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Digital Cash and the Future of U.S. Capital Markets: An Industry Perspective on Opportunities, Challenges, and the Path Ahead

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Introduction

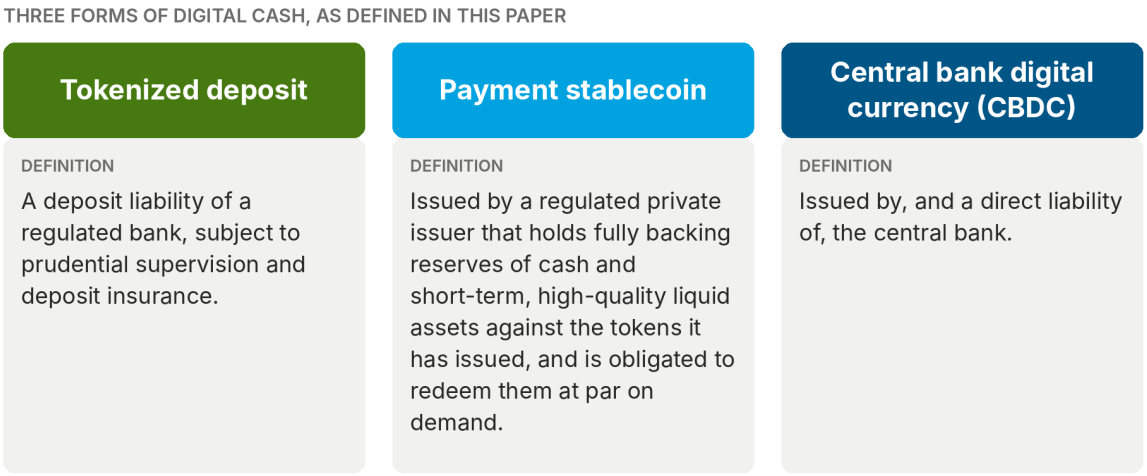
SIFMA has worked to support the integration of digital assets and blockchain infrastructure within the securities markets and the regulatory frameworks that oversee them, to drive innovation in products, operational efficiency, and risk reduction while preserving the core regulatory protections for investors and market integrity that have made the US capital markets the world's largest and most dynamic. In addition to our advocacy for regulatory modernization, SIFMA aims to drive forward the industry conversation on integration of digital products across the securities life cycle. Our hope is that this paper on digital cash will provide our members and the broader market with a perspective on the value of digital cash to securities markets, an understanding of the key considerations around the major forms of digital cash in the US, and a view of the key work that needs to be done at an industry level to support interoperability and integration with established infrastructure. We also hope it will help firms understand how they can begin to engage with digital cash.

Charles De Simone, Managing Director & Deputy Head, Operations, Technology & BCP, SIFMA

Preface

As capital markets look to integrate digital assets and blockchain infrastructure, digital cash has the potential to transform payment and settlement models and serve as a foundational enabler for innovation in markets and infrastructure. The Securities Industry and Financial Markets Association (SIFMA) and Deloitte collaborated to explore a foundational question: How can the securities market adopt and integrate digital cash within the broader end-to-end settlement life cycle?

Digital cash is defined broadly as a digital representation of monetary value: a token or ledger entry that moves and settles like money, but on infrastructure purpose-built for tokenized assets rather than on legacy payment rails.



Underneath these digital cash types lies a critical further distinction: whether an instrument is natively issued, meaning its ledger entry is the authoritative legal record, or a "digital twin," a tokenized representation of a balance that still lives and settles on an off-chain system of record. This distinction is vital because it can affect whether the on-chain funds transfer itself achieves legally binding settlement finality, the point at which a payment becomes final, irrevocable, and unconditional, with legal certainty and without reliance on probabilistic confirmation, fully discharging the payer's obligation, or also relies on a secondary, off-chain reconciliation process to complete funds movement, and thereby shapes the credit risk, regulatory compliance, and operational velocity of the entire transaction. Finality can be achieved under either model, though legal and technical ambiguity remains in both.

This paper draws on a structured series of industry discussions that SIFMA conducted across institutions spanning the financial markets ecosystem to examine how digital cash could evolve across settlement, payments, custody, market infrastructure, compliance, treasury, and other critical adoption dimensions.

These industry discussions took place as established markets continue integrating digital payment rails. That convergence could allow for greater settlement optionality and faster, more precise settlement where needed, unlocking intraday liquidity and reshaping how collateral moves during an expanding trading day and across time zones. However, more continuous settlement could reduce opportunities to aggregate and net transactions, changing how trades clear and increasing demand for intraday liquidity. At the center of that shift sits delivery versus payment (DvP), the principle that a security and its cash payment should exchange simultaneously. Digital cash, particularly when it can sit on the same ledger as the security being settled, offers a path toward optional atomic[1] DvP settlement at a scale the industry has not previously achieved. However, getting there requires progress on interoperability, standards, and regulatory treatment.

This paper synthesizes perspectives from these industry discussions to highlight areas of alignment and the considerations likely to shape the evolution of digital cash in US securities markets. We want to thank the institutions that contributed their time and perspectives to this work. We hope this paper provides a useful, forward-looking contribution to the industry's discussion of digital cash.

Digital cash white paper contributors

- BlackRock
- Circle
- Customers Bank
- Depository Trust & Clearing Corporation (DTCC)
- Edward Jones
- Fidelity National Information Services (FIS)
- Fireblocks
- Fnality

[1] **Atomic delivery versus payment (DvP)** links the transfer of securities and cash so that either both occur or neither does, eliminating principal risk. Real-time settlement refers to when a transaction settles—immediately rather than at a scheduled time or in a batch. A transaction can be real-time without being atomic, or atomic without being real-time. Digital cash can enable both.

- Franklin Templeton
- Goldman Sachs
- Institute of International Finance (IIF)
- Kinexys by J.P. Morgan
- Paxos
- Société Générale
- Society for Worldwide Interbank Financial Telecommunication (Swift)
- State Street Corporation
- TD Bank

About this paper

Industry discussions brought together perspectives from 17 institutions across the securities market ecosystem, including banks and broker-dealers, asset managers, custodians, stablecoin issuers, digital asset infrastructure providers, and financial market infrastructure participants. The breadth of participants was intended to capture perspectives from institutions that may issue, hold, move, settle, safeguard, or otherwise interact with digital cash. This paper is intended to inform industry executives, market participants, infrastructure providers, and technology firms as they consider what the next generation of cash and settlement infrastructure may look like.

Industry discussions were anchored on a common set of themes designed to understand both the potential role of digital cash and the practical requirements for adoption. The discussions explored:

- The design characteristics and considerations of different forms of digital cash (e.g., stablecoins, tokenized deposits);
- The implications for securities settlement and life cycle events;
- Institutional and cross-border movement of funds;
- Custody and wallet models;
- Integration with established payment rails and interoperability;
- Implications for financial market infrastructures, central securities depositories, and central counterparties;
- Anti-money laundering (AML), know-your-customer (KYC), and illicit-financing considerations; and
- The industry's path toward adoption.

Participants discussed the potential for digital cash to enable more automated settlement, facilitate movement of value across markets and time zones, and support closer integration between the cash and asset legs of a transaction. At the same time, the discussions highlighted practical questions around regulatory treatment, risk management, interoperability, operational resilience, custody, compliance, treasury management, and integration with existing infrastructure.

The result is not an endorsement of any particular form of digital cash or market infrastructure model. Rather, this paper offers an industry perspective on the range of models under consideration, the potential value they may create, and the conditions that could shape their adoption and evolution in US securities markets.

Why digital cash, and why now?

