as high quality liquid assets under liquidity regulation 	<i>To be implemented as part of Phase 1</i>
8. Harmonising rules on custody	<ul style="list-style-type: none"> • Retain the existing territorial scope for the custody of DLT-based instruments and provide the same regulatory treatment for DLT-based instruments as traditional financial instruments 	<i>To be implemented as part of Phase 1</i>

⁵ For more detail, please refer to GFMA [response](#) to BCBS consultation on crypto asset amendments (2024)



Point 1. Finalising the UK Digital Securities Sandbox

Why are changes needed?	
<ul style="list-style-type: none"> While the UK's ambition to create a Digital Securities Sandbox (DSS) is a very positive development, a number of improvements can be considered to make the DSS even more attractive given the significant investments required for participation. 	
What changes do we propose?	
0-2 years	2-5 years
<ul style="list-style-type: none"> A more flexible approach to firm-specific go-live limits and Sandbox-wide scaling limits Broaden assets eligibility to include those denominated in non-GBP currencies Provide clarity on a permanent successor regime 	<ul style="list-style-type: none"> Introduce and implement permanent changes by end of the DSS regime (2029)
Benefits of proposed changes	
<ul style="list-style-type: none"> Test regulatory changes required to deliver on long-term scaling of DLT-based capital markets within a sound regulatory system Create incentives for regulated financial institutions to innovate (leading to system-wide benefits) Improve attractiveness of the DSS' commercial proposition and its competitiveness vis-à-vis other sandbox regimes 	

Background

The UK Digital Securities Sandbox will provide temporary modifications to the regulatory framework to accommodate the deployment of new technologies in capital markets and particularly to incentivise the growth of market infrastructures using DLT. Expected to be operational from Summer 2024, the DSS will allow for entrants to perform one, or a combination of the activities of a CSD to apply to become a Digital Securities Depository (DSD). Firms can also operate hybrid entities combining the roles of operating a trading venue and a DSD. Firm-specific limits and Sandbox-wide limits at scaling (both by asset class) will apply.

Enhancing attractiveness of participation in the DSS

Prospective entrants face the challenging need to balance investment costs with the commercial viability of operating within the DSS given caps on transaction volumes and duration. Dynamics in DLT-based capital markets in recent years - in particular the increased size and frequency of securities issues outside of Sandbox regimes - increases the **urgency for and importance of ensuring that the design of the DSS remains attractive to prospective participants**.⁶ Equally important is providing **certainty on a permanent successor regime for non-systemic DSDs** after the end of the DSS.





To tilt the investment decision in favour of participation, and to accommodate for changing market developments, a number of areas for improvements should be considered to enhance incentives for participation and certainty on the successor regime. These are set out in *Figure 2* below.

⁶ ESMA's letter to the European Commission (2024) identifies a number of challenges, including cash settlement, interoperability, investor protection and international competitiveness



Point 1. Finalising the UK Digital Securities Sandbox

Figure 2: **Solutions for enhancing attractiveness of UK DSS participation**

				
	Cost	Transaction Limits	Time Limit	Lack of Clarity on Exit
Consideration for prospective participants	The need to balance significant investment costs in new technology and application with potential business opportunities	Attractiveness of Sandboxes limited due to firm-specific limits, fixed review points on progression, and Sandbox-wide limits in scaling	The limited duration of the Sandbox regimes also restricts the attractiveness of Sandboxes, given investment costs	Exit pathway and regime needed to offer maximum market and regulatory certainty, maintain incentives and reduce sunk costs for participants
Solutions	Improve attractiveness of participating in the Sandbox regime by increasing business opportunities, for example by allowing non-GBP assets to be issued through the DSS, and lowering investment costs	Allow flexible approach to limits and progression on a firm-by-firm basis subject to continuous assessment. This will also ensure that transactions limits can be in line with the levels to which the markets will continue to evolve	Provide commitment to creating the Sandbox's permanent successor regime	Commit to implementing a permanent, successor regime for the new non-systemic DSDs created under the Sandboxes by the end of the temporary regimes



Point 2. Future proofing settlement functions

Why are changes needed?	
<ul style="list-style-type: none"> A key benefit of DLT is that it enables decentralised settlement, enhancing the resilience of settlement infrastructure However, the current regulatory framework under CSDR does not allow for such decentralised settlement 	
What changes do we propose?	
0-2 years	2-5 years
<ul style="list-style-type: none"> The UK should reinforce its commitment to enabling innovative DLT-based settlement models by consulting on a permanent regulatory regime that enables regulation at the level of the core functions/ services, thus enabling both centralised and decentralised settlement This can be tested through the DSS (see <i>Point 1</i>) and a consultation with stakeholders 	<ul style="list-style-type: none"> The UK should introduce and implement permanent regime to allow for decentralised and distributed settlement by end of the DSS (2029)
Benefits of proposed changes	
<ul style="list-style-type: none"> Development of decentralised settlement, which would enhance the resilience of financial system by reducing Single-Point-of-Failure risks Promote innovation and competition through facilitation of new digital FMIs and business models 	

Background

The current European regulatory framework assumes a **centralised settlement system**. It therefore does not allow for the different functions of a securities registrar, provision of securities accounts and settlement to be performed in a decentralised manner by different eligible and authorised actors.

