Nasdaq

Making the Case for Tokenized Collateral

What industry steps will it take to realize the benefits of tokenization?

A Nasdaq Report Created in Partnership with the ValueExchange

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Executive Summary

More than half of the global financial institutions we interviewed for this survey expect to be actively managing live tokenized collateral by the end of 2026.

This key statistic from our "Making the Case for Collateral Tokenization" survey is likely to trigger a flood of reactions across the market ecosystem. From impatient enthusiasm to profound skepticism, the expectations of leading industry practitioners across the world vary significantly on the opportunity for tokenized collateral in 2026 and beyond, perhaps creating more confusion than consensus.

However, what is clear is that industry interest in tokenized collateral has risen consistently over the last three to four years to become the No. 1 use case for distributed-ledger technology (DLT) today in the institutional capital markets.[1] Against a backdrop of manual processing, high operating costs and settlement risk, one in every two firms is considering how DLT can help derive complete certainty of their collateral movements and enable levels of mobility and utilization that are not currently possible in today's legacy world. Buoyed by recent announcements by the Securities and Exchange Commission (SEC) and Commodities and Futures Trading Commission (CFTC) in the U.S. and by the European Central Bank, firms are moving tokenization plans from "if" to "when" and creating a growing opportunity cost for those not involved in this transformational shift.

But for all this potential, what does collateral tokenization offer in practice? At a topline, the biggest organizations stand to unlock up to $340 million in increased interest earnings annually from tokenized collateral. Building on the absolute certainty of delivery that tokenization can enable, firms expect DLT to help them realize new savings by mobilizing inactive, overnight collateral holdings and by eliminating billions of dollars in over-provisioning.

This report from Nasdaq and the ValueExchange explains the details of how collateral tokenization is evolving in reality today. Drawing on statistical findings from a global market survey, supplemented by interviews with leading specialists and industry working groups across the globe, our report captures all of the considerations and objections raised by evangelists and opponents of tokenization alike.

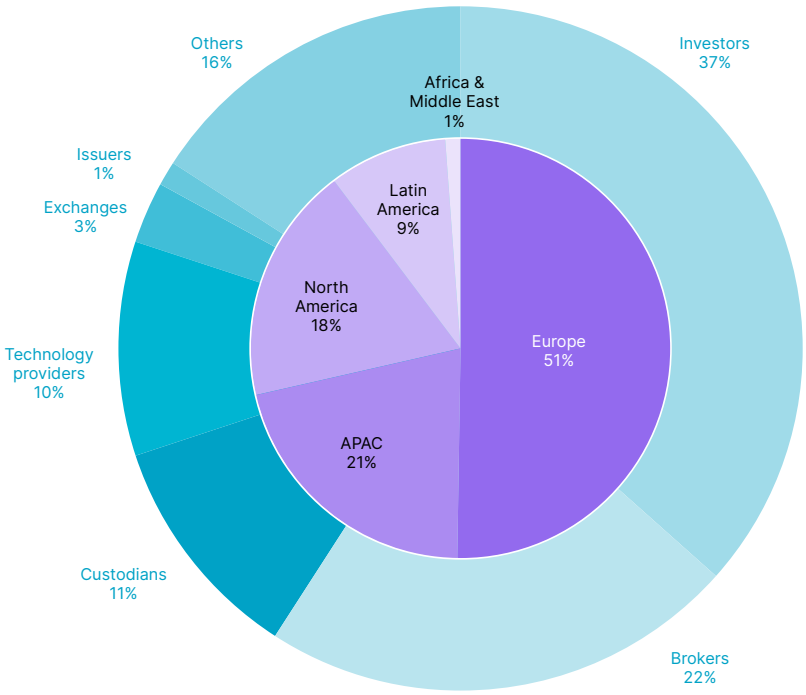
We explain how high-frequency traders (HFTs) and technology-led service providers are leading the charge today, while traditional investment houses are expected to follow a slower, more incremental adoption path of progress and core system change. We also analyze the enablers and criteria that must be met, specifically: Who tokenizes the collateral? For what purpose is it used? What legal and regulatory frameworks are necessary to support the transition and drive institutional adoption?

Bottom line

Inevitably, the tokenization of collateral will happen one trade and "one line at a time" (within industry collateral schedules). This report aims to provide a clear perspective on the journey to broad-based use of tokenization and serve as a guide to any firm looking to chart their own course in this critical space.

Methodology and Reach

The findings in this Nasdaq and ValueExchange report summarize the outputs of an intensive industry-wide survey conducted in Q3 2025. Sponsored by Nasdaq, in partnership with International Securities Lending Association (ISLA), International Swaps and Derivatives Association (ISDA) and International Securities Services Association (ISSA), and run by the ValueExchange, the survey drew on the views of 203 market participants globally. The respondents represent a wide swath of firm types in the ecosystem and demographic distribution of the survey was diverse: 15% from North America, 26% from Europe, 20% from the Middle East/Africa and 15% from Asia-Pacific, ensuring a global perspective on the future of tokenization.



To validate the statistical data and dig deeper into operational realities, the ValueExchange supplemented the survey findings with over 50 hours of debriefs with industry experts, specialized working groups and global regulators. This rigorous process allowed us to move beyond high-level sentiment to understand the specific risks, operational hurdles and legal complexities that firms face when moving tokenized collateral from the lab to the production environment.

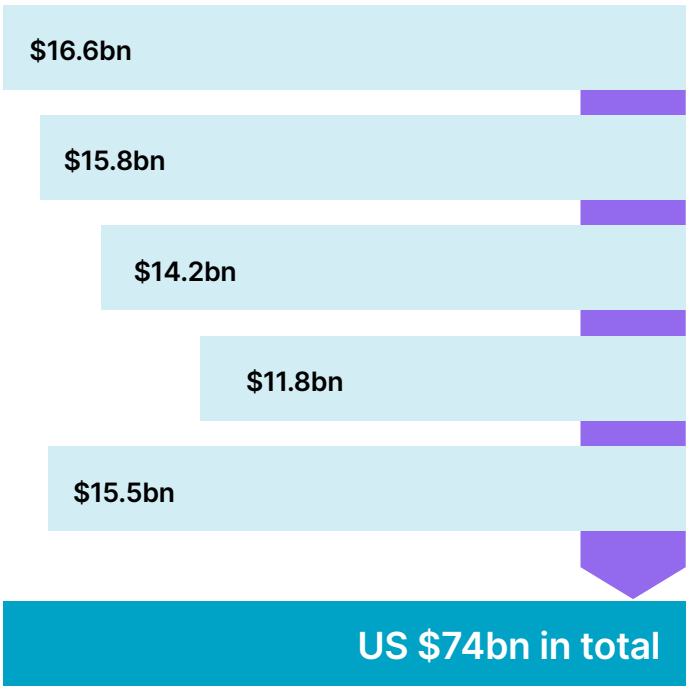
Tokenized Collateral: What if We Could Mobilize 25% of All Margin?

Why are firms across the world dedicating precious transformation and innovation resources to tokenization?

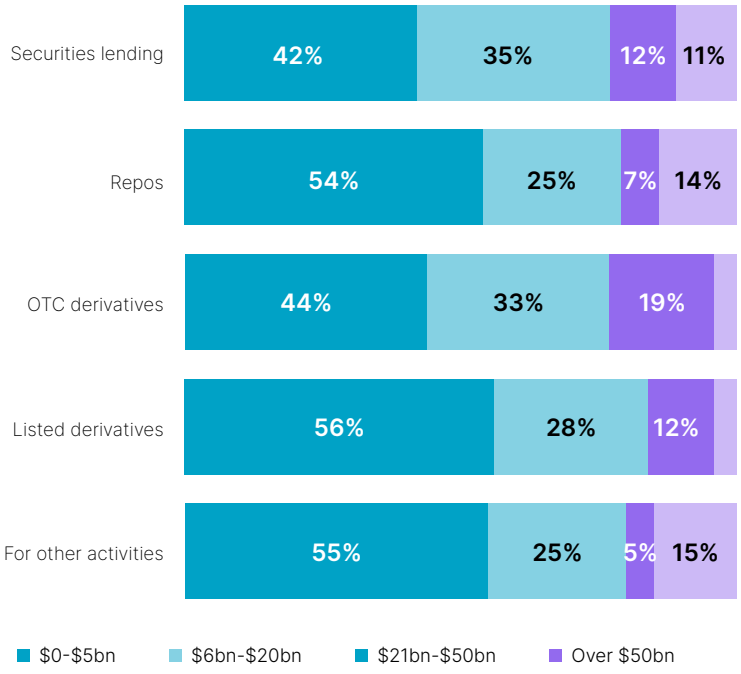
Today, the average firm manages approximately $74 billion in total collateral across all activities, from listed to over-the-counter derivative margining to repos and securities lending.

However, this management is plagued by friction. Operational costs for over-the-counter (OTC) derivatives and securities financing transactions (SFTs) have risen to represent 57% and 50% of total trade costs, respectively.