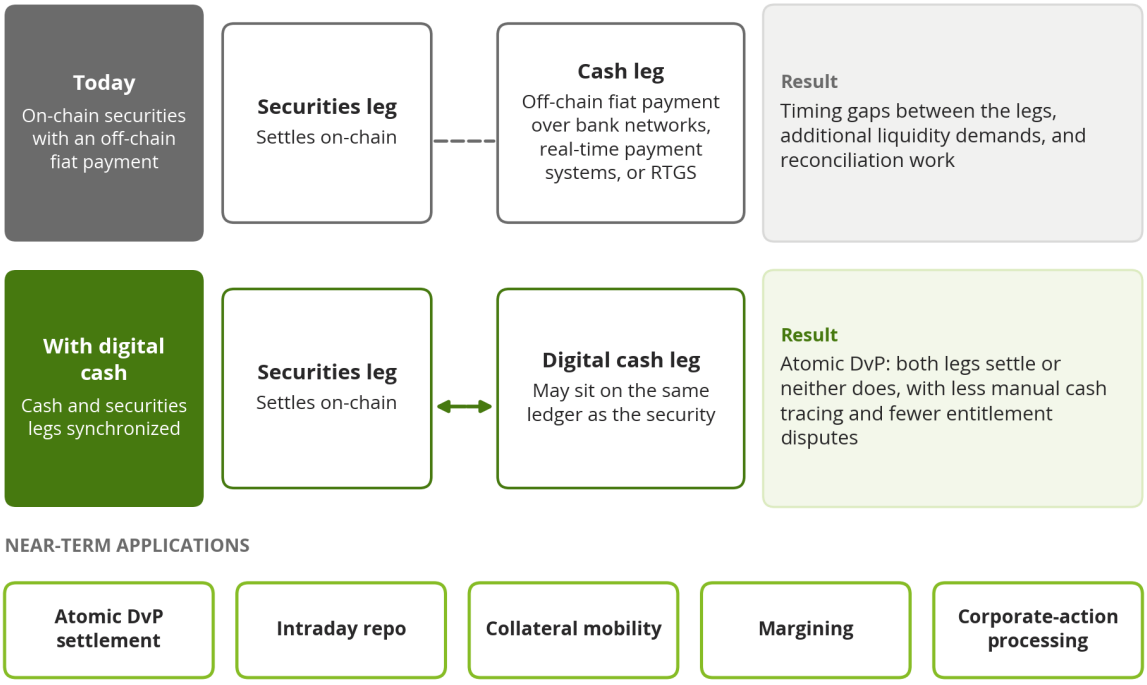
How securities markets may adopt and adapt to digital forms of cash

Convergence of traditional and digital rails

US securities settlement runs on a well-understood but decades-old architecture today: securities move through established market infrastructures on a DvP basis, while commercial-bank payment networks, real-time payment systems, and central-bank Real-Time Gross Settlement (RTGS) infrastructure support the cash leg. This model remains effective and is likely to coexist with emerging on-chain arrangements, but it was not designed for continuous, 24/7, programmable settlement.

That distinction becomes more important as parts of the securities life cycle move on chain. An on-chain securities transaction that depends on a separate, off-chain fiat payment can create timing gaps, additional liquidity demands (requiring firms to lock up extra cash to cover trades while waiting for off-chain payments to clear), and reconciliation work between the two legs. Existing cash rails aren't becoming obsolete; rather, they may no longer provide the synchronization and interoperability required as securities infrastructure evolves. Digital cash could serve as a complementary settlement layer connecting traditional and on-chain workflows, improving liquidity mobility, and reducing friction across the settlement process. Near-term applications include atomic DvP settlement, intraday repo, collateral mobility, margining, and corporate-action processing. By synchronizing a transaction's cash and asset legs, digital cash could reduce manual cash tracing, improve funding certainty, and reduce reconciliation and entitlement disputes.

FIGURE 1 Convergence of traditional and digital rails



Existing cash rails are not becoming obsolete. Digital cash could serve as a complementary settlement layer connecting traditional and on-chain workflows.

Key structural shifts are accelerating this transition. Specifically, several critical developments make 2026 and early 2027 a decisive turning point, distinguishing current efforts from earlier phases of digital asset experimentation in the securities industry:

- **Stablecoin regulation has advanced in the United States.** Progress has been significant, moving toward the establishment of payment stablecoins as a recognized and regulated payment instrument in the eyes of US regulators and supervisors and under US law. While the Guiding and Establishing National Innovation for U.S. Stablecoins (GENIUS) Act has provided much-needed regulatory clarity, key questions about implementation and future rulemaking remain. Most federal regulators have not yet finalized the rules mandated by the law; the Office

of the Comptroller of the Currency (OCC), the first to do so, issued its final GENIUS Act implementing rule in October 2026, effective January 18, 2027, establishing requirements for payment stablecoin issuers under its jurisdiction.[2] Given the current administration's public support for stablecoins as a vehicle for supporting the global role of the USD and on-chain markets,[3] increasing adoption and regulatory support for stablecoins will likely mean market participants will face the option to engage in stablecoin transactions in the near future.

- **Bank-led tokenized-deposit initiatives have moved from concept to live pilots and, in some cases, production.** Several bank consortia and infrastructure providers are also developing interbank settlement networks, although interoperability remains limited.
- **Privately operated, on-chain settlement backed by central bank money is already live in the United Kingdom.** A sterling payment system built on distributed ledger technology (DLT) began processing live payments in December 2023, using balances held in an omnibus account at the Bank of England. The Bank subsequently designated the system for settlement finality protections, as announced in December 2024.[4] In Europe, the Eurosystem launched Pontes in September 2026, connecting market DLT platforms with Trans-European Automated Real-time Gross Settlement Express Transfer (TARGET) Services to support settlement of DLT-based wholesale transactions in central bank money.[5] In the United Kingdom, the Prudential Regulation Authority also applied its leverage ratio treatment for central bank claims to omnibus account reserves, subject to additional conditions.[6] These steps could offer a model for other central banks.

Against that backdrop, this paper treats digital cash's value as a foundational enabler supporting the industry's work across securities settlement, cross-border funds movement, collateral mobility, and repo and securities lending, each of which depends on a trusted, interoperable, and final digital cash leg.

[2] Guiding and Establishing National Innovation for US Stablecoins Act (GENIUS Act), Pub. L. No. 119-27, 139 Stat. 419 (July 18, 2025), § 20 (taking effect on the earlier of 18 months after enactment, which is January 18, 2027, or 120 days after the primary federal payment stablecoin regulators issue final implementing regulations); OCC, GENIUS Act Regulations: Final Rule, OCC Bulletin 2026-50 (Oct. 21, 2026).

[3] Executive Order 14178, "Strengthening American Leadership in Digital Financial Technology," 90 Fed. Reg. 8647 (Jan. 31, 2025) (stating the policy of promoting and protecting the sovereignty of the U.S. dollar, including through actions to promote the development and growth of lawful and legitimate dollar-backed stablecoins worldwide, and of supporting the responsible growth and use of digital assets and blockchain technology).

[4] Bank of England, "Who are we?" (Financial Market Infrastructure Supervision). The list of systems designated under the Settlement Finality Regulations includes the sterling omnibus account payment system referenced in the text. See also Fnality, "Sterling Fnality Payment System Receives Settlement Finality Designation," press release, December 16, 2024.

[5] European Central Bank, "Eurosystem brings central bank money to tokenised finance," press release, September 21, 2026; European Central Bank, "Pontes," accessed November 2026.

[6] Prudential Regulation Authority, PS14/24, "Leverage ratio treatment of omnibus account reserves and minor amendments to the leverage ratio framework," published July 29, 2024. It introduces rules applying the central bank claims exclusion consistently across omnibus and traditionally held reserves, with the omnibus exclusion subject to specific additional conditions. The final rules took effect on August 5, 2024, alongside an updated supervisory statement SS45/15.

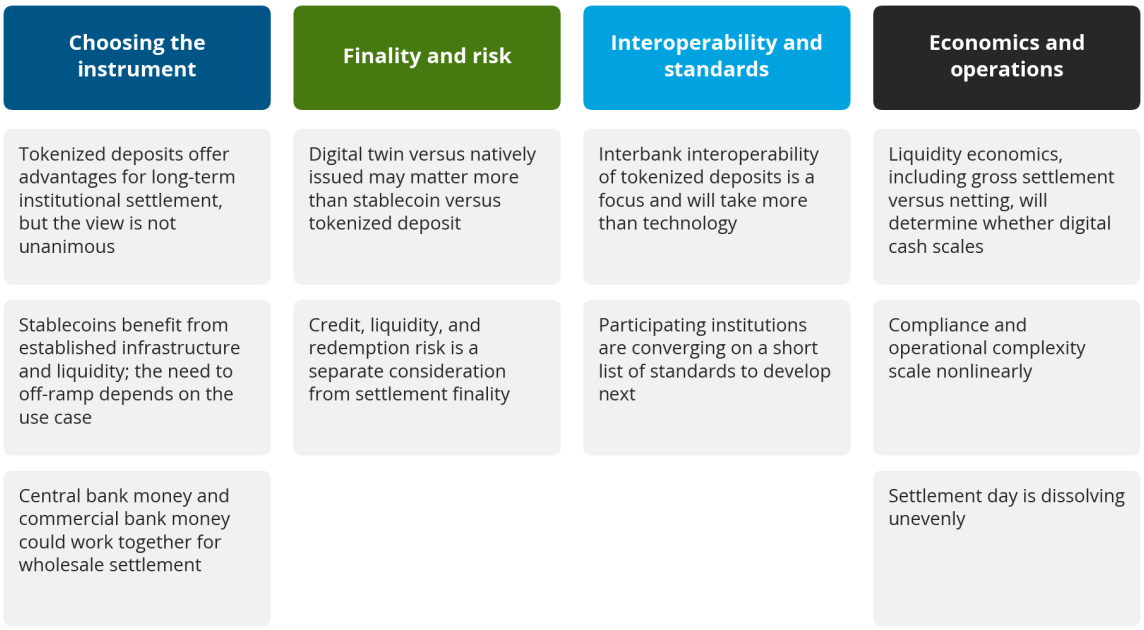
Inside the digital cash debate

While perspectives among individual participants differed, they broadly aligned on several themes shaping the path toward institutional adoption.

