Libertum Project:
Real Estate

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Abstract

Libertum Project is the intermediate bridge between the traditional economy and the Web3.0 economy. Each LBM can be used in a BEP20 to access a decentralized financial service. Libertum's smart contracts and libraries facilitate the publication of P2P lending services (lending and borrowing of SLBMs and other cryptocurrencies) and the use of DeFi services such as Liquidity Pools and Swaps. Libertum contracts run on the Binance SmartChain mainnet to start with and in the future we plan to have our own blockchain which will allow us to have even more decentralization. The roadmap that Libertum plans for the future is not only limited to providing DeFi financial services and crypto-backed loans, but also seeks to broaden the horizons of the credit market, connecting the real estate market together with decentralized finance. That means that we will be a Marketplace for the real estate market (purchase-sale-investment) and a secondary market for all projects and platforms that are allied with the Libertum launchpad and that seek to incur in cryptographic loans with real guarantee.

Content

1. Analysis of the environment

1. 1. PropTech 1.0

In 1982, Property Market Analysis (PMA) was founded in London to sell the results of computer-driven real estate research. That same year, NCREIF used mainframe computing to establish a property index for the United States dating back to 1978. In 1985, the Investment Property Databank (IPD) was founded to organize and analyse commercial property performance data in the UK.

Two years later, Prudential in London and Prudential in New York created the first institutional property investigation teams on both sides of the Atlantic, using personal computers. In the field of construction technology, 1982 was also the year in which Autodesk was launched, a software company that has become multinational and manufactures software for architecture, engineering and construction. In the same 1980s, Argus and Yardi established themselves as leading providers of software and solutions for the analysis and management of commercial real estate investments, while CoStar established itself as a provider of information, analytics and marketing services to the commercial real estate industry in several countries.

These dominant technology companies set their goals by providing closed, comprehensive business services, but often requiring significant and costly customization by the customer. The collapse of dot-com companies and telecommunications in the early 2000s allowed the growth of market share of failed competitors and the period from 1980 to 2000 is known as PropTech 1.0.

PropTech 2.0 has continued the PropTech 1.0 approach to the online residential market due to the homogeneity of the type of real estate asset and the amount of public information available (prices and rentals), and because it is a broad market in which everyone interacts, which offers entrepreneurs clear opportunities to disintermediate existing information providers and markets. The bridge between PropTech 1.0 and 2.0 can be seen in the case of companies such as Rightmove, Zoopla and OnTheMarket in the UK, and Trulia and Zillow in the US. These companies were launched in the 2000s and have become leaders in the online residential market.

1.2. PropTech 2.0

We are seeing PropTech 2.0, a new wave of innovation, investment and entrepreneurial activity. Its roots lie in the frustrations related to large, immobile and illiquid assets, and the vested interests of the companies that control them. According to MIT's Steve Weikal, it's also the result of unprecedented advances in technology, such as cloud computing, more agile coding, mobile devices, and sensors, and much lower costs thanks to ubiquitous connectivity powered by broadband, Wi-Fi, and 4G telephony. There is a new demand for an increasingly tech-savvy and familiar mobile workforce. Innovation appears to be inversely correlated with time at the desk, with the workforce becoming increasingly autonomous (40% by 2020) and mobile.

Just as the PC and later the Internet drove the growth of PropTech 1.0, PropTech 2.0 has been driven by e-commerce, social media, open source software, and the cross-platform world. In order, Amazon has revolutionized commerce by diverting activity from stores to e-commerce on a large scale. Why not sell real estate through an e-commerce platform using customer feedback as an alternative to professional advice? Facebook has created a network system with global scale and reach far beyond the capacity of any real estate broker. Why not capture online networks for real estate marketing? Open source software has enabled cheap access to previously very expensive technological solutions (e.g. online payment processes). Why not build a website that acts as a hanger for these processes and data and build a portal for real estate services? And why not distribute these products and services through PCs, tablets, and (since there are as many cell phone subscriptions as there are people on this earth) smartphones, and through a satellite culture of apps (apps)?