Average collateral pledged today per activity (USD)



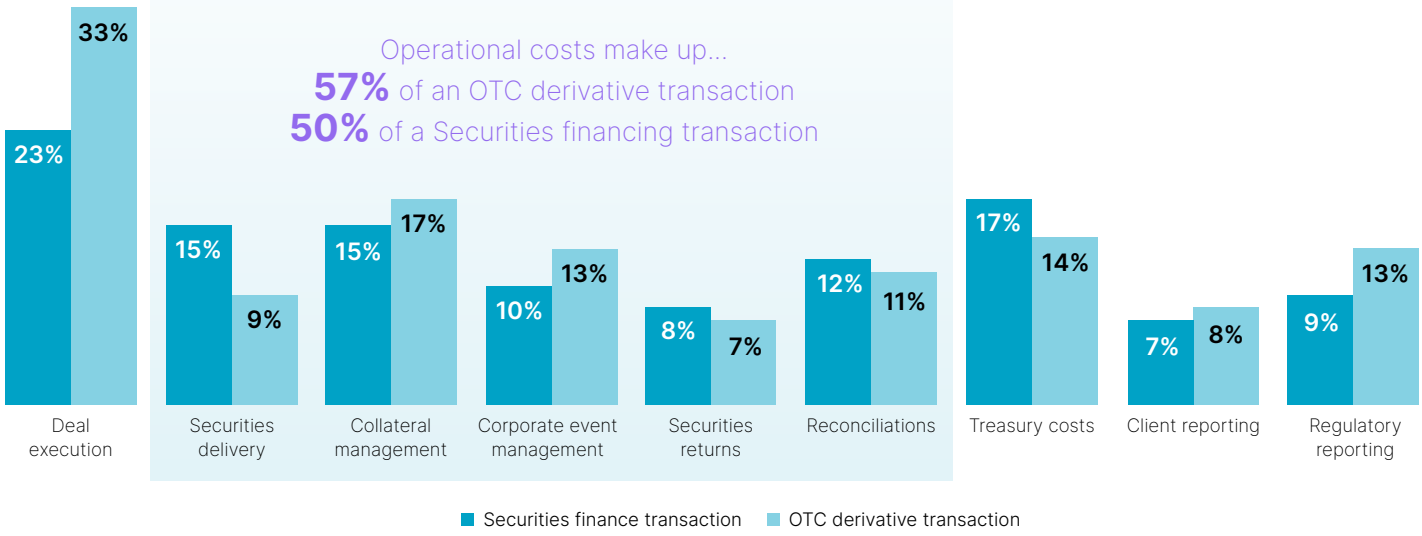
Distribution of collateral volumes



The collateral crisis: Operational frictions

Across the trade lifecycle (including delivery, eligibility management, corporate action processing, returns and reconciliation), firms face an "operational tax" that is **more than doubling the cost** of holding and moving collateral today.

Average breakdown of the costs of a transaction

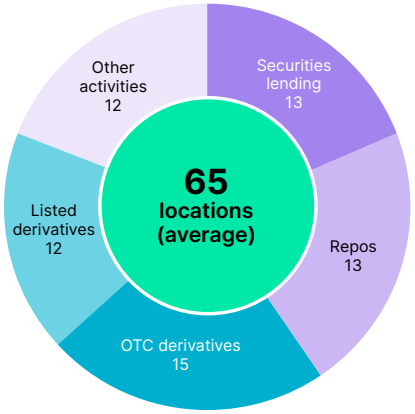


Fueling these operational costs is one central problem: manual processes that undermine delivery. **More than two-thirds (70%) of respondents face significant issues in settlement matching and delivery every day.** This makes it highly likely that at least one counterparty in every collateral move will face significant pressures in simply moving their cash or securities from one account to another. Firms simply do not have the confidence that their collateral will arrive because of manual-based risks and delivery, from matching to exception handling.

If firms have little confidence in one delivery, how is the typical firm to manage when they are faced with an average of 65 different custody locations? For a major Tier 1 bank, **this can translate into over 650 accounts**, multiplying settlement risks to the point where they become existential risks. The costs of complexity extend well beyond the back office.

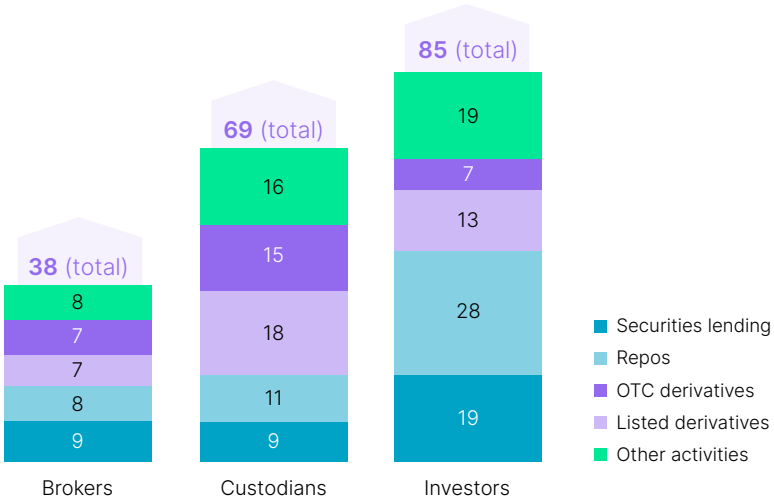
> "Tokenization is all about reducing the friction in the trade"
>
> – COO, Global prime brokerage

Average number of collateral locations per firm (custody locations)



A major Tier 1 bank with at least $100 billion in assets under management will have over 650 accounts

Average number of collateral locations per activity and segment



Corrective behaviors – a drain on balance sheets

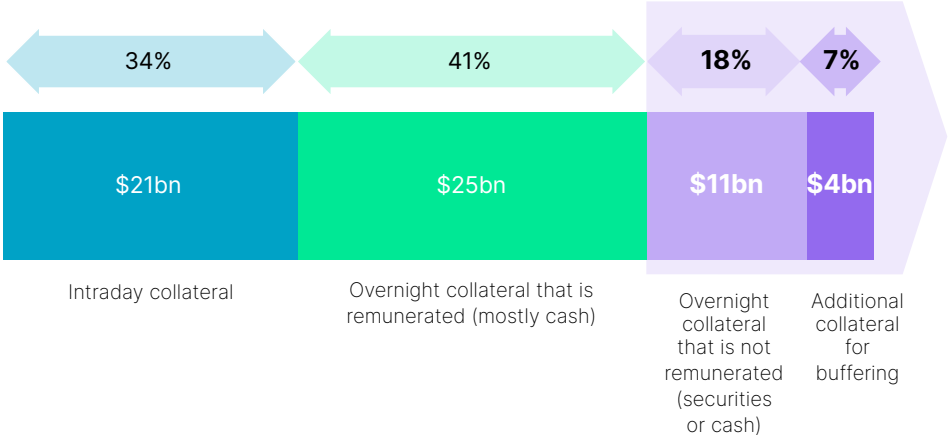
Collateral and margining are mission-critical for every financial institution. Thus, operational risks must be eliminated or mitigated at almost any cost. In order to keep the risk of default to a minimum, firms have employed two corrective solutions over time to ensure they do not face a worst-case default scenario:

1. **"Better early than late."** In practice this means that 35% of firms are posting more than half of their collateral overnight just to ensure that the collateral is in the right account in time for a margin-call in the morning. This is particularly relevant for cross-border transactions where complexity and time-zone differences are most acute (e.g., North Americans posting collateral in European venues).
2. **"Better too much than too little."** On top of the timing, the average firm is posting up to 7% more collateral than they need to just to ensure that there is sufficient funding in the margin account to cover for any failed deliveries.

As valid as these measures may be (given the prohibitive costs of the alternative), the challenge is that only a fraction of all this extra collateral is actually renumerated.

When these non-remunerated overnight postings (mostly securities) are combined with these excess buffers, approximately 25% of a firm's total collateral usage today earns **no returns** at all for the owner. This inefficiency is particularly painful during weekends and public holidays when liquidity is locked and settlement systems are traditionally closed. Bottom line, the opportunity cost of the industry's corrective behaviors is impacting one-quarter of all margin globally.

Average collateral treatment today



"These problems are bad on a normal weekday, but they are unacceptable over a weekend or public holiday"

– COO, Tier 1 investor

Tokenization delivers "certainty of delivery at a specific moment in time," serving as the catalyst for a wide-ranging domino effect across the organization.

Based on our survey, firms expect tokenization to help them avoid approximately 1 in 8 failed trades today (a 13.4% reduction). That this number is not 100% reflects the impact of the many practical considerations around adoption of tokenized collateral – not the least of all being the implications of running dual worlds of tokenized and traditional collateral (on an individual counterparty basis) for what may be decades to come.

The domino effect: How tokenization creates value

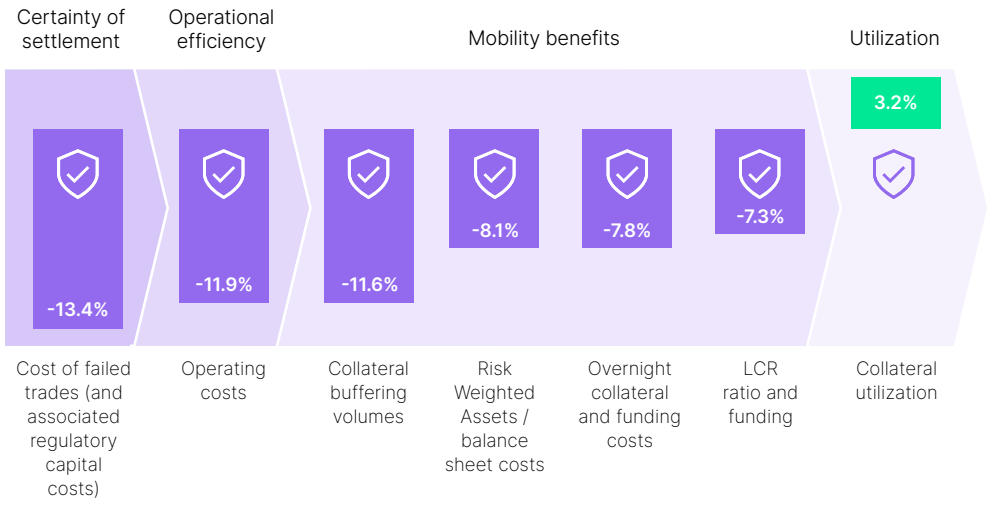
The elimination of 1 in 8 failed trades could create a domino effect of outcomes across firms' operations and treasury teams, multiplying the benefits of tokenization by:

- **Reducing operating costs 12%** through fewer exceptions, manual follow-ups and corrective measures across the trade.
- **Reducing collateral buffering 12%**, helping firms to gradually wind down the amount of excess collateral that they post today.
- **Improving the risk weighted asset (RWA) costs for banks 8%**, helping to transform costly free-of-payment (FOP) transactions into matched or delivery-versus-payment (DvP) movements.
- **Reducing overnight funding costs 8%**, enabling collateral to be lent or placed overnight and safely returned in the morning.

