Bridging TradFi and Blockchain:

Paul Golden examines the core challenges facing leading digital asset settlement providers and how these issues are being addressed.

Fragmented liquidity remains one of the biggest operational challenges in digital asset markets, affecting both the asset and liability sides of settlement. That is the view of Myles Wright, CEO Fnality Services, who notes that the market is responding by building more interoperable infrastructure and venue-agnostic pricing and matching solutions designed to create a more unified view of pricing. Fnality complements this by providing a regulated settlement layer using on chain central bank money, helping institutions mobilise liquidity more efficiently across venues, currencies and jurisdictions.

"Execution and settlement also frequently occur across different platforms, timelines and legal frameworks, further complicating operational workflows," Wright says. "Fnality addresses this challenge through a regulated DLT-based wholesale payment system that enables institutions to settle obligations on-chain using central bank reserves, supporting more efficient liquidity movement across currencies, jurisdictions and networks. This helps institutions access liquidity where and when it is needed, improving capital efficiency while reducing operational complexity."

The value of atomic real-time settlement, explains Wright, is that cash is not released until the asset exchange is completed. In addition, atomic settlement does not require every transaction to settle immediately, if parties to it do not need it. Future-dated settlement can still be synchronised so that payment and

Advancing settlement solutions for institutional digital assets

Images by Shutterstock

delivery of an asset can occur together at the agreed point of settlement. For institutions, this can materially reduce principal risk while supporting more efficient use of liquidity and balance sheet resources. Settlement finality of the kind Fnality offers, alongside asset classification and custody rules, remains one of the most important foundations for institutional digital asset markets because it is what makes a transaction legally irreversible and enforceable.

"The industry is increasingly recognising how critical settlement finality is to building credible and scalable digital asset infrastructure," says Wright. "Many firms are pursuing this capability but only a small number of regulated infrastructures currently provide it. As the market moves from experimentation to production-scale adoption, that distinction is becoming increasingly important."

SETTLEMENT SUPPORTS CREDIBILITY

Crypto was built to eliminate dependencies on intermediaries and other centralised counterparties - but when it comes to settlement, having a centralised counterparty in the middle turns out to be a useful feature observes Anton Deshchenko, senior product manager for Talos portfolio and treasury management systems.

"In digital assets, settlement has remained predominantly bilateral and the danger that one leg settles while the other fails is very much alive," he says, noting that the industry is converging on three approaches to address this.

"The industry is increasingly recognising how critical settlement finality is to building credible and scalable digital asset infrastructure."

Myles Wright

Custodians are leading the charge on atomic bilateral settlement, where both legs settle simultaneously or not at all. New centralised clearing counterparties are positioning themselves as the 'DTCC of crypto' with the additional benefit of netting obligations across counterparties and freeing up balance sheet capital. Further out, blockchain-native settlement protocols governed by smart contract logic are emerging.

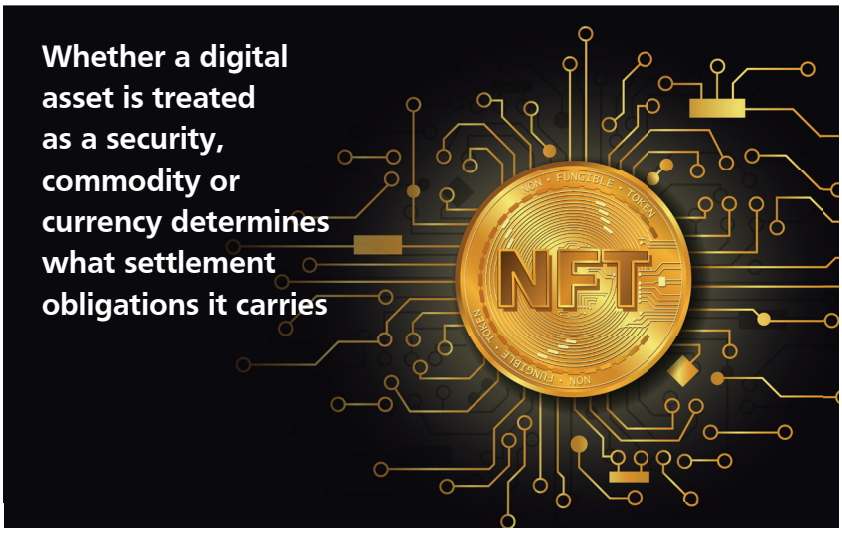
In addition, there is the choice institutions have of settling in commercial bank money with stablecoins or tokenized deposits, or the ultimately safety of central bank money.

