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Collateral Annual 2027

The collateral landscape is one of change and regulatory challenge, but it also presents promising opportunities and innovation for the market.

Within this Securities Finance Times' Collateral Annual 2027, market participants explore real-time settlement and 23/5 trading, a direction of great importance for a fast moving industry, which is tackling the influence of digital assets and changing expectations.

Digital collateral mobility is likely to become a core market infrastructure capability, according to Martin O'Connell of HQLA^{X}, who notes that the objective is not to create a new market structure, but to make non-cash collateral usable in a workflow that is frequent, time-sensitive, and operationally repetitive.

Despite a more digitally-focused market, a persistent bottleneck remains: the manual email mailbox. Neil Murphy of OSTTRA triResolve Margin reviews the fundamental shift toward a more resilient and optimised financial ecosystem.

Consideration must also be given to the fixed income market. Euronext's Yama Darriet gives food for thought when he asks: "If your fixed income business has evolved but your clearing strategy has not, is that a deliberate choice, or a decision still waiting to be made."

For those looking to understand the current collateral landscape, BNY's Cale Newhouse provides a deep dive into the market, from examining constraints to building infrastructure, as well as how technology is shaping a hybrid future. This pairs nicely with a piece from Vermeg's Asma Belgaied Hassine on how collateral platforms can support a hybrid world of traditional and tokenised assets.

Tying in with these similar themes, State Street's Cin Hau discusses exactly how digital assets are changing expectations, touching on 23/5 trading and creating the foundations for a future global settlement model.

Readers can also continue to keep on track with important conversations around the journey to T+1, as Comyno's Frank Becker and Benjamin te Kaat reveal why firms should view the upcoming settlement cycle in the UK, EU, and Switzerland as a catalyst to improve infrastructure and what they should be building towards.

We would like to thank our sponsors for their insights and hope you enjoy all of this and more in this year's Collateral Annual.

Carmella Haswell
Deputy Editor
Securities Finance Times

Publisher: Justin Lawson
justinlawson@securitiesfinancetimes.com
020 3667 3244

Associate publisher: Nicole Taylor
nicoletaylor@blackknightmedialtd.com
07780 008598

Group editor: Karl Loomes
karlloomes@blackknightmedialtd.com
020 3617 1722

Deputy editor: Carmella Haswell
carmellahaswell@securitiesfinancetimes.com
020 3617 1722

Reporter: Theodore Law
theodorelaw@securitiesfinancetimes.com
020 3617 1722

Designer: Lucas Cefai
lucascefai@blackknightmedialtd.com

Studio director: Steven Lafferty
design@securitiesfinancetimes.com

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J.P. Morgan Tri-party launches first Taiwan-listed securities collateral pledge solution

J.P. Morgan has implemented its Taiwan-listed securities collateral pledge solution, becoming the "first" global triparty platform to enable Taiwan-listed securities to be mobilised as pledged collateral.

The development follows enhancements to Taiwan's foreign institutional investor (FINI) pledge framework in March 2026, allowing market participants to pledge Taiwan-listed securities as collateral while maintaining the assets within Taiwan's domestic market infrastructure.

By unlocking Taiwan-listed holdings as a new source of collateral to support offshore securities financing and derivatives activities, this solution aims to help firms optimise liquidity and collateral management across global portfolios.

Robert Evans, head of Asia Pacific Tri-party at J.P. Morgan, says: "Our clients are looking for greater flexibility in how they mobilise assets across markets.

"This pledge solution connects Taiwan's local market infrastructure with J.P. Morgan's global triparty platform, giving clients a more efficient way to put their Taiwan-listed holdings to work.

"This is an important step in expanding the use of Taiwan-listed assets within the global collateral ecosystem."

Ownera and DFNS partner to accelerate adoption of tokenised collateral

Ownera and DFNS have signed a Memorandum of Understanding to launch a joint go-to-market focused on accelerating the adoption of tokenised collateral mobility and intraday financing across institutional markets.

The partnership combines Ownera's orchestration infrastructure with DFNS' secure wallet, governance policy management, and transaction management-signing technology to help financial institutions manage, mobilise, and optimise tokenised assets.

Ownera's production-grade intraday repo and tokenised collateral platform has been validated through industry initiatives involving more than 70 institutions.

Under the partnership, the two companies will jointly market an integrated solution enabling institutions to custody tokenised cash, funds, and securities within DFNS-governed wallets while mobilising those assets across intraday repo and margin workflows.

Ownera will provide the interoperability layer through its FinP2P routing network to move

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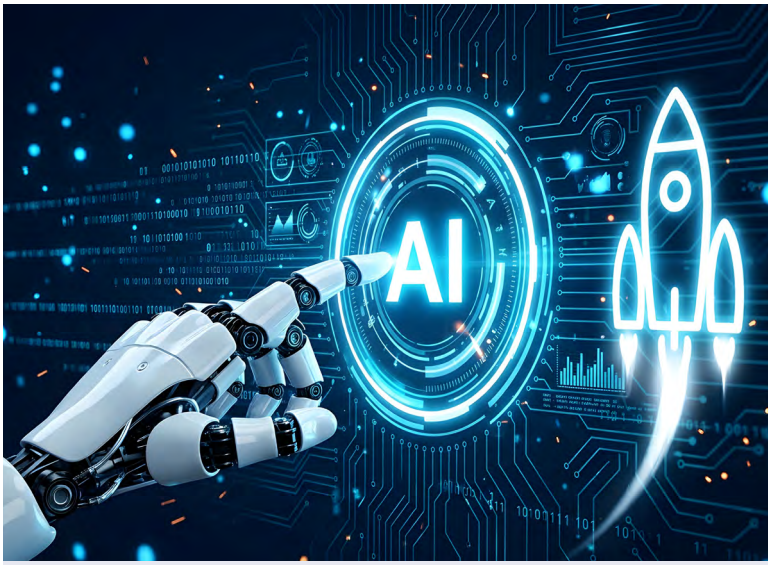
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We couldn't be more grateful for those partnerships, or proud of what we've achieved together. But we're most excited about what we can achieve next.

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Smartstream launches MPC servers for Smart Collateral

Smartstream has announced two new model context protocol (MCP) servers for Smart Collateral, the firm's automated data solution.

Firms can connect an MCP-compatible AI assistant directly to their collateral management platform and interact with it conversationally.

The first server converts Smart Collateral's integration APIs into a secure, AI-operable toolset covering agreements, positions, margin activity, and interest calculations, while the second provides AI assistants with read-only access to Smart Collateral's reporting database.

The AI can also pre-validate proposed collateral movements against existing eligibility and concentration rules prior to execution.

Additionally, the infrastructure supports development teams, helping them to scaffold integration code, generate reconciliation and exception-handling routines, and prototype automation workflows — all while remaining subject to the firm's existing review, testing, and deployment process.

assets across venues without bilateral integrations, while DFNS will deliver the institutional wallet infrastructure, key management, and programmable policy controls.

Together, the organisations aim to deliver a complete collateral lifecycle solution spanning inventory management, margin calls, collateral optimisation, and atomic settlement.

As part of the collaboration, DFNS will become a Founding Member of the Open Collateral Network and will feature a live application within Ownera's SuperApps ecosystem.

The joint go-to-market initiative will focus on financial institutions facing growing collateral pressures, including hedge funds, asset managers, corporate treasuries, and market infrastructure providers.

Vermeg and CBUAE select Delta Capita DLT for digital securities depository

Vermeg, a provider of financial market infrastructure, and the Central Bank of the UAE (CBUAE) have chosen Delta Capita's MACH distributed ledger technology to support the integrated Digital Asset Securities Depository (DASD).

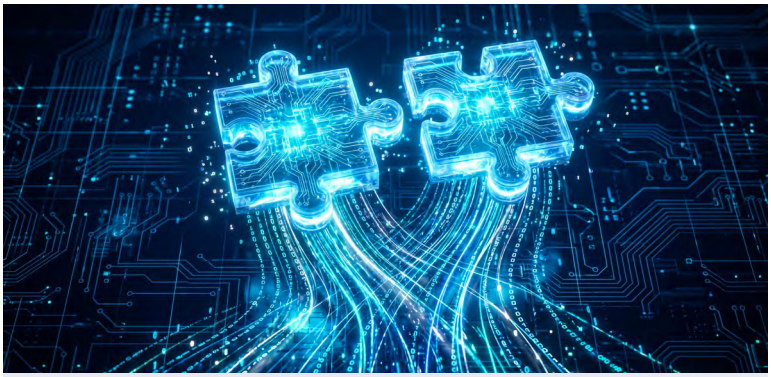
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Capco partners with Clearstream's D7 platform

Capco has been appointed as a D7 digital market partner to support the institutional adoption of Deutsche Börse Group's next-generation digital post-trade infrastructure, operated by Clearstream.

Through this partnership, Capco will assist financial institutions with target operating model design, technology delivery, systems integration, and large-scale migration programmes as capital markets transition toward digital securities and automated post-trade processes.

The D7 platform provides a fully digital framework for automated securities issuance and post-trade processing.

According to Capco, the infrastructure is designed to increase automation, improve efficiency, and prepare market participants for the continued evolution of digital securities and tokenised assets.

As the operator of the platform, Clearstream provides post-trade infrastructure for global financial markets, with more than €22 trillion in assets under custody.

Its infrastructure supports securities issuance, settlement, custody, collateral management, securities lending, and liquidity services. managers, and wealth distribution channels through a common platform, intended to reduce fragmentation across the tokenised asset lifecycle and expand access to new distribution models.

DLX also allows for hybrid, third-party, and self-custody models.

newly created UAE central securities depository (CSD).

Vermeg is designing and providing an integrated and digital CSD platform to support government debt and sukuk, Shariah-compliant financial certificates.

The firm is also delivering a unified collateral management solution.

According to the companies, the DASD will enable capital, cost, and revenue efficiencies via T+0 settlement, along with enhanced collateral mobilisation and asset fractionalisation.

The DASD will also support the issuance of digitally-native sovereign debt, sukuk, and the tokenisation of existing financial instruments.

Chainlink launches cross-chain repo and collateral platform

Chainlink has introduced its end-to-end solution for institutional financing and collateral management across public and private blockchains, Chainlink Fulcrum.

According to Chainlink, Fulcrum is the first cross-chain repo flow separating the management of a financing agreement from cash and collateral settlement networks.

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Broadridge launches DLX

Broadridge has launched DLX — a fully integrated, end-to-end tokenisation and digital asset infrastructure platform — in a bid to allow institutions to operate across both tokenised and TradFi markets through an onchain and offchain connected operating layer.

The platform is launching with the ability to connect to DTCC's tokenisation service via Canton and other networks, with further use cases set to be announced in due course.

DLX builds on Broadridge's Distributed Ledger Repo (DLR) capability for collateral mobility and securities financing, and extends the firm's tokenisation infrastructure into a multi-asset platform for issuance, trading, settlement, custody, governance, and distribution.