Most of all, it can mean a **3% improvement in collateral utilization**, unlocking greater returns for banks and for their asset owner customers.

If these benefits can be derived from avoiding only 1 in 8 trade fails, imagine the impact of broader DLT adoption that would lead to even fewer fails.

Average expected impact of tokenized collateral (% change per metric)



"Tokenization means 120 more hours in each week"

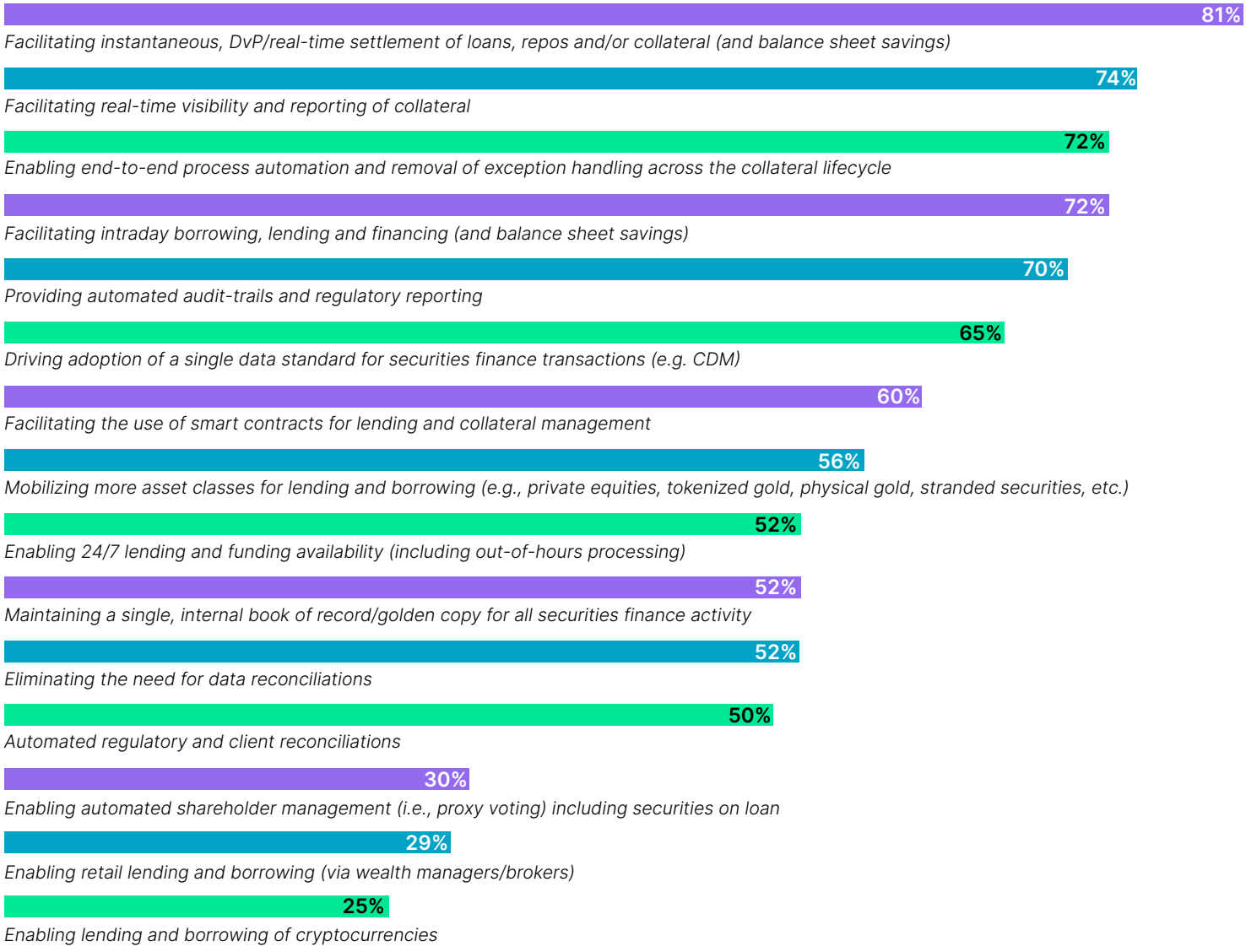
– Head of Trading, Tier 1 investor

The wider business case: A plethora of benefits

The main argument for tokenization may be anchored in the simple enablement of reliable, real-time settlements, but the business case extends to include a host of more qualitative benefits. In enabling greater mobility, tokenization can help improve the efficiency of intraday collateral, not just overnight collateral. Tokenization can also enable a level of trade-flow automation (including smart contract-based management of eligibility and substitutions, for example) that could remove or mitigate the manual operating costs cited above and hence significantly alter the economics of collateral movements.

The advantages extend to market stability, as well. By providing additional hours of liquidity management each week, in theory, tokenization reduces the risk of massive Monday-morning settlement crunches. In a crisis scenario, the ability to mobilize and settle collateral instantaneously across a DLT network provides a safety net that the current batch-processed, T+2 world cannot match.

% of respondents expecting tokenization to have a major role in realizing the following benefits



Quantifying the economic benefit

Given the huge range of possibilities, the complete economic case for tokenization is difficult to estimate. Many of the above costs vary widely by firm and by their trading activities, making an accurate assessment of these benefits complex.

However, in focusing solely on the benefits of mobilizing the 25% of collateral that is currently tied up in corrective and non-interest bearing measures, we can begin to see an economic case emerge based on firm size and daily collateral volume.

Our research categorizes firms into three tiers based on the value of their collateral pledged daily:

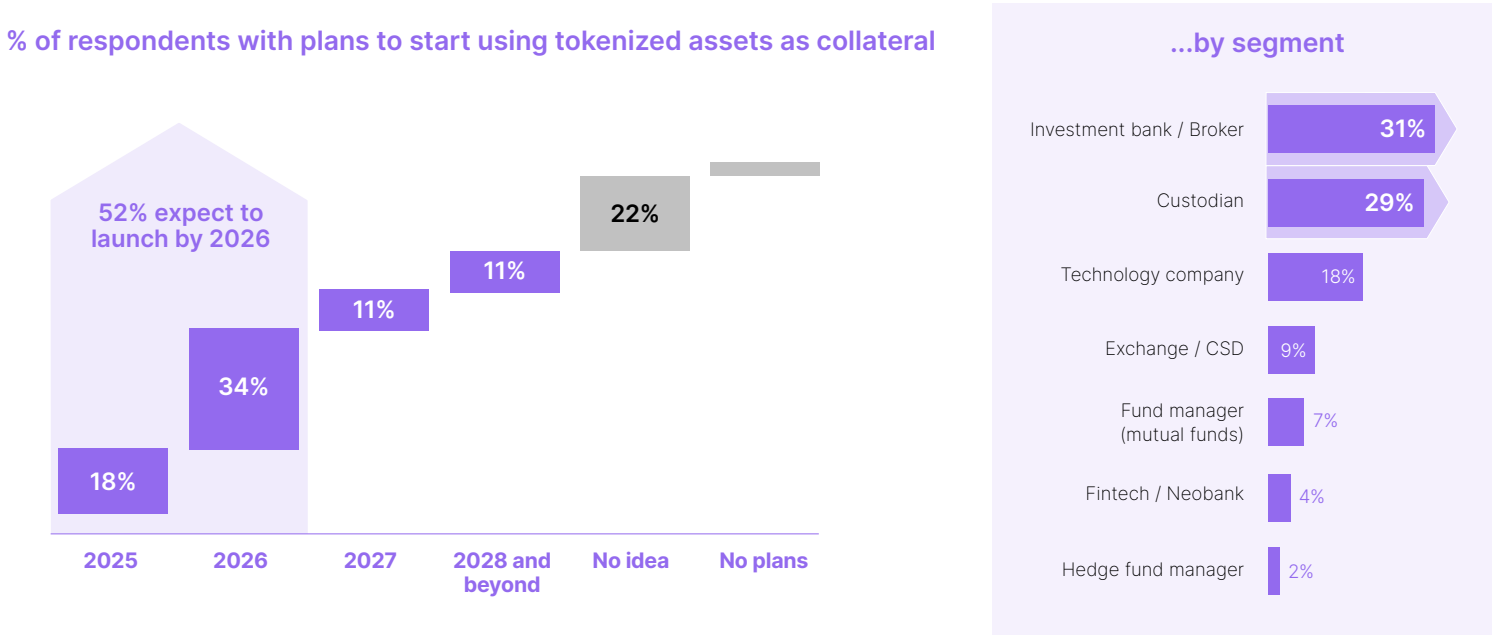
- **Tier 1 (>$100bn AUM):** These firms hold roughly $36.8 billion in excess or non-remunerated collateral. Tokenization is expected to mobilize $4.8 billion of this, resulting in an annual interest earning increase of **$346 million**.
- **Tier 2 ($20bn - $99bn AUM):** With $11.5 billion in idle collateral, these firms can expect an increase of **$190 million** in annual earnings.
- **Tier 3 (<$20bn AUM):** Smaller firms can expect a more modest but still significant gain of **$7.7 million**.

