Tokenization: The Liquidity Paradox

You can tokenize anything – but a liquid market needs more than a token

Digital Finance

BSc Digital Finance Course

Why Can You Buy 0.001 Bitcoin but Not 0.001 of a Skyscraper?

The Ownership Paradox

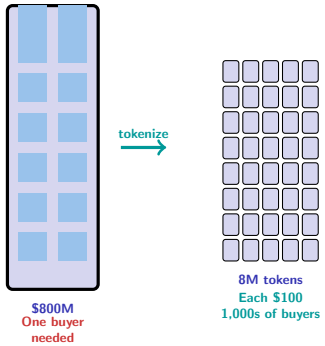
Bitcoin splits into 100 million satoshis. A single skyscraper sells for $800 million – but only to buyers with $800 million in cash or credit. The asset is not scarce. The *access* is.

Why illiquid assets stay illiquid:

- Minimum ticket sizes exclude most investors entirely
- High transaction costs (legal, due diligence, transfer fees)
- No continuous secondary market – selling can take months
- Ownership transfers require legal documents, not just a click

What tokenization promises to change:

- Divide the asset into millions of tradeable digital units
- Lower minimums from millions to hundreds of dollars
- Settle ownership transfers on blockchain in minutes
- Create secondary markets that run 24/7 without brokers



Tokenization does not change what an asset is – it changes who can own it and how easily ownership can be transferred.

What If You Could Sell 10% of Your Home Equity to Pay for Grad School?

Reflection Prompt

You own a flat worth $300,000 but need $30,000 for a postgraduate degree. Your options today: remortgage (expensive, slow), sell the flat (extreme), or take a student loan at 7% interest.

What if you could instead sell 10% of your flat's equity to a network of investors as digital tokens – retaining occupancy and the other 90% – and repurchase that stake in five years when your income grows?

This is not science fiction. It is the direction real-world asset tokenization is heading. Before tokenization, equity release meant one transaction, one lender, on their terms. Tokenization breaks the binary.

The questions that tokenization forces us to ask:

- Who enforces the ownership rights when the token transfers?
- What happens to the token if you stop paying maintenance fees?
- Can a smart contract really govern something as complex as shared property?
- Would a secondary market for flat equity tokens actually be liquid?

The promise is real. So are the complications. Think about one illiquid asset you own or interact with. **What would it take to tokenize it – and what could go wrong?**

Tokenization turns binary ownership (all or nothing) into fractional ownership – but the legal and operational complexity does not disappear, it just moves.

What Is the Difference Between a Token, a Security, and a Digital Twin?

Concept	What it is	Example
Utility token	Right to use a service or platform; not a claim on an asset	Access tokens for a decentralised exchange
Security token	Ownership claim on a real-world asset; regulated like a security	Tokenised shares in an office building
Stablecoin	Token pegged to a fiat currency or commodity	USDC backed 1:1 by USD reserves
NFT	Unique, non-fungible token representing a specific asset or right	Token representing ownership of one specific painting
Digital twin	On-chain data representation of an off-chain asset's attributes	Live sensor data from a tokenised cargo container
CBDC	Central bank-issued digital currency; sovereign money on a ledger	Digital Euro issued by the ECB

The distinction that matters most

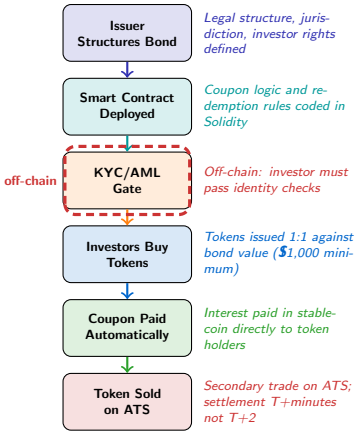
Not every token is a claim on anything real. Regulators care deeply about this distinction:

- **Security tokens** carry legal rights – dividends, voting, redemption. They trigger securities law in every jurisdiction where they are offered.
- **Utility tokens** are just access rights. If they appreciate in value, regulators may reclassify them as unregistered securities.
- **NFTs** are unique. Fungible tokens are interchangeable. One $100 token in a property fund is identical to any other – a crucial difference for liquidity.
- **The Howey Test** (US) and MiCA (EU) are the two frameworks determining which category a token falls into – and what compliance burden that imposes.

Key insight: The same underlying technology can produce a utility token, a security, or a currency depending entirely on the rights it encodes and the promises its issuer makes.

"Token" is not a legal category. Whether a token is a security, a commodity, or a utility depends on the rights it encodes – and determines which rules apply.

