

The Timing Problem Financial Markets Cannot Ignore



Executive Overview

Atomic settlement is moving from experiment to market infrastructure. While banks, asset managers, and market commentators often frame distributed-ledger settlement as a new product or asset class, the more consequential issue is architectural. Financial institutions are built around staged recognition of exposure, liquidity, and capital, while atomic settlement collapses those stages into a single, irreversible event. When value moves faster than institutions can recognize it, a timing gap emerges between settlement reality and enterprise state. As settlement compresses, that gap becomes economically material and forces institutions to assess whether enterprise timing architecture remains coherent. The response does not require wholesale transformation; it requires sequencing.



The Timing Gap

Traditional market infrastructure sequences exposure recognition in stages—execution, clearing, settlement, balance-sheet capture—each separated by defined time buffers. These buffers exist for a reason: they allow netting, margin calculation, reconciliation, and governance checkpoints to occur, giving institutions time to verify and authorize each step before moving to the next.

Atomic settlement compresses those buffers. Execution, settlement, and ownership transfer converge into a single atomic event. Central Counterparties (CCPs) and depositories remain; their purpose is risk mutualization and custody, not timing. The temporal separation between those functions no longer exists.

The result is a timing gap. Settlement finality occurs the moment the transaction executes, while most enterprise systems recognize exposure, liquidity, and ownership through staged processes designed for control and reconciliation. General ledgers post on batch cycles. Risk warehouses refresh on scheduled feeds. Collateral and liquidity engines rely on prior-cycle positions.

Atomic settlement reduces counterparty risk at the transaction level. However, by collapsing the traditional time buffers between execution and recognition, it exposes a different problem: institutions can no longer assume that enterprise state updates before the next obligation settles. Value has already moved while authoritative internal systems are still catching up.



The Numbers Don't Lie

This is not a future state. Stablecoins processed over \$33 trillion in transaction volume in 2025—exceeding the combined annual payment volume of major global card networks such as Visa and Mastercard¹. Tokenized U.S. Treasuries now exceed \$9 billion, driven by institutional funds and demand for on-chain collateral².

The largest of these products, the BlackRock USD Institutional Digital Liquidity Fund (BUIDL), has reached roughly \$2.5–\$2.8 billion in assets within about a year of launch³. In absolute terms, this remains small compared with traditional vehicles—a single ETF such as the Vanguard S&P 500 ETF (VOO) holds more than \$600 billion in assets⁴. But the growth trajectory is notable: products like BUIDL are reaching multi-billion-dollar scale far faster than early ETFs did as that market matured².

Meanwhile, major wealth platforms are beginning to consider digital asset allocations of 1–4% of AUM, with these small percentages applied to trillion-dollar client books⁵.

At the infrastructure layer, DTCC, SWIFT, and major exchanges are running active production pilots, not feasibility studies⁶.

The market is moving. The question is whether institutional architecture is moving with it.

Digital Assets Are Architecture, Not an Asset Class

The challenge of digital assets is architectural, not instrument-specific. Ownership updates when conditions are met, not when ledgers reconcile. For institutions, this means cash, securities, and collateral can shift before internal systems have reflected the change, creating gaps in exposure, funding, and governance. Enterprise systems remain anchored to staged recognition: general ledgers post on batch cycles, risk warehouses refresh on scheduled feeds, and collateral engines rely on prior-day positions. When settlement compresses these stages into a single atomic event, the result is a timing mismatch between what has actually moved and what the institution believes it holds.

¹ [Stablecoin Volume Just Crossed \\$33 Trillion. Now What?](#)

² [RWA.xyz | Tokenized U.S. Treasuries](#)

³ [BlackRock Expands \\$2.5B BUIDL Fund to BNB Chain for Institutional Access](#)

⁴ [VOO-Vanguard S&P 500 ETF | Vanguard](#)

⁵ [Bank of America expands crypto access for wealth management clients | Reuters](#)

⁶ [Paving the Way to Tokenized DTC-Custodied Assets | DTCC: Swift to add blockchain-based ledger | Swift](#)



11:07 a.m.

At 11:07 a.m., a broker-dealer executing tokenized Treasuries through a regulated DvP platform settles atomically. Cash and securities transfer simultaneously, with immediate and irreversible finality. Internally, however, enterprise systems may still reflect prior balances, creating a timing gap between settlement and recognition.

Nothing inside the institution moves at the same speed.

The securities sub-ledger posts in the next scheduled cycle. The general ledger updates at end-of-day batch cycle. The liquidity dashboard refreshes from an overnight warehouse. The collateral engine is still operating on T+1 assumptions. The risk system reflects yesterday's exposure.