These figures assume a conservative interest rate environment but demonstrate that the value case for tokenization is robust across the entire spectrum of market participants. For the largest banks, the savings represent a material impact on their return on equity (ROE) and, in every tier, the case for tokenization appears highly compelling.

A very real path to adoption in 2026

The $340 million opportunity perhaps explains the urgency with which collateral is being tokenized today: **52% of firms expecting to start using tokenized collateral by the end of 2026**.

Led mainly by investment banks and custodians (the two sides of most OTC collateral trades), over 75% of the world's collateral givers and takers expect to be interacting with tokenized collateral at some point in the next three years, making this one of the most prominent change dynamics across today's capital markets. Based on the ValueExchange's research, **more people are expecting to invest in tokenized collateral than in T+1.**



Who, How and When? Unpacking the Business Case

As with all new technologies, DLT's benefits are being felt differently based on trading strategies, scale, transaction types and geographic location. Time will tell as institutionalization plays out and adoption accelerates with further opportunities unlocked.

	Who?	Which trade?	Where?	Which assets?	When?
Lead	**High-frequency trading firms (HFTs)**	**Repos**	**Domestic**	**Cash**	**Overnight**
Others	Prime brokers Central counter-party clearing houses (CCPs) Banks Asset managers	OTC derivatives Securities lending Listed derivatives	Cross border	Tokenized money market funds (TMMFs) High-quality liquid assets (HQLA)	Weekends Intraday

Who's benefiting the most now?

Based on our discussions, we believe that there are several levels or distinct "waves" of benefit, ranging from HFTs (who are already running 24/7 operations for crypto and who see volumes of "trapped" traditional securities as a drag on performance) to Tier 2 banks and asset managers, who are at present broadly resistant to the idea of round-the-clock liquidity management.

These groups are broken down as follows:

	HFTs	Prime brokers	CCPs	Tier 1 banks and asset managers	Tier 2 banks and managers
Characteristics	Managing high volume of inventory Already running 24/7 operations Highly aware of performance drivers and drags	Managing high volume of inventory Large users of triparty agents Service providers to HFTs	Managing client assets (most often as segregated) Margin efficiency is central to competitive differentiation Global client base	Large user of triparty agents High volumes of legacy technology/ processes Global exposures High sensitivity to margin efficiency/ utilization	Higher volumes of bilateral collateral trades Regionally or domestically focused Lower levels of business scrutiny around margin/ capital efficiency
Tokenization benefits	Collateral mobilization across the 7-day week; significant potential earnings gains to be had Alignment of 24/7 (crypto) margining with traditional securities Removal of weekend "guess-work" (from Fri to Mon)	Support for key clients Inventory mobilization highly compelling for internal case (but not client assets) Main focus on extended hours during the week (especially for cash) Unlikely to benefit from weekend and full overnight mobility	Reduced trade fails due to margin issues Increased margin efficiency moving toward more incremental, real-time margining Limited balance sheet improvements: most client assets are segregated	Portfolio manager empowerment: Tokenizing portfolio assets to be instantly pledged and used for financing can drive portfolio returns Fewer failed trades (and faster settlements) Growing use of TMMFs as collateral	Mobilization of bilateral collateral could be highly valuable Reduced operational risks (and cost of managing exceptions)
Challenges	Counterparty readiness (i.e., who to trade with on a weekend?)	Client legals: lack of common law precedents for token recovery Legacy technology platforms	Regulatory limitations on acceptance of tokens as collateral Time required to update eligibility schedules Limited acceptance of tokens as (backstop) collateral by central banks Loss of net investment income (on cash collateral)	Critical dependency on middle-office/ back-office providers, triparty providers and custodians Onward (counterparty) readiness Legacy technology platforms	Implementation: How to ensure that the integration of tokens into their infrastructures is seamless and largely invisible 24/7 staffing and oversight Overnight batch systems

To now, the path of realization has separated firms into waves of tokenized collateral beneficiaries:

- **Wave 1: HFTs, crypto traders and prime brokers:** These firms are focused on inventory mobilization and extended hours. They are the most aggressive today because they need to manage 24/7 exposures, often driven by their activities in the crypto and digital asset space.
- **Wave 2: CCPs:** Central counterparties benefit from reduced fails and risk reduction. However, they face significant regulatory limitations on the acceptance of tokens, making their adoption more complex.
- **Wave 3: Investors and banks:** This group will see benefits by tokenizing assets directly within their portfolios to instantly pledge and finance them. This "asset-to-pledge" workflow will drive the next generation of portfolio returns, although significant hurdles must first be overcome in staffing, technology and processes.

Which transactions are benefiting?

Currently, **30% of firms see repos as the highest priority for tokenization**, making them the primary target activity in the short term. Bilateral, broadly short-term, critically reliant on fixed income collateral and often traded by those who most understand capital efficiency, repos have all the key characteristics required for successful tokenization. Add to that the proven viability of tokenized repos (with over $9 trillion in monthly turnover processed by Broadridge's DLR platform, for example[2]) and you have an asset class that is already beginning to prove its worth.

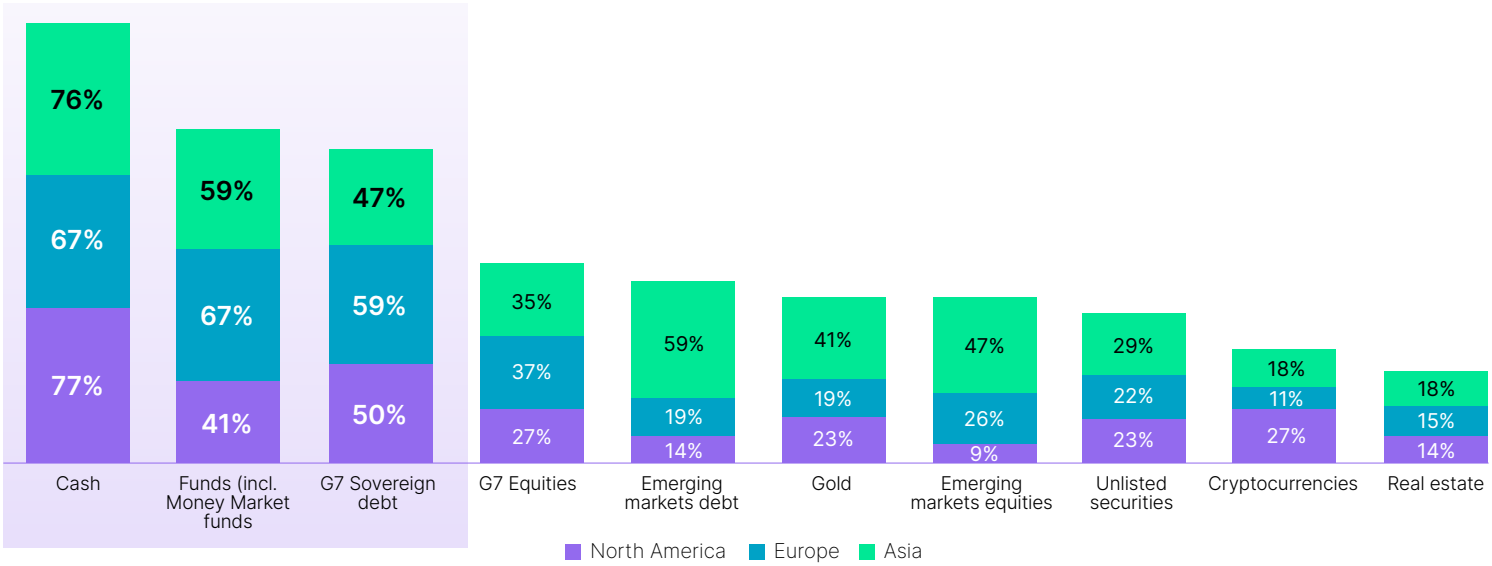
Derivatives, both OTC and listed, follow closely behind (with 23% and 10% of firms seeing these trades as a high priority for tokenization respectively). While prime brokers seem especially bullish on the prospects for tokenized derivative margining, the runway for listed derivatives margining is still long, owing partly to the time required for CCPs to evaluate and trigger any changes to their collateral schedules. As soon as the world's leading central banks begin to accept tokens as collateral in their backstop funding facilities, then we can expect these evaluations to begin in earnest.

What collateral to tokenize? Cash, MMFs and HQLA

In terms of asset classes, the tokenization of cash, money market funds (MMFs) and HQLA are the primary targets for at least 50% of our survey respondents in almost every region.

> "There isn't a case to tokenize every asset class"
>
> – COO, Tier 1 CSD

% of respondents in each region expecting to tokenize each asset class for use as collateral



Given the high volumes of cash used in variation margining (around 68% of all VM is cash), the scale of benefits to be derived from guaranteed, instant and round-the-clock delivery of cash is vast. Many are eager to see tokenized MMFs enter the digital money space as soon as possible, 66% of our respondents see this mobility being enabled by tokenized payment platforms (such as Fnality or the ECB's Trigger mechanism) in the short term and 63% turning to stablecoins (as Digital Asset's tokenized repo trades evidenced in H2 2025 using Circle, Brale and M1X's coins[3]). As many have also noted, these benefits can easily be realized through other, non-blockchain technologies (including upgrades to existing central bank payment infrastructures). With the U.S. Fedwire potentially looking to expand its operations to 24/7 coverage in 2027/2028, the outlook for faster, wholesale money movements is trending positive.

The fact that 60% or more European and North American firms see TMMFs as collateral in 2026 is a striking statement of intent for the year ahead (see box below) and is evidence of one of the largest ongoing bodies of work in the tokenization space today.