Follow One Tokenized Bond from Issuance to Secondary Market Trade



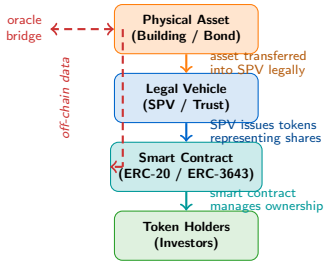
Six steps, two worlds

- **On-chain:** coupon payments, ownership transfers, and redemption are automated by smart contract – no custodian, no manual processing
- **Off-chain:** the bond's legal terms, the collateral, the KYC/AML checks, and the court that enforces investor rights all remain in the traditional legal system
- **The oracle problem:** when the bond matures, the smart contract must be told the redemption occurred. That signal comes from an off-chain data feed – which can be wrong, manipulated, or delayed
- **ATS (Alternative Trading System):** secondary trading occurs on a regulated platform, not a public DEX. Liquidity depends on how many investors participate – not on the token existing

Key insight: The blockchain handles settlement. The *value* of the token still depends entirely on the issuer's creditworthiness and the legal system enforcing the bond contract.

Tokenizing a bond automates settlement – but it does not change the bond's credit risk, the legal enforceability, or the need for KYC at every transfer.

How Do You Represent a Legal Claim on a Physical Asset as a Blockchain Token?



The token is only as strong as the legal wrapper beneath it.

Four-layer architecture

- **Layer 1 – Physical asset:** The building, bond, or commodity exists in the real world and is subject to physical and legal risk
- **Layer 2 – Legal vehicle:** A Special Purpose Vehicle (SPV) or trust holds legal title. Token holders' rights depend on this structure being enforceable in court
- **Layer 3 – Smart contract:** Governs who holds tokens, enforces transfer restrictions, and distributes cash flows automatically. ERC-3643 adds identity whitelisting for regulatory compliance
- **Layer 4 – Token holders:** Own fractional economic interest. Their rights are defined by the SPV's legal documents, not by the token itself

The oracle dependency: Any event that changes the asset's value or status (rent payments, valuations, defaults) must reach the smart contract via an oracle. Oracles are the weakest link – they re-introduce trusted intermediaries at the data layer.

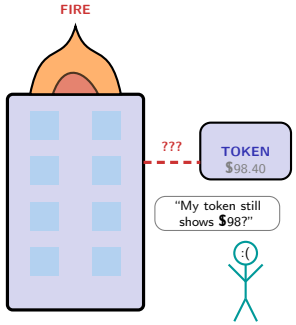
A tokenized asset is a four-layer stack: physical reality, legal structure, smart contract, and token. Each layer can fail independently.

What Happens to Your Token When the Real-World Asset Burns Down?

The Gap Between Code and Reality
Smart contracts execute flawlessly on-chain. But the asset they represent exists in a world of fires, floods, lawsuits, and regulatory changes that no smart contract can foresee.

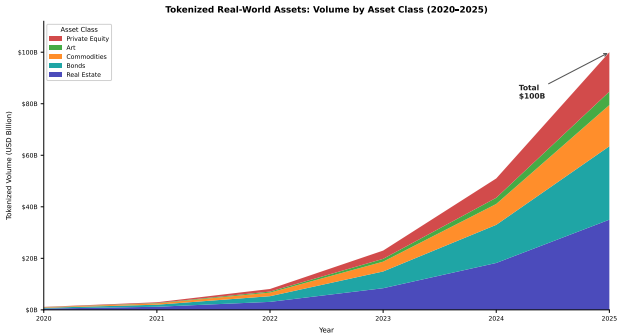
What can destroy value – or the token itself:

- **Physical loss:** The building burns down. Insurance pays the SPV. Does the SPV distribute proceeds to token holders? Only if the legal documents say so – the smart contract cannot compel it
- **Legal failure:** The SPV is structured in a jurisdiction that changes its securities law. Token holders' rights become unenforceable overnight
- **Regulatory seizure:** A regulator freezes the SPV's assets. The token keeps trading – disconnected from the underlying, now worthless
- **Oracle failure:** The data feed reporting rental income is manipulated. Token holders are paid phantom yields on phantom income
- **Liquidity mirage:** Secondary market appears liquid with thin order books. A single large seller collapses the price because depth was an illusion



Tokenization puts ownership records on-chain. It does not put the asset on-chain. When reality diverges from the ledger, the ledger cannot fix it.

Where Is Real-World Asset Tokenization Growing – and Which Asset Classes Lead?