This is at odds with the development of **DLT-based capital markets**, which are based on a shared-ledger infrastructure to which different market participants have access and can – depending on governance and permissioning – participate in the governance of the ledger. These limits are acknowledged by the DSS: to test the possibility of decentralised settlement (which can be integrated with the operation of a trading venue), the DSS allows different and more eligible and authorised actors to take part in the settlement value chain, although within transaction and time limits.

Decentralised settlement can, moreover, reduce concentration and single-point-of-failure risks⁷, increase infrastructure resilience, promote evolution of different business models, and ultimately improve FMI operator choice for market participants. Decentralised settlement consists of different eligible and authorised actors to take part in different parts of the settlement value chain (see Figure 3 below). In fact, as highlighted in Figure 4 below, a model of distributed and decentralised settlement would be compliant with the BIS Principles for Financial Market Infrastructures.

Creating a future-proof UK settlement regulatory framework

As the **permanent successor regime to the DSS**, the UK regulatory framework should allow for **decentralised settlement to develop without transaction limits. This can be achieved by allowing notary, maintenance, and settlement services to be performed separately at the functional level.** This can be achieved by altering the UK Central Securities Depositories Regulation (CSDR) in a way that allows for both centralised and decentralised settlement systems under UK regulation.

To enable regulated decentralised settlement systems, individual regulated entities can be authorised to perform one or multiple of the core functions of Notary, Maintenance, and Settlement by running relevant nodes in a DLT-based settlement system. An additional role – that of a regulated DLT Protocol Manager – could be made responsible for the provision and maintenance of the network itself. Providers of core services in a decentralised settlement system should be adequately regulated to the same outcome as the existing framework, and provisions in existing financial-services regulation – including CSDR – could appropriately be applied. Figure 4 below outlines the envisaged roles and services and the types of regulatory requirements that can be applied to them.

⁷ The Monetary Authority of Singapore's "Global Layer 1 Whitepaper" (2024) states that a DLT-based settlement system maintains benefits for risk reduction: "Under the new arrangements, both cash and securities transactions would be hosted and executed on the same shared ledger infrastructure. This means that cash and securities could be exchanged simultaneously, whereby either both cash and securities legs of a transaction would succeed, or both would fail. This arrangement would minimise the system impact if or when a counterparty defaults."



Point 2. Future proofing settlement functions

For additional assurance, oversight can be incorporated in the decentralised infrastructure. This can be achieved either by requiring a governance entity on a permanent basis to preside over the decentralised settlement infrastructure and oversee the different actors, including and in coordination with the DLT Protocol Manager, or by allowing the supervisor to maintain a node in the decentralised settlement system so as to allow visibility on transaction data.

Developing a future-proof, technology-neutral and innovation-enhancing regulatory framework for securities settlement along aforementioned lines would be an absolutely vital step towards scaling DLT-based capital markets in Europe. It would enable decentralised and DLT-based settlement systems, which in turn can help enhance innovation and resilience in market infrastructure, and potentially over time reduce fragmentation in the settlement landscape, helping to enable Capital Markets Union. By appropriately regulating the functions and governance of DLT-based settlement infrastructure, this can be done without introducing additional risks to the system.

More directly, adjusting CSDR to enable regulated decentralised settlement systems would also **allow other challenges related to scaling of DLT-based market to be overcome.** In particular, **qualified DLT-based platforms could become eligible Securities Settlement Systems (SSS)**, which in turn would allow securities issued through them to:

- Become eligible for admission to listing and trading on trading venues
- Become eligible for use in financial collateral arrangements
- Qualify as eligible collateral for the purpose of the BoE's monetary policy (see *Point 5*).
- Benefit from settlement finality (see *Point 4*).

All of these would significantly enhance the attractiveness, tradability, and function of DLT-based securities, and hence the liquidity and growth of DLT-based capital markets.