"Whichever model prevails, the critical precursor is settlement orchestration – understanding your obligations, sequencing activity intelligently and managing the risk of failing to settle," explains Deshchenko, referring to commercial bank money settlement. "For sell-side institutions in particular, sequencing is essential. Efficient downstream settlement depends on first collecting on upstream obligations without tying up treasury capital."

A final complication is that although on-chain asset settlement can happen in near real time, the fiat leg in many cases remains beholden to banking hours and correspondent bank checks. Fnality gets around this by ensuring that participant banks have access to their on-chain central bank reserves at any time for settlement, 24/7, irrespective of whether local RTGS systems are open or not.

"Truly atomic DvP for crypto-versus-fiat remains largely out of reach today, which is where regulated stablecoins become a compelling settlement mechanism, allowing both legs to move on the same rails," says Deshchenko.

Whether a digital asset is treated as a security, commodity or currency determines what settlement obligations it carries



Whether a digital asset is treated as a security, commodity or currency determines how it can be held in custody, how it must be reported and what settlement obligations it carries. Until major jurisdictions converge and more firms obtain the settlement finality designation Fnality possesses, institutions face the unattractive choice of operating under worst-case assumptions or risking being caught on the wrong side of a future ruling.

"DLT finality introduces a risk dimension with no real analogue in traditional markets: irreversibility," notes Deshchenko. "In TradFi, settlement errors can be unwound whereas on-chain, there is no recourse. Sending assets to the wrong address is a permanent loss, which makes pre-settlement validation, exception workflows and confirmation controls critical."

REAL-TIME RECONCILIATION VITAL

In this context, real-time, transactional reconciliation, rather than end-of-day batch processes, is essential to catching discrepancies before a transaction is broadcast. Fragmented liquidity creates both execution and operational challenges for institutions, observes Adam Sporn, head of prime brokerage and institutional sales at BitGo. When liquidity is dispersed across exchanges, OTC desks, custodians and blockchain networks, firms can face wider spreads, inconsistent market depth, slippage and less reliable price discovery.

"It also increases settlement complexity," he says. "Institutions may need to pre-fund multiple venues, move collateral across platforms and reconcile balances across disconnected systems. In a 24/7 market, those frictions can increase counterparty exposure, reduce capital efficiency and make institutional risk management more difficult."

"Efficient downstream settlement depends on first collecting on upstream obligations without tying up treasury capital."

Anton Deshchenko

Sporn describes regulatory clarity as essential because settlement is a legal and risk management function, not just a technology function. "Institutions need confidence in how assets are classified, how they may be custodied, how client assets are protected and when settlement is final and enforceable," he says.

The regulatory environment is becoming more constructive. In the US, the GENIUS Act created a federal framework for payment stablecoins, with implementation ongoing, which is important because stablecoins and tokenised cash are likely to play a meaningful role in institutional settlement. Recent OCC guidance has also provided additional clarity for national banks and federal savings associations around permissible crypto-asset activities, including custody, certain stablecoin-related activities, DLT network participation, custody and execution services and related operational functions.

"At the same time, broader market structure legislation remains important," says Sporn. "The CLARITY Act - which recently advanced out of the Senate Banking Committee - would, if enacted, help clarify the treatment of digital assets, intermediary obligations, disclosures and market oversight."

He suggests the industry should continue engaging with regulators and building infrastructure that meets institutional standards from the outset, arguing that clear rules around custody, disclosures, reserves, transaction monitoring, operational resilience and settlement finality will support broader adoption.

"Regulation should not be viewed as a barrier - for institutions, it is a prerequisite for trust and scale," says Sporn, adding that the market is moving toward more interoperable infrastructure, including custody-integrated settlement networks, API connectivity, tokenised cash and collateral models, regulated stablecoin-based payment rails operating under clearer regulatory frameworks and secure cross-chain messaging.

