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- Exploring what tokenization can and cannot accomplish

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Chapter 1
Introducing Tokenization

After years of hiding in plain sight, tokenization has finally begun to garner global attention. Worldwide Google search trends show a remarkable surge coinciding with Trump's second term in office. Before this, tokenization had remained a largely unacknowledged workhorse throughout the launch of Bitcoin (2009) and Ethereum (2015); the formalization of the ERC-20 standard (2017) to tokenize fungible assets and the ERC-721 standard (2018) to tokenize non-fungible assets; and the major crypto market bull runs of late 2017, mid-2021, and late 2024 (see Figure 1-1).

Tokenization has indeed become a hot topic, but there's so much confusion about what it means and what it can and can't accomplish. The concept itself is wonderfully simple and potentially transformative. Yet, as with many things associated with "crypto" or "blockchain," tokenization has likewise attracted surprisingly polarized views and almost religious fervor from both advocates and critics over what, at its core, is largely a decision about how records are kept.

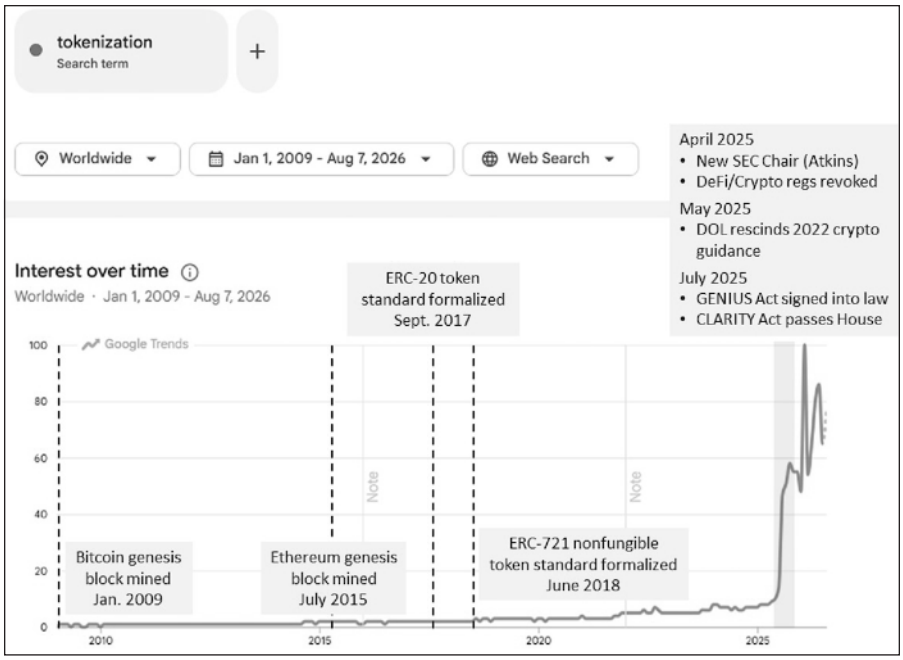


FIGURE 1-1: Worldwide Google search trend for "tokenization" from January 2009 through August 2026.

Beginning at the Beginning: What is Tokenization?

Tokenization simply refers to the act of maintaining an asset's ownership and transaction records on a public blockchain rather than (or perhaps in addition to) a paper ledger, electronic notepad, or spreadsheet.

Thus, a *tokenized security* (or security token) refers to a security whose ownership and transaction records are maintained on a blockchain. Likewise, tokenizing some other asset means using blockchain-based records to represent and track ownership of that asset.

The first and foremost thing to remember is that the method used to keep ownership records does not determine what the underlying asset fundamentally is. Recording ownership of a car, house, bond, stock, or artwork on a piece of paper, in a private database, in a spreadsheet, or on a blockchain does not transform that asset into something economically different simply because the record keeping technology has changed.