Figure 3: **Models for Centralised and Distributed Settlement (see roles explained in table below)**

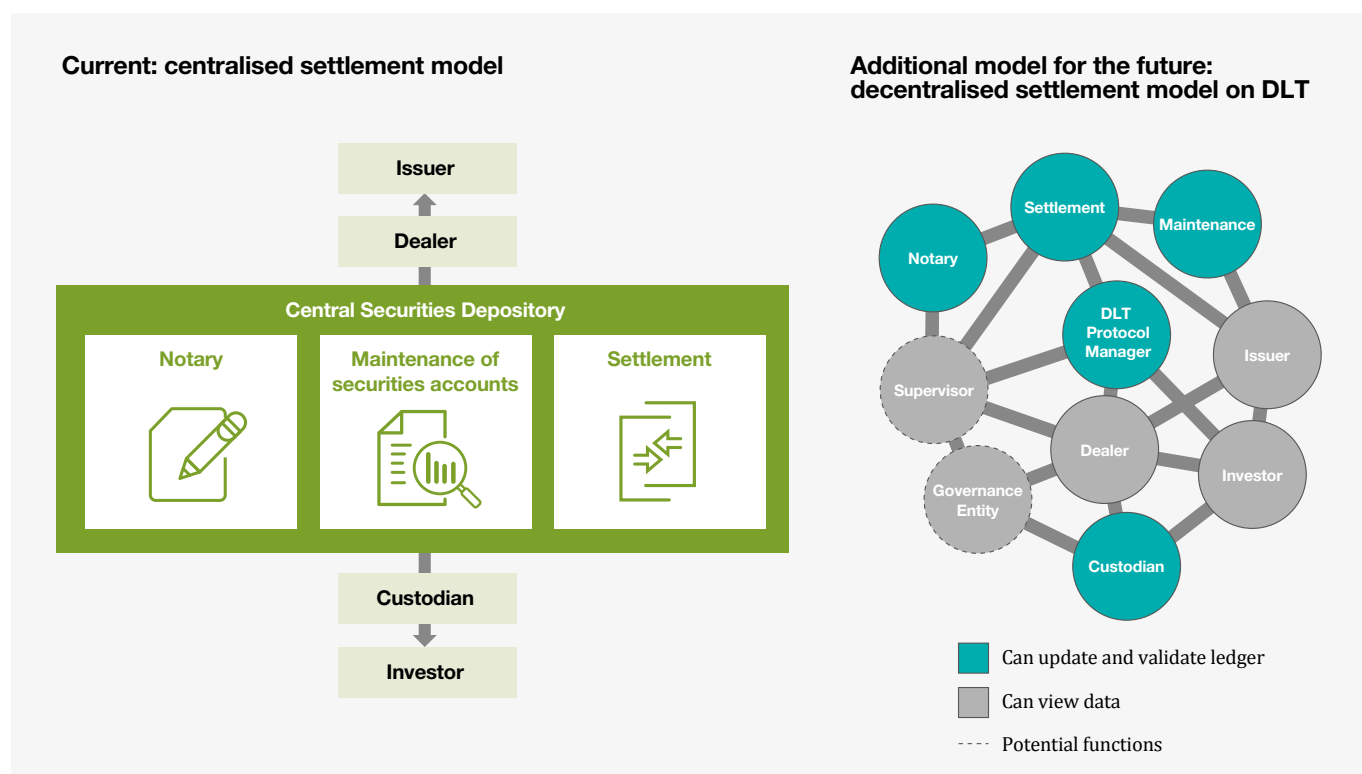


Figure 4: Settlement Roles – How will functions evolve in a DLT-based (Decentralised) Settlement System?

International standards	Centralised Settlement Systems under CSDR		Decentralised Settlement Systems (proposed regulatory regime under adjusted CSDR)		
	CSDR Core Service Definition	Required to be performed by CSD under PFMI principles?	Service in DLT settlement system	Entities that should be able to provide service	Key regulations that should apply to provision of the service
Securities Registrar⁸	Notary: Initial recording of securities in a book-entry system	No, can be a separate registrar	Recording of issues and transactions on DLT ledger by input actors (issuers, dealers, investors, custodians). ⁹	CSDs, regulated financial institutions, DLT platforms	<ul style="list-style-type: none"> Appropriate and proportionate CSDR requirements, including: <ul style="list-style-type: none"> Authorisation Organisational requirements Anti-Money Laundering (AML) Regulation¹⁰ Digital Operational Resilience Act (DORA)
Provision of Securities Accounts	Central maintenance service: providing and maintaining securities accounts at the top tier level	Yes, the definition of a CSD is one that provides securities accounts, central safekeeping services, and asset services	Updating and validating the ledger to reconcile records on transfers. May not need to be centralised.	CSDs, custodians, DLT platforms	<ul style="list-style-type: none"> Appropriate and proportionate CSDR requirements, including: <ul style="list-style-type: none"> Authorisation Organisational requirements Protection of securities and asset segregation AML Regulation DORA
Securities Settlement System	Settlement service: operating a securities settlement system	No, can be CSDs, CCPs, as well as commercial bank functions involving securities transfers	Processing and validating transactions between input actors	CSDs, regulated financial institutions, DLT platforms	<ul style="list-style-type: none"> Appropriate and proportionate CSDR requirements, including: <ul style="list-style-type: none"> Authorisation Organisational requirements Settlement finality¹¹ Client asset segregation Appropriate prudential requirements AML Regulation DORA
New functions			<i>New function:</i> DLT Protocol Manager: providing and maintaining the network	DLT platforms, ICT service provider	<ul style="list-style-type: none"> New dedicated rules DORA
			<i>New potential function:</i> Governance entity: presiding over the decentralised settlement framework and overseeing the different actors	CSDs, regulated financial institutions, DLT platform, authorised third-party governance entity.	<ul style="list-style-type: none"> New dedicated rules, organisational rules, governance and supervision