According to the firm, DLX supports the full lifecycle of tokenised assets through a modular, multi-chain architecture, which allows participants to distribute their own tokens and partake in markets for tokens issued by other parties.

The offering connects issuers, investors, intermediaries, asset managers, and wealth distribution channels through a common platform, intended to reduce fragmentation across the tokenised asset lifecycle and expand access to new distribution models.

DLX also allows for hybrid, third-party, and self-custody models.

The separation allows for more flexible funding, 24/7 risk management, enhanced capital efficiency, and reduced operational complexity, enabling cross-chain delivery-versus-delivery across multiple blockchains, Chainlink says.

Fulcrum combines aspects of the Chainlink platform into a single solution: Chainlink Runtime Environment, Cross-Chain Interoperability Protocol, and Chainlink Data Streams, along with other functionalities such as compliance, privacy, and AI.

Counterparties will be able to choose eligible assets, set financing terms, and coordinate settlement across supported chains through a single venue.

The firm says Fulcrum also comes with 24/7 operational support.

The solution is in the process of being integrated with TradFi environments and existing values, allowing participants to compare financing terms across them and route transactions to a chosen venue, where the agreement is then executed and governed.

Fulcrum does not custody assets, act as a counterparty, or operate a trading venue. ■


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Why Europe's settlement shift is really a collateral story – and how Comyno is addressing it

T+1 is not the destination, say Comyno's Frank Becker, chief operating officer, and Benjamin te Kaat, sales executive, who discuss why firms should view the upcoming settlement cycle as a catalyst to improve infrastructure and what they should be building towards

Europe's move to T+1 settlement is now firmly on the agenda. With the transition targeted for October 2027, banks, brokers, custodians, and market infrastructures are beginning to assess what needs to change across their organisations.

Much of the industry conversation has understandably focused on settlement itself: settlement instructions, matching rates, standing settlement instructions (SSIs), affirmation processes, and the operational changes required to squeeze today's post-trade activity into a much shorter window.

All of that matters. But it may also be missing the bigger picture.

The real challenge of T+1 is not simply how quickly a transaction can settle. It is how quickly institutions can understand their funding and collateral requirements, identify the right assets, mobilise them, and respond when circumstances change.

And that makes T+1 as much a collateral and liquidity challenge as a settlement one.

As Frank Becker, chief operating officer and head of sales at Comyno, puts it: "The industry naturally talks about T+1 as a settlement project, because settlement is where the deadline becomes visible. But if you look underneath, many of the real dependencies sit in collateral, liquidity, and data. Making the last step faster doesn't help much if everything feeding into it still operates on yesterday's timelines."

Settlement is only the visible part of the problem

At first glance, shortening the settlement cycle looks relatively straightforward: if the industry currently settles a transaction two days after execution, it simply needs to perform the same processes one day earlier. Unfortunately, markets do not work quite like that.

Compressing the settlement cycle means compressing everything that happens around settlement. Processes that previously had several operational windows available suddenly have considerably less room for error. This becomes particularly important for collateral.

Institutions will have less time to respond to margin calls, less time to perform collateral substitutions, and less time to arrange collateral upgrades. Treasury teams will have less time to fund unexpected positions, while collateral teams will need a much more accurate picture of which assets are actually available at any given moment.

In other words, T+1 does not just accelerate settlement. It accelerates decision making. And that is where things get interesting.

The European market also has characteristics that make the collateral question particularly important. European securities finance markets make extensive use of non-cash collateral and triparty structures. Collateral therefore moves through a complex network of custodians, agents, clearing infrastructures, and triparty providers.

Simply knowing that an institution owns €100 million of a particular security is not enough. The institution needs to know where those securities are held, whether they are already encumbered, whether they are eligible for a particular transaction, how quickly they can be mobilised, and whether using them represents the economically optimal decision.

That is a very different problem from simply sending a settlement instruction faster.

Benjamin te Kaat, sales executive at Comyno, says: “Clients rarely have a shortage of data. The problem is getting the right data, from the right systems, quickly enough to make a decision.

‘Under T+1, knowing that collateral exists somewhere in the organisation isn’t enough. You need to know whether you can actually use it — now.”

The collateral clock is getting faster

The traditional collateral operating model was designed around relatively predictable processing windows.

Collateral positions could be reconciled, margin calls calculated, eligibility checked, and assets allocated within defined operational cycles. Exceptions could often be resolved manually.

T+1 puts pressure on that model. When settlement cycles shorten, the tolerance for manual intervention becomes smaller.

An exception discovered late in the day can quickly turn into a funding requirement, failed settlement, or expensive borrowing requirement. This creates a growing need for intraday visibility.

A collateral manager should ideally be able to answer, in real time, some fairly basic questions: what collateral do I have? Where is it? What is available? What is eligible? What is already pledged? What will I need later today?

And what is the cheapest asset I can deliver without creating another problem somewhere else? Those questions sound simple. Getting the answers often is not.

The uncomfortable reality of collateral infrastructure

Many large financial institutions still operate fragmented collateral environments.

Different business units may maintain separate collateral pools. Securities lending, repo, derivatives, and treasury activities may use different systems. Assets may be held across multiple custodians and triparty agents. Eligibility rules may sit in different applications — or, in some cases, spreadsheets.

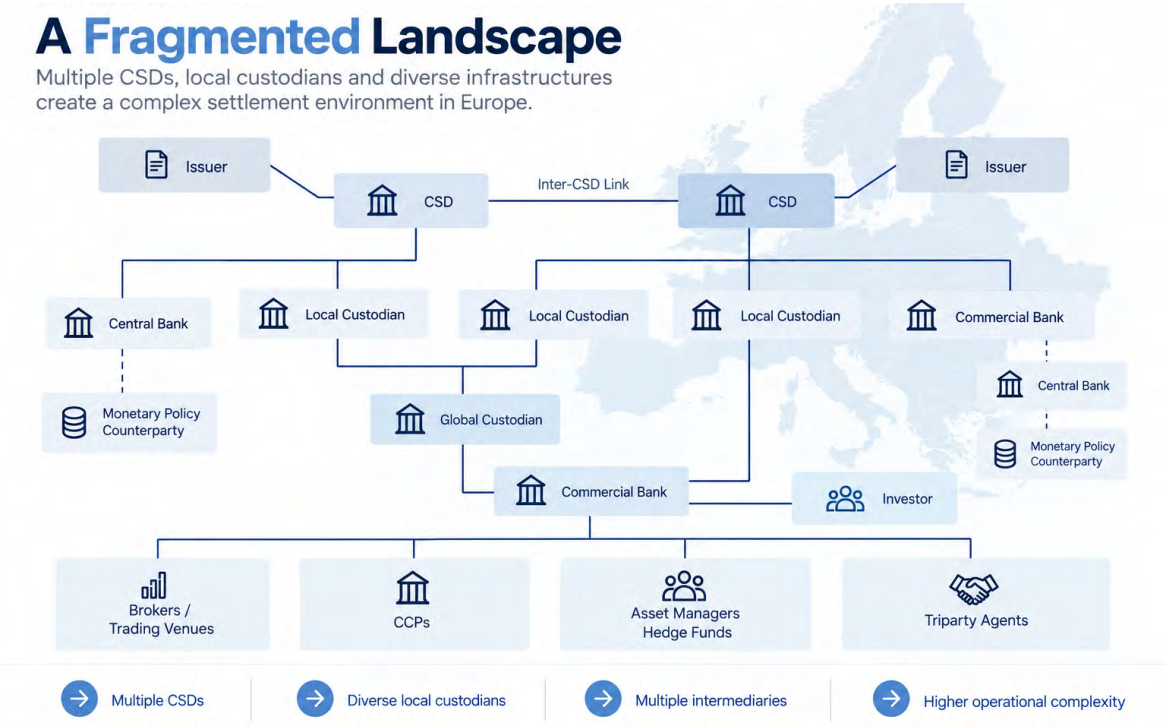
The result is that institutions can have substantial collateral inventories without necessarily having a consolidated view of what is genuinely available. There is also an organisational dimension.

Trading desks optimise transactions. Treasury manages liquidity and funding. Collateral teams manage eligibility and allocation.

Operations focuses on settlement and exceptions. Each function can be doing its job perfectly well while the organisation as a whole still makes a suboptimal collateral decision.

That might have been manageable when markets had more time. Under compressed settlement cycles, it becomes much harder.

“There is still a surprising amount of manual intervention in the market,” te Kaat observes. “Excel itself isn’t the enemy — we all use it. But if a spreadsheet, an email, and somebody’s personal knowledge are critical components of your collateral decision at 15:00, shortening the settlement cycle is going to expose that pretty quickly.”



There is no point automating a settlement instruction if someone still has to manually determine whether the collateral behind the transaction is eligible.

From collateral management to collateral optimisation

This is why the conversation needs to move beyond traditional collateral management. Banks increasingly need to think about collateral as an enterprise-wide resource. The first step is visibility: creating a consolidated view across collateral pools, custodians, trading books, and triparty relationships.

The second is eligibility. Eligibility rules should be machine-readable and capable of being evaluated automatically. Instead of an operator checking whether a particular ISIN satisfies a counterparty's collateral schedule, an eligibility engine should be able to determine this immediately across potentially millions of positions.

The third step is optimisation. Once an institution knows what collateral it owns and where that collateral is eligible, the question becomes: what should it actually deliver? That means considering funding costs, haircuts, liquidity, asset scarcity, opportunity costs, and future obligations.

Cheapest-to-deliver is therefore becoming less of a nice-to-have optimisation exercise and more of a core part of the operating model.

Becker argues that this requires institutions to think beyond individual applications: "The objective shouldn't be to buy another collateral tool and create another

silo. The objective is to establish an operating model where inventory, eligibility, optimisation, trading, and settlement can work together. Technology should orchestrate that process rather than add another screen for somebody to monitor."

This is where technology architecture becomes critical.

Rather than continuously adding standalone applications, firms increasingly need orchestration layers capable of connecting trading, inventory, collateral, treasury, and settlement processes. This is also the thinking behind Comyno's C-One Suite, which brings securities finance workflows, data, and connectivity together across the transaction lifecycle, with capabilities spanning MultiMarket Manager for automated trading on multiple trading venues, Auto Returns, Auto Recalls, Locate Manager, and Collateral Optimiser, supported by Comyno's Connectivity product for integration with the wider market infrastructure.

Connectivity is a strategic component of this architecture. A Collateral Optimiser may identify the most appropriate asset to deliver, but that decision has limited value if the surrounding infrastructure cannot communicate efficiently with custodians, triparty agents, trading venues, and internal systems.

In short, optimisation and execution cannot be treated as separate worlds. The best collateral decision is fairly useless if you cannot execute it quickly.

T+1 is probably not the final destination

There is another reason why firms should avoid designing their technology strategy exclusively around the October 2027 deadline. T+1 is unlikely to be the end state.

Across financial markets, the direction of travel is already visible: intraday collateral management, near real-time margining, intraday repo, tokenised assets, and new



"The objective is to establish an operating model where inventory, eligibility, optimisation, trading, and settlement can work together"

Frank Becker
Chief operating officer
Comyno

digital settlement networks. All of these developments point towards shorter processing cycles. The logical conclusion is T+0 — or, eventually, some form of instant or near-instant settlement.

