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Digital Insights

How Tokenization Is Changing the Way the Industry Thinks About Financial Transactions

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In today's global financial ecosystem, lack of trust between counterparties, unequal access to investment opportunities, limits on liquidity, multi-day settlement cycles, and underdeveloped market standards contribute to fragmented and inefficient trading and settlement across both public and private capital markets.

Imagine a more advanced ecosystem in the future where an ordinary retail investor is able to trade 20k shares of a private equity position directly for a fractional share in a commercial real estate building, where a limited partner can sell partnership interests in an alternative investment fund to gain liquidity without penalty, where a portfolio manager can increase liquidity of a new fund by issuing fractional shares that attract new investors, and where a speculator can quickly buy and sell shares in illiquid private unicorns with cryptocurrency.

Such a future could become a reality, as major banks and other key financial institutions are exploring a new approach known as "tokenization"[1] where a wide range of different assets can be repackaged into smaller bits that make them much more transparent, affordable, liquid and efficient to service and where global standards can exist across different jurisdictions, subject to further regulatory developments in this space. This not only helps make investing more accessible, but it also expands the potential client base for global asset managers who were otherwise focused mostly on institutional relationships.

Brown Brothers Harriman and PolySign, Inc. collaborated on this article to explore tokenization's potential to transform financial services and how the ability of the technology to deliver on its promise of automation, liquidity and transparency will require interoperability between traditional service providers and digital players to bring all its benefits to investors.

[1] https://www.marketwatch.com/story/big-four-firm-ey-major-banks-and-other-key-financial-institutions-are-working-to-tokenize-assets-behind-the-scenes-11632259962

How does asset tokenization work?

Tokenization is the process of converting ownership rights into purely digital representations of an asset that can be subdivided, traded, and stored on decentralized ledger technology (DLT). A token can theoretically represent any asset type, but they are usually considered either native to the blockchain and have no physical presence, such as Bitcoin, or are not native to the blockchain and represent some form of a real-world asset, such as shares of a company.

Tokenized assets are widely considered the next generation of *book entry processing* in which a digital token is used to represent an actual security for example. While book-entry and tokenized assets are both digital representations of value, there are key differences in terms of the verification process and degree of centralization. For book-entry securities, transfer authorization ultimately depends on the ability of the central security depository (CSD) to verify the identity of the account holder who is its direct participant. By contrast, a digital token's authorization depends on the validation of matching public and private keys on a DLT or blockchain to unlock ownership rights.

With traditional securities, only the CSD can update a central ledger and is the single entity responsible for recording all transaction histories. Tokenized asset accounting and transfer are completely decentralized, meaning that ownership is validated by multiple participants in the network. However, most tokenization platforms today are not completely open and have had to incorporate various restrictions to ensure accountability for compliance with regulatory requirements relating to know-your-customer (KYC), anti-money laundering (AML), and cybercrime.

Introducing tokens also changes the way payments are made for the delivery of assets. If both the securities and the cash required for payment reside on the same DLT and are already linked to an account on that ledger, then a single-ledger transfer can take place through a process called atomic settlement. In the future, though, we should expect that tokens will also be required to represent cash in the payment legs between different DLT platforms. Because the order and timing of those transfers is critically important, smart contracts, or transaction protocols that automatically execute based on a sequence of processing steps, will likely be needed to conditionally process both transaction legs across platforms where true atomic settlement is not possible. In order to fulfill the cash transfers on a blockchain without introducing additional volatility associated with cryptocurrencies, many existing tokenization platforms currently take advantage of a special type of token called a "stablecoin" whose value is tied to a stable real world asset like the US Dollar or gold. Likewise, the industry may soon be able to leverage digital currencies issued by central banks (CBDCs), which would be backed the issuing government's monetary authority.

What is book entry processing?

Years ago, securities were issued as paper certificates. Physical possession provided proof of ownership. However, moving paper certificates around to different owners as they were bought and sold was slow, expensive, and risky. Therefore, central security depositories (CSDs) were set up in all major markets to immobilize paper certificates by storing them in one place, eliminating the need to settle trades by physically moving them. Later, technology advancements enabled securities to be "dematerialized" – that is, the majority of physical securities certificates no longer exist at all and ownership is reflected only by electronic book-entry in an account at a CSD.

What type of assets can be tokenized?