Point 3. Making CSD Security Record-Keeping Requirements Compatible with the Use of DLT

Why are changes needed?	
<ul style="list-style-type: none">Securities have to be registered with a CSD in book entry form to be eligible for a number of key economic functions:<ul style="list-style-type: none">Admission to on-venue tradingFinancial collateral arrangements (and relatedly, as central bank collateral)The DSS allows for security book entries to be recorded on DLT. However, this treatment is not extended to DLT-based securities issued outside of the DSS	
What changes do we propose?	
0-2 years	2-5 years
<ul style="list-style-type: none">The UK should clarify that the recording of securities in “book-entry form” can be done on DLT (under Art. 3 CSDR)	<ul style="list-style-type: none">The UK should broaden the permission to satisfy the security registration requirement to all eligible securities registrars, including decentralised settlement systems, by end of the DSS – see <i>Point 2</i> for more detail
Benefits of proposed changes	
<ul style="list-style-type: none">Improve investor access and deepening secondary market liquidityAbility to mobilise DLT-based securities as financial collateral, which could remove trapped capital from the financial system and enhance (intraday) securities lending and collateral marketsAchieve economic equivalence between DLT-based securities and traditional instrumentsPromote innovation and competition through facilitation of new digital FMIs and business models	

Background

DLT-based securities have to be recorded and represented in book-entry form in a CSD in order for them to be admitted to trading on trading venues (Regulated Markets, Multilateral Trading Facilities and Organised Trading Facilities) or be used as financial and central bank collateral.

Ensuring technology-neutrality in securities registration

There is uncertainty as to whether the book-entry form recording requirement is compatible with DLT-based settlement systems, where such recording occurs through the creation of tokens. Therefore, **clarification that DLT-based systems can indeed be used to record securities** would provide certainty and ensure the technology-neutrality of regulation with respect to book-entry requirements.

“Clarification that DLT-based systems can be used to record securities would provide certainty and ensure technology-neutrality of regulation”



Point 4. Supporting Settlement Finality

Why are changes needed?	
<ul style="list-style-type: none"> Settlement finality rules ensuring the enforceability and binding character of transfer orders only apply to CSD-operated Securities Settlement Systems (SSS) As a substantial portion of the DLT ecosystem current does not comply with the definition of SSS, transfer parties of many DLT-based securities do not benefit from certainty on settlement finality, netting and insolvency remoteness. This leads to a lack of certainty for investors and participants with respect to finality and insolvency remoteness. 	
What changes do we propose?	
0-2 years	2-5 years
<ul style="list-style-type: none"> The UK should review the applicability of existing settlement finality rules to DLT-based securities, by either providing an exemption from the rules subject to certain compensatory measures or allowing settlement finality to be satisfied through an assessment by regulated financial institutions 	<ul style="list-style-type: none"> Explore how to enable settlement finality on public blockchains
Benefits of proposed changes	
<ul style="list-style-type: none"> Provide necessary regulatory certainty to market participants Facilitate innovation in medium- to long-term, including of public ledgers 	

Background

Settlement finality rules provide for the legal enforceability and binding character of transfer orders and netting despite the insolvency of a participant, and currently only apply to Securities Settlement Systems (SSS) which under the CSDR have to be operated by CSDs¹². As most DLT-based platforms do not qualify as SSS, investors of DLT-based securities issued by these platforms do not benefit from settlement finality.