That does not mean every market will suddenly move to instantaneous settlement. There are legitimate questions around liquidity, netting efficiency, and market structure that make immediate settlement far more complicated than simply making existing processes faster. But the trend is clear. Batch-based operating models are gradually being supplemented — and in some cases replaced — by event-driven ones.

For collateral management, that distinction is fundamental. In a traditional model, a firm may calculate its collateral requirements at defined times during the day and allocate assets accordingly. In an event-driven model, every trade, margin call, settlement instruction, or change in inventory potentially alters the optimal collateral allocation. The collateral system therefore needs to react continuously.

Te Kaat sees T+1 in that wider context: “If a bank invests heavily just to get over the October 2027 line, it may find itself having the same conversation again a few years later. T+1 should be used as an opportunity to ask what the operating model needs to look like in an intraday world. Otherwise, you’re basically renovating the kitchen when you know you’re going to rebuild the house.”

Intraday liquidity changes the equation

This has important implications for treasury. Under longer settlement cycles, institutions have historically had more time to identify funding gaps and source liquidity. As settlement windows compress, liquidity management increasingly becomes an intraday exercise.

A failed collateral movement at 10:00 may create a funding requirement shortly afterwards. A large securities lending recall may change available inventory. A margin call may suddenly consume securities that had been earmarked for another transaction.

The ability to identify these dependencies before they become problems will become increasingly valuable. This requires more than dashboards. It requires data models capable of combining positions, transactions, collateral requirements, eligibility rules, and settlement status in close to real time. And increasingly, it requires automated decision making.

Automation has to cover the entire lifecycle

Securities finance has already automated significant parts of its trading lifecycle.

Electronic trading, automated matching, and rule-based execution have become increasingly common. Locate workflows provide a good example.

What historically involved emails, phone calls, and manual inventory checks can increasingly be handled through automated workflows that evaluate availability and predefined rules almost instantly.

The same principle now needs to extend into collateral.

A genuinely T+1-ready operating model should ideally provide straight-through processing (STP) from the trade through collateral selection, allocation, settlement, and lifecycle management. Manual intervention should become the exception rather than the default.

That does not mean removing humans from the process. Quite the opposite. It means allowing collateral and treasury

specialists to focus on decisions that genuinely require judgement rather than spending their day moving data between systems.

“Automation is not about taking the human out of securities finance,” Becker says. “It is about taking the unnecessary manual steps out. Experienced people should be managing liquidity, exceptions, and client relationships — not copying information between systems because two applications don’t speak to each other.”

What institutions need now

So what should institutions actually be building?

The starting point is a central view of collateral across business lines, legal entities, custodians, and triparty agents. That view needs to be supported by real-time or near real-time data. Yesterday’s inventory is not particularly helpful when today’s settlement deadline is approaching.

Institutions then need automated eligibility management. Eligibility rules need to become structured data rather than operational knowledge buried in agreements, spreadsheets, and people’s heads.

On top of this comes collateral optimisation. Firms need to determine not only which collateral can be delivered, but which collateral should be delivered when funding costs, haircuts, liquidity, and future obligations are taken into account.

And all of this ultimately depends on end-to-end connectivity and STP. Trading platforms, treasury systems, collateral engines, custodians, triparty agents, and settlement infrastructures need to communicate without creating another series of manual hand-offs.

This may sound ambitious, but there is an important distinction: firms do not necessarily need to replace their entire technology stack.



“T+1 should be used as an opportunity to ask what the operating model needs to look like in an intraday world”

Benjamin te Kaat
Sales executive
Comyno

In many cases, the smarter approach will be to connect existing infrastructure through a common orchestration and data layer. Comyno's C-One Suite follows this approach by combining workflow automation and securities finance functionality with Comyno Connectivity, helping link internal systems and processes with the external ecosystem rather than creating another isolated technology layer.

As Becker explains: "We don't believe the answer is necessarily a big-bang replacement of everything a bank already has.

There is a lot of good infrastructure out there. The challenge is making those components work together, creating transparency across the lifecycle, and putting intelligence on top of the data."

The 2027 deadline should be a catalyst

The temptation with regulatory or market infrastructure deadlines is always to solve the immediate problem. For T+1, that would mean optimising settlement processes sufficiently to survive October 2027. That would be a missed opportunity.

The institutions that benefit most from the transition will probably be those that treat T+1 as a catalyst for redesigning their broader securities finance and collateral operating models.

That means breaking down collateral silos, improving connectivity, introducing automated eligibility engines, building optimisation capabilities, and creating much greater transparency between trading, treasury, and operations. As te Kaat concludes: "The interesting question isn't really whether a bank can settle one day faster. Most institutions will find a way to do that. The bigger question is whether they can use the transition to build a model that makes better funding and collateral decisions throughout the day. That's where the longer-term value sits."

"The real question for banks is not whether their settlement infrastructure will be ready for October 2027. It is whether their collateral operating model will be ready for what comes next"

Because the industry is not simply moving from T+2 to T+1. It is moving from scheduled processing towards continuous processing; from fragmented collateral pools towards enterprise-wide optimisation; and from manual operational decisions towards increasingly automated ones.

T+1 just happens to be the deadline forcing everyone to deal with it. And once the industry has built the infrastructure required to operate effectively in that environment, the conversation will inevitably move on.

From T+1 to intraday. From intraday to near-instant. And eventually, perhaps, to a market where asking whether a transaction settles on T+1 or T+2 sounds rather old-fashioned.

The real question for banks, therefore, is not whether their settlement infrastructure will be ready for October 2027. It is whether their collateral operating model will be ready for what comes next. ■



What happens on ledger stays on ledger, or does it?

Martin Walker, senior product manager at FIS, explores the trading landscape where both digital and conventional securities exist and what this means for the market

What are the implications of a world where trading is in a mix of digital and conventional securities? Do I need to throw away all my infrastructure and start again?

For much of the discussion around digital assets, there is an implicit assumption that moving financial assets onto distributed ledgers means moving the financial institution onto distributed ledgers too.

It is an appealingly simple proposition. Securities become tokens. Cash becomes tokenised. Transactions settle on a blockchain. Smart contracts automate transactions. Therefore, surely, the systems used to trade, manage risk, account for positions, and control settlement must also migrate onchain.

But does that logic really follow?

For banks, brokers, and asset managers contemplating a future containing both conventional and digital securities,

the more useful question is not — how do we put our existing infrastructure on a blockchain?

It is: what actually changes when some of the assets our infrastructure manages happen to live on blockchains? That distinction matters.

Capital markets systems already live in a fragmented world

Consider what a conventional trading or post-trade system actually does.

A front-to-middle-office platform captures trades, maintains positions, calculates P&L and risk, and connects to execution and settlement infrastructure. Middle and back-office systems instruct movements of securities and cash, maintain books and records, generate accounting entries, and provide views of settled positions.

Crucially, these systems are already aggregators of information from multiple places.

A bond can be represented in a trading system without that system recreating the infrastructure on which legal ownership of the bond is ultimately recorded. Conventional systems primarily need to know what an asset is, where it is held, what has happened to it, and how to communicate with the infrastructure responsible for it.

Put differently, a system recording ownership of cows does not need a virtual model of the field in which the cows live. That rather mundane observation becomes important when the field is renamed ‘the blockchain’.

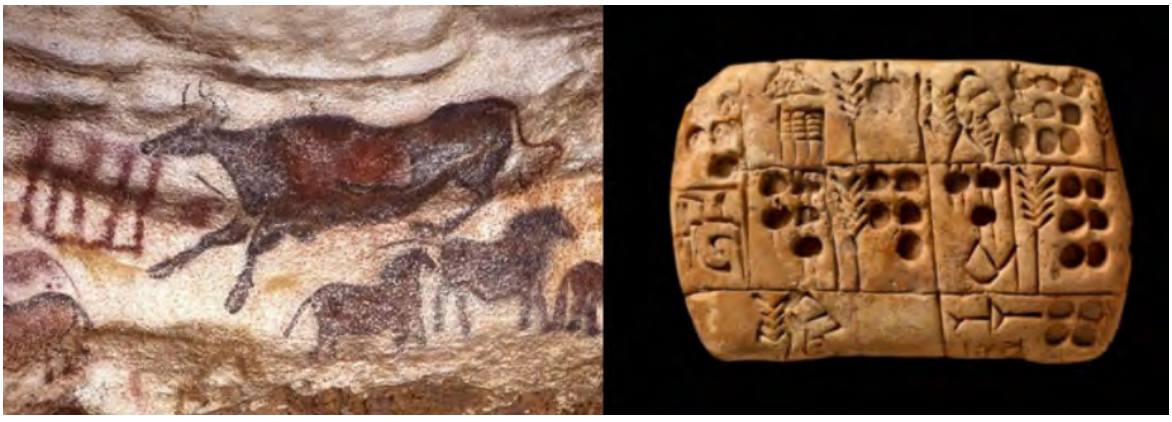
There isn’t one blockchain

The phrase ‘onchain’ can conceal rather more than it reveals.

There are public blockchains in which assets are controlled through centrally managed smart contracts, private networks governed by groups of participants, and private networks ultimately controlled by a single organisation.

So saying that an asset is onchain is a little like saying a conventional security is ‘held electronically’. Interesting, perhaps, but nowhere near enough information to operate a business.

Figure 1: Recording the number of cows rather than making a painting of each one distinguished ancient civilisations from cave men



Which chain? Which token? Who controls it? What rights does ownership convey? Is the token the authoritative ownership record, or does it represent an asset of which definitive ownership continues to reside on conventional infrastructure?

"Adding a ledger does not necessarily remove a ledger. Sometimes it adds another one"

This last distinction is particularly important for tokenised real-world assets. In some structures, the blockchain record represents an asset while actual ownership continues to be recorded on conventional centralised infrastructure.

In other words, adding a ledger does not necessarily remove a ledger. Sometimes it adds another one.

Digital assets introduce new verbs

What does genuinely change is the operational vocabulary.

Traditional systems understand ideas such as buy, sell, deliver, receive, pledge, and redeem. Digital assets introduce additional concepts such as staking, locking into smart contracts, wrapping, minting, burning, airdrops, and atomic settlement.

Some have reasonably close conventional analogues. A token transfer resembles a securities delivery or payment. An airdrop can look somewhat like a scrip dividend. Depending on the asset, burning can resemble redemption. Atomic settlement on a single chain resembles gross delivery-versus-payment. Others are genuinely different.

A token might be staked and consequently unavailable for another purpose. Assets can be placed under the control of a smart contract.

A wrapped asset may represent an asset located on another blockchain. Crypto custody introduces management of private keys as an important part of controlling assets.

For an existing capital markets platform, however, the critical requirement is often surprisingly familiar: know what the asset is. Know where it is. Know whether it is available. Know how to move it. And know what happened after you tried.