By noon, the institution's authoritative systems of record are describing a balance sheet that no longer exists.

This is not a technology failure. The settlement worked exactly as designed. It is a timing failure; it reflects the gap between when value moves and when the enterprise recognizes that movement.

For a mid-tier broker-dealer with \$20B in daily turnover, a 5% shift to atomic settlement moves ~\$1B intraday before any internal system has confirmed it. Collateral is encumbered before the eligibility engine sees it. Funding is committed before treasury has visibility. Risk exposure has crystallized before the dashboard reflects it. Governance frameworks designed around reversibility and end-of-day checkpoints activate after the fact.

The institution is managing its balance sheet in arrears.

At modest penetration, this creates operational friction manageable with manual overlays and conservative buffers. At meaningful penetration, it becomes structural risk. The overlays multiply. The buffers grow. The cost of operating on stale state compounds quietly, invisibly, across every function that touches settlement.

For G-SIBs running equivalent books at 5–10x this scale, the same 5% shift produces \$5–10B of intraday exposure moving through systems that were not designed to see it in real time.

The question is not whether atomic settlement is efficient. It is whether the enterprise can recognize what just happened, before the next transaction settles.

The Functions That Break First

This is not about launching a tokenized product or replacing core systems. It is about whether the enterprise timing architecture remains coherent under atomic settlement. The table below maps the timing misalignment by actor at mid-tier institutional scale.

Actor	Reference Scale	Exposure Base	5% Shift	Primary Failure Mode
Bank Treasury	Large regional / custody bank	\$100B liquidity pool	\$3–5B	Funding blind spot
Broker-Dealer	Mid-tier, single desk	\$20B daily turnover	~\$1B	Recognition lag
Liquidity Management	Large regional bank	\$50B intraday facilities	\$2–3B	Stale steering
Collateral Management	Active collateral manager	\$20B collateral pool	~\$1B	Availability blindness
Asset Management	Large fund, 2% DA allocation	\$50B AUM	~\$1B	NAV divergence

All figures are illustrative and based on hypothetical scenarios for a mid-tier institution at ~5% atomic settlement penetration. Actual outcomes will vary based on institutional structure, market conditions, and implementation approach.



Bank Treasury

The timing problem for treasury is funding velocity. When atomic settlement finalizes, cash leaves the balance sheet immediately. Internal recognition: GL posting, liquidity dashboards, FTP allocation—follows hours later in batch cycles.

The result: treasury must pre-position intraday funding without authoritative visibility into what has already moved. Funding decisions are made against yesterday's snapshot, while today's obligations have already settled.

At a bank running a \$100B liquidity pool, a 3–5% shift to atomic settlement accelerates \$3–5B of intraday cash movement into windows that current systems cannot see. That is not a reporting lag. It is a funding decision made blind.



Broker-Dealer

The timing problem for broker-dealers is recognition lag. Settlement finalizes atomically: cash out, securities in, with immediate finality. Internally, the securities sub-ledger, general ledger, risk warehouse, and collateral engine all update on different, slower cycles. For several hours, every system that governs funding, margin, and client exposure is describing a position that no longer exists.

The lag is not confined to one function. It cascades: stale risk feeds stale margin calls, which drive stale collateral commitments, which in turn drive stale funding decisions. Each layer compounds the one before it.

For a desk with \$20B in daily turnover, a 5% shift to atomic settlement moves ~\$1B intraday—positions are encumbered before dashboards reflect them, funded before systems confirm them, and exposed before risk frameworks recognize them.



Liquidity Management

The timing problem for liquidity management is steering on stale state. Basel III intraday liquidity monitoring assumes institutions can identify and track peak intraday liquidity usage. Atomic settlement breaks that assumption, as outflow timing becomes unpredictable and the intraday windows that liquidity facilities are sized around shift or disappear entirely.

LCR buffers calculated on prior-day snapshots may appear adequate, even as intraday outflows have already eroded the position. The buffer looks right until it isn't, and by the time the dashboard catches up, the exposure has already peaked.

A bank with \$50B in intraday liquidity facilities sized to known outflow windows could find \$2–3B of those windows migrating forward or falling outside monitored periods entirely, creating false headroom precisely when real headroom is tightest.



Collateral Management

The timing problem for collateral is availability blindness. When atomic settlement moves assets, encumbrance is immediate. Eligibility engines, haircut calculations, and collateral schedules remain anchored to T+1 assumptions and prior-day positions.

The result is a gap between what the collateral engine thinks is available and what has actually moved. The gap runs in both directions: assets committed elsewhere appear eligible, and freed collateral is not recognized as available until the next cycle.