Industry participants consistently agreed that digital cash will not necessarily replace traditional fiat settlement or rails, nor does digital cash require tokenized securities to become dominant before it creates value. Traditional and digital settlement forms are likely to coexist as the securities industry gradually moves parts of its infrastructure on chain. In that transition, digital cash would operate as an underlying infrastructure layer, supporting settlement across on-chain and traditional workflows and unlocking liquidity without requiring every security to be tokenized. Similarly, the unique features of both payment stablecoins and tokenized deposits offer advantages; the question is not which would “win,” but where each has better product-market fit and how easily each integrates into different parts of the securities life cycle. The key question, therefore, is less which tokenized instrument leads the market, and more how digital cash can interoperate with existing fiat rails and the industry’s compliance, custody, and treasury infrastructure. These institutional and operational interfaces, not the underlying blockchain technology, will likely determine how quickly securities markets can adapt to digital forms of cash.

Going forward, it is critical to look beyond stablecoin and tokenized deposit features as payment instruments to understand how they fit into the broader payment systems the industry relies on. Ultimately, multiple participants stressed that broad-based adoption is driven by the business value that digital payment systems create, not a narrow focus on specific instruments.

FIGURE 2 Key takeaways from the industry discussions



Participants did not agree on every point. The discussion that follows sets out the range of views.

- **Tokenized deposits offer many advantages for long-term institutional settlement because they integrate easily within established legal and regulatory frameworks, but that view is not unanimous.** Across sell-side banks and some asset managers, the case for tokenized deposits rests less on technology than on inherited trust and established regulatory frameworks: deposit insurance, bank safety and soundness, the ability to rely on existing regulations and legal interpretations, and a regulated issuer. Several participants expect institutional treasurers and asset owners to weigh this heavily once genuine choice exists. Correspondent banking is expected to remain the engine of cross-border settlement for capital markets, trade, and other financial activity, with new digital cash forms and settlement rails supplementing that system rather than replacing it. The macro structure likely stays intact even as the underlying processes get faster, more automated, and more interoperable. Proponents of stablecoins argued a properly regulated stablecoin gives holders a stronger legal claim than a tokenized deposit: redemption at par even in the issuer's bankruptcy, versus exposure to the issuing bank's own asset-liability mismatch, citing the 2023 regional bank failures as a reminder that banks are not risk-free counterparties, although this view of stablecoin holders' protections in an issuer bankruptcy remains untested. Others rejected this altogether, arguing that tokenized deposits, stablecoins, tokenized real-world assets, and tokenized money market funds will each find the use case that fits best and coexist, much as cash and cash equivalents do today.
- **Stablecoins can adopt the settlement role quickly, particularly cross-border**. Stablecoins leverage powerful, pre-existing network effects. By tapping into highly active liquidity pools, ubiquitous digital wallets, global trading exchanges, and institutional-grade custody solutions, users can immediately deploy stablecoins for low-friction cross-border movement, fund subscriptions and redemptions, and corporate treasury applications. Within this

ecosystem, recipients may hold, reinvest, or make further payments natively in stablecoins without ever converting them into bank money.

- **"Digital twin" versus "natively issued" may be a more consequential distinction than stablecoin versus tokenized deposit.** A structurally important position surfaced: Meaningful on-chain cash settlement finality may require a natively issued instrument, rather than a tokenized "digital twin" of an off-chain funds balance that remains subject to batch reconciliation. Other participants offered a more flexible view, noting that well-governed twin or entitlement models can deliver meaningful benefits. These models should, however, be distinguished. A digital twin may depend on subsequent off-chain reconciliation, compared to a payment system in which participants hold and transfer entitlements to funds held off-chain. A related but distinct question is whether cash and securities should sit on the same ledger. Some participants preferred same-ledger settlement, while others argued that cross-ledger orchestration could synchronize the two legs, with legal finality determined by the relevant systems' legal frameworks and rules.
- **The allocation of credit, liquidity, and redemption risk is a separate consideration from settlement finality.** Beyond determining when a transfer becomes final, securities market participants need to understand whose obligation the digital cash represents and who bears losses or provides liquidity if settlement fails, the issuer becomes insolvent, or a participant defaults. Clearing and settlement arrangements provide an additional dimension for evaluating these exposures across forms of digital cash. Depending on their design, such arrangements may incorporate participation requirements, prefunding, collateral, netting, liquidity resources, and default-management procedures. Their assessment therefore extends to the scope of any settlement guarantee, holders' redemption rights, and the allocation of losses under stress. These features should be examined individually: participation in a shared network does not, by itself, imply central counterparty protection or mutualized loss sharing.
- **Central bank money and commercial bank money could work together for wholesale settlement.** Central bank money balances already support on-chain settlement in certain jurisdictions and, over time, wider adoption could offer a trusted, risk-free foundation for digital settlement. Running alongside it, tokenized commercial bank money in the form of programmable bank deposits would provide the critical liquidity and operational flexibility needed to drive daily market transactions. Together, these two monetary forms could enable more efficient global wholesale settlement. Realizing this potential more widely would require alignment across institutions, including establishing interoperable technical standards, unified legal treatment of tokenized claims, and clear agreements on cross-border recognition and settlement finality. Industry participants pointed to Europe's recent initiatives, including the launch of Pontes, as a model of what legal and technical clarity can unlock for an integrated digital monetary system.
- **Interbank interoperability of tokenized deposits is a focus, and achieving it will take more than technology.** Nearly every bank and infrastructure provider converged on the same mechanism: Interbank transfers should work through a burn-and-mint model, with net interbank obligations settled across the institutions' central bank accounts, rather than banks holding each other's tokens directly. Participants added that the underlying technology is largely ready; what is missing is interoperability between the fiat and digital worlds, legal certainty, and governance evolving alongside it. In practice, the friction of "off-ramping" is entirely dependent on

the use case: only when external obligations strictly require legacy bank fiat does conversion introduce additional transactional costs, FX spreads, and liquidity considerations.

- **Liquidity economics, including the strategic balance between instant gross settlement and netting efficiency, will determine whether digital cash can scale beyond pilots.** Fragmented liquidity and prefunding requirements across multiple venues, ledgers, and bank networks create costs that grow with institutional activity. The solution is not to settle every transaction individually and immediately. Doing so could reduce the benefits of netting, increase liquidity requirements, and make settlement less efficient. A more practical approach is to use instant gross settlement selectively when its risk-management benefits outweigh the liquidity cost, while continuing to use netting where it is more efficient.

PARTICIPANT PERSPECTIVE

The Liquidity Cost of Multiple Venues

If on-chain settlement is distributed across multiple platforms, what is the liquidity cost of covering settlement across multiple venues? As new platforms emerge, they fragment liquidity; to build a business case, they need to deliver enough value to justify those liquidity costs and drive the interoperability needed to address them.

- **Compliance and operational complexity scale nonlinearly with digital cash.** Banks, asset managers, and infrastructure providers alike identified the same pattern: A tokenized deposit or stablecoin transaction triggers greater friction than an ordinary cash transfer (e.g., new account types and wallet-level AML screening, whose regulatory ownership remains ambiguous) and adds a Travel Rule workflow that still runs off-chain, breaking "atomic" settlement into a two-step screen-then-release process in practice.
- **Participating institutions are converging on a short list of standards they want to see developed next.** Several priorities emerged as key enablers for broader adoption:
    - Interoperability and fungibility across bank-issued tokenized deposits
    - An independent due diligence scorecard for evaluating digital cash instruments, issuers, and payment rails
    - Formal High-Quality Liquid Asset (HQLA) and tax and accounting treatment for stablecoins and tokenized deposits
    - Common technical interfaces that work with existing messaging standards
    - Clearer SEC guidance on how existing fund rules apply to tokenized structures
    - Stronger AML, KYC, sanctions-screening, and reconciliation capabilities that can operate at the speed of digital settlement

PARTICIPANT PERSPECTIVE

Market Practices, Not Just Technical Standards

The industry needs to build out on-chain market practices, not just technical standards. If you want to execute a given transaction, how does it behave consistently? For example, how do you consistently use digital cash for handling a dividend payment or funding of a retail client account? You need an approach that realizes the benefits of digital cash but provides a standardized approach for new participants.