That is an extension of the traditional operating model, not necessarily its destruction.

The future could actually be more fragmented

There is another uncomfortable possibility. Digital assets could initially make market infrastructure more complicated, not less.

Traditional capital markets already cope with multiple settlement venues, economically equivalent assets held in different locations, complex static data, and the difficulty of obtaining an accurate near-real-time view of inventory.

Distributed ledger technology does not automatically eliminate those problems.

The document notes that multiple blockchains do not have a universal interaction standard comparable to established financial messaging standards.

The same underlying asset can exist in different forms on

different chains, potentially requiring minting and burning to produce the version a receiving party requires. Cross-chain transactions can also involve wrapped assets.

Instead of asking “is this an asset”, infrastructure increasingly needs to answer: which representation of this asset, on which infrastructure, under whose control, is available for this particular transaction?

That sounds revolutionary until you realise how closely it resembles a familiar securities-processing problem: identifying exactly where inventory is held and whether it is deliverable through the settlement route required by the counterparty.

The data model gets richer. Connectivity gets broader. Controls have to evolve. The fundamental problem does not disappear.

So do I need blockchain in my trading system?

Not necessarily. This is where architecture needs to be separated from fashion.

Many capital markets platforms do need modernisation. That does not establish that DLT is the appropriate technology for their internal P&L, risk, inventory, or accounting calculations. The source paper’s argument is that conventional technologies remain well suited to secure, high-volume processing for these purposes.

More importantly, the institution’s system still has to consolidate information across environments.

It may need positions from conventional custodians, CSDs, banks, crypto custodians, public networks, and private DLT networks.

Putting the aggregating system itself onto one blockchain does not magically make those other environments homogeneous.

The architectural objective should therefore be interoperability, rather than ideological purity. A system needs sufficient static data to identify different

The real transformation is at the boundary

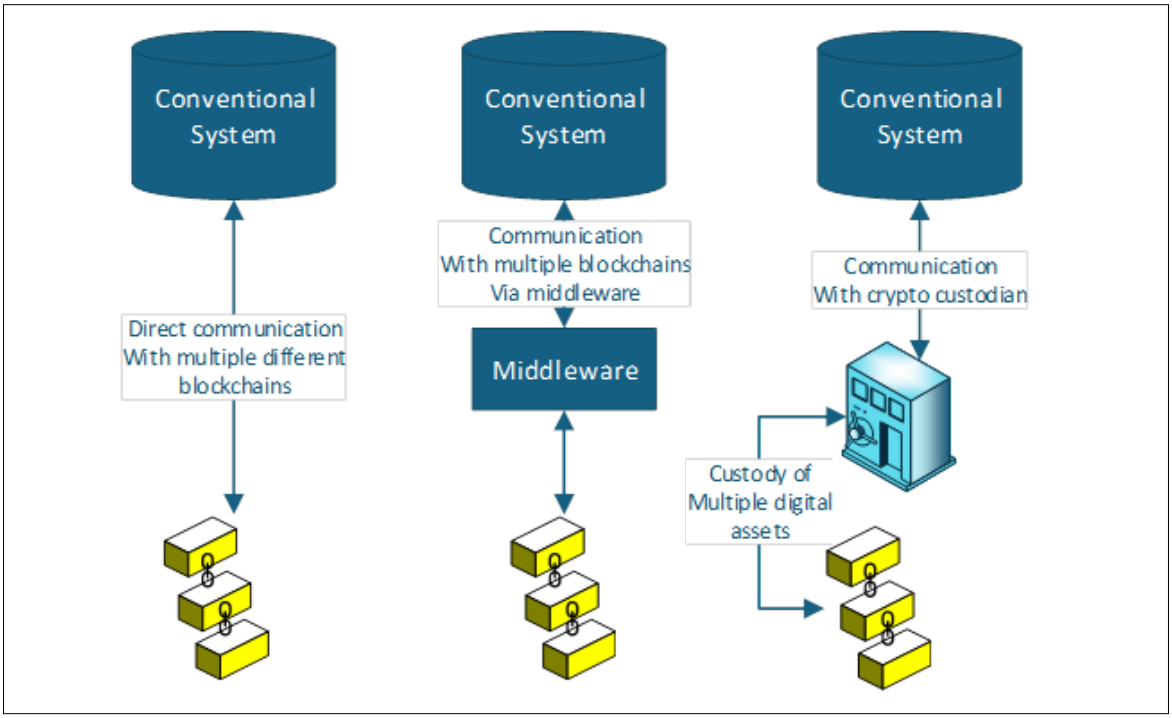
This leads to what may be the more important technology conclusion. The biggest change may occur at the edges of existing systems, rather than at their centre.

A conventional platform does not necessarily need to become a blockchain platform. It needs to become blockchain-aware.

That means understanding new asset attributes and states. It means distinguishing different tokenised representations of economically similar assets. It means communicating with new places of settlement or with intermediaries that abstract that connectivity. And it means incorporating successful, failed, or reversed movements into the institution’s authoritative view of inventory. These requirements follow directly from the functions identified for existing systems and the additional DLT-related processes.

That architecture has an important strategic benefit too: it accepts that the future is unlikely to arrive in one clean migration.

Conventional securities are not going to disappear the morning somebody issues a tokenised bond. Institutions therefore have to operate conventional and digital assets simultaneously. Infrastructure capable of spanning both worlds may ultimately be more useful than infrastructure designed exclusively for either.



What happens on ledger stays on ledger. Except what matters

The seductive vision of blockchain is that everything can happen on a shared ledger and therefore enormous amounts of conventional market infrastructure can disappear. Parts of that vision may become reality.

But operating a financial institution requires a consolidated understanding of assets, liabilities, risk, P&L, collateral, and settlement, regardless of where the underlying record resides. Conventional capital markets systems already perform much of that aggregation across heterogeneous infrastructure.

Digital assets extend the number and nature of those infrastructures. The sensible response is therefore not to ask whether every existing system should be replaced with DLT. It is to ask whether those systems can represent the new assets and states, connect securely to the environments in which they exist, initiate the necessary transactions and incorporate the results into an accurate enterprise view. Modernised systems with sufficient data models and connectivity to communicate with blockchains are a practical short-to-long-term requirement for capital markets firms dealing with digital assets.

So, do you need to throw away all your infrastructure and start again?

Probably not. But you may need to stop thinking of digital and conventional as two separate worlds. The winning infrastructure may not be the infrastructure that puts everything on a ledger. It may be the infrastructure that no longer cares which ledger an asset happens to be on. ■

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Has European fixed income evolved faster than the infrastructure supporting it?

Yama Darriet, head of OTC and Repo Expansion at Euronext, provides a deep dive into the different facets within the fixed income market and key considerations for firms to attain core benefits

As fixed income businesses evolve, firms need to assess how their current infrastructure supports efficiency, manages risk, and preserves choice. The practical question is then how to allocate activity across available clearing routes while retaining valuable netting benefits.

A fixed income business can change considerably while its clearing arrangements remain much the same. A dealer expands into another sovereign market. Its bond inventory grows, its repo requirements shift, and new clients bring different financing needs, trading strategies, and risk profiles.

At what point should those changes prompt a fresh look at where, and how, the business clears?

The assessment should consider the implications of relying on a single clearing arrangement compared with maintaining two, both today and as the business develops.

Established arrangements may remain appropriate, but that conclusion should reflect the current portfolio, its counterparties, and its dependencies. It is clear that clearing (if you pardon the pun) deserves a place in that wider assessment.

The scale of repo activity reinforces the relevance of that assessment. ICMA's 50th European Repo Market Survey, published in March 2026, recorded €13.65 trillion of outstanding repo and reverse repo across 59 participants in December 2025, up 24.6 per cent year-on-year. These figures reflect outstanding positions within the survey sample, rather than market turnover.

Volumes, however, are only one dimension. As a dealer serves a broader range of participants, the composition of its business can change too. Clients may have different investment horizons, liquidity needs, and directional exposures. Understanding those differences is essential to assessing whether clearing arrangements remain suited to the activity they support.

For cash bonds and repo, the economics are closely connected. Repo finances inventory and can provide securities needed to meet delivery obligations. Reviewing bond transactions and their financing separately risks overlooking costs, efficiencies, and dependencies that become apparent only at portfolio level.

Consider a hypothetical dealer expanding its cash bond activity in another European sovereign market. Serving those clients means holding additional inventory and financing it through repo.

The dealer needs to understand how its clearing arrangements will support both activities, including the risk profile of the business it expects to attract.

The first step is to assess what the existing arrangement already delivers. Concentrating eligible positions can support netting and, where the risk model and account structure permit, margin offsets across related cash bond and repo activities. Familiar settlement processes also have value. These benefits form the benchmark against which an additional clearing relationship should be assessed.

The next step is to examine how risk is managed within each arrangement. Central clearing helps manage bilateral counterparty risk, but the assessment also needs to consider the central counterparty's (CCP's) own exposures, safeguards, and participant structure.

The relevant questions extend beyond which counterparties are available to trade. How do participants access clearing, and where do their

obligations sit? How are exposures controlled? What commitments could fall on the dealer under the applicable default-management arrangements

Participant composition matters here. Different access structures and concentrations of activity can change the risks a CCP must manage. Where participants follow similar strategies or hold directional portfolios, firms should examine whether those exposures create concentrations that could be difficult to manage during stress.

Broader participation alone does not determine the outcome: the resulting exposures and the safeguards applied to them are what count.

Operational dependencies deserve equally direct scrutiny. If a dealer relies on one CCP for a segment of its business, disruption to that route could constrain its ability to clear new activity. An additional relationship may provide another route, provided the necessary products, counterparties, limits, and operational capacity are available.

Reliance on a single CCP creates a dependency that firms should assess as their business grows. Maintaining an additional, operationally-ready clearing relationship can reduce that dependency by providing another route for eligible new activity if the primary route is disrupted. The practical value lies in ensuring that the necessary counterparties, limits, collateral, and operational capacity are in place to use it when needed.

The practical task is therefore to assess how business and risk could be allocated across multiple CCPs while minimising the loss of netting benefits.



"Maintaining an additional, operationally-ready clearing relationship can reduce dependency by providing another route for eligible new activity if the primary route is disrupted"

Yama Darriet
Head of OTC and Repo Expansion
Euronext

Splitting offsetting positions can increase aggregate margin. Another relationship also brings fees, operational work and, where applicable, default fund commitments. Allocating a coherent segment of cash bond and repo activity may produce a different result from dividing individual transactions.

The dealer should compare the combined costs, liquidity requirements, and concentrations created across both relationships, including the effect on its remaining portfolio.That assessment must be grounded in executable business.

Margin efficiencies only matter if the relevant securities, counterparties and access arrangements are available. Settlement and triparty connectivity also influence whether the proposed allocation fits existing custody and collateral processes.

Resilience should then be tested against specific scenarios. During disruption to one CCP, which new transactions could realistically be directed elsewhere? During market-wide stress, could the dealer meet simultaneous margin and liquidity demands across both arrangements?