In the long term, the question shifts to will tokenization help to bring large volumes of emerging market, illiquid or private assets into the collateral world? The industry remains cautious about the underlying liquidity of these assets, with the near-term focus clearly on the most liquid, high-velocity assets that currently make up the lion's share of collateral liquidity today. The 59% of Asian firms that expect to use tokenized Asian debt in 2026 is, however, a core theme to be tracked.

The case for Tokenized Money Market Funds (TMMFs)

TMMFs are described as "the great opportunity of tokenization" for 2026.

While a small number of traditional money market funds ("2(a)7 funds" in the U.S.) are eligible at the major CCPs today, the viability of tokenized MMFs has yet to be proven in a collateral context. But with extensive work ongoing (under the leadership of the GDF and ISDA) and with Tier 1 fund managers launching TMMFs at a growing rate, we should expect significant progress to be made in bringing TMMFs into eligibility schedules in 2026.

Why? Because TMMFs are highly safe collections of assets and because tokenization allows investors to use their factionalized money market fund holdings as direct collateral without needing to redeem the shares for cash—a process that currently involves significant time delays and settlement risk. All the while, these holders continue to earn interest from their holdings; a win-win for fund managers, banks and brokers.

However, the adoption of TMMFs faces challenges. There is a critical reliance on near-real time KYC/AML onboarding at the fund's transfer agent for every counterparty, a process that would require extensive technology and process transformation for most providers. Many also question how many of the world's sovereign debt markets could provide sufficient supply of liquid, underlying bonds for TMMFs to hold. While USD-denominated government bond funds may be relatively easy, other markets may quickly prove too shallow.

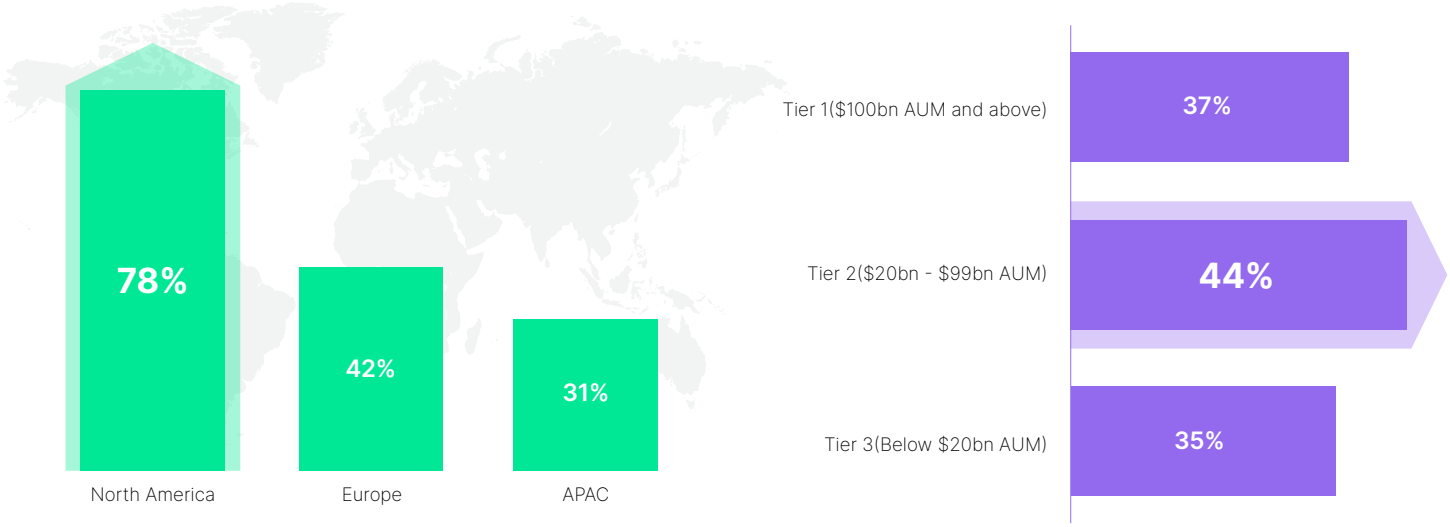
Where to tokenize? Domestic trades in the U.S. … for now

The most striking distinction in today's collateral markets is the divide between the speed and viability of tokenization in the U.S. and the rest of the world. The world's tokenization agenda is running at two speeds.

Fueled by continued innovation throughout 2025 (including live repo trades using U.S. Treasury Bills in July, November and December[4], a 22% growth in stablecoin usage and the SEC's "no action" approval of DTCC's tokenization platform), the American markets are changing at a rapid pace: 78% of North American firms expect to see their businesses significantly impacted by tokenization.

By contrast, those in Europe and in Asia-Pacific see a longer development path ahead. While the foundations are being laid in Europe (notably through the ECB DLT trials in 2024, Eurex/Clearstream's acceptance of tokens as collateral, HQLAx's wider growth and by continued work by the ECB in Projects Appia and Pontes), the prevailing view is that the widespread tokenization of collateral will take time. Only 42% of European firms today expect to see a major impact from tokenized collateral.

% of respondents expecting tokenized collateral to have a significant impact on their business (by firm tier)



From a jurisdictional perspective, the majority of tokenized collateral deployments so far have been within a single jurisdiction and using a single currency (i.e. $repos using tokenized U.S. treasuries against USD-denominated coins). Simpler in structure and addressing a smaller set of problems, the focus on practical viability has enabled early benefits of tokenization to be realized.

This leaves the major prize still looming: cross-border trades. This is where the majority of overnight collateral is tied up today and where tokenization can have the most impact. Yet this space is also the most complex, with myriad triparty service providers and legal considerations (for every trade, security and counterparty jurisdiction) preventing any quick scale.

The roadmap for tokenization looks set to progress one jurisdiction at a time.

When is tokenization of most benefit?

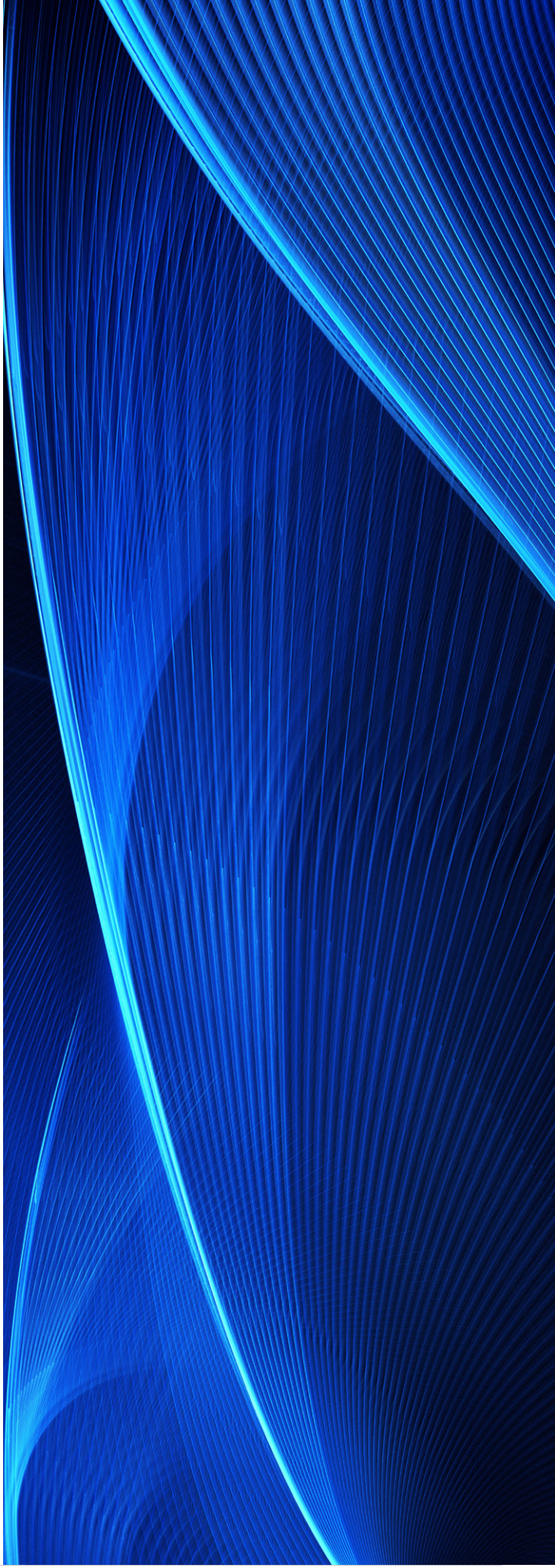
Much is said about the potential for tokenization to enable 24/7 markets and early trades (e.g., those by DTCC, Digital Asset and a number of financial services firms) have highlighted the opportunity for tokenization to trigger repo trades at 10:00am on a Saturday morning.

In the short term, the appetite for this kind of trade appears limited, though compelling for those trading crypto (such as HFTs and their service providers). The practical demands that this would place on traditional banks and brokers appear prohibitive in the short term.

Instead, these traditional firms see significant value in today's Monday-to-Friday:

- Overnight collateral posting, removing the need for evening collateral movements to support early morning processing and avoiding early morning exception handling to make sure that collateral is where it is meant to be; and
- Intraday posting to support specific funding checkpoints and market deadlines.

This is changing, however, with the 23/5 clearing of US securities, the transition to T+1, growing institutional exposures to crypto and even Sunday trading in the Middle East. The pressure on traditional firms to manage treasury and collateral operations across an expanding time window is increasing.



How to Tokenize? The Critical Question

The market opportunity for tokenized collateral may run into the hundreds of millions of dollars, but the realization of that opportunity is dependent on a number of core factors. For some, these factors are inconveniences that merely diminish the market opportunity, for others these factors are enough to render the use of tokenized collateral unviable.