- **The settlement day may dissolve unevenly as digital cash is adopted.** Participants held different views on whether a defined “settlement day” could survive in a 24/7, programmable environment. Some expect the always-on nature of tokenized deposits and stablecoins will inevitably make the option of a continuous, second-by-second settlement an increasingly common market practice. In this view, any financial institution or infrastructure provider unable to move money in real time risks being left behind as corporate treasurers demand faster, more efficient capital movement. Many industry participants nonetheless expect the traditional business day to endure. They point out that key financial operations, from risk management and tax reporting to balance-sheet reconciliation, still rely on structured cutoff times and a universally understood end of day. The advent of digital cash gives institutions more precise tools to manage their money. Instead of being bound by legacy banking hours, firms will be able to program their own settlement cycles, opting for instant gross settlement for urgent payments while scheduling automated batch windows to net lower-priority transactions. The result is a more flexible financial system in which the business day is no longer fixed but customized to meet specific operational and liquidity needs.

Correspondent banking remains the backbone of cross-border settlement today, clearing capital markets and trade activity at scale, though not without limitations. This is not expected to change fundamentally even as new rails are layered on. A more useful framing is a near-term set of improvements to the existing system and a genuinely long-term infrastructure build, each serving a different purpose and drawing on the other without needing to converge fully.

Where is digital cash heading?

While the early narrative around digital assets focused heavily on tokenizing traditional securities, the industry discussions identified digital cash as a key catalyst enabling broader market transformation across a range of use cases throughout the securities life cycle. Achieving true scale across wholesale markets depends on resolving the structural economics of liquidity, establishing legal finality, and forging coordinated interbank standards rather than simply upgrading software. The industry discussions point to five core theses about the future of digital cash:

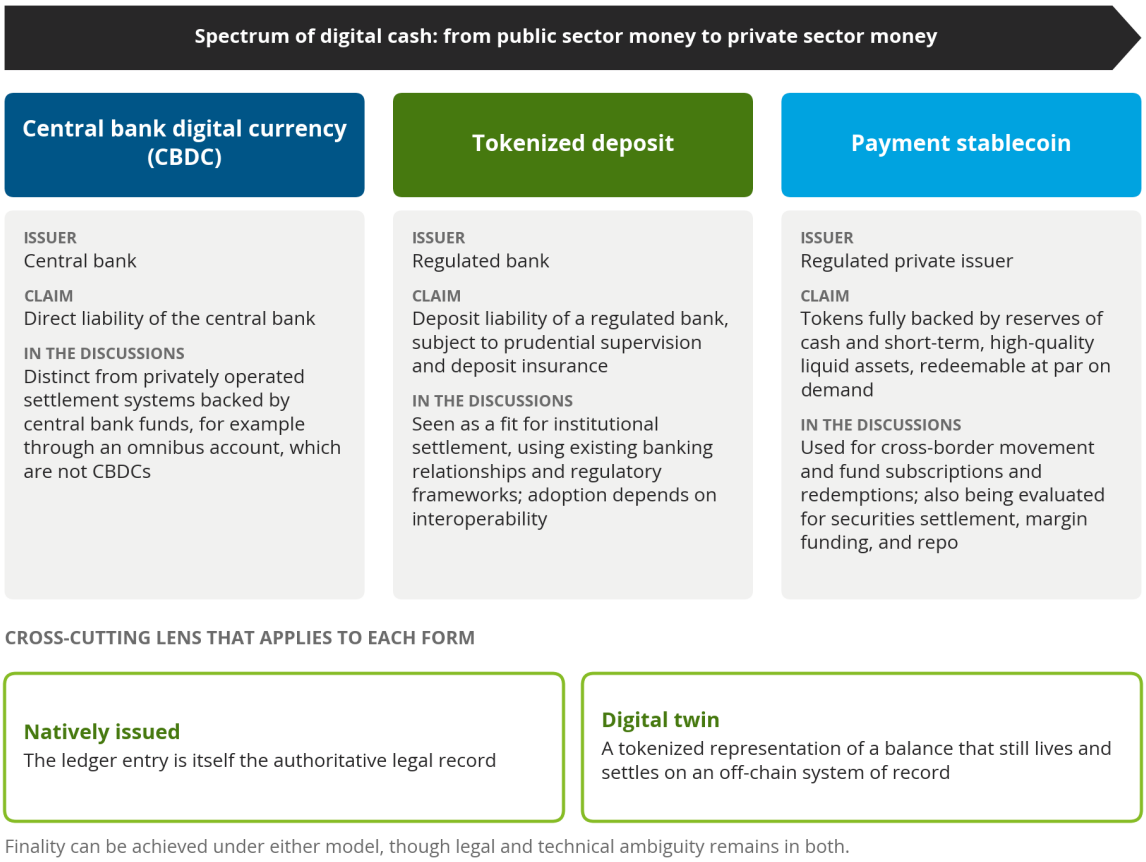
FIGURE 3 Five core theses about the future of digital cash



1. No single form of digital cash is likely to capture all use cases.

The future of digital money is likely to remain pluralistic, with different forms serving distinct wholesale and retail needs. Tokenized deposits could play an important role in institutional settlement by leveraging existing banking relationships, prudential supervision, and established regulatory frameworks, although adoption will depend on interoperability and integration with existing payment infrastructure. Regulated payment stablecoins are also being evaluated for institutional capital markets use cases, including securities settlement, margin funding, and repo, alongside cross-border payments, trading venue liquidity, and emerging applications such as agentic commerce. Their established distribution and digital asset infrastructure could support this institutional adoption. A diverse ecosystem of banks and regulated payment stablecoin issuers could support competition and settlement choice, while reducing reliance on individual providers where alternatives are accessible and interoperable. The suitability of each model will depend on the use case, network reach, and associated credit, liquidity, and operational risks.

FIGURE 4 The spectrum of digital cash



Some participants argued that settlement efficiency is greatest where tokens are natively issued and the ledger itself constitutes the authoritative legal record. In their view, tokenized digital twins of funds that mirror off-chain bank liabilities offer fewer finality benefits because ownership and finality still depend on off-chain books of record. Others noted that well-governed twin and entitlement models, supported by reliable synchronization with the system of record, can still deliver meaningful operational benefits during the transition. Payment systems in which participants hold and transfer entitlements to funds held in an omnibus account should, however, be distinguished from such models: transfers of those entitlements can achieve legal settlement finality within the payment system, without requiring a subsequent off-chain transfer of the underlying funds to complete settlement, subject to the applicable legal framework and system rules. Ultimately, digital cash rails are expected to supplement, not displace, correspondent banking and existing settlement backbones like Fedwire, Clearing House Interbank Payments System (CHIPS), T2, and Continuous Linked Settlement (CLS).[7] While new rails will likely capture market share in expensive, slow cross-border corridors, cost-effective domestic systems are better positioned to endure and remain in use alongside new alternatives.

[7] Board of Governors of the Federal Reserve System (FRB), "Fedwire Funds Services," last updated June 25, 2024; The Clearing House, "CHIPS® Network," accessed October 2026; European Central Bank, "Successful launch of new T2 wholesale payment system," press release, March 21, 2023 (T2 replaced TARGET2 as the Eurosystem's RTGS system); CLS Group, "CLSSettlement," accessed October 2026.

2. Digital cash delivers value independent of securities tokenization.

Securities tokenization has often treated cash movement as secondary. However, the most significant near-term economic returns come from optimizing cash, liquidity, and collateral operations across existing financial markets, yielding immediate advantages and clear P&L impacts for adopting firms even if the underlying securities market remains unchanged. Operating cash on programmable rails lets firms calculate, pledge, and call margin dynamically, around the clock, as market risks shift. This continuous, real-time margining offers a major advantage for markets trading 24/7. By pre-positioning and escrowing collateral digitally, automated systems can liquidate assets under predetermined contractual terms the moment risk appears, which can shorten the gap between a margin breach and its remedy when manual intervention cannot keep pace. However, greater automation also introduces risks, as simultaneous margin calls and pre-programmed liquidations could amplify market volatility and liquidity pressures, underscoring the need for appropriate safeguards and controls.

Furthermore, digital cash enables just-in-time liquidity across global clearing accounts, allowing a single digital cash reserve to satisfy cross-border collateral obligations across different jurisdictions without forcing treasuries into redundant, expensive spot foreign exchange conversions. Financing markets such as repurchase agreements and securities lending benefit immediately from continuous, programmable settlement, allowing cash to be mobilized outside normal market operating hours. In cross-border payments, live deployments demonstrate that digital cash can reduce rigid cutoff times, opaque routing, and multiday beneficiary confirmations by creating direct digital connections between originating and receiving institutions, compressing foreign exchange settlement risk through payment-versus-payment mechanics.