Existing positions and their supporting collateral cannot be assumed to move freely between CCPs. A credible assessment must establish which obligations remain at each clearing house, what resources would be required, and which activities could continue through the alternative route.

Better information can support that analysis. In May 2026, CPMI–IOSCO published proposed amendments to CCP resilience guidance and public disclosures addressing areas including margin simulation tools, initial margin responsiveness, and model governance. For participants, a practical use of greater transparency is to compare portfolio allocations under consistent market and stress assumptions.

There is also a longer-term commercial consideration. A credible alternative gives firms greater choice as their requirements evolve. Competition can encourage improvements in service, functionality, and pricing, although those benefits should be evaluated alongside the cost of maintaining another relationship. The value lies in having a usable option and the ability to act on it.

The next step is to test the proposed allocation through suitable activity. A defined segment of business can reveal how projected efficiencies translate into collateral movements, settlement outcomes, and daily operating costs.

Regular use also keeps teams familiar with the processes, providing evidence on which to expand, adjust, or reconsider the relationship.

Adding a new clearing relationship will naturally require justification, but existing arrangements deserve the same scrutiny to ensure they remain fit-for-purpose as business needs evolve.

For a cash bond and repo portfolio, it means understanding which netting benefits remain valuable, how participant composition affects risk, which dependencies matter, and how those factors could change over time.

A deliberate allocation should preserve efficiency while providing the choice and operational capacity the business needs.

If your fixed income business has evolved but your clearing strategy has not, is that a deliberate choice, or a decision still waiting to be made? ■



Tokenised collateral gets real: From pilots to production

Asma Belgaied Hassine, product deputy director, Capital Markets Europe & UK at Vermeg, reviews how collateral platforms can support a hybrid world of traditional and tokenised assets

For most of the last decade, tokenisation belonged to innovation teams, focused on proofs of concept and whether distributed ledger technology (DLT) could work in capital markets.

That conversation is changing. Since 30 March 2026, the Eurosystem has accepted marketable securities issued through central securities depositories using DLT as collateral for its credit operations, provided they meet its eligibility and collateral management requirements.

Legal frameworks are evolving too. Rather than create a parallel rulebook, the International Securities Lending Association (ISLA) and the International Capital Market Association (ICMA) have built on existing agreements. The Global Master Securities Lending Agreement (GMSLA) 2010 Digital Assets Annex clarifies how asset-backed digital assets and platform-transferred securities fit within the definition of securities.

Intraday repo offers a practical use case: faster settlement can help firms mobilise collateral and obtain secured funding when they need it during the day. This matters because tokenisation is not the end goal. The value comes when it makes collateral easier to mobilise, settle, and reuse, and when firms can choose between traditional and tokenised assets based on economics, liquidity and risk.

For sell side and buy side firms, that changes tokenisation from a technology project into a collateral management question.

The collateral decision does not change

When a collateral manager receives a margin call, the fundamental questions remain familiar.

Is the asset eligible? What is it worth? What haircut applies? Where is it held? How quickly can it settle? And, importantly, is there another eligible asset that would be cheaper or more efficient to deliver?

Tokenisation changes how an asset may be represented and moved, but it does not remove these questions. This is important because not all tokenised assets are equivalent. If the token is issued and settled through the appropriate market infrastructure, its risk profile may be similar to that of the traditional security.

Additional dependencies may arise around the intermediary, custody structure, and settlement mechanism. The collateral system therefore needs to understand the asset's characteristics rather than simply label it 'digital'.

One inventory, not a digital island

This is a key operational challenge.

For the foreseeable future, traditional and tokenised securities will coexist in a hybrid market. A bank may hold traditional bonds, tokenised securities, cash, and tokenised money-market instruments that can satisfy different collateral obligations. Creating a separate collateral process for digital assets would undermine much of the benefit.

A collateral manager should ideally be able to see these assets in the same inventory, while preserving their different legal, liquidity, eligibility, and settlement characteristics. That is where the existing collateral operating model becomes important.

In Vermeg's approach, its Collateral Management engine and its Collateral Optimization engine provide the collateral decision and optimisation layers, while its Settlement engine provides the settlement layer between those decisions and the infrastructures where assets are

held and settled. The objective is not to build a separate 'tokenised collateral system', but to allow new forms of collateral and new settlement routes to participate in the existing collateral lifecycle.

In practical terms, the process should remain recognisable: discover the asset -> value it -> check eligibility -> optimise -> allocate -> instruct settlement -> service the asset (corporate actions) -> reconcile.

What changes is that one of the possible settlement routes may now be tokenised.

What this means for the sell side

For a sell side institution, the opportunity is largely about inventory and liquidity efficiency.

A large bank may have collateral spread across legal entities, custodians, triparty agents, central securities depositories, and potentially several digital networks.

If tokenised assets sit in another isolated system, the collateral manager gains another pool to manage but not necessarily more usable liquidity. The real benefit comes when the bank can see conventional and tokenised inventory together and determine which asset is best for each obligation.

A rapidly settling tokenised asset may suit an urgent margin requirement, while a traditional security may be preferable because of its haircut, funding cost, or broader eligibility. The decision should be economic.

This is where optimisation becomes particularly relevant. A collateral optimisation engine should be able to consider the cost, eligibility, haircut, liquidity, and settlement characteristics of both traditional and tokenised inventory and recommend the most efficient allocation.

Tokenisation then becomes another source of collateral mobility, rather than another operational silo.

And for the buy side

Asset managers and other institutional investors often hold high-quality securities whose mobilisation is constrained by settlement, custody arrangements, or operational cut-offs. Tokenisation may make parts of that inventory easier and faster to mobilise. But increased mobility only creates value if the collateral platform knows that the asset exists and can use it.

For the buy side, the key is to connect investment inventory with collateral obligations and settlement routes, assessing availability, agreement eligibility, haircuts, and economics versus cash or other securities. This is particularly relevant when cash is expensive to source or when firms want to reduce unnecessary cash buffers. The benefit is not simply faster settlement, but a broader and more usable collateral inventory.

The settlement route becomes part of the optimisation decision

Traditionally, collateral optimisation has focused heavily on what asset should be delivered. Increasingly, it may also need to consider how that asset should be delivered. If the same exposure can move through different infrastructures, the settlement route becomes another optimisation parameter.

A collateral platform may therefore consider eligibility, haircut, and funding cost alongside settlement speed, operating hours, network liquidity, transaction cost, and finality.

The objective is not for Vermeg's Collateral Management or Optimisation engines to become a blockchain. It is for the collateral layer to orchestrate the decision across different asset types and settlement rails.

Connecting the collateral decision to the settlement network

Identifying the optimal tokenised asset is of limited value if the firm cannot move it efficiently through the infrastructure where it is held.

Vermeg's platforms play complementary roles: its Collateral engine manages the collateral lifecycle and obligations, its Optimisation engine supports efficient allocation, and its Settlement engine provides the settlement layer connecting that decision to traditional and emerging digital infrastructures.

The end-to-end process becomes: collateral requirement -> eligibility -> optimisation -> allocation -> settlement orchestration -> traditional or DLT settlement network -> confirmation -> asset servicing -> reconciliation.

The objective is not to replace existing market infrastructures with a separate digital ecosystem. It is to allow firms to operate across both worlds through a consistent collateral and settlement process.

Faster collateral does not eliminate collateral management

Near-instant settlement does not automatically simplify collateral management. If collateral can move in minutes, firms can potentially respond to exposures more quickly and reduce the gap between a change in risk and the arrival of collateral.

But faster movement also requires valuation, eligibility, optimisation and settlement instructions to keep pace. There is little benefit in an asset being able to settle in seconds if it takes hours to determine whether it is eligible, locate it in the inventory, and approve its use. The value therefore comes from connecting the decision layer with the settlement layer.

Collateral platforms already sit where agreements, exposures, inventory, eligibility, optimisation, and settlement meet. Tokenisation adds another asset form and potentially another settlement route.

From tokenisation to collateral mobility

Tokenised collateral should not be measured by the number of digital assets issued or pilots completed.

Can a collateral manager receive a margin requirement, see all available assets — traditional and tokenised — determine which are eligible, compare their economics, select the best collateral, and settle it through the most appropriate route? If the answer is yes, tokenisation has stopped being an innovation project and become part of the market infrastructure.

The future is unlikely to be a separate digital collateral market running alongside the traditional one. It is more likely to be a hybrid collateral ecosystem, where different forms of assets and different settlement rails coexist.

The role of the collateral platform is to make that complexity invisible to the user: one view of inventory, one set of eligibility and risk controls, one optimisation process, and a settlement layer able to route instructions across traditional and digital infrastructures.

At that point, tokenisation is no longer the story. Better collateral mobility is. ■



The future of collateral: Continuity, connectivity, and intelligence

Cale Newhouse, senior director, product management, Global Collateral, BNY, provides a deep dive into the world of collateral, from examining constraints to building infrastructure, as well as how technology is shaping a hybrid future for the market

Effective collateral intelligence and mobility are critical levers in the risk management toolkits of global financial, corporate, and sovereign institutions. Decisions about where collateral is held and deployed directly impact funding costs, real-time liquidity positions, and a broad array of regulatory constraints. Managing those trade-offs requires an enterprise-wide view of obligations and available assets — supported by optimisation models that can mobilise securities and cash across venues.

Since the financial crisis, regulatory and balance sheet constraints have increased the cost of inefficient collateral allocation and made timing, access, and flexibility of movement more important. To respond effectively to risk and settlement demands, institutions require real-time information, clear objectives, and the ability to mobilise rapidly.

Three trends are reshaping how institutions meet those demands. First, markets are moving towards continuous, always-on operation. Second, digital technology — tokenisation, programmable ledgers, and atomic settlement — is expanding definitions of collateral and the pace of market activity. Third, the latent value of data and intelligence is just beginning to be realised, turning visibility and orchestration into a source of efficiency. From BNY's perspective, this shift is elevating collateral as a strategic resource that must be visible, mobile, and deployable across the enterprise.

Managing a fast-changing set of constraints

The simultaneous constraints shaping collateral decisions have grown and evolved over time as regulators have sought to promote greater financial stability and mitigate multifaceted financial risk. For example, the Liquidity Coverage Ratio (LCR) mandated ample liquidity reserves and sufficient term funding. The Net Stable Funding Ratio (NSFR) required matching long-term assets with appropriately stable liabilities.

The global systemically important bank (G-SIB) scoring framework added several new dimensions including cross-jurisdictional activity, reliance on short-term wholesale funding, and interconnectedness to financial counterparties. The Supplementary Leverage Ratio (SLR) measures overall balance sheet leverage; even low-risk activity can consume scarce balance sheet capacity.

Looking ahead, the eventual implementation of Basel III Endgame will introduce additional capital requirements and further increase the range of constraints institutions must manage.

Collateral management decisions in this context often require trade-offs between several evolving and interrelated constraints with material financial impact. These constraints may result in a more resilient, safer financial system that carries higher operating costs for participants.