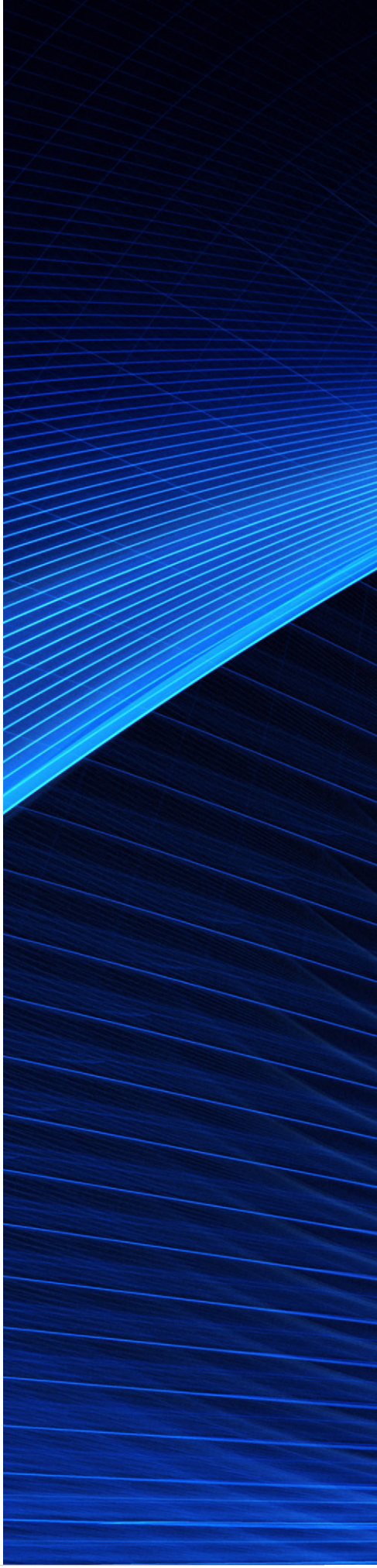
The P&L of tokenization: Implementation factors

Implementing tokenization is not just a technology choice, it is also a P&L decision. Revenue and savings from tokenization are accompanied by the costs of deploying blockchain technology.

	Tier 1 ($100bn AUM and above)	Tier 2 ($20bn – $99bn AUM)	Tier 3 (below $20bn AUM)
+ Total increase in interest earnings (per annum)	$346m	$190m	$7.7m
− New and increased costs	**Networks** • Network connectivity: building to new networks • Network charges: >2 bps per network **Systems** • System connectivity: digital custody and position keeping • System changes to run overnight **Processes** • Separate processes: costs of running traditional and digital collateral management and risk **People** • Staffing: weekend and overnight staff for trading and operation **Liquidity and risk management** • Loss of netting • Haircuts for additional risk management **Capital costs** • Regulatory capital costs of risk		

In practice this means that firms have to weigh the revenue upside against the additional costs driven by the following factors:

- **Project costs**
  - The average firm was spending $2 million on their digital asset projects in 2025[6] (across project management, technical resources, operations, risk, compliance and legal specialists). Project spend could consume up to a third of the potential revenue upside for some Tier 3 firms.
- **Network fees:**
  - Connectivity to digital networks currently costs approximately 2 bps (for each network). These fees can be prohibitive if a firm needs to connect to multiple chains, to the point where blockchain fees entirely outweigh the revenue opportunity.
- **System and process duplication:**
  - With few traditional banking systems capable of managing and processing digital assets today, digital custody and position-keeping require new infrastructure not only to house the assets but also to operate 24/7.
  - Invariably, these specialist systems are being put in place alongside traditional systems, meaning a duplication of processing, including systems and the processes in place to oversee them, in place of an upgrade.
  - With multiple collateral teams already running in each major bank, this duplication can be exponential and lead to a multitude of niche systems to support each collateral activity. Across these teams, this range of platforms might only increase the effort needed to consolidate positions and form a holistic view of financing positions at any time. More systems equal less visibility and less control.
- **Staffing:**
  - Moving to a 24/7 margining model requires human capital for trading and operations on weekends and overnight. This is a small step for those already active in the crypto markets or for those already operating follow-the-sun models, for example. But regional and local banks and brokers (most notably in Europe) see this kind of expansion as counter-productive and cost prohibitive.
- **Divided liquidity:**
  - The net benefits of tokenization could be undermined if the process of using digital securities creates new gaps or divisions in today's collateral pools. These divisions can take many forms.
  - Reduced netting: As volumes of real-time (gross) collateral movements increase, the netting benefits felt at CCPs and with counterparties will



inevitably diminish. Firms will have to choose between immediacy and netting.

- Reduced fungibility: If, for example, a tokenized treasury bill behaves differently from a traditional one (because it is instantly transferrable based on smart contract rules vs. slowly transferable based on human interactions), then should the two forms of the asset remain fungible from a risk perspective? Do both types of assets constitute the same level of risk? Needless to say, fungibility of digital and traditional assets must be maintained from a risk management perspective but differences are emerging that could undermine this.
- Divided trade flows: What happens if the buy/sell process for a security remains traditional but the collateral ecosystem becomes digital? In tokenizing collateral are we creating new dividing lines across the trade cycle that could evolve into points of risk or latency?
- With netting and fungibility central to every balance sheet, their preservation is essential in a tokenized environment.

- **Cost of risk:**
  - The additional (operational and credit) risks set out above are not conceptual. They are material in the haircuts applied by collateral takers and in banks' regulatory capital costs (most notably in their RWA provisions).
  - Many of the unique risk considerations inherent in tokenized assets (such as recovery risk, network risk, smart contract risk and governance risk) are still only understood by the world's risk managers at a rudimentary level. Today, this means that the haircuts applied to tokenized assets are excessive and potentially prohibitive as firms continue to evolve their own understanding of risk. While this will shift over time, the industry's lack of understanding can, in many cases, form a short term cost obstacle that is insurmountable.
  - Equally, many of these risks manifest in banks' RWA provisions (under the Basel Framework). Based on the BIS standard for crypto asset exposures (referred to as SC060)[7], banks must hold 1250% of the value of each transition when a digital asset fails to meet one of a range of due diligence criteria. If mismanaged (from a due diligence perspective) a single trade can be cost prohibitive today.

Legal definitions: CSDs as the make or break

In a collateralized transaction, are you receiving the asset or are you receiving the promise of the asset? This critical technical and legal distinction lies at the heart of tokenized collateral today – impacting both costs and overall viability for market participants.

> "We cannot create multiple versions of the same security"
>
> – Head of Collateral, Tier 1 bank

There are two models of tokenization:

	Exchanging ownership	Exchanging the promise of ownership
Referred to as	**Exchanging or pledging ownership** **Digital property** **A "CSD tech upgrade"**	Exchanging or pledging a token that is the promise of ownership of an underlying asset Digital claim "Immobilize and book entry" "Digital twin"
Examples today	**DTCC (potentially D7, SDX, etc.)**	Broadridge DLR, bank-issued tokens, etc.
Core principle	**Pledge is the security**	Pledge is the right to a security that exists in the traditional world
Speed of recovery?	**Recovery of security is instant and direct on-chain**	Recovery relies on underlying processes in third-party platforms (e.g. CSDs) to update records in their own time
Where is finality?	**On-chain + in the registry**	In third-party system (off chain)
Regulatory status	**Security (under CSDR, etc.)**	Structured product / derivative (TBC per jurisdiction) BIS: Group 1b / 2 (1250% RWA)
Versus today	**Equivalent title** **No additional counterparty risk**	Additional counterparty risks versus traditional security (i.e., to the tokenizer) Necessary haircuts / additional RWA provisions

Both forms of tokenization are technically and legally viable but involve different levels of counterparty exposure and therefore imply different costs of risk.

In a collateral context, the ability to "exchange (or pledge) ownership" is often cited as a precondition for tokenization. Firms must be able to pledge and hold tokens that are equal in all forms to the underlying securities and that do not present any additional risks.

In practice, this means that the token should be issued by an Issuer CSD. As the functional operators of the security's registry, the CSD is the main institution to be able to update and amend the core registry for a token at the same time as it would for a traditional, dematerialized security. In the EU, this is also the only way for the token to be classified as a security (under CSDR).

The alternative to this is firms holding a token as collateral would face an additional counterparty risk (i.e., against the tokenizing institution) and a process risk (i.e., against a third-party settlement cycle in a CSD), hence increasing the cost of risk and haircuts for the tokens.

This legal foundation is the core reason why recent announcements by DTCC are so critical in a collateral context. Leveraging their connectivity to the Federal Reserve, the DTC (DTCC's CSD entity) will soon be able to offer firms direct access to tokenized securities that are equal in all legal forms to their traditional equivalents for both equities

and debt. Using these tokens, firms will be able to exchange or pledge tokenized U.S. treasuries at scale, including the full transfer of title and based on the same counterparty risk parameters as for the traditional securities.

At this key piece of the puzzle is put in place for U.S. securities, tokenized collateral is becoming a practical possibility for the first time. For momentum to continue, it is critical that the DTCC's peers in other global market infrastructures keep pace so that tokens of European, British, Japanese or other nations' debt become equally available to banks and brokers soon.

Legal enforceability: The unproven frontier

Beyond the legal nature of the token itself, there is also a question of legal precedent for token recoverability, particularly in common law jurisdictions (such as the UK). Specifically, there is an absence of case law regarding the recovery of assets via tokens: No court has so far recognized recovery of assets via a token. Absent this precedent, firms are hesitant to move large volumes of collateral into tokenized form because they are unsure if a court would recognize their right to the underlying assets in a bankruptcy event.