"For institutions, interoperability must be controlled, permissioned and auditable. It is not enough to connect systems; firms need settlement workflows that integrate with custody, treasury, compliance and risk platforms. The most practical progress will likely come from regulated or permissioned environments where participants are known, controls are defined and settlement processes can be monitored."

UNDERLYING ISSUES REMAIN

Compressing settlement cycles from T+2 to T+1 does not solve the underlying structural issues that drive credit and operational risks in the case of commercial bank money settlement, because settlement will still be hampered by legacy design, unconnected processes and duplicated systems that create delays, uncertainty and costly repair work for all parties.

Moving towards real-time settlement orchestration changes that model, explains Ross Dilworth, head of strategy and partnerships at Baton Systems. Mechanisms such as atomic PvP and DvP synchronise both legs of a transaction, so each leg moves only when the corresponding leg is ready and both settle under a robust process and legal framework.

"That removes the timing mismatch that creates principal settlement risk and uncertainty, is scalable to a wide range of use cases and - when paired with liquidity optimisation strategies such as netting - can provide institutions with substantial economic benefits and increase business capacity," he says.

DLT networks can enable this by providing shared, real-time and transparent workflows where participants can agree settlement requirements, timing and scope, but parties also need to be able to link these workflows with their existing internal systems and processes.

Dilworth reckons the major challenges for institutions include understanding the end-to-end business case, the practical steps required to connect these new assets into existing models and ensuring that any investment is future-proof to the range of differing digital solutions that are developing.

"Firms also need confidence that new assets, models and settlement mechanisms can fit within established operating and legal and regulatory frameworks before they can use them at scale," he adds. "However, waiting for this clarity should not stop progress. There are settlement, liquidity and collateral challenges in today's markets that banks can address now."

"Digital assets can help accelerate the move to genuinely real-time settlement as connected and interoperable settlement networks emerge."

Ross Dilworth

Dilworth agrees that siloed blockchains can create a real adoption challenge because they often require institutions to build separate controls and workflows for each blockchain, digital asset or venue and are not designed to work with existing institutional processes and systems.

One approach that is gaining traction, he observes, is to leverage more flexible networks that are not asset specific and provide banks with the capability to orchestrate settlement in real-time across a range of traditional and digital flows without requiring replacement or a new operating model for each new asset.

This has the added benefit that it supports hybrid use cases, for example FX PvP where one leg sits on traditional fiat rails and the other on digital asset infrastructure, using consistent settlement logic across both.

"This helps to future-proof the process by connecting existing operating processes and making it easy to scale and onboard new digital assets," says Dilworth. "Equally importantly, it also expands the range of business use cases where these assets can be leveraged.

Digital assets are inherently well-suited to supporting real-time settlement without constraints around traditional business days or settlement windows, with the concurrent liquidity and risk benefits that this offers.

"For a long while, digital assets were a solution looking for a problem but when leveraged as part of a wider simplification and modernisation of process, they can help accelerate the move to genuinely real-time settlement as connected and interoperable settlement networks emerge," says Dilworth.

Digital assets are inherently well-suited to supporting real-time settlement

MARKET SIMPLIFICATION OPPORTUNITY

Looking ahead, he suggests there is a generational opportunity to simplify the way markets settle today and to extend these capabilities to broader collaborative processes that allow banks to automate more of the processes they currently do between themselves.

According to Deshchenko, a consistent pattern when institutions enter digital assets is that trading gets the primary attention and settlement becomes the afterthought, although that is now starting to change.

"The systems institutions already have were not built for digital assets," he says. "They weren't designed for on-chain finality, for assets that simultaneously exist across multiple chains, or for a market that never closes. Retrofitting them is often more fragile than starting fresh."

The solutions are maturing on several fronts. Cross-chain interoperability protocols are reducing the friction of moving assets between networks, custody providers are building richer settlement APIs that allow institutions to orchestrate movements programmatically and orchestration platforms are beginning to bridge the TradFi/DeFi divide.

As for how tokenisation might reshape post-trade and settlement for institutional digital assets, Deshchenko says the most immediate impact is compressing timescales toward zero. "Extending the atomic settlement model to tokenised securities would eliminate the bilateral exposure window between execution and final settlement," he observes. "Beyond speed, tokenisation enables programmable settlement where what currently requires a chain of instructions across multiple intermediaries can, in principle, be reduced to a single atomic transaction."