Enabling DLT-based securities to benefit from settlement finality

It should therefore be considered how DLT-based platforms can support settlement finality. There are two solutions available in the immediate term:

- Whether an exemption from the settlement finality rules can be allowed subject to compensatory measures.** Such measures can include insolvency remoteness and protection measures, from the DLT-based platform being in place. For example, the DSS currently allows for DSDs to define the moments of entry and of irrevocability of transfer orders at go-live, and this treatment could be extended to other DLT platforms outside of the DSS.
- Allowing for regulated financial institutions to conduct an assessment to satisfy settlement finality**, which should consist of:¹³
 - Clear outlining of processes as to how and when settlement of the transaction is achieved - whether pursuant to a bilateral contract or the rules or technical processes or conventions of the relevant market, exchange, venue, or DLT-based platform¹⁴; and
 - A legal review of the settlement process which has concluded that settlement finality is achieved or is likely to be achieved in practice.

¹² Under Directive 98/26/EC of the European Parliament and of the Council of 19 May 1998 on settlement finality in payment and securities settlement systems

¹³ For more detail, please refer to GFMA response to BCBS consultation on crypto asset amendments (2024)

¹⁴ As highlighted by the Monetary Authority of Singapore's "Global Layer 1 Whitepaper" (2024), DLT-based settlement systems should be able to define that settlement is considered final and irrevocable, once a predetermined number of validating nodes (operated by qualified counterparties and actors) have achieved consensus on the state of the ledger.



Point 4. Supporting Settlement Finality

In the medium-term, the creation of a permanent framework for DLT-based settlement systems as outlined in *Point 2* should over the medium-term resolve the settlement finality concerns. The proposed framework would allow both for the continuation of centralised settlement as well as the development of decentralised settlement (as proposed in *Point 2*) and DLT-based settlement systems (e.g. DSDs) would be designated as SSS, thereby benefitting from settlement finality in a similar way to existing SSS.

Settlement Finality on Public Blockchains

It remains unclear how the legal definition of settlement¹⁵ applies to transfers of DLT-based securities on public blockchains, which operate on the basis of a consensus mechanism between peer validators (or miners) as opposed to a third-party intermediary performing the settlement function in the traditional infrastructure.

It is advisable for policymakers to consult on and consider **whether the definition of settlement finality needs to be amended to allow for market scaling on public blockchains as the settlement layer,** and under what conditions.

“It is advisable for policymakers to consult on and consider whether the definition of settlement finality needs to be amended”

¹⁵ Defined as "the completion of a securities transaction where it is concluded with the aim of discharging the obligations of the parties to that transaction through the transfer of cash or securities, or both" under CSDR Art. 2(1)(7)



Point 5. Achieving Collateral eligibility

Why are changes needed?	
<ul style="list-style-type: none"> The Bank of England does not generally accept DLT-based securities as collateral. This undermines their economic value and attractiveness to investors 	
What changes do we propose?	
0-2 years	2-5 years
<ul style="list-style-type: none"> The Bank of England should assess how to achieve the eligibility of DLT-based securities issued outside of the DSS as central bank collateral 	<ul style="list-style-type: none"> The Bank of England should align its eligibility criteria with the adjusted regime for settlement systems (see <i>Point 2</i>)
Benefits of proposed changes	
<ul style="list-style-type: none"> Provide for faster mobilisation of collateral compared to traditional instruments Achieve economic equivalence between DLT-based securities and traditional instruments Provide source of liquidity to underwriting banks (otherwise liquidity would need to be separately sourced, which increases costs) 	

Background

The eligibility of DLT-based securities as financial collateral (see *Point 3*) and central bank collateral is of key importance to their value and attractiveness to investors, as well as for banks' ability to underwrite the securities and act as market makers. This is an important step to scaling of DLT-based capital markets. In particular, given the importance of bonds issued by highly-rated sovereigns, agencies and corporates to central bank market operations and for monetary policy transmission, **DLT-based bonds should be accepted by the Bank of England as collateral**. This is a key step to market scaling, and the DSS usefully allows for securities issued through it to be used as collateral.

Collateral eligibility of DLT-based securities issued outside DSS

To facilitate **technological neutrality**, the Bank of England should generally accept DLT-based securities as collateral eligible for its operations in accordance with the eligibility category granted to their underlying securities or traditional equivalents. If the Bank of England identifies risks with accepting such instruments and deems that they should not be eligible as collateral, it should specify the reasoning and identify remedies with the industry. In particular, given the importance of bonds issued by highly rated sovereigns, agencies and corporates to central bank market operations and for monetary policy transmission, it is imperative that **DLT-based SSA bonds should be generally accepted by the Bank of England as Level 1 or Level 2 collateral** (in accordance with the eligibility of their underlying securities or traditional equivalents).