Because a token is just a digital representation of an asset and not the asset itself, any asset can be tokenized. Common examples today include:

- physical objects, such as fine art and collectibles
- precious metals, like gold and silver
- real assets, such as real estate
- intangible assets, such as equities, bonds, and mutual funds,
- other intangible assets, such as licenses, patents, copyrights, Intellectual Property (IP)
- unlisted, physical securities

In most cases, a token is just a digital representation of an actual underlying asset. Examples of token types and the models of their use include:

- Securities token offerings (STO)s which can represent any financial asset issued as a token.
- Stablecoins which are tokens with a fixed exchange rate to a fiat currency or other convertible real asset.
- Central Bank Digital Currencies (CDBCs) issued by central banks as electronic versions of fiat currencies such as digital renminbi issued by the Chinese Central Bank as parallel method of payment

Alternative investments such as hedge funds, private equity, venture capital and private debt and real assets such as real estate, infrastructure, and natural resources are attracting investors in increasing numbers. These asset classes are generally less liquid, less accessible, and less transparent than traditional assets, making them a perfect target for tokenization.

What are the benefits of tokenization and how could it change our industry?

Tokenization offers the potential to "open up" private markets, unlocking the full potential in illiquid, relatively high-performing asset classes through enhanced market access and wider distribution. By tokenizing hard-to-access asset classes, the industry could potentially improve settlement efficiency, as well as enable new liquidity through tokenized and fractionalized trading in DLT-enabled primary and secondary markets.

Tokenization also offers the potential for more efficiency by removing intermediaries from the settlement processes and therefore, greatly reducing the logistical challenges involved in the creation, purchase, and sale of securities. Exchanges, trading, clearing, and settlement is now possible in seconds thanks to atomic swaps of tokenized assets across multiple decentralized platforms. Smart contracts allow issuers to program the sequence contingent processing steps in a contract, which eliminates counterparty risk and reconciliation costs of complex financial instruments. Financial service providers are envisioning the possibility of automating consolidated reporting and compliance, custody, and asset servicing.

The benefits of issuing digital assets as an investment vehicle:

Fractional Ownership

Traditional assets such as commercial real estate and fine art are usually defined by a high price per unit. Tokenization of an asset offers an efficient path to fractionalize its value, making it more accessible by effectively lowering the minimum investment threshold.

Added Market Liquidity

As a byproduct of fractional ownership, tokens are also expected to improve liquidity because they enable a much broader base of smaller-ticket investors to participate in the market.

Enhanced Trust

The transparency and immutability of DLTs helps to reduce the reliance on a single central authority to mitigate counterparty risks in the settlement process.

Programmability

The smart contracts that are built into many tokenized asset platforms help to automate the execution of complex transactions and shorten settlement cycles. They also have the potential to streamline compliance monitoring processes like KYC/AML.