There is also the potential for meaningful gains in collateral mobility and capital efficiency since tokenised assets can be pledged and moved in near real-time. For institutions managing multi-asset portfolios across both digital and traditional instruments, that composability is a significant operational and capital efficiency advantage.

Sporn explains that tokenisation can make post-trade processes faster, more automated and more transparent. If assets, cash and collateral can exist in tokenised form, settlement can become less dependent on sequential, manual workflows. "It can also improve collateral mobility, reduce reconciliation burdens and support more automated lifecycle management," he adds. "I believe the most meaningful opportunity is the ability to settle tokenised assets against tokenised cash or regulated payment instruments, reducing counterparty exposure and improving capital efficiency."

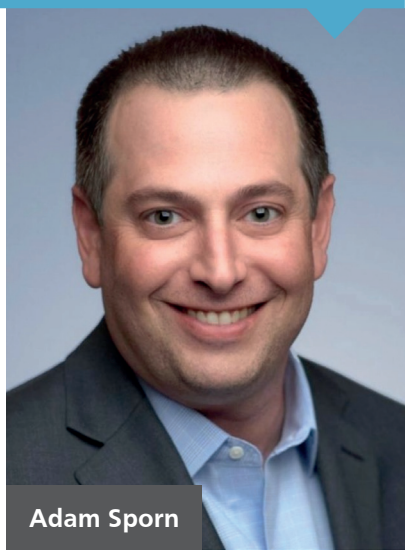
BitGo supports triparty collateral management workflows that allow clients to segregate collateral from counterparty, - particularly for financing and derivative activity, – and has growing institutional interest in posting tokenised money market funds as collateral, given their funding efficiency and 24/7 transferability.

MULTIPLE MODEL MOVEMENT

The market is increasingly moving away from the idea that a single blockchain network will dominate institutional finance towards a network-of-networks model where different platforms specialise in different assets, markets or jurisdictions while remaining interoperable through shared standards, messaging frameworks and legal agreements.

"Several solutions are emerging to support this shift," says Wright. "Cross-chain messaging protocols are becoming more sophisticated, enabling transactions on one network to trigger corresponding actions on another. Shared settlement layers are also developing, providing a common cash settlement mechanism that can connect multiple asset platforms." Bridges to legacy financial infrastructure, including RTGS systems, custodians and payment networks, are helping integrate tokenised transactions into the broader financial ecosystem where required.

"Institutions need confidence in how assets are classified, how they may be custodied, how client assets are protected and when settlement is final and enforceable."



Adam Sporn

Fnality believes tokenisation has the potential to fundamentally simplify post-trade infrastructure by collapsing many of the separate layers that exist in traditional financial markets.

When both assets and cash are represented on distributed ledger technology, many of these steps can become integrated into a single shared workflow. Trade execution and settlement can occur as part of the same event, records become synchronised rather than reconciled across institutions and many manual operational processes can be significantly reduced. The result, says Wright, is not simply faster settlement but a more structurally efficient system where collateral can move intraday, liquidity can be deployed more dynamically and balance sheets can operate more efficiently while reducing operational and counterparty risk. "Tokenisation also makes assets inherently more programmable, allowing rules, workflows and post-trade processes to be embedded directly into the asset itself," he adds. "This creates greater automation, fewer manual interventions and improved interoperability between assets and different forms of money."

According to Wright, the next phase of industry development is likely to focus less on underlying technology innovation and more on institutional adoption, interoperability and regulatory integration at scale. "One major trend will be broader participation in shared settlement infrastructure," he says. "Early adopters have already demonstrated the viability of these models but wider institutional participation is where network effects and meaningful transaction scale will begin to emerge."

Another key development will be the convergence of digital asset settlement with tokenised collateral, intraday liquidity and repo markets. Once institutions can settle transactions atomically and with finality, entirely new liquidity and balance sheet optimisation models become economically viable.

"This transition from proof-of-concept activity toward live, regulated and production-grade infrastructure is expected to drive the next stage of growth in institutional digital assets," adds Wright. As tokenised markets mature, regulated digital cash and settlement finality are likely to become foundational components of market infrastructure rather than optional enhancements.