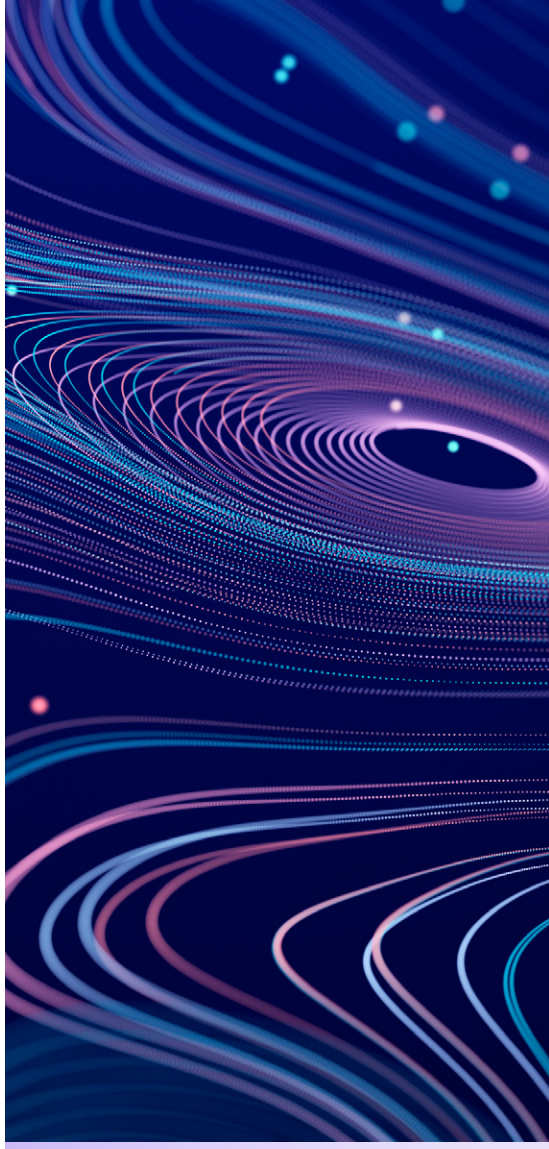
For tokenized collateral to be fully adopted by prime brokers and triparty agents, in particular, this obstacle would need to be addressed so that client tokens mean smooth recourse to underlying assets.

Interoperability: The role of the Common Domain Model (CDM)

Throughout the last decade of DLT's evolution, the fractionalization of liquidity across multiple chains and digital platforms has been a central concern for adopters. In 2025 it was the No. 1 obstacle for institutional firms and it remains a core obstacle to firms' development plans.

Central to this issue is the ability to move a single asset (e.g., a tokenized U.S. treasury) from one chain to another seamlessly, without ever impacting the integrity of the security. For interoperability to be possible, the core definitions of an asset must be defined and populated in a consistent way across all chains.

How to ensure this in today's markets? Based on our research, **70% of firms see the Common Domain Model (CDM) as the foundation** for this consistent digital asset representation on-chain. By using a standardized data language (developed by and for the industry), firms can ensure that a tokenized asset on one chain can be recognized and settled on another, thereby preventing the creation of "digital islands" and allowing for the seamless mobilization of collateral across different DLT infrastructures and traditional venues.



"We can document what we like but there is no case law to support this"

– COO, Tier 1 prime brokerage

Intra-entity flows: A starting point

Given the multiple pending legal, jurisdictional and commercial questions, what is the most sensible first step for firms looking to realize some part of the tokenized collateral opportunity?

For larger firms, the use of DLT and tokenization to support intra-entity flows (as J.P. Morgan has done successfully with Broadridge's DLR platform) appears to be an excellent starting point. This is for the following reasons:

> "Blockchain has spawned hundreds of puddles of liquidity – but where are the deep pools of trading liquidity today"
>
> – Head of Trading, Tier 1 investor

- **Creating a compelling event:** Given the significant "chicken and egg" challenge that many firms face in adopting tokenization, senior group management leadership in this case can be an essential driver of adoption.
- **A coherent risk view:** An entire ecosystem can be built around a single set of risk definitions and interpretations, with no need for extensive discussions and negotiations between counterparties.
- **Common technology:** Integration and adoption of tokens can scale quickly, leveraging group technology platforms wherever possible.
- **Standardization:** Leveraging these same group resources, the adoption and implementation of common standards can be instant across multiple entities, eliminating the need for extensive discussions between counterparties and providers.
- **Controllable outcomes:** Multiple entities can work to a shared roadmap that takes into account myriad external dependencies.

No banking group is ever entirely homogenous and comparatively few groups have the scale to be able to benefit from this approach. It is nevertheless highly compelling for many Tier 1 firms.

The Road to Tokenized Collateral

Is there a case to be made against tokenized collateral? Despite the potential earnings upsides, there are several macro- and micro-level reasons why the adoption of tokenized collateral may be slow:

Macro

Process	**"Markets today are not designed for 24/7 operations. People simply go home at night."**	Concerns around the practical viability of round-the-clock markets are front of mind for many smaller banks and investors. They don't have the resource or the willingness to move away from normal office hours and they see a range of quality-of-life reasons why this should be avoided.
Market safety	**"Does the world want a bank-run on a Sunday?"**	The macro implications of running global funding markets on a 24/7 also need careful consideration. As the UK's Gilt crisis demonstrated, bank runs can now happen in minutes. With liquid collateral markets around the clock, the risk of a bank run occurring at 3 a.m. on Sunday morning, for example, is significantly higher.
Investment appetite	**"Banks have just spent billions on Swift upgrades. They're not going to now throw that infrastructure in the bin."**	From a cost perspective, the value of putting in place an entirely new collateral infrastructure is perhaps questionable just as the world's banks conclude their upgrades of cash messaging to ISO20022 standards.
Regulatory appetite	**"Does tokenization mean more window dressing?"**	"Window dressing" (the practice of banks putting up required levels of capital for specific measurement windows, only to then redeploy the capital in between these windows) is already a notable concern for Central Banks in Europe. Would regulators want to encourage a technology that makes it easier for banks to do this?

Micro

Making things worse before they get better?	**"We're going to need two of everything for a while"**	The inevitable co-existence of tokenized and traditional securities (for many years ahead) means that firms will need to maintain dual systems and processes across the trade cycle. Will this harm firms' ability to scale?

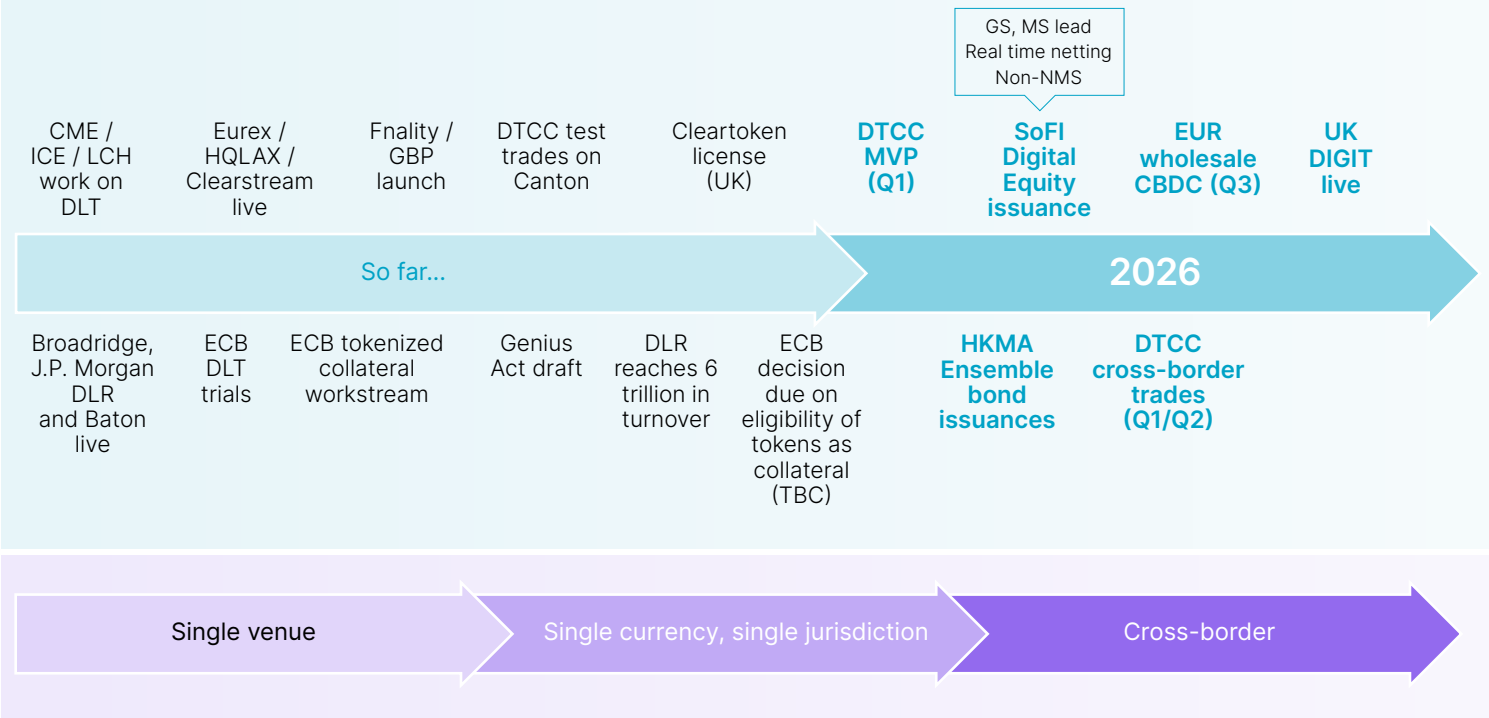
P&L	**"The opportunity isn't the problem. It's the costs"**	The seemingly compelling revenue opportunity can quickly be eroded by network charges, chain integration costs, capital costs and by the additional people costs required to support tokens. This is where industry effort needs to focus.
Netting	**"Whatever we do, it cannot harm our netting"**	What impact will more real-time collateral movements have on the netting of funding? Will this help or hinder funding costs?
Visibility	**"I couldn't even measure these benefits today"**	Aside from the world's largest financial institutions, there is significant doubt that smaller banks and investors (who still run on daily batch processes) could leverage or even track the potential upside of tokenized collateral today.
Counter-parties	**"I'll go when my client or counterparty goes"**	Who goes first? With most firms intending to be "fast followers" in tokenization, who and where are the counterparties that will trigger the first wave of adoption?