At the same time as these global changes occurred, trade bodies such as PISCES and later OSCRE established standards for the exchange of what had been proprietary data books. Systems like Yardi and Argus that were designed not to communicate with each other ("spaghetti balls of knots and tangles") began to enable collaboration and application compatibility. Zoopla has launched an open application programming interface (API) that allows developers to create applications using local data about their sales and rental listings, using 15 years of price data sold. (Application programming interfaces enable cross-site collaboration, while also driving traffic to your own website and not "missing that eyeball.") IPD grew from a UK company to an information provider in all regions of the world. These advances allowed PropTech 2.0, an innovator, to enter an industry whose barrier was slowly being dismantled.

PropTech 2.0 is happening because the answers to these questions seem obvious while the real estate industry continues to be characterized by its limits. Will the nature of the asset class ultimately frustrate innovators? In retrospect, PropTech 2.0 will be judged a highly successful revolution only if it frees the asset class and the industry around it from its limits. Will PropTech be as durable as the industry on which it has been built? Can you make fundamental changes to the way property is owned, marketed or valued?

1.3. The limitations of real estate as an asset class

In short, return on property is linked to some extent to the performance of the economy and capital markets. The economy is the basic driver of occupant demand and, in the long run, returns on investment are produced by rent-paying occupants. However, in the short term, returns are mainly explained by changes in prices and capitalization rates, which in turn are driven by required returns. The required returns do not exist in a vacuum, but are driven by available or expected returns in other asset classes. As the required returns on bonds and stocks move, so will the yields required for the property, followed by the rates and prices of the property's capitalization.

However, property is a true third asset, different from stocks and bonds. This means that it has the potential for diversification and therefore the justification to keep it within a multi-asset portfolio. In general, the impact of the real economy and capital markets on cash flow

and the value of real estate is different from the impact on stocks and bonds, and is distorted by several factors.

These are as follows:

1. Property is a real asset and wears out over time, suffering from physical deterioration and obsolescence, creating depreciation.
2. The cash flow delivered by a real estate asset is controlled or distorted by the lease agreement between the owner and occupant. U.S. leases can be for 3 or 5 years, fixed, or with pre-agreed annual increases. Leases in continental Europe can last for 10 years, with rent indexed to a measure of inflation. Leases in the UK for high-quality offices are commonly for 10 years, with rents fixed for five-year periods, after which they can only be revised upwards.
3. The supply side is controlled by planning or zoning regulations, and is highly price-inelastic. This means that a boom in demand for space can be followed by a supply response, but only if permission to build can be obtained and only after a significant delay, which will be governed by the time needed to obtain a permit, prepare a site, and build or refurbish a property.
4. The returns delivered by the property are likely to be heavily influenced by appraisals rather than marginal commercial prices. This leads to the concept of smoothing.
5. The property is highly illiquid. It is expensive to trade property, there is a great risk of abortion expenses and the result can be a very wide supply and demand differential (a gap between what buyers and sellers will accept).
6. Real estate assets are generally heterogeneous and large in terms of capital price. This means that property portfolios cannot be easily diversified and suffer greatly from specific risks. The costs of investigation and due diligence are significant.
7. Leverage is used in the vast majority of real estate transactions. This distorts the return and risk of a real estate investment.
8. Property risk seems low. Rent is paid before dividends, and as real estate, the property will be a store of value even when vacant and yielding no income. Their annual yield volatility also appears to be lower than that of bonds. This is somewhat distorted by appraisals, but the reported performance history of real estate suggests a median return for low risk and a seemingly undervalued asset class.
9. Unlike stocks and bonds, home returns appear to be controlled by eight- to nine-year cycles.
10. Real estate is time-consuming and expensive to manage.

In the future, there are opposing forces at work. The excesses of the run-up to the credit crisis will create a backlash that will value conservatism, low leverage, more modest fee structures, and better governance. At the same time, we must continue to innovate. An improvement in liquidity can be expected from unlisted real estate investments. Although real liquidity is neither possible nor desirable in the private equity real estate market, we can expect to see secondary trading platforms that help investors manage mixed portfolios of listed and unlisted properties, particularly at the central end of the market.

