Share

ARTICLE

The Future of Asset Tokenization: How Oracles Extend Trust and Enable Smart Contracts

by Noah Buxton

August 06, 2021

"Tokenization" is a buzzword frequently heard in connection with cryptocurrencies and decentralized finance (DeFi). As awareness of blockchain and its opportunities continues to grow, the concept of tokenizing assets will become increasingly standard in other segments of the finance world.

Billions of dollars in securities have already been tokenized, tens of billions in fiat currency have been tokenized in the form of stablecoins, and commodity tokenization is ramping up. This trend will only accelerate as awareness of the benefits increases and the cost of switching to a decentralized model decreases. Eventually, any asset could be tokenized and tradable on public blockchains.

This tokenized future, with new markets and a transformed business landscape, will depend on "smart contracts" and "oracles." Here's an overview of tokenization, the role of smart contracts and oracles, and the opportunities created in a tokenized future (and what this all means for CPA firms).

What Is Tokenization?

In its most simple definition, tokenization is the process of putting ownership rights and ownership history of an asset or security onto a public ledger and converting it into a digital token that can be traded and used in applications on a blockchain. The

value of the digital token is determined by the market, or by a peg to another value (i.e., stablecoins pegged to the value of the dollar). Almost any asset can be tokenized, from financial instruments such as private securities, public securities, and funds (including those focused on real estate, debt or fixed income) to commodities such as gold to intangibles such as carbon credits, power purchase and production, futures contracts and royalties.

Tokenization brings with it the same qualities as those inherent to blockchains. While simplifying the ease with which assets can be bought, sold or traded, tokenized assets inherit the security, trust, immutability, decentralization, portability and liquidity from the underlying blockchain that are hallmarks of the technology. In addition, tokenizing assets allows for the tracking of provenance, fractional representation and speed of transfer or sale.

Tokenizing assets will create new secondary markets and opportunities to invest in innovative on-chain products, but large-scale tokenization of real-world, income-producing assets requires reliable off-chain data specific to those underlying assets. As an example, consider an internet browser. When connected to the internet, it is an incredibly powerful tool. When off-line, a browser's functionality is drastically limited.

The same is true for smart contracts that run on decentralized networks such as the Ethereum blockchain. Smart contracts can only see the data that is already on-chain, such as transactions, tokens and wallets, but cannot access token prices or any other information on the web. Oracles are the "internet connection" for smart contracts (more on that below).

How Tokenization Runs on Smart Contracts

Assets whose ownership rights have been represented as digital tokens operate on decentralized platforms and are controlled and managed by smart contracts. Platform decisions are guided by code (smart contracts) preprogrammed to execute automatically when certain market conditions are met. Smart contracts, which are visible and auditable by all, reduce the formality and costs traditionally associated with the use of a third party to manage and verify interactions.

In a decentralized borrowing transaction, for example, a user can post collateral in an asset-backed token such as stablecoins, gold or anything the application allows and borrow against it in the time it takes to confirm the transaction on-chain. There are no loan oficers, lengthy applications or exorbitant fees. The interest rates and borrowing terms are all set algorithmically within the code of the smart contract.

While providing trust and transparency, smart contracts respond only to data that is inherent to, or has been delivered onto, a blockchain. Real-world information that impacts a smart contract is disconnected from on-chain environments and needs

to be input onto the platform from a trusted and reliable source. This layer of infrastructure helps build an environment that can realize the full potential of smart contracts.

Oracles Are the Bridge

Oracles act as an intermediary between real-world data and blockchain ecosystems. Mediators between the on-chain environment and the real world, they enable the creation of robust smart contracts that address a multitude of scenarios, such as allowing for fractional ownership of real estate. In addition, they convert off-chain data into a format accessible to the smart contract.

The accuracy and reliability of the data delivered from an oracle ultimately determines the security of the smart contract. If the data is wrong as the result of manipulation or simply incorrect implementation, the smart contract can fail, resulting in potentially catastrophic loss. In addition, if the data trail is not auditable and the methodology and sources are not transparent, the security of the smart contract similarly decreases.

Current Use Cases for Off-Chain Data

DeFi's spectacular success during the past year is an example of the potential of smart contracts and a testament to the importance of reliable data sources. As of July 2021, it was [estimated](#) that the amount of assets locked up in DeFi exceeded $100 billion. The oracle feeds in this instance focused primarily on pricing, but future inputs could range anywhere from weather data to election results to property values.

Strengthening the Trust in Oracles

Historically, accountants have been trusted to provide accurate and reliable financial information about businesses to the public. The tools and techniques CPAs employ have changed over time to keep pace with technological innovations. The rapid innovation and disruption presented by public blockchains, tokenization of traditional assets and development of new financial products and business models will help usher in the next phase of the CPA's evolution.

Public accounting firms substantiating new forms of financial data for clients and creating new ways in which assurance data can be delivered to intended users and markets is a necessary part of this progression. The act of validating and transmitting data through oracles networks to open, public blockchains and decentralized platforms extends the natural role of accountants in society.

Some oracle networks, such as Chainlink, are able to utilize a decentralized approach to collect inputs and aggregate data from a range of nodes, taking the average of all sources. In other cases, depending on the data being collected, there may be only a few sources or even a single source, and a trusted endpoint is needed. While a single or limited source arguably forces reliance

on more centralized data sources, the value of getting such data on-chain is outweighed by narrow concerns about the data source being centralized.

Indeed, on the Chainlink network today, even collection of centralized data from single/limited endpoints is facilitated using a decentralized and open group of participating node operators. So decentralization still provides an added layer of trust to single-source data.

In sum, collection of single-source data, or use of trusted endpoints operated by known players (e.g., public accounting firms) supports the overall growth of a decentralized ecosystem and is a net positive. Solutions such as Armanino's TrustExplorer Oracle Services will enable businesses to bring important legacy enterprise data, asset reserves data and other important financial data on-chain for use in their own decentralized applications and/or other open protocols.

A Tokenized Future

Tokenization has the potential to drastically transform capital markets as we know them today. The move to digitization of all assets is in its early stages but is accelerating. Making trustworthy sources of off-chain data available to on-chain applications will enable widespread use of, and trust in, smart contracts across an ever-broader range of business opportunities.

For questions or to learn more, contact our Digital Assets & Blockchain team.