Aligning Bank of England criteria with proposed updated regulatory regime for settlement systems

Updating the CSDR to enable DLT-based settlement systems (as proposed under *Point 2*) can in the medium-term resolve uncertainty around collateral eligibility: such a regime would enable DLT-based platform to be recognised as Securities Settlement Systems (registration with a securities registrar and validated by a settlement system), thus enabling alignment with Bank of England eligibility criteria.



Point 6. Providing Cash Settlement Solutions

Point 6. Providing Cash Settlement Solutions

Why are changes needed?	
<ul style="list-style-type: none">Settlement of securities transactions in central-bank money minimises counterparty risk and is generally a regulatory requirement (e.g. CSDR Art 40).A DLT-based central-bank money solution is therefore key to achieving scale in, and reap full benefits and efficiencies of, use of DLT in capital markets	
What changes do we propose?	
0-2 years	2-5 years
<ul style="list-style-type: none">The Bank of England should continue its synchronisation of the Real Time Gross Settlement (RTGS) with other (DLT-based) ledgers and expand on its work on wholesale CBDCs, and provide clarity on when solutions will be availableThe Bank of England should provide regulatory clarity on privately-created on-chain payments means for cash settlement by DLT platforms outside the DSS	<ul style="list-style-type: none">The Bank of England should begin work on a distribution solution, under which tokenised central bank money can be issued directly onto selected market (asset) chainsDepending on the DSS developments, the Bank of England should allow cash settlement in tokenised commercial bank money and qualified stablecoins on a permanent basis
Benefits of proposed changes	
<ul style="list-style-type: none">Allowing on-chain Delivery-versus-Payment (DvP), which would lead to benefits such as settlement programmability and atomic settlement (if desired)Allows for the innovation and development of on-chain central bank moneyAccelerate development of qualified and regulated stablecoins and their market growthAccelerate innovation by banks through the development of tokenised commercial bank money solutions	

Effective and efficient means of DLT-based cash solutions are key to achieving important benefits offered by DLT, in particular the ability to achieve transaction programmability, and, if desired, atomic settlement (with all components of a transaction executed precisely and/or simultaneously). Transactions in DLT-based securities transactions – e.g. bond issues - have been settled using different cash solutions (see Annex to this document for an overview).

To facilitate further DLT-based market scaling, two key types of DLT-based cash solutions are needed with respect to DLT-based cash:

1. Publicly-provided central bank money solutions
2. Regulatory clarity on the use of privately created, on-chain payment means, including commercial bank money, stablecoins, and private solutions for tokenised central bank money.

These are further outlined below:

DLT-based Central bank money

Availability of risk-free central-bank money settlement is key for the development of wholesale DLT-based markets. Central-bank money provides minimal settlement risk and is therefore the cash solution of choice in important wholesale markets. Moreover, the ability to settle in central-bank money settlement may also be of great importance for (debt) issuers and is generally mandated by settlement regulation (e.g. Art 40 CSDR).



Point 6. Providing Cash Settlement Solutions

In the UK, two solutions are currently available or being developed that would establish links between central bank money and DLT: **the Sterling Finality Payment System enables participants to settle transactions in tokenised representation of central bank money** through an omnibus account in the current RTGS system. In addition, the Bank of England is exploring adding a **new functionality to the Real-Time Gross Settlement (RTGS) system that would enable interlink the existing RTGS systems with other DLT-based platforms.**

Certainty around the continued availability of DLT-based central-bank money is vital for continued innovation and investment in DLT-based markets. In order to achieve this, the Bank of England should take the following steps:

1. **Continue to explore and build on wholesale central bank digital currency (CBDC) solutions, including through the finalisation of RTGS synchronisation and issuance of a wCBDC.** In view of other European jurisdictions' experiments with the creation of a wCBDC, including the Swiss National Bank's pilot issuance of wCBDC and the Eurosystem's trials and experiments with three different wCBDC solutions, the Bank of England should continue to explore different options for DLT-based central-bank money solutions and consult with industry on the form, functionality, timing and criteria of such solutions.
2. **In 2025, announce a decision to move towards a permanently available solution.** Providing commitment to a permanent DLT-based central-bank money solution will offer certainty to market participants.
3. **Begin exploration of a distribution solution and possible criteria for issuance of a wCBDC onto market ledgers.** In the longer-term this could be preferable as, compared to other possible definitive solutions, it would ultimately fully integrate asset and cash ledgers and eliminate risks from chain bridges.

Privately cash settlement instruments:

Bringing other forms of payment instruments on-chain can also play a key role in enhancing settlement efficiency. While central bank money is a vital and preferred cash settlement solution in some markets, commercial bank money settlement on-chain can be of great added value too, including in markets where such settlement is common.