Those costs can circulate throughout the broader financial ecosystem through higher financing rates and transaction fees as institutions implement liquidity buffers or limit balance sheet deployment.

The impact is not confined to regulated banks and dealers — buy side counterparties face reduced intermediation capacity and less favourable pricing. Intermediaries that are more efficient and effective in managing liquidity, capital, and other constraints can in turn offer better pricing or greater capacity.

The same dynamic can benefit the wider market: structural enhancements that mitigate frictions and reduce cost across

the collateral and financing ecosystem can have network effects, improving price efficiency and increasing capacity for many market participants.

How collateral platforms have helped optimise these constraints

Collateral platforms connect diverse networks of institutions with equally diverse financial objectives. They facilitate safe and efficient collateral exchange to generate funding and manage risk, providing technology to view, allocate, mobilise, and optimise collateral across obligations and accounts.

These networks offer access to deep pools of liquidity and services for implementing key contractual terms such as eligibility, haircuts, and concentration limits. Netted, orchestrated settlement, and credit extension further reduce counterparty risk and intraday liquidity requirements.

Together, these services can help institutions manage several key constraints more efficiently. Under LCR, 30-day term funding, sufficiently broad collateral schedules, and substitution rights help institutions secure funding for a rotating book of securities.

For NSFR, collateral platforms can help firms align term assets with more stable liabilities and improve decision-making around tenor transformation. In the context of G-SIB, firms may benefit from broader counterparty access and structures that help manage balance sheet footprint more efficiently.

Modern collateral platforms have already evolved beyond operational utilities to act as key financial optimisation hubs, particularly when integrated with other critical client financial services such as clearing and custody platforms. Their role is likely to continue expanding as 24/7 operating models and digital asset technology unlock greater efficiencies and new capabilities.

Building infrastructure for a more continuous market environment

The move towards always-on markets is one of the most significant developments in collateral markets today, and for the foreseeable future. Markets have historically closed according to predictable daytime, weekday, and holiday schedules, even though market-moving risks can emerge and accumulate at any time including weekends.

Technological developments that enable automated operations and synchronisation of activity around the clock are now making more continuous markets feasible. Collateral platforms that support continuous settlement can create additional value by decreasing overfunding, precautionary liquidity buffers, and net financing costs. Extended operating hours can introduce new funding sources and counterparties from previously incompatible time zones and reduce the need for setting aside precautionary liquidity to support periods when liquidity is low or unavailable.

The combination of new supply and lower buffer demand can serve to lower overall funding costs, while trading and settlement activity currently concentrated into sharp peaks around market opens may distribute more evenly, smoothing liquidity throughout the day.

Always-on markets can also introduce new sources of short-term liquidity — including intraday borrowing — that better match the timing of funding needs. In response, the market may need to update its approach to overnight funding. A repo booked at 20:00 that will mature well before the following evening has different economics than traditional overnight funding booked at 08:00.

Supporting a more continuous operating model will likely require updated location and staffing strategies. Institutions will also adopt new operating models at different speeds. Successful collateral platforms will develop offerings that accommodate varying states of client readiness and retain the connection points to adjacent services that clients rely upon today. A key part of our holistic always-on strategy at BNY is to deliver a complete set of supported trade types and asset financing models by deepening the integration between our clearing, custody, and collateral platforms at all hours of the day.

A hybrid future: Traditional, tokenised, and native digital assets

Another force rapidly reshaping the collateral ecosystem is the advance of digital technology. Collateral platforms rely on the ledgers and custody infrastructure of affiliated or partner custody banks. Their physical custody network and pricing sources limit the scope of assets they can support; separate ledgers for deliverable and triparty transactions limit genuinely atomic settlement.

Digital collateral technology can now unify assets into a single, programmable ledger with immutable books and records. This allows for the recording of tokenised alternative and physical assets in collateral transactions on the same digital ledger as the most commonly-traded securities in the world.

Unified digital layers also enable dynamic, atomic settlement — synchronising legs that are traditionally settled separately. That reduces the counterparty risk and temporary liquidity outflows required by those separate settlements. For example, multi-leg trades like borrow-pledge structures could be settled atomically to minimise liquidity outlays.

Smart contract-enabled workflows, particularly those deployed to aid in always-on operating models, can create functional leverage by automating predefined actions such as eligibility checks, substitutions, and margin movements under controlled conditions.

For the foreseeable future, the global collateral ecosystem is likely to be hybrid. As with always-on operating models, adoption is unlikely to proceed at the same pace across asset classes, jurisdictions, or client segments. As a result, traditional, tokenised, and natively digital assets will coexist -— working together in concert — and require holistic visibility and management capabilities.

Practical use cases that address known frictions and deliver quantifiable value to specific segments will likely see earliest adoption. Different asset types may serve partially overlapping liquidity, financing, risk, and operational needs, while new forms of digital cash and tokenised securities can expand the pools of assets available as collateral.

Data, insight, and orchestration as sources of efficiency

The third force reshaping collateral is the growing importance of data and intelligence. Collateral decisions have always depended on a picture of what is held, what can be moved, and what can be deployed, but this picture has mostly been fragmented across accounts, custodians, entities, and rails. Data processing, normalisation, and analysis capabilities have been supercharged by AI, allowing those fragments to be connected and immediately acted on, whether by autonomous agents or humans equipped with AI-powered insights.

The stakes only rise as the picture grows more complex. New regulations, asset classes, and operating models multiply the trade-offs in play. Always-on and digital collateral capabilities expand what can be done, but

realising value from those capabilities depends on understanding the trade-offs to relevant constraints — and quickly taking action.

Insights — including integrated views of collateral inventory across accounts and custodians in both digital and traditional environments — can help firms understand what assets are available, how quickly they can be mobilised, and what constraints apply. From there they can be deployed to optimise liquidity impact, opportunity cost, and balance sheet usage. Proactive signals and early-warning systems further support better decision-making by bringing attention to potential opportunities or issues.

"As traditional, tokenised, and natively digital assets coexist, participants need connectivity across central counterparties, custodians, and settlement venues"

Orchestration connects data, insights, and execution across funding, collateral, and liquidity to optimally utilise funding channels and collateral balances. Orchestration becomes even more important and complex in an environment where collateral may move across time zones, entities, servicing models and, increasingly, both traditional and digital rails. AI can improve speed and efficiency by helping identify optimisations more quickly and automating workflows within appropriate governance and control frameworks.

At BNY, we see this orchestration layer as central to the future of collateral management: connecting insight, execution, and control across funding, liquidity, and asset-mobility workflows.

The next phase of collateral evolution: What are the priorities?

Collectively, these developments are prompting the market to revisit fundamental conventions and concepts such as business day cutoffs and fails management against a new backdrop, with implications for critical processes and risk models. Taken together, the three trends point to three implications for how participants should respond.

The move toward continuous markets makes resilience a priority: longer operating windows require updated exception management, service continuity, and control frameworks, alongside a willingness to revisit the settlement-timing assumptions embedded in limits and buffers.

The advance of digital technology makes interoperability essential. As traditional, tokenised, and native digital assets coexist, participants need connectivity across central counterparties, custodians, and settlement venues, and the integrated custody relationships that make collateral genuinely mobile across them.

The growing importance of data and intelligence makes timely, automated decision-making a necessity — with AI increasingly driving rapid and comprehensive insights into asset availability, eligibility, and intraday requirements.

For BNY, these priorities converge in collateral infrastructure that brings resilience, interoperability, and intelligence together across increasingly interconnected liquidity, financing, and collateral ecosystems. As market structures continue to evolve, these capabilities will become critical in supporting efficiency and adaptability across the financial ecosystem. ■

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Digital collateral mobility: Unlocking non-cash variation margin

Martin O'Connell, Solutions Architect at HQLA^X, explores the importance of digital collateral mobility, noting that the objective is not to create a new market structure, but to make non-cash collateral usable in a workflow that is frequent, time-sensitive, and operationally repetitive

The International Swaps and Derivatives Association's (ISDA's) recent work on eligible variation margin collateral highlights a familiar conclusion: firms may hold suitable high-quality securities, but operational friction still prevents those assets from being used efficiently for non-cleared derivatives. Digital collateral mobility can close that gap by making non-cash variation margin (VM) faster to settle, easier to substitute, and more reliable to recall.

Variation margin is a simple concept with demanding operational requirements. When market prices move, collateral should move quickly enough to protect both counterparties. In practice, the collateral that moves fastest is not always the collateral that is most efficient to deliver. Cash is familiar and easy to process, but it can be scarce, expensive, and poorly aligned with the available asset profile of many buy side firms. High-quality securities are often available, but they remain difficult to mobilise quickly across different custodians.

ISDA's August 2026 paper frames this as both an eligibility and an operating model question. Expanding the range of eligible VM collateral matters, but eligibility alone is not enough if onboarding, optimisation, substitution, servicing, and settlement remain slow or uncertain. Recent industry discussion has also tested whether instruments such as tokenised money-market funds could broaden the eligible collateral set.

For the time being, however, many of these instruments remain beyond the scope of what receiving banks can typically refinance, limiting near-term uptake. The more immediate opportunity is therefore to make securities that are already eligible easier to move, reuse, and recall.

From collateral eligibility to collateral mobility

For many firms, the operational model for securities collateral still reflects a fragmented market structure. Assets may be held at a preferred custodian, in a domestic central securities depository (CSD), through a global custodian, or at a triparty agent. Moving those assets to satisfy an OTC margin call generally requires cross-custodian settlement which must take account of cut-off times, multiple custodian chains, and sequencing across several parties. The process works eventually, but it is often too slow or too uncertain for a market that increasingly requires real-time exposure management.

Digital collateral mobility addresses this problem by changing what has to move. Securities can remain within existing custody and safekeeping arrangements, while ownership is transferred on a digital collateral ledger. The underlying asset does not need to move across custodians each time a margin obligation is settled. Instead, the ownership record changes at a precise moment in time, with a digital collateral record acting as the operational link between the asset, the giver, and the receiver.

The objective is not to create a new market structure for its own sake. The objective is to make non-cash collateral usable in a workflow that is frequent, time-sensitive, and operationally repetitive. Variation margin is a natural use case because the settlement requirement is clear, the timing pressure is real, and the benefits of reducing friction are immediate.

Faster settlement without forced cash usage

The first benefit is faster settlement. If ownership can transfer on-ledger in near real time, participants can satisfy VM calls using securities that would otherwise be operationally trapped. This reduces the need to fall-back to cash simply because cash is easier to move.

For dealers, faster settlement improves access to securities collateral and supports more efficient reuse where permitted. Collateral received on-platform can be reused in approved triparty or other collateral workflows without leaving the digital

collateral environment. For the buy side, the benefit is the ability to meet VM obligations without unnecessary cash drag.

Faster settlement also improves certainty. Traditional settlement chains create timing mismatches, settlement fails, and give-before-you-get exposures. Delivery-versus-delivery substitution can remove much of this uncertainty. If one security is being recalled and another is being delivered, both ownership transfers can be synchronised. Participants do not need to over-collateralise while waiting for one leg of the substitution to complete.