Accessibility

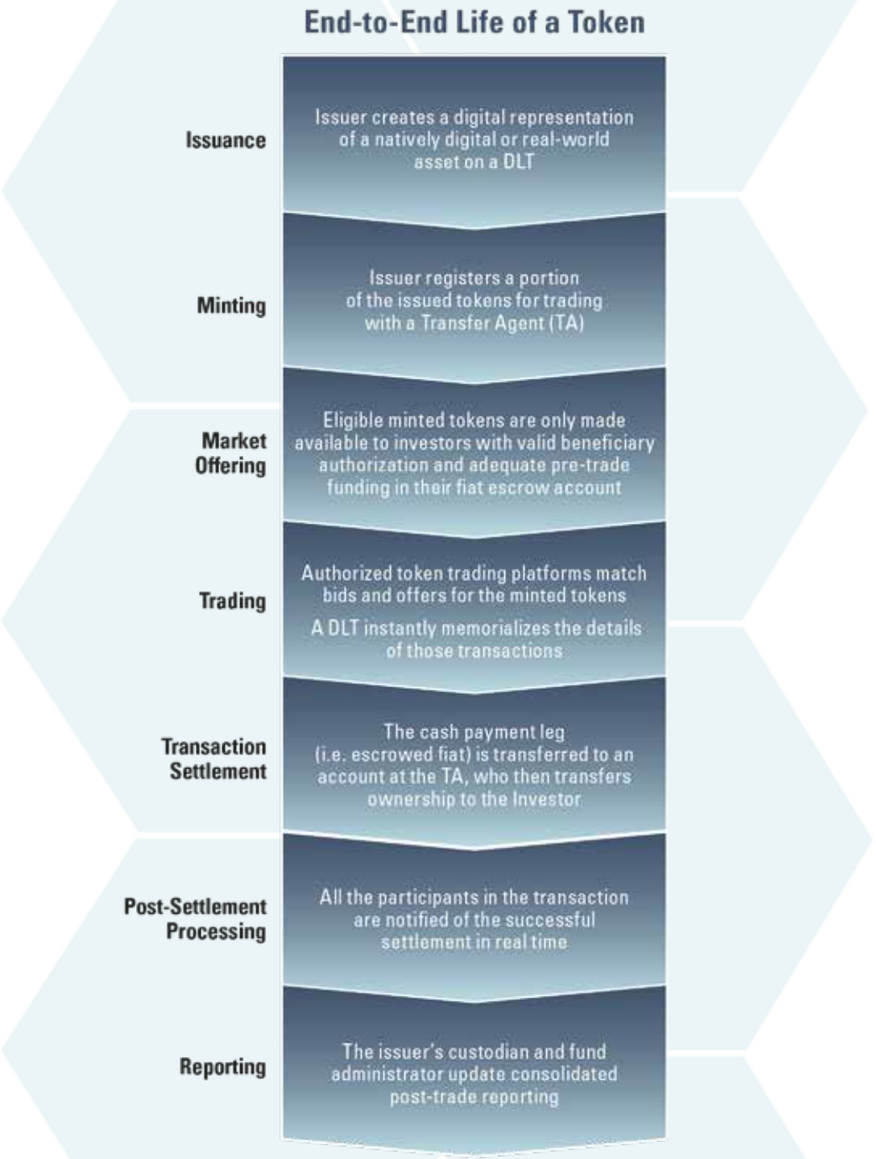
A digital/crypto wallet can be opened online almost instantaneously, without the need to go to a bank or open an account with a broker. This feature makes digital assets more accessible than traditional financial market instruments. Because of this, it is not uncommon for digital assets to be the very first financial investments purchased by new investors in the market.

Additionally, blockchain and DLT, the underlying technology used for the tokenization, enable open source, decentralized, and cryptographically secured operations as an alternative to the traditional linear processing required between the front, middle and back offices.

Coming together to make the vision a reality

Given the speed and infrastructure investment required for tokenization, its potential is dependent upon collaboration among digital asset ecosystem participants. From a technology perspective, the market will need a resilient distributed infrastructure that can support the full lifecycle of a tokenized asset via a cross-border, asset agnostic, multi-party ecosystem that doesn't necessarily exist at scale today. Such a network would need to enable:

- atomic, cross-border settlements of different assets across multiple public and private digital ledgers 24 hours per day, 365 days per year
- near instant transaction processing time scales
- real-time transparency into price discovery and asset valuation where global standards exist across jurisdictions
- an authoritative blockchain that does not require a central operator allows for digital identification and digital signing
- technical and operational interoperability with legacy institutional asset serving platforms
- network protocols that instill trust among transacting counterparties that is capable of accounting for more than one set of local laws and regulations



Digital asset solutions are already delivering many of these capabilities to the market. By providing the infrastructure for near instant processing, faster settlement across different assets and markets and real time transparency, they are enabling improved liquidity and boosting investor flow by unifying segregated markets, exposing assets to more investors, and providing real-time valuation. The newest technology offers much higher throughput and performance than previous versions of blockchain technology, which has enabled the scalability needed to effectively support an almost unlimited number of settlement transactions per second. Additionally, these new platforms may offer:

- enhanced security and reduced risk by removing the complexity that comes with managing alternative third-party smart contracts-based solutions
- integration options for an array of different asset types in a regulatory compliant manner (for securities and non-securities alike)
- contractual clarity and trusted trading capabilities through their governance models
- ledger sovereignty by enabling counterparties to maintain full control of assets on their ledgers and with no foreign authority exerting influence on transactions

How do we bridge the gap between legacy analog and this new digital ecosystem?

Despite all the progress the industry has already made toward asset tokenization, these new digital assets aren't fully integrated into the traditional financial services infrastructure or existing legal or regulatory frameworks yet.