Nor should the choice of record keeping system, by itself, determine the relevant regulatory authority. Moving records from paper notebooks to digital databases

did not transform houses and cars into a new "digital database asset class." Likewise, moving records from private databases to blockchains does not automatically create a new "tokenized asset class" that should be governed independently of what the underlying assets actually are and how they were being governed prior to updating how the records were being kept.

The idea of improving record keeping technology is hardly new. Businesses have repeatedly migrated from paper ledgers to electronic records, databases, spreadsheets, cloud-based systems, and other technologies when those tools offered advantages over what came before.

Blockchain-based record keeping can likewise be especially valuable in circumstances where records are fragmented across multiple parties, agency problems are significant, or participants would benefit from having rules and transactions made visible and automatically enforceable on a shared system. Rather than relying entirely on an institution such as Bank of America or Wells Fargo to follow procedures described in internal documents or on a website, some processes can instead be encoded into publicly visible rules that execute automatically.

At the same time, simply adopting a new record keeping tool doesn't guarantee that people will use it in its most elegant or value-adding ways. People have not only managed to use spreadsheets to expertly organize data for quick analysis and informed insights, but they have also used them in scary and strange ways that should not serve as the basis on which spreadsheet technology is judged. Blockchains are no different. A blockchain can support sophisticated financial infrastructure, but it can also be used to establish your associated non-ownership of a cartoon monkey.

The technology should therefore be evaluated separately from any particular use someone happens to make of it.

Searching for the elusive tokens

Another common source of confusion is deceptively simple: Where exactly is the "token"?

When something is tokenized, the word *token* is being used as an abstract unit of account. It's not necessarily analogous to physically holding a casino chip or some other tangible object that represents an ownership claim.

If stock is tokenized and your account balance shows that you hold five tokens, those five tokens simply represent the record that you own five shares of stock. The "token" is the blockchain-based numerical representation of that ownership interest. When you "transfer" one of these tokens to someone else, you are really

submitting a transaction that updates the blockchain record so that your balance decreases by one and the recipient's balance increases by one.

Modern finance has long operated comfortably with this kind of abstraction. When you log into your bank account and see a balance of $5,000, you generally don't wonder where or how the five thousand physical dollars could possibly be "stored" on the internet. You understand that the number represents a legally and economically meaningful claim recorded within a financial system.

The same is true of brokerage accounts. Investors routinely own stocks, bonds, and other financial assets without possessing physical certificates. The modern financial system has already largely separated physical possession from records of ownership and continues to move away from physical representations of those claims.

Tokenization simply introduces another record keeping architecture, along with some new terminology, through which those ownership claims can be represented.

Defining the laws of tokenization

A few simple principles help cut through much of the confusion surrounding tokenized assets.

1. **Tokenization does not change what the underlying asset is.**

   Tokenizing an asset does not, by itself, turn that asset into a security. If tokenization appears to have turned a non-security into a security, something else was done prior to the tokenization stage that changed the economic or legal nature of the asset.


TECHNICAL STUFF

   For example, recording ownership of gold on a blockchain doesn't suddenly turn gold, which is a commodity, into a security. But if you first structure fractional ownership interests that entitle investors to claims on a pool of gold, you've created a security through a process known as *securitization*. Tokenizing those interests afterward doesn't create the security; it simply changes how ownership of the already-securitized interests is recorded. That is, you first securitized the gold, then you tokenized the security.

   In the end, a bond is still a bond, a stock is still a stock, and gold is still gold. Tokenization only changes the record keeping architecture, not the fundamental economics of the asset being recorded.

2. **Tokenization does not automatically create liquidity.**

   Putting ownership records on a blockchain does not magically create buyers, sellers, market makers, price discovery, or a functioning secondary market. Liquidity depends on market structure and economic demand; it can be enhanced by, but is not guaranteed simply based on, whether the asset has been tokenized.