Why recall confidence is essential for the buy side

For buy side firms, recall confidence is essential. Fast delivery is not enough if the asset cannot be returned when the portfolio manager or collateral team needs it. Funds cannot treat securities as an efficient source of VM if recall depends on external settlement chains, manual intervention, or a long onward reuse chain outside their control.

A controlled on-platform reuse model can address this concern. The receiver may be able to reuse the securities, but only through agreed platform workflows. That keeps the asset within a short reuse chain and avoids unnecessary external settlement. When the giver needs to recall the security, the return and replacement delivery can be coordinated through the same digital rails used for the original VM transfer.

This is the key alignment point. Dealers want collateral that can be reused efficiently. Buy side firms want predictable recall and operational control. A platform model that supports reuse, but constrains it to transparent and controlled workflows, can satisfy both requirements. The receiver can make productive use of the collateral, while the giver can be confident that recalls and substitutions will not be delayed by avoidable market-level settlement.

Integration with existing market practice

Adoption will depend on whether digital collateral mobility feels like an extension of existing collateral operations rather than a parallel market structure. Many buy side firms do not want to build a digital asset operating model from scratch simply to post securities for VM. They want their custodians, advisers, and collateral platforms to connect using familiar instruction flows, reporting standards, and account structures.

That is why standard messaging and custody-chain preservation are important. A fund may instruct through its existing custodian or adviser. The custodian may hold assets in fund-specific accounts, support the creation of digital collateral records, and provide reporting back to the fund or depositary. The underlying securities remain within a regulated custody structure, while the digital layer provides the ownership transfer and orchestration needed to settle VM more efficiently. Buy side financial institutions exploring how this model could apply to their own VM workflows should engage with HQLA^{X} to understand how digital collateral mobility can be integrated with existing custody, advisory, and collateral management arrangements.

For the sell side, the same principle applies. A dealer should be able to receive securities collateral in a form that satisfies the relevant documentation, supports title transfer where required, and can be reused within agreed constraints. The model should not weaken legal certainty or collateral eligibility; it should improve the speed and precision with which eligible collateral is delivered and managed.

From operational efficiency to strategic advantage

The commercial case becomes stronger when VM is

considered alongside broader collateral requirements. Firms are under pressure from shorter settlement cycles, intraday liquidity demands, real-time risk monitoring, and the need to optimise collateral across multiple counterparties. A digital collateral mobility layer can help address these pressures by reducing unnecessary settlement movements, lowering operational risk, and making collateral available when and where it is needed.

For buy side firms, the strategic benefit is optionality. A fund can continue to hold high-quality assets with its preferred custodian, but still use those assets more dynamically to meet margin calls. It can reduce reliance on cash, avoid unnecessary collateral transformation, and maintain better control over security-level inventory. For dealers, the benefit is a more predictable source of eligible collateral, received with clear ownership and capable of being channelled into reuse workflows where permitted.

There is also a resilience argument. If securities can be mobilised outside traditional custodian cut-off times then firms can reduce the buffers they hold against settlement uncertainty. In stressed markets, that can be the difference between using collateral efficiently and being forced into costly liquidity actions at short notice.

The next phase of collateral infrastructure

Digital collateral mobility should not be seen as a replacement for custodians, CSDs, triparty agents, or existing legal frameworks. Its value lies in connecting those structures more effectively. Tokenisation or digital representation is only one part of the story.

The more important capability is orchestration: coordinating ownership transfer, settlement conditions, substitutions, recall controls, and reporting across multiple participants while preserving the integrity of the underlying custody model. HQLA^{X} operates at the centre of this operating model, enabling participants to achieve the benefits of a digital collateral operating model without re-building their existing business processes. That is the opportunity for non-cash VM. Market participants do not need a more complex collateral process; they need a faster and more reliable one.

"Firms that solve the mobility problem will be better placed to reduce cash drag, improve collateral velocity, lower operational risk, and respond to margin calls with greater precision"

By decoupling ownership transfer from unnecessary cross-custodian movement, digital collateral mobility can make securities a more practical alternative to cash for OTC VM. By supporting controlled reuse and atomic substitution, it can also give the buy side confidence that securities delivered today can be recalled tomorrow.

The industry discussion on eligible VM collateral is therefore only the starting point. The more important question is how collateral will move. Firms that solve the mobility problem will be better placed to reduce cash drag, improve collateral velocity, lower operational risk, and respond to margin calls with greater precision.

In a market moving towards real-time settlement and more intensive liquidity management, digital collateral mobility is likely to become a core market infrastructure capability. ■



The end of the inbox era: Leveraging AI to solve the collateral communication crisis

Neil Murphy, product owner, OSTTRA triResolve Margin, reviews the fundamental shift toward a more resilient and optimised financial ecosystem

For over 20 years, the collateral management industry has chased the holy grail of 100 per cent straight-through processing (STP). We have connected upstream and downstream systems and built automated calculation engines. Yet, for a significant portion of the market, a persistent bottleneck remains: the manual email inbox.

Despite the rise of structured margin call messaging via Acadia, a vast volume of tasks — margin call negotiations, dispute resolutions, and collateral proposals — are still live within fragmented email chains.

This 'inbox era' of collateral management is characterised by manual data entry and extraction, the constant toggling between systems, and the inherent operational risk of human error.

To truly deliver business-optimised workflows, we must bridge the gap between unstructured communication and structured data. The solution lies in the strategic integration of artificial intelligence directly into the margin workflow.

The friction of fragmented workflows

The current burden on collateral teams is not just the volume of calls, but the medium of communication. When a margin call is sent, the 'truth' of that transaction immediately splits.

The financial data sits within a platform, while the negotiation — the 'why' behind a dispute or the 'what' of a collateral pledge or substitution — resides in a trader's or analyst's inbox.

This fragmentation creates a hidden manual workflow. Analysts spend hours each day performing what is essentially high-stakes data entry: reviewing their inbox queue, searching for a specific thread or update, opening attachments and reading through email chains to identify counterparty intent, and then manually typing those figures back into their margin system. This process is not only inefficient, it is a breeding ground for settlement failures and operational risk.

Bridging the gap with AI-driven automation

Business optimisation is about more than just speed; it is about cognitive offloading. By integrating AI to deliver automated email analysis, we can transform the collateral platform from a mere recording tool into an intelligent co-pilot.

The evolution of this workflow begins with contextual integration. Rather than forcing a user to leave the margin platform to check their email for margin call updates, the OSTTRA triResolve Margin system can now pull the relevant email correspondence directly into the margin dashboard.

Using intelligent mapping, the system matches counterparty emails to specific workflow events (such as margin calls or interest calculations) with surgical precision.

Once the data is centralised, the system uses AI to perform the heavy lifting through intent recognition. It analyses the body of an email to determine if a counterparty has agreed or disputed a call, providing a plain-English summary.

More importantly, it utilises smart pre-population where AI extracts key data points — such as agreed amount, notional, ISIN/CUSIP, currency, and settlement dates — to automatically update the required workflow fields.

This shifts the user focus from manual data entry to monitoring an exceptions-based workflow, effectively

adding value. Instead of building the transaction from scratch, the user simply verifies the AI-generated suggestions against the displayed email thread. This expert approval approach ensures that while the machine provides the speed, the human retains the final authority.

Optimising the client experience: Why it matters

How does this make life better for the client? The benefits are reflected in four core pillars:

1. **Reduced operational drag.** By eliminating the inbox shuffle, teams can handle higher volumes of margin calls without increasing headcount. This allows firms to scale their operations efficiently during periods of market volatility.

2. **Mitigation of human error.** Manual data entry is inherently risky. Automating the extraction of margin calls/responses directly from the source text significantly reduces the likelihood of fat-finger errors and subsequent settlement breaks.

3. **Enhanced audit trail.** When the entire history of a negotiation is captured within the platform, the audit trail is seamless. There is no longer a need to reconstruct what happened from archived emails months after the fact.

4. **Cost.** Increased scalability and reduced risk of human error benefit the bottom line directly.

Who stands to gain?

While automation is a universal goal, certain market participants will find this AI-driven capability particularly transformative. Regional banks who face a large number of smaller, non-automated counterparties are obvious beneficiaries. Furthermore, investment managers and hedge funds often cite a lack of automation when trading with major brokers and futures commission merchants for products including repo, OTC cleared, and exchange traded derivatives — which traditionally reside outside of automated messaging networks, including Acadia.

In these cases, firms often face a diverse range of counterparties, or find their broker is not onboarded to industry messaging utilities and still rely on email for margin negotiations.

Furthermore, firms managing complex collateral portfolios — where substitutions and interest statements are high-volume — will see the greatest reduction in manual labour and the most significant improvement in their daily operational cycle.

A foundation of trust and governance

It must be acknowledged that AI is only as valuable as the trust placed in it. A business-optimised workflow must be a secure one. This necessitates an AI framework built on strict governance: ensuring no client data is exposed to external vendors for training and adhering to international standards like ISO 42001.

The goal is not to replace the human element of collateral management, but to liberate it. By removing the friction of manual email processing, we allow collateral professionals to focus on what truly matters: managing risk, optimising liquidity, and strengthening counterparty relationships.

The transition from the ‘inbox era’ to the ‘intelligence era’ is not just a technological upgrade; it is a fundamental shift toward a more resilient and optimised financial ecosystem. ■


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How State Street is building the infrastructure for digital collateral markets

Cin Hau, Alpha Collateral Services at State Street, explores how digital assets are changing expectations of the market, touching on 23/5 trading and creating the foundations for a future global settlement model

Financial markets have historically operated according to the schedules of exchanges, banks, and settlement systems. Clients have built their funding, investment, and collateral processes around these fixed operating windows, with collateral calls, settlements, and decision-making concentrated during business hours.

Digital assets are changing these expectations. Tokenised funds, digital cash, and tokenised securities can move almost continuously, creating the possibility for clients to mobilise assets more quickly, access liquidity when needed, and respond to market events outside traditional market hours.

For State Street, the challenge is not simply extending operating hours. Clients still need the safety, oversight, and controls that underpin institutional markets.

The objective is therefore to build digital infrastructure that allows traditional and tokenised assets to work together seamlessly, delivering greater flexibility without increasing operational risk.

In the nearer term, this may be experienced as a 23/5 operating model, providing near-continuous weekday access while maintaining a controlled window for reconciliation, maintenance, and resilience.

For collateral, the focus is on helping clients move collateral faster, optimise asset usage and access liquidity more efficiently, while ensuring that the people, processes, and governance supporting these activities remain robust.

Collateral is a strong use case because margin obligations can arise quickly, while eligible assets may sit across custodians, markets, and legal entities. A tokenised money market fund (MMF) or government bond could theoretically be pledged at any hour, but it still requires custody, valuation, eligibility assessment, haircuts, concentration checks, settlement evidence, and reporting. Tokenisation can improve mobility, transparency, and programmability, but the token does not remove these obligations.

