Real Estate Asset Tokenization in the UK

Proof of Concept for Her Majety's Land Registry (HMLR) demonstrates the ability of blockchain technology to increase transparency and cut costs in real estate

Abstract

Her Majesty's Land Registry, the UK government department responsible for recording 25 million ownership titles on lands and properties valued at over £7 trillion ($8.7 trillion), partnered with ConsenSys Codefi to explore the use of blockchain and smart contract technology to aid speed, simplicity and transparency in the real estate market.

The project entailed the creation of a digital token representing ownership of a specific property. Owners were able to decide the number of tokens or shares of a virtual property, and the offer price. While this project was conducted as a part of the HM Land Registry's Digital Street R&D Project, it represented the same process and behavior as a real property equivalent.

The Pain Points

Today, the real estate investment industry suffers from the following pain points:

- Cumbersome and costly maintenance of investor registry
- High minimum tickets for investment, which translates to low numbers of investors, expensive underlying assets, and price swings subjective on matching a buyer and seller
- Multiple dislocated parties and expensive intermediaries required to come together simultaneously in order to carry out a transaction
- Isolated secondary markets that continue to rely on manual processing
- Low levels of transparency

Individuals and companies seeking to participate in the real estate sector rely on agents to manage the owner registry, transaction, and administration. While most are resigned to this cumbersome and inefficient process, recreating a transaction through smart contracts removes multiple layers of cost and friction. This technology has the potential to combat increased elitism in the real estate market while firing the collective imagination through one of the most far-reaching applications of blockchain.

The Solution

HMLR created a prototype "Title Token" representing shares of a property. It issued the token on Codefi's digital asset marketplace. The process involved 8 steps:

1. Property owners request Title Tokens that represent their real-world asset ownership. The tokens are a digital twin of the traditional title deed, including similar data of ownership etc.

2. Property owners log in via a digital wallet, in this case their MetaMask account (a bridge to the Ethereum blockchain), and verify their identity.

3. This verification process prompts HMLR to then transfer the Title Token to the user's appointed wallet.

4. Property owners at this point are able to create security tokens linked to their Title Token on the Codefi Assets platform.

5. The owners can decide the number of security tokens or fractionalization, the price of the tokens, the total offering amount, and other specifications.

6. With these details finalized, owners are then able to launch, manage and trade their security tokens on Codefi's digital marketplace.

7. Investors logged in to Codefi Assets can
      a. Manage their property portfolios
      b. View available security token offerings
      c. Access HMLR-sourced asset data
      d. Engage in asset trading

8. Regulators have access to view high-level token data including real-time pricing and capitalization, as well as all ongoing on-chain activities, including when trades take place.

Smart Contracts: Technicals

Codefi Assets enables the easy creation and deployment of smart contracts on the Ethereum mainnet based on the ERC1400 standard, among others. The ERC1400 standard was specially created by the Ethereum community and ConsenSys to represent financial assets on the blockchain. These highly configurable smart contracts and security tokens have the following features:

- Security tokens support force transfers, burns and mints by an administrator

- Security tokens support trade restrictions through off-chain certificate generation. Token transfers are conditioned upon the validity of the certificate, offering the issuer robust control capabilities over their financial assets across both primary and secondary markets

- Security tokens support partial-fungibility (i.e. the ability to create different classes of assets)

- All smart contracts used were audited by ConsenSys Diligence

The Results

Codefi enabled HMLR to achieve Proof of Concept that blockchain technology can be applied broadly to the real estate sector to do the following:

- Save on costs
- Reduce time spent on verification
- Increase flexibility for customising products
- Broaden access to those unable to buy an entire property
- Provide trusted proof of evidence of the origin and provenance of a traded fractional property asset

Smart contracts on the Ethereum blockchain provided secure and efficient transaction processing and a "single source of truth" between all participants, improving transparency and accuracy of information. The investor registry remains automatically updated and maintained.

The normal reams of paperwork and compliance to be submitted and reviewed for property transactions by multiple parties are alleviated by inviting potential investors to create their own accounts, fill in a KYC form and upload all necessary documents to the platform. These are automatically processed before payment via wire transfer, with the smart contracts executed upon payment validation.

The issuer then authorizes the transfer of tokens to the investors through a certificate signed using its private key. Upon completion, investors get a receipt with full details of the sale and a link to the transaction on the Ethereum blockchain.

Digitising the investment process also provides opportunities to distribute assets more globally, since international investors can access the platform just as easily as domestic investors.

Tokenizing Real Estate Assets

Innovation in the years since the US subprime mortgage crisis that sparked the global economic meltdown of 2008 has not touched most of the housing market, according to Moody's Investor Service. Its research estimates that applying blockchain in the US market could save 20% in expenses, or $1.7 billion annually.

Among the potential applications for blockchain in the real estate sector, the most viable and widespread is tokenizing assets, according to research by property services firm Cushman & Wakefield. In line with HMLR's aim to enable greater participation in real estate, the report predicts that tokenization will help the commercial real estate market open up to a broader range of people due to lower minimum investments, improved transparency and increased liquidity. The timeframe to realize this potential is generally thought to be much sooner for real estate compared to other asset classes, with early examples of implementing real estate tokenization making headway.

HMLR's Proof of Concept for the use of asset digitization demonstrates that tokenization can offer greater efficiency, transparency and risk management without compromising the security and governance standards that are fundamental to owners, investors and regulators. The process places records of ownership, tax receipts and asset history on an immutable ledger that any authorized party can see. It sheds light on a systemically important industry that has historically been characterized as opaque and illiquid while removing multiple layers of bureaucracy that add costs, time and friction to transactions.

The real estate sector suffers from serious barriers to entry, especially for younger people. The application of blockchain technology has the potential to radically change this industry for the better by broadening access, increasing transparency and streamlining complex transaction processes.

About Codefi Assets

Create, issue, and manage the lifecycle of digital assets, associated markets, and digital financial instruments on public or permissioned blockchain networks.

codefi.consensys.net/codefiassets