For issuers and investors considering tokenizing assets, it is important to seek out service providers that can successfully work with both digital players and traditional financial institutions. The original vision of blockchain was to "rip and replace", i.e. be a wholly separate alternative to the traditional financial ecosystem. For example, while there are many blockchains and service providers that enable asset tokenization, most require the assets to be "issued" onto an existing public blockchain like Ethereum or a private blockchain like Corda. This can be challenging because, in many cases, it could require an asset issuer to develop new technical capabilities in order to either replace their current ledger system with a new blockchain solution or develop nodes that can directly operate on existing blockchains in the market.

For many organizations, who do not wish to overhaul their entire systems in order to accommodate DLT, the preferred solution is a platform that caters to both digital players and traditional financial institutions because it may not require asset issuers to make as many major updates to their internal processes.

In particular when it comes to data connectivity, issuers who choose to tokenize assets may want the choice to either interface with a digital asset platform via its application programming interfaces (API) or, if necessary, continue to leverage existing legacy data delivery channels like SWIFT messaging or secure file transfer protocol (sFTP). The idea behind newest technology products – like PolySign's PolyNet platform as one example – is that they provide options in the ecosystem so that the issuer's existing provider network is not required to operate complex digital asset systems of their own from the outset of digital asset adoption. With this type of hybrid approach, as digital asset transactions are completed, they are "memorialized" onto the vendor's blockchain but can also be reflected on traditional books and records systems at the same time. This enables better interoperability between traditional players and new digital players.

In addition, platforms that employ third generation blockchain technology, which is scalable and allows mass adoption, make it possible to secure digital assets through the use of smart hardware security modules with threshold signatures and multi-party computing as well as end-to-end encryption validation via biometrics.

What's next?

While asset tokenization in theory has the potential to disintermediate many traditional players, in reality, the road to digital tokenization will be heavily dependent on incremental evolution and cooperation with existing, trusted ecosystem players.

The first factor encouraging evolving adoption is trust. When an investor purchases a tokenized asset, they must trust that the digital token represents a real asset, and that the digital token can be traded and redeemed for the underlying asset. This is best done through financial institutions that have a high degree of familiarity and trust with consumers and other institutions, who can guarantee the "connection" between the token and the real asset. Purchasing tokens from or through reputable financial institutions provides investors with a good way of differentiating between scam tokens and those that represent real-world value.

A second factor affecting adoption is regulation. As discussed earlier, tokenized assets represent the whole spectrum of financial instruments, from securities and commodities to derivatives. While some cryptocurrency players have already found themselves in regulatory hot water when they trade an asset class that they were not licensed to do, traditional financial institutions often have the licensing necessary to offer multiple financial instrument types, which may or may not comply with the individual regulatory requirements for different asset classes. For example, to the extent that tokens are deemed to be securities offered and sold in the United States, then under U.S. securities law they must either be registered with the SEC or qualify for an exemption from registration. Additionally, in the evolving digital asset industry, there may be assets that are created that don't yet have a regulatory framework to oversee them or a framework that provides legal certainty. Especially in these cases, it is important to partner with existing financial institutions that already have a constructive and historic dialogue with regulatory agencies and familiarity with relevant legal frameworks.

Many jurisdictions require that institutions holding assets should custody them with independent, licensed financial institutions. With digital assets, it's important to use a licensed and regulated custody provider who can offer enterprise grade products and services in compliance with relevant laws and regulations. A regulated digital asset custodian can offer a blend of digital asset and traditional financial expertise, leveraging issuers' existing custody arrangements with a traditional provider, which could enable further digital product adoption.

About PolySign Inc.

PolySign is a transformative financial technology company providing institutional investors with cutting-edge blockchain-enabled infrastructure in support of digital assets across the capital markets and payments sectors. PolySign was founded when leading technologists and innovators from pioneering cryptocurrency and distributed ledger technology companies came together with traditional capital markets executives.

PolySign's PolyNet solution enables financial institutions to issue, store and transfer a wide range of tokenized assets, without needing to make any changes to their legacy internal ledger infrastructure. PolyNet has been deployed as a proof-of-concept in major financial institutions. PolySign's New York-regulated custodian, Standard Custody & Trust Company, is a next-generation Qualified Custodian offering novel, patented technology for securing secret keys.

For more information, please visit **polysign.io** & **standardcustody.com**.

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