PARTICIPANT PERSPECTIVE

Granular Rules for Cash Management

Digital cash could allow much more granular rules for cash management, such as when to sweep to a money fund or when to move funds across borders. Today those decisions are largely driven by deadlines and handled in batches, so digital cash could add flexibility. AI agents could later generate bespoke rules for cash management or investment strategies. This is a major opportunity.

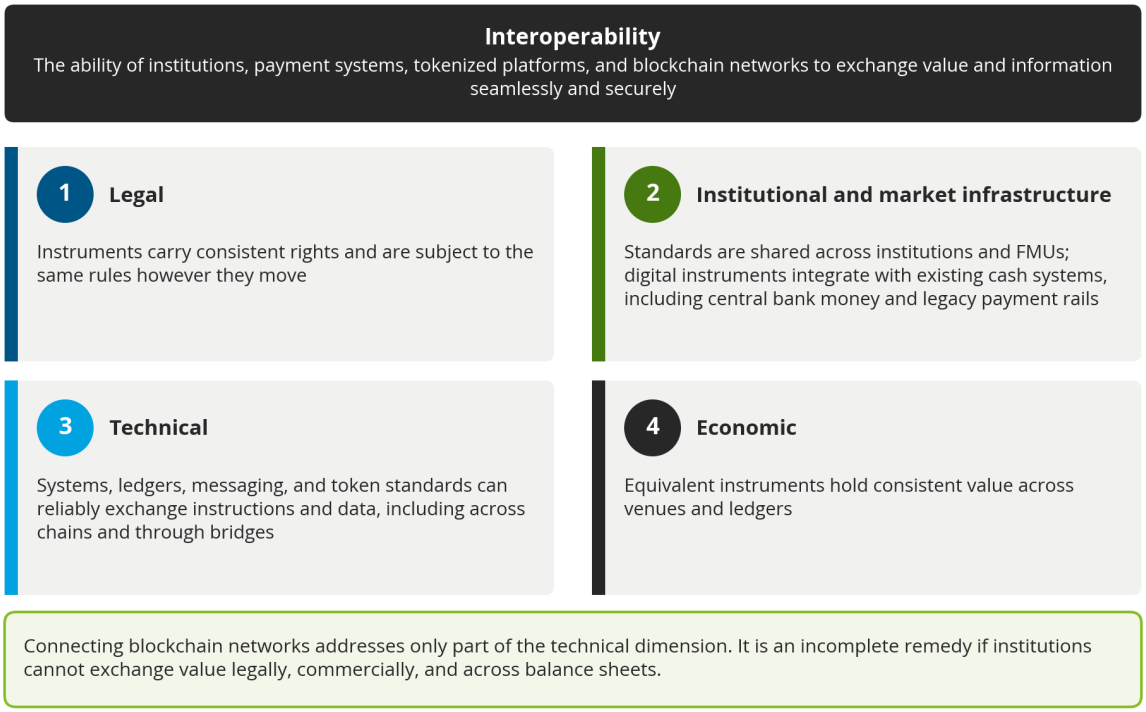
3. Interoperability is critical, but not the only component needed to scale.

Interoperability, in the context of digital cash, refers to the ability of different institutions, payment systems, tokenized platforms, and blockchain networks to exchange value and information seamlessly and securely. It extends beyond technical connectivity to include common standards across institutions and FMIs, integration with existing payment and cash systems, compatibility of token standards, and cross-chain transfers, while preserving settlement finality, preventing duplicate claims, and maintaining accurate books and records. It has four dimensions:

- Legal: instruments carry consistent rights and are subject to the same rules however they move;

- Institutional and market infrastructure: standards are shared across institutions and financial market utilities (FMUs), and digital instruments integrate with existing cash systems, including central bank money and legacy payment rails;
- Technical: systems, ledgers, messaging, and token standards can reliably exchange instructions and data, including across chains and through bridges; and
- Economic: equivalent instruments hold consistent value across venues and ledgers.

FIGURE 5 Four dimensions of interoperability



Connecting blockchain networks addresses only part of the technical dimension. It is an incomplete remedy if institutions cannot exchange value legally, commercially, and across balance sheets. Cross-chain links also leave several problems open. Bridges should be designed so that token balances are not replicated on both sides of a transfer. Settlement finality should be defined for transfers that cross a bridge, and accounting and record-keeping requirements should still be met, whichever ledger holds the asset.

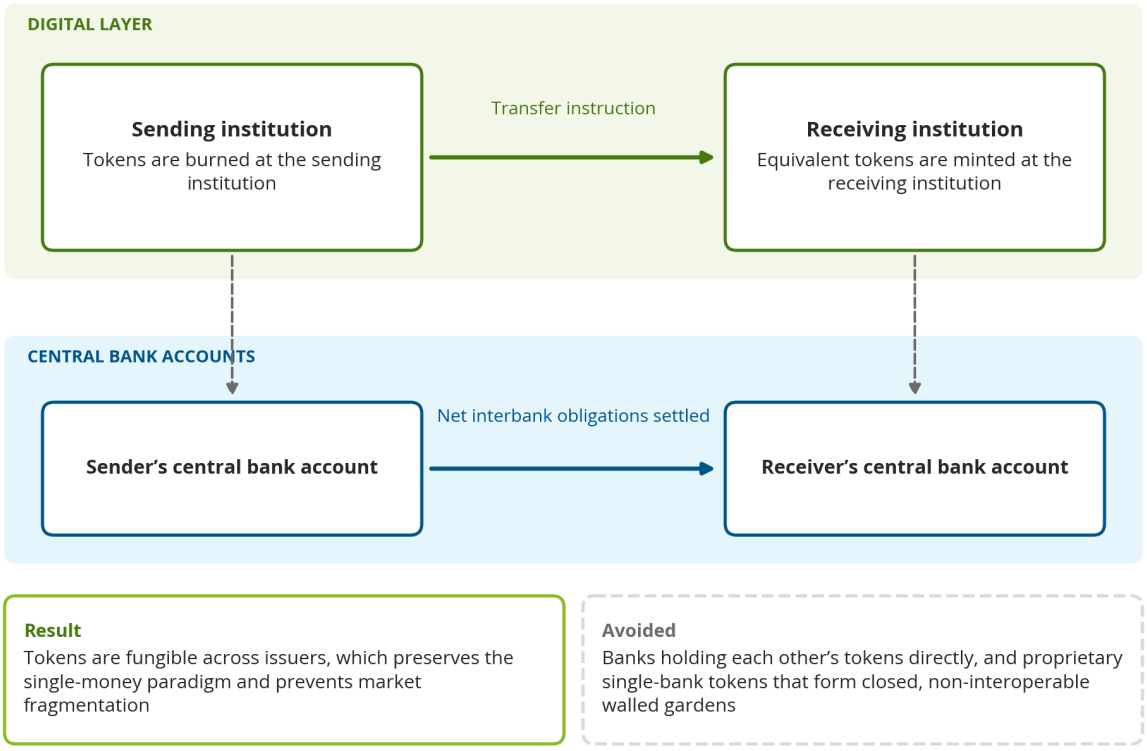
PARTICIPANT PERSPECTIVE

Interoperability Between the Digital and Traditional Worlds

Interoperability is often understood as the ability to move assets between blockchains. The interface between digital and traditional systems matters at least as much. Digital cash and conventional money will coexist for the foreseeable future, and funding into stablecoin and tokenized deposit networks still runs through established payment systems. Institutions therefore need to convert reliably in both directions, moving cash and assets onto a ledger to use them in on-chain applications, and back again to reach the liquidity and services that remain in the traditional system. Not every transaction needs to be digital from end to end on day one, and many digital asset transactions are expected to settle on existing fiat rails for some time.

Interoperability also requires resolving interbank fungibility, data semantics, and cross-border governance. Proprietary, single-bank tokens risk creating closed, non-interoperable walled gardens that fragment institutional liquidity. To prevent this, the market requires a functional interbank burn-and-mint framework in which tokens are burned at the sending institution and minted at the receiving institution, with net underlying interbank obligations settled across central bank accounts, enabling fungibility across issuers. Additionally, while some stablecoins are issued natively on multiple ledgers, moving others across distinct distributed ledgers currently requires synthetic, foreign-exchange-style bridging steps, which introduce counterparty exposures and accounting inefficiencies that mirror legacy foreign exchange friction. Globally, multilateral cross-border platforms should decouple local sovereign ledgers from shared international settlement layers. Typically, national ledgers built in domestic isolation cannot easily be retrofitted for cross-border alignment later; systems should be designed from the foundation with governance, shared minimum requirements, and settlement standards. Finally, scale will not come from inventing bespoke protocol stacks. Digital cash interfaces should integrate directly with existing institutional messaging standards and communication protocols. While ISO 20022 represents the critical messaging standard that should evolve to support these hybrid market structures, digital cash networks should also integrate with the other diverse market pipes and communication infrastructures currently in operation, mapping new settlement mechanics directly into familiar core banking software.