The State Street Digital Asset Platform brings together custody, tokenisation, compliance, digital cash, wallet management, blockchain connectivity, data services, reporting, and analytics. Collateral+ connects collateral operations, custody, funding, and optimisation across custodial networks. Together, these capabilities aim to link the digital representation of an asset with the institutional processes that make it acceptable as collateral.

The business and operational impact

For collateral operations, 23/5 changes the operating model from a sequence of regional business days into a near-continuous service. Work can no longer depend on one team completing every stage before its local close.

Handover between regions becomes a core control, with clear ownership of open margin calls, substitutions, settlement exceptions, and unresolved eligibility issues. The daily maintenance window must also be planned so that critical activity is not left without support.

Operations teams would spend less time initiating routine movements manually and more time supervising automated workflows, resolving exceptions, and confirming that digital and traditional records remain aligned. Smart contract-driven eligibility checks and substitutions can accelerate processing, but exceptions still require accountable human review. Procedures must therefore define when automation

may proceed, when an item is stopped, who can override a rule, and how that decision is recorded.

"Where full real-time processing is not yet possible, software will make the boundary visible and manage queues safely through the 23/5 operating window"

Reconciliation also becomes more continuous. A distributed ledger may provide an immutable transaction record, but internal books, custody records, valuation sources, clearing systems, and client reporting must still agree. A hybrid model is therefore likely to remain important for the foreseeable future, with digital networks and traditional books and records operating together rather than one immediately replacing the other. Operations need timely visibility of transaction status, failed movements, asset encumbrance, and available inventory. The practical benefit is faster collateral mobilisation; the operational challenge is managing it safely across time zones and systems.

For finance and treasury functions, more mobile collateral can improve the use of liquidity and high-quality liquid assets. Near-real-time information on inventory, funding requirements, and margin calls can support earlier decisions on whether to deliver cash, conventional securities, tokenised securities, or tokenised fund units. The benefit is a broader, more visible inventory set and more timely allocation decisions across both traditional and digital assets.

Finance controls must expand to cover the full digital lifecycle. Accounting treatment, valuation, income, fees and balance sheet classification must remain consistent whether an instrument is tokenised, represented by an underlying traditional asset, or digitally native.

Finance teams need a common data model so that digital positions do not become a separate ledger that is difficult to reconcile with the general ledger, fund accounting, and client books.

Look-through information for tokenised MMFs remains important because haircuts and eligibility should reflect the underlying risk rather than only the digital wrapper. This is not unique to tokenisation, but digital structures make consistent data and transparency across the wrapper and underlying assets even more important.

Treasury functions and collateral optimisation become more closely connected. Forecasting tools can identify upcoming margin requirements and recommend suitable inventory based on eligibility, liquidity, funding cost, and concentration limits. This can improve liquidity planning, widen the usable inventory view and support earlier funding decisions.

Risk and compliance functions must also monitor cyber, anti-money laundering (AML), Know Your Customer (KYC), counterparty and network risks, alongside established market and operational risks.

The additional control investment is therefore part of the value proposition: faster movement is paired with faster evidence, clearer escalation, and stronger oversight.

Software will move from batch-based, market-specific processing toward event-driven and near-real-time

architecture. A margin call, valuation update, eligibility change, or settlement confirmation will trigger the next controlled action without waiting for a scheduled end-of-day file.

Where full real-time processing is not yet possible, software will make the boundary visible and manage queues safely through the 23/5 operating window.

State Street's solution is designed to connect collateral across traditional custody networks, private distributed ledger technology (DLT) environments, and public permissioned networks through integration layers and standard interfaces.

These connections bring together Collateral+, the Digital Asset Platform, custodians, triparty agents, clearing venues, order management systems, and finance platforms.

A common asset and transaction model gives each system a consistent view of the position, owner, valuation, restriction, and settlement status, allowing the same collateral journey to be controlled across multiple networks.

State Street is addressing this by moving eligibility schedules, haircuts, concentration limits, substitution logic, and approval thresholds from manual procedures into configurable, controlled rules and, where appropriate, smart-contract logic.

The solution combines these rules with version control, approval workflows, effective dates, testing, and an auditable record of every automated decision. This allows a rule to be changed once and applied consistently across channels while preserving accountable review and governance.

Resilience and exception management are designed into the platform. A 23/5 service requires monitoring across regions, clear alerts, idempotent processing to prevent duplicate movements, recovery from partial failures, and controlled maintenance windows.

Dashboards distinguish business exceptions from technical failures and show who owns the next action. Human override is limited, permissioned, and fully recorded.

"The transition to digital collateral should begin with the problems clients and operating teams need to solve, then apply the technology to clearly defined journeys"

Security and identity controls operate across wallets, users, legal entities, and networks. Software enforces segregation of duties, role-based access, transaction limits, and approval policies while supporting AML and KYC requirements. Data lineage connects the token to the underlying asset, custody account, valuation source, and collateral agreement, creating the evidence needed for operations, finance, clients, auditors, and regulators.

The transition to digital collateral should begin with the problems clients and operating teams need to solve, then apply the technology to clearly defined journeys. Priorities may include mobilising tokenised MMF units, processing substitutions more quickly, and meeting intraday margin calls during periods of liquidity pressure.

Each journey needs an agreed operating owner, finance treatment, eligibility model, technology integration, exception path, and control evidence.

Early-adopter programmes can then test whether the end-to-end process works across normal activity, market stress, and system failure scenarios.

"State Street is bringing together Collateral+, the Digital Asset Platform, custody, digital cash, common data, and global operations"

Success should be assessed not only by whether a token moves, but by whether the asset is available when needed, the movement settles correctly, books and records remain aligned, exceptions are resolved promptly, and the client receives reliable reporting. These foundations are necessary for a controlled move from conventional processing toward 23/5 and potentially, over time, broader 24/7 collateral mobility.

The role of Collateral+ and the Digital Asset Platform

Collateral+ provides the collateral workflow, inventory, funding, and optimisation layer, while the Digital Asset Platform provides digital custody, tokenisation, wallet, compliance, and blockchain connectivity.

The strategic value comes from integration between them. Analytics can identify a requirement and suitable asset; controlled digital infrastructure can then support mobilisation; and custody, accounting, and reporting services can record the outcome. Integration with platforms can further connect onboarding, workflow, and order management. The objective is not a blockchain-only operating model, but a hybrid architecture in which tokenised and traditional assets use common controls and data.

This is particularly important for institutional clients that require segregated custody, auditable records, formal governance, and detailed reporting.

Tokenisation is reshaping the entire operating model. It enables operations teams to focus on continuous oversight and exception management; provides finance and treasury with more timely and integrated insights; extends established risk and compliance controls into digital environments; and drives the shift towards event-driven, interoperable, and resilient technology platforms.

A 23/5 model is a practical transition from global support to global settlement. Today, State Street can support collateral activity across regions and time zones, but the underlying assets, cash, and market infrastructures used for settlement are not always available continuously.

To bridge this gap, State Street is bringing together Collateral+, the Digital Asset Platform, custody, digital cash, common data, and global operations.

This integrated model enables collateral to be mobilised, transferred, and managed more seamlessly across markets and time zones, moving beyond simply supporting activity to facilitating settlement itself.

By increasing the mobility and programmability of collateral while maintaining institutional controls, governance, and trust, State Street is helping create the foundations for a future global settlement model. ■

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Grands Moulins de Pantin
9 rue du Débarcadère
93500 Pantin
France

Christian Oger
Head of Market and Financing Services Strategic Sales, Securities Services

Valery Bloud
Co-Head of Market and Financing Services Strategic Sales, Securities Services

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Nathaniel Wuerffel
Head of Market Structure &
Global Collateral Platform Product Lead
nathaniel.wuerffel@bny.com

Cale Newhouse
Senior Director, Product Management, Global Collateral
cale.newhouse@bny.com

Timothy Shanahan
Head of Sales & Relationship Management, North America
Global Collateral, Global Clearing
timothy.shanahan@bny.com

John Templeton
Head of Sales & Relationship Management
Securities Finance
john.templeton@bny.com

www.bny.com

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For more than 20 years, Comyno has been combining deep securities finance expertise with innovative technology. Specialising in Securities Finance, Repo and Collateral Management, we help financial institutions simplify complexity, automate processes and optimise their operations.

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Zimmerweg 6
Frankfurt am Main
D-60325, Germany

Frank Becker
COO & Head of Sales
+49 (0)151 4249 0801
frank.becker@comyno.com

Benjamin te Kaat
Sales Executive
+49 (0)151 404 21685
benjamin.tekaat@comyno.com

www.comyno.com

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David Lewis
Senior Director, Securities Finance Matching Platform & Market Data
david.a.lewis@fisglobal.com

Igor Salzgeber
Global Co-Head Securities Finance & Collateral
igor.Salzgeber@fisglobal.com

Nancy Steiker
Global Co-Head Securities Finance & Collateral
nancy.Steiker@fisglobal.com

US: +1 877 776 3706
EMEA: +44 20 8081 3840
APAC: +63 2 8802 6299

www.fisglobal.com

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HQLA^X is an innovative financial technology firm that leverages Distributed Ledger Technology (DLT) to bring game-changing efficiencies to the securities finance and repo industry

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Richard Glen
Solutions Architect
richard.glen@hqla-x.com

Charlie Amesbury
Sales
charlie.amesbury@hqla-x.com

www.hqla-x.com

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Eileen Herlihy
Global Head of Sales, Trading Services
+44 207 1348 626
eileen.herlihy@jpmorgan.com

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OSTTRA triResolve Margin provides much more than a collateral workflow solution. By enabling STP of calls from issuance through to pledge and settlement, customers can complete margin calls in seconds, not hours. The unique integration with OSTTRA triResolve means users gain access to their counterparty network. This connectivity delivers valuable insight into portfolio differences, facilitating proactive investigation of discrepancies and prompt dispute resolution.

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Sam Edwards
Managing Director, Head of Collateral Services
sedwards1@statestreet.com

www.statestreet.com

Vermeg is a leading provider of specialized software solutions for the financial services industry. With over 30 years of expertise, Vermeg is covering two main market segments in financial services: Capital Markets and Insurance.

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General Manager, Capital Markets Europe & UK

Michael Carignano
Head of Market Innovation, Capital Markets Europe & UK

Wassel Dammak
Strategic Account Director, Capital Markets Europe & UK

Asma Belgaied Hassine
Product Deputy Director, Capital Markets Europe & UK

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Traditional securities. Tokenised assets. Cash and money-market tokens. One collateral lifecycle, one eligibility check, one optimisation, one view of what you own and where it can move. Whether the settlement rail is a CSD or a DLT network is a decision, not a project.

The Vermeg Collateral Stack

O1 · Decision

Collateral Engine

Agreements, exposures, eligibility & the full collateral lifecycle across asset classes.

O2 · Optimisation

Optimisation Engine

Cheapest-to-deliver across cost, haircut, liquidity, and now, settlement route.

O3 · Settlement

Settlement Engine

Orchestrates instructions across traditional infrastructures and DLT networks.

Settlement Rails

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