The road to tokenization: Critical dependencies

Taking into account all of the above factors, there are a number of critical dependencies that must be met in order to firms to realize the significant opportunity of tokenized collateral:

CSDs	CCPs	Central Banks	System Providers	Custodians and Tri-parties	Counterparties
Must offer tokenized securities as equals to traditional ones	**Must operate 24/7 to provide finality, even on weekends**	**Must provide "repo counterparty of last resort" facilities for digital assets**	**Must make digital asset management seamless for investors across banking systems, middle- and back-office platforms and risk**	**Must be able to offer institutional-levels of safekeeping and servicing for digital assets**	**Must be able to evaluate and manage token risk so that haircuts and the cost of risk can be correctly calibrated**
Must ensure cross-chain connectivity, so that CSD-issued tokens can be freely used across multiple venues and chains	Must begin evaluating how to include tokens in their eligibility schedules	Must enable real-time, 24/7 access to wholesale funding	Must actively adopt and champion standards (such as CDM) to support interoperability	Must integrate digital and traditional assets under a single CSA framework	Must define a starting point for tokenized collateral so that it can be tried and used in their own worlds

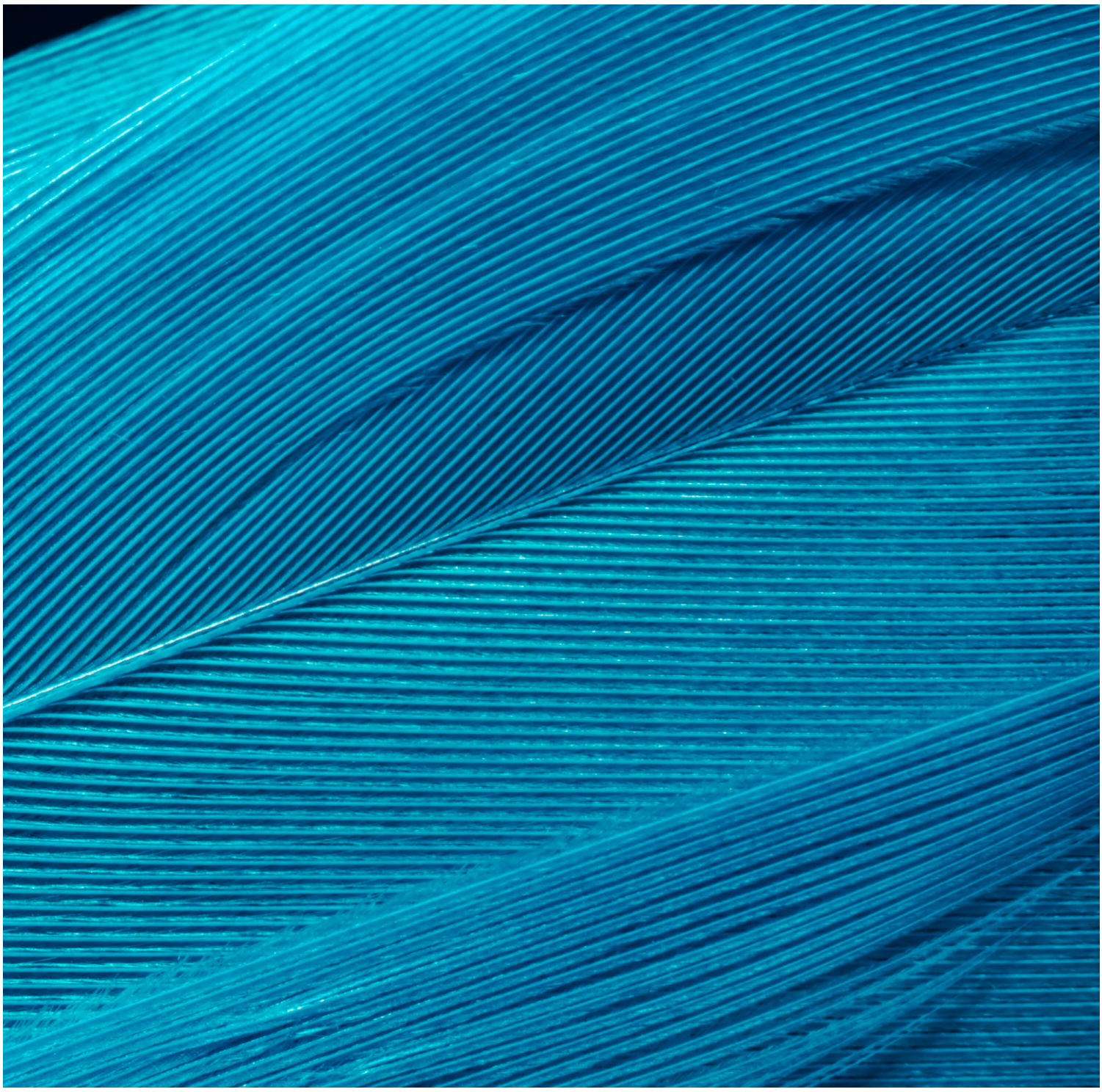
2026: Key milestones ahead



Following the landmark regulatory and market developments of 2025, 2026 is going to be a significant year for the adoption of tokenized collateral. In our view, the most significant ongoing initiatives are expected to be:

Tokenized U.S. treasury trades / DTC MVP	Having completed domestic repos using tokenized U.S. treasuries in 2025, the DTCC and a range of industry players are continuing to expand the scope of their trades to include other currencies and jurisdictions. Leading into the DTC's planned MVP for tokenized U.S. equities and bonds this year, this will enable global institutions to access tokenized securities in the world's most liquid asset classes.
CFTC Digital Assets Pilot Program (USA)	Following their December announcement[10], the U.S. CFTC has issued a no-action position that allows Futures Commission Merchants (FCMs) to begin accepting digital assets as customer margin collateral from their clients.
European Central Bank (ECMS) acceptance of tokens as collateral	Following their announcement in February[11], the ECB's Eurosystem will begin accepting tokenized securities as eligible collateral from March 30, 2026. This will provide an essential risk management tool for institutions and clearing houses (who will now be able to reverse-repo any tokens on deposit against the ECB in times of stress), removing a critical obstacle to the adoption of tokenized securities by these firms. The ECB has confirmed that Project Pontes will deliver a regular service for settling DLT transactions in central bank money as early as the third quarter of 2026. This brings wholesale EUR on-chain, alongside Fnality's GBP payment services, enabling cash margining and DVP.

DIGIT and UK Synchronisation Lab	As part of its broader Digital Innovation and Technology (DIGIT) strategy, the Bank of England will be launching the Synchronisation Lab (a series of wholesale CBDC experiments across the payments and capital markets space).
GDF TMMF working group	Following their legal clarifications in 2025, Global Digital Finance (drawing together an expansive group of investors, banks and service providers) will continue and further advance their scoping of TMMF for use as collateral.



Conclusion: One Line at a Time

In 2026, the tokenization of collateral will cease to be a "future state" for many.

With 52% of firms preparing for a 2026 launch, the industry is approaching a critical mass of adoption. This acceleration is particularly notable in North America, where nearly 80% of firms expect tokenized collateral to have a major impact on their business model within the next 24 months. Drawn by significant interest earning opportunities and supported by a highly conducive regulatory and market environment, American firms are turning tokenized collateral into a live reality.

The pressing question is how this early, domestic activity can scale. Faced with a host of obstacles and impediments across their processes, platforms and people, many financial services organizations continue to feel that tokenized collateral is not suited to their business. How these firms will shift their perspectives to see a positive and compelling P&L outcome will depend on numerous parties, from CSDs to blockchain networks.

The journey to tokenized collateral will be incremental – and it will be " one line at a time" in the collateral schedule. In a world of highly complex collateral agreements and technology frameworks, there is no opportunity for a "silver bullet" to transform the entire industry overnight. But progress is being made.

About Nasdaq Financial Technology

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About the ValueExchange

VX is a research, benchmarking and sales enablement company. Partnering extensively with industry associations across the globe, our aim is to not just answer questions but also to make sure that statistical insights support advocacy on leading themes and industry pressure areas.

Learn more here

Footnotes

[1] ISSA / ValueExchange DLT in the Real World 2025

[2] https://www.broadridge.com/press-release/2026/broadridge-distributed-ledger-repo-platform-december#:~:text=NEW%20YORK%20%E2%80%93%20January%208%2C%202026,volumes%20totaling%20nearly%20%249%20trillion.

[3] https://thevx.io/campaign/treasuries-on-chain-an-industry-case-for-change

[4] https://thevx.io/campaign/treasuries-on-chain-an-industry-case-for-change

[5] https://www.sec.gov/files/tm/no-action/dtc-nal-121125.pdf

[6] ISSA / ValueExchange “DLT in the Real World” 2025

[7] https://www.bis.org/basel_framework/chapter/SCO/60.htm

[8] https://thevx.io/campaign/treasuries-on-chain-an-industry-case-for-change/

[9] ISSA / the ValueExchange, DLT in the Real World 2025

[10] https://www.cftc.gov/PressRoom/PressReleases/9146-25

[11] https://www.ecb.europa.eu/press/pr/date/2026/html/ecb.pr260127_1~a946167ce1.en.html