In addition to traditional cash settlement solutions, DLT-based solutions also include stablecoins. As proposed, stablecoins regulated by the Bank of England have to comply with stringent reserve-backing and governance requirements and can as such be appropriate settlement instruments.

Providing clarity on the use of DLT-based commercial-bank money and stablecoins in settlement is of great importance to further market development. The DSS enables the use of tokenised commercial-bank money and stablecoins regulated by the Bank of England (when available) for cash settlement by providing an exemption from Art. 40 of CSDR on a discretionary basis, and it should be considered whether such an exemption can be extended to the cash settlement of DLT-based security transactions outside of the DSS and for continued use in regulated decentralised settlement systems after the conclusion of the DSS.



Point 7. Proportionate Prudential Treatment

Why are changes needed?	
<ul style="list-style-type: none">DLT-based securities do not benefit from the same capital and liquidity treatment as traditional securities	
What changes do we propose?	
0-2 years	2-5 years
<ul style="list-style-type: none">The implementation of BCBS standards on crypto assets should not penalise transactions solely on the basis of the use of public, permissionless blockchains.¹⁶Existing liquidity regulation should not preclude DLT-based securities from receiving the same treatment as traditional securities.	<i>To be implemented as part of Phase 1</i>
Benefits of proposed changes	
<ul style="list-style-type: none">Enable banks to underwrite, distribute and act as market makers for DLT-based securitiesEnable broader innovation and experimentation with, and investment in, public ledgers in the medium- to long-term	

Background

Lack of technology neutrality in capital and liquidity regulation can prove a significant obstacle to DLT-based market development. In particular, divergent prudential treatment can create obstacles for banks to act as underwriters and intermediaries (including market makers) for DLT-based securities, as this would unduly penalise their balance sheets.

Below the prudential treatment of DLT-based securities will be assessed further:

Capital regulation

The Basel Committee for Banking Supervision (BCBS) published an update on prudential treatment of crypto-assets in May 2024. Under these rules, capital treatment is differentiated between DLT-based assets, with DLT-equivalents of traditional securities receiving in principle the same capital treatment as those traditional securities.

However, the BCBS rules assign a punitive risk weight of 1250% to all DLT-based securities transacted on permissionless blockchains, even when such securities meet the classification conditions of tokenised traditional assets. This is due to a number of ‘unique risks’¹⁷ in the use of permissionless blockchains identified by the BCBS.

The punitive prudential treatment is expected to restrict banks’ investment and participation in capital-market transactions on public blockchains, given the outsize balance-sheet impact such participation would have. An unintended consequence is that markets can be driven towards non-bank financial institutions / shadow banking space, which does not have the same disclosure requirements as the banking industry.

The use of prudential rules to resolve perceived risks should be avoided. This is especially the case as banks have sufficient expertise and robust compliance frameworks to mitigate the risks of using a permissionless blockchain as a base layer for the issuance of DLT-based securities, including limiting counterparty participation through whitelisting.

It is therefore advised that – in the UK’s transposition of the BCBS rules - banks be allowed to make an assessment of whether exposures to DLT-based security transactions executed on permissionless ledgers should be eligible for the same prudential treatment as the underlying securities or equivalent traditional formats. In this assessment, banks should consider certain important criteria such as robust governance, controls and risk mitigating solutions.

16 For more detail, please refer to [GFMA response to BCBS consultation on crypto asset amendments \(2024\)](#)

17 The risks identified include reliance on third-party to carry out basic operations, policy, legal, AML/CFT risks, and risks around settlement finality, privacy, and liquidity



Liquidity regulation

Liquidity regulation seeks to ensure that banks have an adequate stock of unencumbered high-quality liquid assets to meet liquidity needs in stress and maintain a stable funding structure. Typically, assets representing claims on the UK Government, Bank of England, other highly rated European governments and central banks, and multinational agencies are eligible as Level 1 assets (assets of extremely high liquidity and credit quality) for the purpose of satisfying the Liquidity Coverage Ratio.

Traditional and DLT-based bonds issued by the same public sector issuer generally have the same credit quality, and the DLT-based format should not be excluded from qualifying as high-quality liquid assets. This should also be extended to the calculation of the Net Stable Funding Ratio, such that it should not be precluded that DLT-based assets receive the same required stable funding factor as their traditional equivalents.