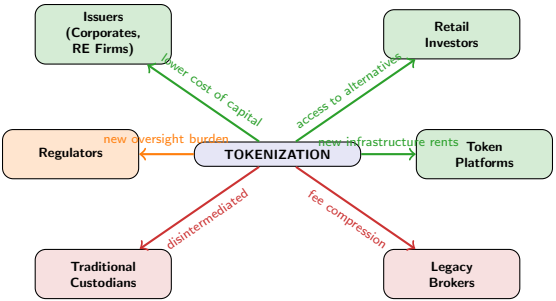
Reading the growth pattern

- **Real estate leads** because it combines high asset values with chronic illiquidity – tokenization's most compelling use case. Retail investors gain access to commercial property that was previously institutional-only
- **Bonds accelerate** after 2022 as rising interest rates made fixed-income attractive and blockchain settlement offered real cost savings over T+2 clearing
- **Private equity** grows fastest proportionally – fund interests are highly illiquid, and tokenization promises secondary market access for LP stakes
- **Commodities** benefit from provenance tracking: tokenized gold with on-chain vault certificates reduces custodial risk
- **Art remains small** despite media attention – valuation opacity and legal title complexity limit institutional adoption

The pattern: Growth is real, but concentrated in asset classes where intermediaries charged the most. Tokenization is a wedge against rent-seeking middlemen.

Illustrative projections based on WEF, BCG, and industry reports. Real estate and bonds lead because they combine high values, high intermediary costs, and clear legal title.

Who Wins When Illiquid Assets Become Tradeable – Issuers, Investors, or Intermediaries?



Winners:

- **Issuers** access deeper pools of capital at lower cost – retail tokenization can reduce issuance fees from 5%+ to under 1%
- **Retail investors** gain access to asset classes previously reserved for institutions – private equity, real estate, private credit
- **Token platforms** (Securitize, Tokeny) capture infrastructure rents replacing custodians

Losers:

- **Traditional custodians** (State Street, BNY) face smart-contract-based settlement displacing their core custody and transfer-agent business
- **Legacy brokers** lose distribution monopoly as issuers go direct to retail

Mixed:

- **Regulators** gain transparency from on-chain data but must supervise 24/7 global markets with jurisdictional boundaries

Tokenization does not eliminate intermediaries – it replaces incumbent intermediaries with new platform intermediaries that capture the same rents with different technology.

The Tokenization Readiness Checklist: When Does Tokenization Add Value vs Complexity?

Five questions to determine if tokenization creates value:

1. Is the asset genuinely illiquid today?
Tokenization solves an access and liquidity problem. If the asset already trades freely (listed equities, ETFs), tokenization adds complexity without benefit.

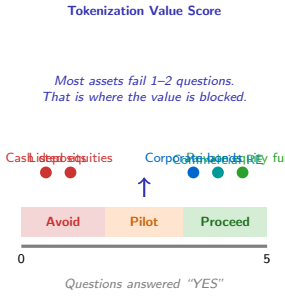
2. Is legal title clear and transferable?
The token represents a legal claim. If title is disputed, fragmented across heirs, or restricted by regulation, the token inherits that uncertainty.

3. Can off-chain events be reliably reported on-chain?
Rental income, valuations, maintenance events, and defaults must reach the smart contract via oracles. If the data pipeline is unreliable, automation breaks.

4. Is the investor base large enough to create liquidity?
A secondary market requires two-sided depth. Tokenizing a single asset for a handful of investors creates legal complexity without market liquidity.

5. Does the regulatory pathway exist?

Security token offerings require prospectus filings, AML/KYC compliance, and ATS licensing. Without a clear regulatory path, the offering cannot launch legally.



Tokenization adds value when illiquidity is genuine, legal title is clean, oracles are reliable, investor depth exists, and a regulatory pathway is open. All five must hold.

Your Challenge: Design a Tokenized Fund for an Illiquid Asset Class

Mini-Challenge (20 minutes)

A European infrastructure fund holds $2 billion in toll roads and renewable energy plants. These assets generate steady cash flows but are illiquid – LP interests cannot be transferred for 10 years. Your task: design a tokenized secondary market for LP stakes.

Apply the tokenization readiness checklist to this case:

1. **Is the asset genuinely illiquid?**
   - What are the current exit options for LPs? Why is a 10-year lockup standard?
   - How does tokenization change the liquidity profile without changing the underlying cash flows?
2. **Is legal title clear and transferable?**
   - Can LP interests be fractionalized and transferred under the fund's existing LPA?
   - What SPV structure would you use? Where would you domicile it (Cayman, Luxembourg, Delaware)?
3. **Can off-chain events reach the smart contract?**
   - Toll revenue and energy output are metered data. How would you bring these on-chain?
   - Who controls the oracle? How do you prevent manipulation?
4. **Will a secondary market actually be liquid?**
   - Who would buy a token representing a fraction of a toll road they cannot visit or influence?
   - What minimum token size balances accessibility against administrative cost?

Deliverable: A one-page term sheet describing your tokenized fund structure, the token type, the ATS venue, and the three biggest risks you cannot mitigate.

Tokenization is an engineering and legal design problem. The technology is the easy part – the hard part is making the legal claim durable and the market genuinely liquid.