1.4. The sharing economy and real estate

In the real estate market, there are a number of technology-driven proposals that allow sharing the use of homes, rooms, office buildings, restaurants, storage space and car parking. Millennials have been forced to accept that renting homes is the norm, as buying a home in densified urban areas is becoming more expensive and requires large down payments of capital. Real estate has a high cost of capital, even if debt is used, a down payment of 10-30% of the total cost is needed, including transfer fees and taxes. In London, despite the construction of more than 30,000 new city apartments since 2008, prices have increased by 60%. The average house price in London is about £660,000, and typical minimum deposits are at least 20%, or £135,000. Affordability has forced millennials to question the need to own a home, but there is extreme excess capacity in the housing market. It is estimated that there are 700 million square meters of additional capacity in China in 2016 alone, with more than 400 million square meters in residential and the rest in commercial. A housing survey in England in 2015 suggested that "the total number and proportion of underemployed households in England increased between 1995-1996 and 2014-2015 from 31% (6.2 million people) to 36% (8.2 million households). This was mainly driven by an increase in underemployed households in the owner-occupied sector, from 39% in 1995 to 51% in 2015. Meanwhile, underemployment in the rented sectors decreased from 13 per cent in 1996 to 9 per cent today."

These statistics suggest a widening gap between rich and poor. The decline in underemployment in the rental market suggests that more and more millennials are being pushed or dragged into a shared rental lifestyle. The growing demand in the rented sector has created a supply shortage, but as more and more startups start operating in the p2p (peer to peer) rental market, this shortage could easily be corrected through increased supply. 8.2 million households in England have one or more bedrooms than they don't. In addition to its high cost of capital, the property is also highly illiquid and non-portable.

The property exchange process is inefficient, time-consuming and costly. The average time to complete a purchase in the UK is 3 months or more, and the average in China is 6 to 12 months. In 2016, less than 2% of owner-occupied properties changed hands in China. The cumbersome buying process and high capital requirements of traditional real estate have deterred many people from owning their own properties.

2. PropTech 3.0

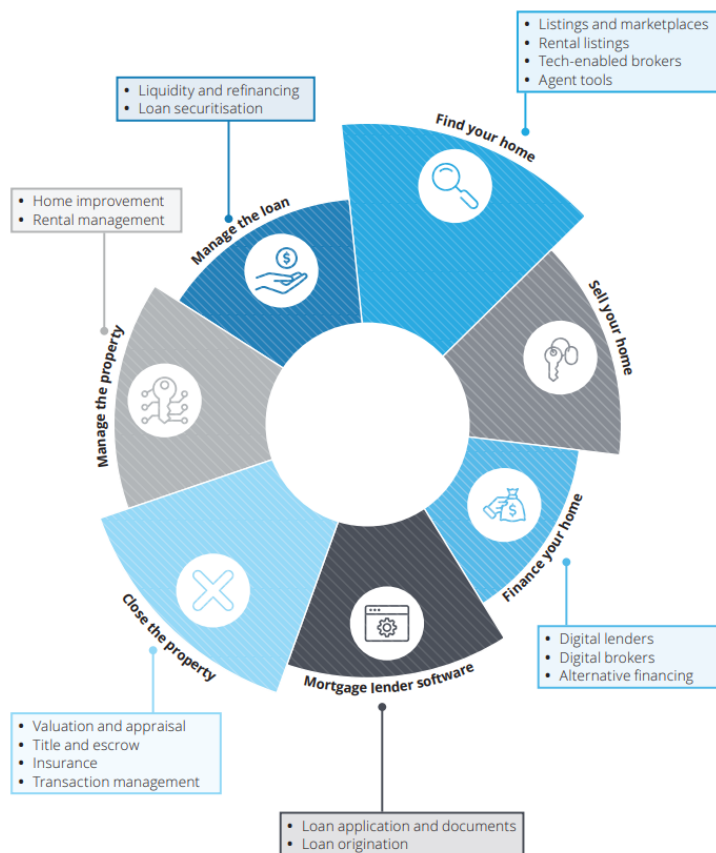### 2. 1. Blockchain to real estate

In the real estate market, PropTech innovators have improved the way information is exchanged, but it still relies heavily on intermediaries. Transactions require time and closeness, and are based on personal relationships. Instead, a distributed ledger like blockchain can send data quickly and frictionlessly to all stakeholders. Early assessments of potential blockchain applications in real estate include direct landlord-tenant rental agreements; buying and selling property, including title and land details; ownership and control records available during the procurement and due diligence process; and the exchange of building maintenance records. Imagine also a world of digital asset management, which records ownership and manages and distributes revenue rights directly.