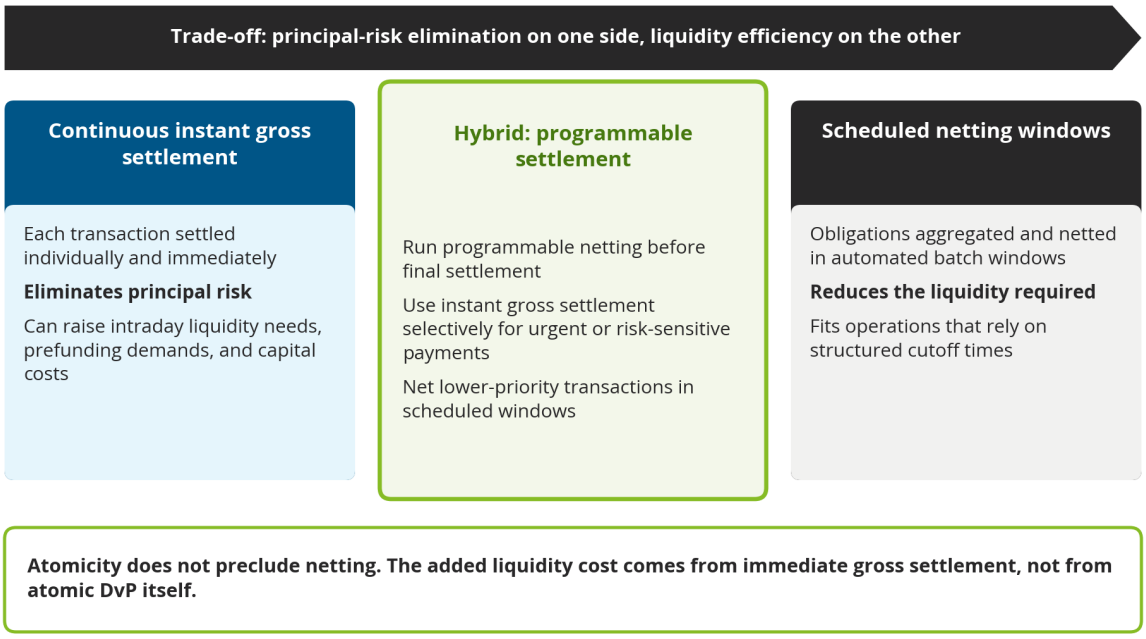
FIGURE 6 Interbank burn-and-mint model for tokenized deposits



4. Adoption hinges on institutional readiness and liquidity economics.

The limiting factor for enterprise deployment is not blockchain throughput or software maturity. The challenges lie within the institution: legal and accounting recognition, compliance architecture, key governance, and intraday liquidity economics. Instant, atomic gross settlement across every transaction eliminates principal risk but can increase intraday liquidity requirements, creating prefunding demands and capital costs that may compound at institutional scale. These liquidity implications arise from instant gross settlement rather than atomicity itself, which does not preclude netting before settlement. In high-volume wholesale markets, continuous gross settlement can require a prefunding model that can be economically counterproductive compared to netting. Therefore, viable institutional systems should preserve netting efficiencies where appropriate, including by running programmable netting algorithms prior to final settlement.

FIGURE 7 Balancing instant gross settlement and netting



Furthermore, on-chain code executes instantly, but legal finality requires statutory clarity on insolvency priority, asset segregation, and dispute remediation. Without statutory recognition across key jurisdictions, instantaneous technical settlement remains exposed to legal challenge and judicial reversal. Compliance also remains a major bottleneck. AML, sanctions screening, and Travel Rule workflows still run through off-chain, asynchronous systems, fracturing atomic transactions into multistep “screen-then-release” operations.

- Deploying digital cash safely requires wallet-level identity credentials, continuous transaction monitoring, and verifiable permissioning, including controlled force-burn, force-transfer, and emergency-freeze capabilities, without compromising market confidentiality. Finally, managing institutional private keys across sharded architectures, multiparty computation, and dual-authorization controls represents a far more demanding operational and custody hurdle than managing traditional book-entry securities.

5. Industry-wide coordination is needed to scale; institutional readiness alone does not solve it.

An individual bank can optimize its internal systems, but it cannot create a liquid market alone. Digital cash could remain trapped in isolated proof-of-concept deployments until the broader industry establishes common operational conventions, regulatory alignments, and shared infrastructure standards. Widespread institutional adoption cannot occur without definitive regulatory guidance on capital treatment, requiring regulators to establish clear standards for HQLA eligibility, reserve capital requirements, and standardized accounting recognition for tokenized balances.

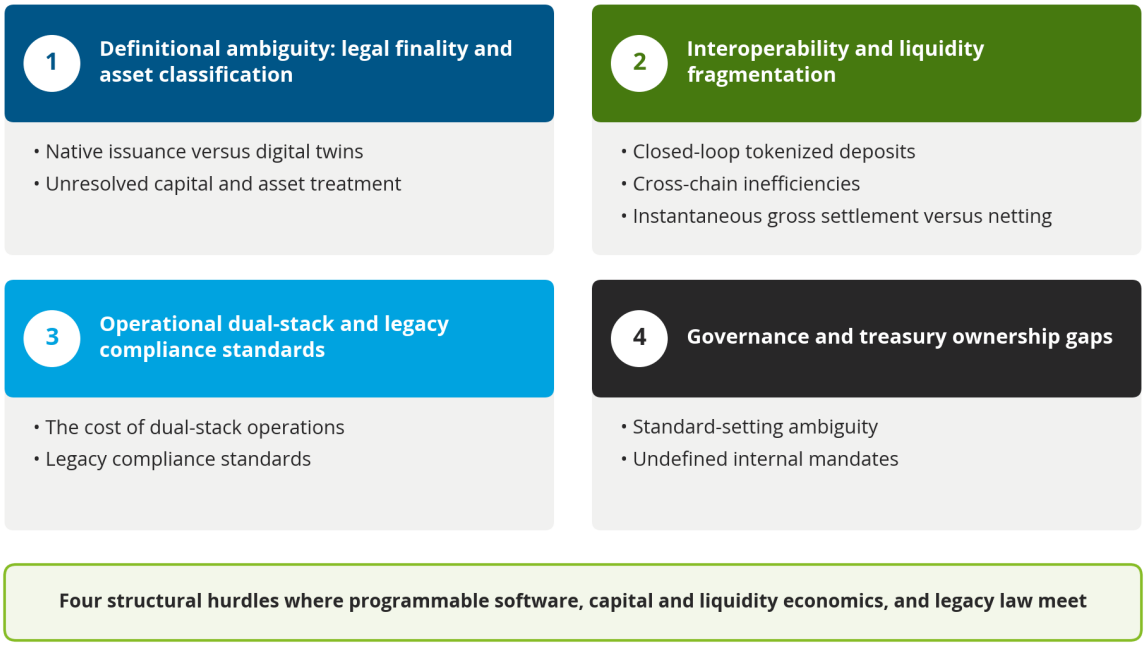
Currently, financial institutions lack a neutral, market-wide standard to assess the creditworthiness, technology resilience, and smart contract audit integrity of third-party digital cash issuers and payment rails. The industry will also need to

assess how to align a continuous 24/7 transaction cycle with established conventions for reporting, end-of-day balance reconciliations, and central counterparty default waterfalls, and where modifications may be necessary for new operating models and timeframes. The industry should coordinate on synchronized valuation cutoffs and operational boundaries, even with continuous ledger availability, and decide whether a defined “settlement day” survives or is replaced by continuous transaction-by-transaction reconciliation.

Current challenges of digital cash for the securities industry

Deploying digital cash in securities transactions creates friction where programmable software, capital and liquidity economics, and legacy law intersect. These challenges center on four structural hurdles:

FIGURE 8 Four structural hurdles



Definitional ambiguity: legal finality and asset classification

- Native issuance versus digital twins and entitlement models: Settlement finality may be achieved in both natively issued token and digital-twin models, but neither model guarantees legal or technical finality in every context. For natively issued tokens, an on-chain record may serve as the authoritative record where it is recognized under the applicable legal framework. Digital twins, which reflect balances held in off-chain systems, may require reconciliation with those systems and may be affected by insolvency proceedings. The outcome in each case depends on the relevant jurisdiction, legal framework, and system design.
- Unresolved capital and asset treatment: Stablecoins and tokenized deposits present fundamentally different risk profiles; private stablecoins carry reserve composition and redemption risk, while tokenized deposits carry credit exposure to the issuing commercial bank. Without formal prudential guidance on HQLA eligibility, risk weighting, and accounting treatment, institutions cannot reliably price counterparty risk.