At ~\$1B of intraday atomic settlement, margin call timing, collateral substitution windows, and eligibility calculations can all be operating on positions that no longer exist.



Asset Management

The timing problem for asset managers is the divergence between settlement reality and reported exposure. Portfolio allocation, NAV calculation, and liquidity buffer sizing all assume batch settlement timing. When settlement becomes atomic, cash and securities move before NAV cycles and allocation models update.

Liquidity buffers are sized to reported exposure; if reported exposure lags settlement reality, buffers are either too thin where positions have grown or unnecessarily large where they have been reduced.

For a \$50B fund with a 2% digital asset allocation, \$1B can shift intraday, misaligning cash availability, margin calculations, and redemption capacity against a NAV that will not reflect the movement until end of day. For the largest asset managers, this can reach \$10–20B.



The Cost of Standing Still

Timing misalignment at low penetration is manageable. Manual overlays cover the gaps. Conservative buffers absorb the uncertainty. The cost is friction: real but containable.

The problem is that penetration does not stay low.

As atomic settlement scales from 5% to 10% to 20% of daily flow, the misalignment does not grow linearly—it compounds. Each function that operates on stale state creates downstream errors in the next function that depends on it. Stale exposure feeds incorrect margin. Incorrect margin feeds misallocated collateral. Misallocated collateral feeds mispriced funding. Mispriced funding feeds the next day's buffer sizing. The firm is not just behind; it is systematically misaligned across every layer simultaneously.

The financial consequences are concrete:



Liquidity strain: funding must be pre-positioned before systems reflect outflows, forcing institutions to carry excess buffers, increasing the cost of funding through the spread between the funding rate and the opportunity cost of idle capital.



Collateral drag: assets held in reserve against positions that have already settled, or committed twice due to eligibility blindness, represent direct balance-sheet inefficiency.



Capital distortion: exposure recognition that lags settlement produces regulatory ratios calculated on stale inputs, creating periods where reported capital adequacy diverges from actual risk.



Escalation failure: governance frameworks built around reversibility and end-of-day checkpoints cannot respond to irreversible intraday events. By the time escalation triggers, the exposure has already crystallized.



Operational cost inflation: every gap between settlement reality and system state requires a manual overlay. At scale, those overlays become permanent infrastructure—headcount, reconciliation cycles, exception processes—that add cost without restoring coherence.



The Case for Cheap Insurance

The end state is uncertain. How much settlement will be atomic, which asset classes move first, and which infrastructure prevails—no one knows. Waiting for clarity is reasonable. It is also a risky approach.

The risk is not a sudden shift. It is that penetration crosses a threshold quietly, and firms that waited find themselves managing a structural problem with the wrong tools.

The insurance is cheap. No transformation program is required. Batch architecture is the operating reality for the foreseeable future, and the general ledger, the risk warehouse, and the collateral engine are not going anywhere, nor should they. The question is whether they are supplemented with intraday capture layers, authoritative interim state, and governance triggers that reduce the window of blindness between settlement and recognition.

The building blocks are knowable, the interventions are targeted, and most are defensible on their own merits independent of digital asset adoption. That is a design problem, not a technology problem, and the question is not whether to act, but where to start and in what sequence.

Institutions must first define their strategic commitments: what is the firm's tolerance for real-time, irreversible settlement? Can operations function without a defined market close? How will regulators be engaged in approving new settlement models? Digital asset initiatives must be anchored in core systems, not confined to experimental sandboxes.

Integration into finance, risk, compliance, and reporting systems is essential. Parallel books or side ledgers recreate fragmentation and reintroduce reconciliation burdens that shared-state models are designed to eliminate. Firms should design reusable, enterprise-grade capabilities that scale across asset classes and business lines, including custody, ledger integration, token lifecycle management, and real-time risk ingestion, ensuring that solutions are modular and extensible rather than one-off.

Clear architectural boundaries are equally critical. Institutions must determine what to build internally, what to buy, and where to partner, avoiding fragile integrations and vendor lock-in that could create new dependencies. Finally, governance and accountability frameworks must evolve: in a 24/7 market environment, ownership, escalation, and oversight cannot pause at market close. Continuous markets demand continuous monitoring and proactive controls.



A&M can help institutions navigate these steps by defining strategic priorities, mapping timing gaps, and designing modular, scalable, and governed solutions that align with core systems, enabling firms to adapt to accelerated settlement while maintaining operational coherence and regulatory compliance.

About A&M

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Provide tailored compliance frameworks and solutions to meet evolving global and regional regulatory standards.

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Revenue Generation and Go-to-Market

Identify growth opportunities and execute go-to-market strategies to drive revenue and long-term success.

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