In a simple residential transaction in the UK, there is a minimum of several parties involved, estate agents, transmission lawyers, structural surveyors, land registry (land titles), local authorities (multiple searches), environmental agency, HMRC (stamp duty), banks (financing and money exchange), credit rating agencies (on behalf of banks), Public services (accounts outstanding). Much of the information that these parties possess and that is required in the process is public, but is stored in different private silos. An attorney is paid to gather all this information, and other information is collected by credit rating agencies, but is repeated in the lawyer's searches. Payments are made to various parties through various banks. In summary, it could be said that the use of a distributed ledger such as blockchain in real estate could simplify the transaction process by bringing together all relevant information in one place, instantly accessible by all stakeholders.
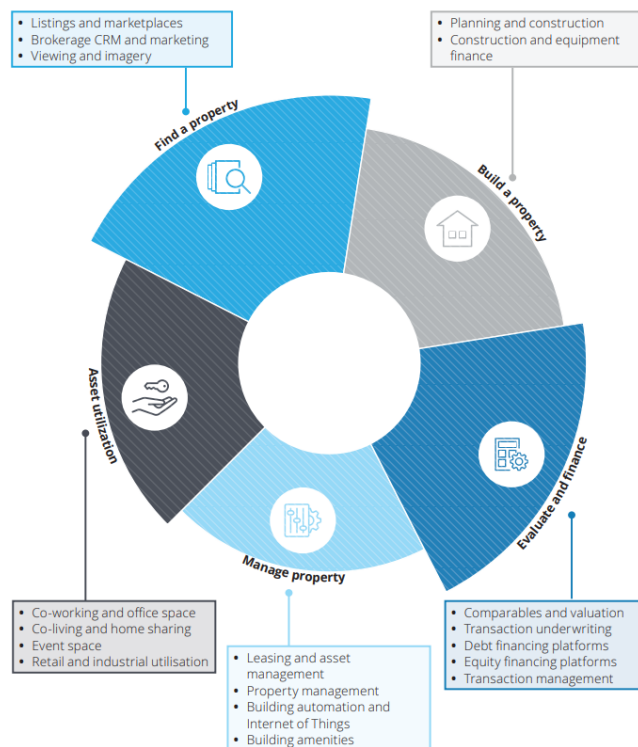
This could save time and money, as it would eliminate the need for intermediaries and facilitate the exchange of assets. However, for this to be possible, it is necessary for the parties involved in the transaction to upload the relevant information to the distributed ledger rather than to their individual databases.

2. 2. Facilities of Libertum PropTech 3.0

Residential PropTech 3.0 Landscape.

Commercial property PropTech 3.0 Landscape.

- Listings and marketplaces
- Brokerage CRM and marketing
- Viewing and imagery

- Planning and construction
- Construction and equipment finance

- Co-working and office space
- Co-living and home sharing
- Event space
- Retail and industrial utilisation

- Leasing and asset management
- Property management
- Building automation and Internet of Things
- Building amenities

- Comparables and valuation
- Transaction underwriting
- Debt financing platforms
- Equity financing platforms
- Transaction management

Find a property
Build a property
Asset utilization
Evaluate and finance
Manage property

2. 3. EIP-1155 Smart Contracts

Abstract

This standard describes a smart contract interface that can represent any number of fungible and non-fungible token types. Existing standards, such as ERC-20, require the implementation of separate contracts by token type. The ERC-721 standard token ID is a single non-fungible index and the group of these non-expendables is implemented as a single contract with configurations for the entire collection. In contrast, the ERC-1155 Multi Token Standard allows each token ID to represent a new configurable token type, which can have its own metadata, provisioning, and other attributes.

The argument contained in the argument set of each function indicates a specific token or token type in a transaction. _Id

Motivation

Token standards such as ERC-20 and ERC-721 require a separate contract to be implemented for each type or collection of tokens. This places a lot of redundant bytecode on the Ethereum blockchain and limits certain functionality by the nature of separating each token contract into its own authorized address. With the rise of blockchain games and platforms like Enjin Coin, game developers may be creating thousands of types of tokens, and a new type of token standard is needed to support them. However, ERC-1155 is not specific to gaming and many other applications can benefit from this flexibility.