PARTICIPANT PERSPECTIVE

Custody Applies to Securities, Not Cash

Cash is a liability on a bank's balance sheet. What a custodian holds is a digital representation of cash, which is a different instrument with different legal characteristics. The phrase "cash custody" blurs that line, and imprecise language can lead to conversations about regulatory expectations that deposits be held off the bank's balance sheet, an arrangement that is inconsistent with how a bank operates. Precise terms for what is actually being safeguarded help clients and regulators understand what a custodian can and cannot do.

Interoperability and liquidity fragmentation

- Closed-loop: Most tokenized deposits currently circulate within a single bank's network. Without a mechanism to settle obligations between institutions, they function as proprietary claims on one bank rather than as fungible cash.
- Cross-chain inefficiencies: Stablecoins not natively issued on each blockchain they operate on require third-party bridging or synthetic minting, introducing credit risk and liquidity fragmentation that mirror foreign exchange frictions.
- Instantaneous gross settlement versus netting: Instantaneous gross settlement with atomic DvP eliminates principal risk, but can reduce the liquidity benefits of multilateral netting. Atomicity itself does not preclude netting before settlement. Demanding full, continuous prefunding across multiple venues can create significant capital drag for high-volume trading desks. Adoption may focus less on instantaneous settlement, whose capital costs may outweigh its benefits, and more on programmability and settlement precision while preserving netting.

PARTICIPANT PERSPECTIVE

A Licensed Issuer Is Not a Licensed Instrument

Establishing whether a given stablecoin is a lawful payment method in each investor's jurisdiction requires significant legal effort. An issuer may hold licenses in several markets while the specific token is not registered in them, and in many markets no regime exists. A fund that accepts a subscription in cash and returns proceeds in a stablecoin may also be facilitating an exchange that requires a license. The situation resembles needing a money transmitter license in every state, and it limits cross-border use of stablecoins more than technology does.

Operational dual-stack and legacy compliance standards

- The cost of dual-stack operations: Operating 24/7 real-time blockchain rails alongside legacy batch-based systems forces firms to run redundant reconciliation, dual accounting workflows, and complex key-management infrastructure (such as multiparty computation) at substantial cost.
- Legacy compliance standards: Traditional AML, sanctions screening, and Travel Rule workflows are batch-oriented, account-based, and jurisdictionally bound. Applying them to continuous, wallet-based rails breaks atomic transactions into cumbersome "screen-then-release" steps.

Governance and treasury ownership gaps

- Standard-setting ambiguity: The market lacks consensus on whether commercial consortia, industry associations, or central bank mandates should drive digital cash standards.
- Undefined internal mandates: Institutions rarely have an internal owner for real-time liquidity. Treasury desks, trading desks, and technology operations frequently dispute who is responsible for funding, monitoring, and capitalizing continuous, intraday settlement accounts.

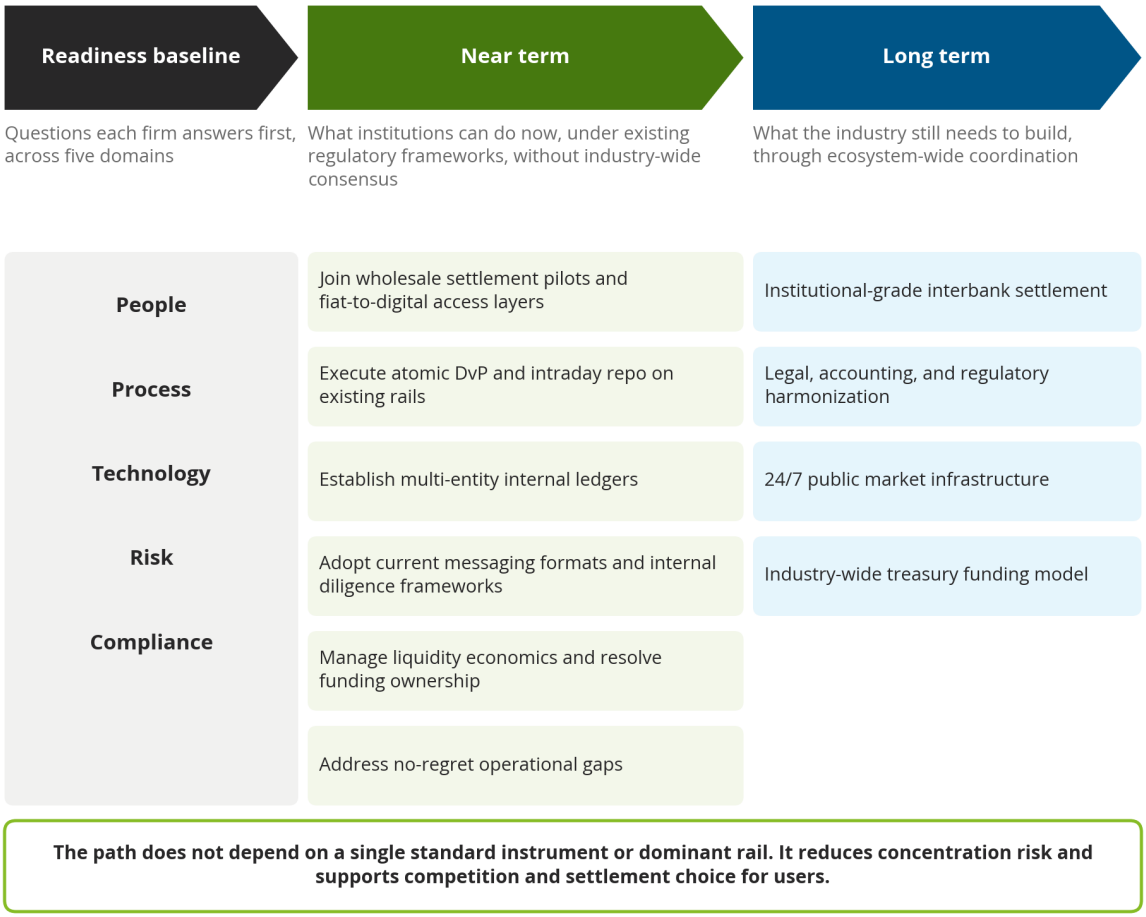
The table below summarizes additional priority forward-looking activities industry participants noted in response to these challenges.

Challenge	Priority forward-looking activity
Settlement finality is not consistently defined across native issuance versus digital twins	Industry and regulatory convergence on a shared finality definition by instrument type; extension of existing legal-opinion work to tokenized deposits and stablecoins
Interbank and cross-network interoperability does not yet exist at scale	Continued build-out of interbank settlement utilities with interoperability designed in from the outset; a common technical standard for cross-chain stablecoin fungibility

Challenge	Priority forward-looking activity
Regulatory and legal treatment is fragmented across jurisdictions	Regulatory guidance clarifying how existing fund rules apply to tokenized structures; continued stablecoin-law implementation; engagement with foreign market regulators
AML/KYC and sanctions compliance were built for a slower, account-based system	Industry-consortium development of digital identity standards; a formal event-based AML/KYC model; modernized real-time sanctions screening
Operating models still run a costly legacy-and-digital dual stack	Continued investment in key-management infrastructure; shared conformance-testing infrastructure; tighter internal governance to close the pilot-to-production gap
Credit, counterparty risk, and capital treatment remain unresolved	Prudential regulators issuing formal HQLA and accounting guidance for both instrument types; industry-standard concentration-risk frameworks for stablecoin issuers
Balancing settlement timing, gross settlement, and netting remains a design challenge	Continued experimentation with hybrid models (e.g., more frequent netting cycles, intraday windows, smart-contract-enabled intraday repo)
Standard-setting governance ambiguity persists	A structured, cross-institutional standards dialogue convened through a neutral industry forum that separates business-semantic standards from technical implementation standards
Treasury funding ownership is undefined	Clarify, within each institution, which function funds and confirms real-time liquidity positions; extend existing foreign exchange intraday swap funding models as a starting template

An adoption path

FIGURE 9 The adoption path



While addressing these systemic challenges requires industry-wide coordination, individual firms can first establish a baseline of operational readiness by addressing critical strategic questions across people, process, technology, risk, and compliance:

- Has the board established a formal digital asset committee with explicit approval boundaries for capital and liquidity exposure, instrument types, risk appetite, and venue participation? Who ultimately owns the operational and liquidity risk of intraday digital cash positions? Does treasury have both the mandate and the technical literacy to manage them?
- Do legal, compliance, risk, and audit officers understand distributed ledger mechanics well enough to challenge front-office digital asset strategies, rather than defer to them?
- Can enterprise risk systems continuously monitor, aggregate, and stress-test market, counterparty, and credit exposures, rather than relying on end-of-day calculations, at a pace commensurate with 24/7 markets? Do trading and credit risk engines carry automated circuit breakers and real-time collateral-call triggers that function without manual intervention?