3. **Tokenization does not eliminate off-chain verification problems.**

   If an asset or supply-chain process requires someone to verify facts in the physical or legal world before tokenization, those problems do not disappear merely because ownership records are placed *on-chain* (stored permanently on a blockchain network). A blockchain can faithfully record that a token represents ownership of a diamond, building, or bar of gold but it cannot independently determine whether the diamond exists, whether the building has burned down, or whether the gold is actually sitting in the promised vault.

4. **Tokenization can automate processes, but only those that can actually be encoded.**

   One of the most powerful features of tokenization is the ability to combine ownership records with programmable rules that don't require trust in a central party for their execution. Transfers, payments, restrictions, distributions, or other actions can sometimes be automated using smart contracts. But blockchain code cannot magically automate information or decisions that remain dependent on the off-chain world.

Applying Tokenization to Everyday Transactions

Once you separate tokenization from the hype surrounding it, its potential advantages become easier to understand.

Tokenization can create a shared record of ownership across parties who would otherwise maintain separate databases. It can make asset transfers programmable without requiring a trusted intermediary for execution. It can enable transactions to settle directly between participants. It can allow payments and asset transfers to occur within the same technological environment. And it can make some ownership records and transaction rules more transparent and auditable.

These benefits become especially interesting when applied to activities people already perform every day.

Going shopping

Tokenization can allow money-like claims, such as payment stablecoins (covered in Chapter 2 of this minibook), to move directly between consumers and merchants over blockchain-based *payment rails* (digital networks using decentralized ledgers).

Rather than relying exclusively on traditional card networks and their associated intermediaries, consumers may increasingly be able to cheaply and quickly transfer tokenized money directly to merchants. This can be particularly valuable when visiting smaller merchants abroad who may not accept foreign-issued Visa or Mastercard payments. In those same areas, nearby ATMs may also be unable to process foreign-issued cards, making it difficult to obtain local cash as an alternative.

Accepting payments

For merchants, tokenized payments may reduce reliance on layers of banks, card networks, and payment processors.

But accepting a tokenized payment also introduces different considerations, including confirmation times, wallet infrastructure, and stablecoin issuer risk that must be weighed against the potential benefits. Chapter 2 of this minibook discusses these details at greater length.

Trading stocks

Tokenization may also change how securities are issued, transferred, and traded. Rather than having ownership records pass through multiple private databases maintained by brokers, clearing organizations, custodians, transfer agents, and other intermediaries, some or all of those records could instead exist on shared blockchain infrastructure.

That doesn't mean that all of those intermediaries automatically disappear. Rather, tokenization creates the possibility of reorganizing which functions are necessary, who performs them, and how those functions interact.

Verifying provenance

With records memorialized on a public blockchain, tracing ownership history can become easier and more transparent. Imagine, when shopping for a used car, being able to freely review not only prior ownership transfers but also a history of

accidents, inspections, and maintenance associated with that vehicle. Or imagine buying an expensive bottle of wine or piece of jewelry and being able to trace its chain of ownership back to the original authorized seller.

Blockchain records can also be used to memorialize important checkpoints beyond ownership. For example, trusted service providers could record that a car received required maintenance or that fine wine was stored under appropriate conditions. These records don't guarantee that the underlying *off-chain* events (in this case, the real-world car servicing or proper wine storage) actually occurred as represented, but they can make the resulting history much harder to alter after the fact.

Understanding the Limits of Tokenization

Tokenization is a neat tool, not magic.

Putting an asset on a blockchain doesn't make a bad investment good. It doesn't make an illiquid asset liquid. It doesn't eliminate fraud, guarantee that off-chain assets exist, determine the correct regulatory treatment, or remove the need for trusted parties whenever somebody still has to perform an off-chain function.

What tokenization can do is provide a different architecture for maintaining ownership records and memorializing transaction history according to predefined rules. This distinction is essential. The most relevant question is not whether everything can be tokenized. Technically, ownership claims of anything can be recorded on a blockchain. The more important question is when the blockchain-based record keeping actually provides a meaningful improvement to alternatives.

And that, ultimately, is what the rest of this minibook explores.