New functionality is possible with this design, such as transferring multiple types of tokens at once, saving on transaction costs. Trading (escrow/atomic swaps) of multiple tokens can be built on top of this standard and eliminates the need to "approve" individual token contracts

separately. It is also easy to describe and mix multiple types of fungible or non-fungible tokens in a single contract.
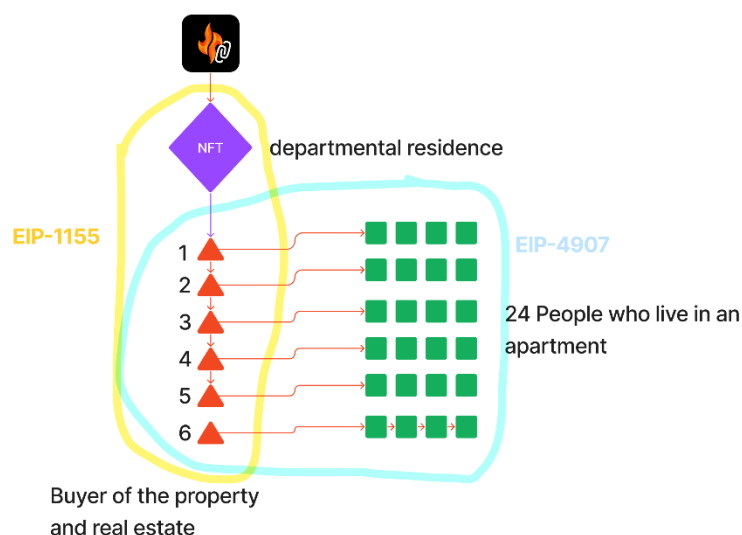
2. 4. EIP-4907 Smart Contracts

Abstract

This standard is an extension of EIP-721. Proposes an additional role () that can be granted to addresses, and a point at which the role is automatically revoked (). The role represents the permission to "use" the NFT, but not the ability to transfer it or set users.userexpiresuser

Motivation

Some NFTs have certain utilities. For example, virtual earth can be "used" to build scenes, and NFTs representing game assets can be "used" in the game. In some cases, the owner and user may not always be the same. There may be an owner of the NFT who rents it to a "user". The actions that a "user" should be able to take with an NFT would be different from those of the "owner" (for example, "users" should generally not be able to sell ownership of the NFT). In these situations, it makes sense to have separate roles that identify whether an address represents an "owner" or a "user" and manage permissions to take action accordingly. Some projects already use this design scheme under different names, such as "operator" or "controller", but as it becomes more and more prevalent, we need a unified standard to facilitate collaboration between all applications. In addition, applications of this model (such as rental) often require that user addresses only have temporary access to NFT usage. Typically, this means that the owner must send two on-chain transactions, one to list a new address as the new user role at the beginning of the duration and one to claim the user role at the end. This is inefficient in both labor and gas, so an "expire" function is introduced that would facilitate the automatic end of a term of use without the need for a second transaction.

2.5. EIP-####LBM: Multi-token rental, an extension of EIP-1155

Abstract

A standard interface for contracts that manage various types of tokens. A single deployed contract can include any combination of fungible tokens, or other configurations. This standard is an extension of EIP-1155. It proposes an additional role that can be granted to

addresses, and a point in which the role is automatically revoked. The role represents the permission to "use" the multi-token, but not the ability to transfer it or set different users or conditions.

Motivation

For the development of the EIP-####LBM we rely on the concept of EIP-1155 where we have a RET-NFT (or tokenization of the property represented in NFT) where Libertum manages the governance and the ability to create fungible tokens called "MRET" (multi tokenization of the property), where crypto investors are the userswho participatein the Libertum Marketplace and have the ability to buy and sell and rent the MRET.

The MRET are equivalent to a % of the total value of the property, therefore, each owner of an MRET has the power to manage his equivalent share of the property; this translates into the generation of "MRET rentals" which will be destined to the 2 user, those who rent the property.

Users who have the "MRET rental" may not have the ability to transfer it or establish users or conditions different from those proposed within the governance of RET-NFT where all MRET holders establish the rules and conditions of the real estate contract for the 2 user who occupies the property through the possession of a "MRET rental" contract.