- Can the third-party risk management framework continuously monitor custodians and exchange venues, with clear risk thresholds set for each relationship?
- How will the compliance stack integrate blockchain analytics to score wallet addresses, screen counterparties, and flag tainted sources of funds in real time, including unhosted wallets and decentralized rails, without slowing settlement down?
- How would the institution mask proprietary transaction patterns and counterparty identities on shared ledgers without compromising regulatory transparency?
- Does treasury have real-time visibility into cash, collateral, and liquidity buffers fragmented across external blockchains, custody networks, and trading venues? How will it forecast intraday liquidity drains, manage prefunding across disconnected venues, and automate just-in-time funding to avoid stranded capital? Can the asset-liability management framework sweep liquidity between legacy RTGS systems, such as Fedwire or T2, and digital cash networks during nonbanking hours?
- Is the operating model built around follow-the-sun desks or autonomous exception-handling protocols to resolve settlement breaks on a 24/7/365 basis? Are middle- and back-office teams staffed to field institutional client inquiries and resolve disputes in real time?
- How can current ledger infrastructure support real-time, 24/7 transaction processing, or will legacy batch windows block atomic settlement? Can the institution execute atomic, on-chain DvP today, or has that never been tested?
- Can the general ledger maintain real-time, automated synchronization between client sub-accounts and omnibus on-chain wallet balances? Do accounting platforms reconcile trade confirmations against on-chain transaction hashes at the block level?
- Does the institution rely on institutional-grade key storage, such as multiparty computation or hardware security modules, to eliminate single points of failure? How are signing permissions revoked instantly in the event of a breach?
- What operational workaround exists if a third-party distributed network halts, forks, or suffers a consensus failure during active market hours?

Near term: what institutions can do now

Once an institution completes its internal readiness checklist, it can pivot to near-term, market-ready initiatives that fit within existing regulatory frameworks and require no industry-wide consensus. These activities give firms an opportunity to understand digital cash applications firsthand, build capabilities within their teams, and identify potential integration issues with their own systems without requiring major structural changes to existing business models. Regardless of how digital cash ultimately develops, this experience will prepare firms to engage with on-chain cash, emerging payment systems, and new operational flows they support.

- **Join existing wholesale settlement pilots or integrate fiat-to-digital cash (e.g., tokenized deposits, stablecoins) access layers.** Institutions not yet active in the market can immediately enter existing bank-consortium initiatives or infrastructure-led cross-border wholesale settlement experiments. In parallel, fiat-to-digital cash integration models, including API-based connectivity between traditional bank accounts and regulated digital

cash instruments, can also help inform requirements for conversion, custody, controls, and integration with existing financial infrastructure.

- **Execute atomic DvP and intraday repo using existing digital cash rails.** Apply digital cash to bilateral margin calls and intraday repo using existing systems. Settling cash and collateral simultaneously eliminates overnight drag and principal risk without altering underlying cash equities or bond settlement structures. Rather than defaulting to gross atomic settlement for high-volume trades, firms should leverage smart contracts to run intraday netting batches, reserving instant gross settlements specifically for volatile, risk-sensitive transactions.
- **Establish multi-entity internal ledgers.** Rather than waiting for complex interbank networks to mature, institutions with cross-border footprints can deploy digital ledgers today. This model lets corporate clients run automated, round-the-clock treasury sweeps across international subsidiaries, removing reliance on correspondent banking cutoff times. Although proprietary ledgers inherently confine liquidity within a single bank's perimeter, they provide an immediate, executable pathway to institutional tokenization ahead of broad interbank connectivity.
- **Adopt current financial messaging formats and institute internal diligence frameworks.** Incorporate digital asset extensions into existing ISO 20022 messaging pipelines (such as populating wallet addresses and token identifiers within standard payment fields) rather than building separate communication protocols. Simultaneously, establish internal diligence frameworks, including firm-level rating criteria, to assess stablecoin reserve transparency, issuer legal structures, and custody mechanisms. This allows business lines to select instruments based on risk profile and counterparty exposure.
- **Manage liquidity economics and resolve funding ownership.** Institutions should actively model the prefunding requirements and liquidity fragmentation costs when operating across multiple venues simultaneously. To address this, firms should formally mandate that corporate treasury desks manage and confirm intraday liquidity positions, using existing foreign exchange intraday swap funding frameworks as an operational template. Defining this ownership now prevents a critical structural gap from stalling operations once a pilot needs to scale.
- **Address the no-regret operational gaps identified by industry standard-setters.** Organizations should proactively upgrade internal and external data flows that move information through the settlement stack too slowly to meet required timelines. By eliminating manual intervention across reconciliation layers and supporting 24/7 processing, firms can remove the operational bottlenecks that block real-time execution, independent of which instrument or network ultimately prevails.

Long term: what the industry still needs to build

The priorities below require ecosystem-wide coordination, regulatory engagement, and mature, production-scale infrastructure. Firms should distinguish these industry-level efforts from the actions they can take on their own today.

- **Institutional-grade interbank settlement.** The industry should consider further developing production-scale interbank utilities, including models where tokenized deposits are burned at the originating bank and minted at the receiving bank, with net obligations settled across central bank reserve accounts. This preserves the singleness of money and prevents market fragmentation. This work should draw on experience from existing live

infrastructure for on-chain settlement with central bank money balances while addressing US market requirements.

- **Legal, accounting, and regulatory harmonization.** Expanding digital cash into international securities settlement demands statutory clarity on when an on-chain transfer becomes legally final and irrevocable. Global authorities should align insolvency and property rights to ensure that local bankruptcy proceedings cannot unwind multi-jurisdiction atomic transactions. Prudential supervisors should also issue definitive guidance establishing capital risk-weighting, balance-sheet recognition, and HQLA qualification for both stablecoins and tokenized deposits. Clarifying these legal and capital differences is a regulatory mandate that private market initiatives cannot fulfill on their own.
- **24/7 public market infrastructure.** Running private digital settlement around the clock without introducing systemic liquidity risk requires central banks to extend RTGS windows, discount facilities, and intraday credit lines to align with 24/7 commercial schedules and prevent weekend liquidity shortages. Deploying digital cash in wholesale markets also requires privacy-preserving technologies that shield sensitive trade data, counterparty identities, and balance positions from public view. These cryptographic controls should work alongside automated compliance protocols that let regulators monitor financial crime, bridging the current asymmetry between traditional account-based monitoring and token-based validation. Furthermore, the industry will need to assess how to integrate standardized resolution frameworks, automated margin-unwinding mechanisms, and network circuit breakers into industry infrastructure to contain sudden liquidity shocks and reduce the risk of instant contagion.
- **An industry-wide treasury funding model for real-time liquidity provisioning.** Adapting traditional foreign exchange intraday swap arrangements into a dedicated funding mechanism for digital cash can provide corporate treasury departments with clear cost-allocation structures. Giving treasury desks the institutional mandate to fund continuous liquidity positions resolves an operational bottleneck that exists independently of software design.

This adoption path does not depend on the industry choosing a single standard instrument or a single dominant rail. Instead, long-term systemic resilience rests on a multi-model architecture. By coexisting, commercial bank networks and regulated payment stablecoin issuers could help insulate the financial system against single-point-of-failure risks while affording institutions genuine settlement choice across domestic, wholesale, and cross-border operations. Firms should address liquidity economics, interoperability, and treasury-funding ownership now, while correspondent banking networks continue to support settlement as industry-wide infrastructure develops. Together, these actions can help establish the foundation for a scalable, competitive, and interoperable settlement model with settlement choice for users.

About the organizations

SIFMA

SIFMA is the leading trade association for broker-dealers, investment banks and asset managers operating in the U.S. and global capital markets. On behalf of our industry's one million employees, we advocate on legislation, regulation and business policy affecting retail and institutional investors, equity and fixed income markets and related products and services. We serve as an industry coordinating body to promote fair and orderly markets, informed regulatory compliance, and efficient market operations and resiliency. We also provide a forum for industry policy and professional development. SIFMA, with offices in New York and Washington, D.C., is the U.S. regional member of the Global Financial Markets Association (GFMA).

Deloitte

Deloitte helps organizations effectively navigate business risks and opportunities, from strategic, reputation, and financial risks to operational, cyber, and regulatory risks, to gain competitive advantage. Deloitte's Digital Assets practice works with financial services institutions to help them navigate the strategic, operational, and regulatory dimensions of digital asset adoption and market infrastructure transformation.

Authors

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