“Lack of technology neutrality in capital and liquidity regulation... can create obstacles for banks to act as underwriters and intermediaries (including market makers) for DLT-based securities”



Point 8. Promoting Consistent Rules on Custody

Why are changes needed?	
<ul style="list-style-type: none">The UK has proposed to expand the territorial scope and require new authorisation for the custody of DLT-based securities – this represents deviations from current market practices and would negatively hamper the scaling of security token markets	
What changes do we propose?	
0-2 years	2-5 years
<ul style="list-style-type: none">The UK should retain the existing territorial scope for the custody of DLT-based instruments and provide the same regulatory treatment for DLT-based instruments as traditional financial instruments	<i>To be implemented as part of Phase 1</i>
Benefits of proposed changes	
<ul style="list-style-type: none">Facilitate custodians’ participation in DLT-based markets and access to overseas sub-custodian networks, which benefit investor participation, primary market scaling, secondary market liquidity and financial stabilityPreserving market functioning and arrangements for instruments that meet the definition of financial instruments	

Background

The UK’s proposed approach¹⁸ to treat DLT-based securities (qualifying as specified investments) as cryptoassets for the purpose of custody, expand the territorial scope of regulated custody activities for cryptoassets, and require new authorisation for such activities **significantly departs from the current market practices for securities and would negatively hamper the scaling of DLT-based security markets**. The proposed approach would subject DLT-based securities to a different and bespoke treatment from traditional financial instruments under the FCA’s custody or client money rules in the Client Assets Sourcebook (CASS). If changes are not made to the proposals to preserve the existing custody treatment for DLT-based securities, UK-based investors could lose access to UK and overseas custodians of such securities, as would UK custodians to overseas networks of custodians.

Moving towards consistency and technology neutrality

- Custody rules and regulatory guidance should be technologically neutral**, and provide clarity and consistency in treating DLT-based instruments in the same manner as traditional financial instruments.

18 For more detail, please refer to AFME’s [response](#) to the FCA’s Discussion Paper “DP23/4: Regulating cryptoassets Phase 1: Stablecoins” (2024)



Annex

Figure 5: **Comparison of attributes and regulatory treatment of different cash solutions in Europe (EU & UK)**

Cash solution	On-chain (DLT-based) or off-chain (traditional)?	Risk-free?	Currently available?	Allow for use in Sandboxes?	Allow for regular use?	Additional regulatory, operational, interoperability considerations?
TARGET2 (Euro Area)	Off-chain	Yes	Yes	Yes	Yes	Does not allow for DLT capabilities
RTGS (UK)	Off-chain	Yes	Yes	Yes	Yes	Does not allow for DLT capabilities
SICSystem (CH)	Off-chain	Yes	Yes	Not applicable	Yes	Does not allow for DLT capabilities
Helvetia SNB wCBDC Pilot (CH)	On-chain	Yes	Yes – on a pilot basis	Not applicable	Yes	Direct issuance onto market asset ledger
Sterling Finality Payment System (UK)	On-chain	Yes	Yes	Yes	Yes	Interoperability required with DLT platforms and CSD
ECB T&E - Banque de France wCBDC integrated solution (EU)	On-chain	Yes	Yes – for experiments and trials	Tbd	Tbd	Interoperability between BdF ledger and asset ledger
ECB T&E - Bundesbank wCBDC trigger solution (EU)	On-chain	Yes	Yes – for experiments and trials	Tbd	Tbd	Trigger chain between Bundesbank ledger and TARGET2
ECB T&E – Banca d'Italia hash-link solution (EU)	On-chain	Yes	Yes – for experiments and trials	Tbd	Tbd	Communication via API between an asset ledger and the TARGET2
Tokenised commercial bank money	On-chain	No, but reserve backing reduces settlement-related risks	Yes	Permitted	No – clarification on eligibility required	Regulatory clarity needed
Stablecoins	On-chain	No, but high backing asset and capital requirements reduce settlement-related risks	Yes, but not eligible for cash settlement outside of the DLT Pilot Regime	Permitted under the EU DLT PR (MiCA EMTs issued by credit institutions), but the UK DSS does not propose to allow stablecoins as payment instruments	No	Approval under MiCA and future UK regime required



/ About AFME

The Association for Financial Markets in Europe (AFME) is the voice of all Europe's wholesale financial markets, providing expertise across a broad range of regulatory and capital markets issues.

We represent the leading global and European banks and other significant capital market players.

We advocate for deep and integrated European capital markets which serve the needs of companies and investors, supporting economic growth and benefiting society.

We aim to act as a bridge between market participants and policy makers across Europe, drawing on our strong and long-standing relationships, our technical knowledge and fact-based work.

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on a wide range of market, business and prudential issues

Expertise

deep policy and technical skills

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with European and global policymakers

Breadth

broad global and European membership

Pan-European

organisation and perspective

Global reach

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