ContractLand

Powering The Decentralized Economy

Abstract. ContractLand is a decentralized exchange (DEX) powered smart contract marketplace focused on helping small-to-mid sized (SMEs) companies to optimize and transform their business through tokenization. The exchange and it's wallet acts as a point of conversion and settlement of tokens for businesses and their end-users, while the marketplace offers a diverse and standardized set of smart contract solutions for various business use cases.

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Background

Blockchain technology was revolutionary in enabling the creation of tokenized assets that are fungible, transferable, and verifiable. It allowed anyone to own and transfer assets across an open financial network without the need for a trusted third party. The inception of smart contracts extended these capabilities to a far greater degree - disrupting the fundamental form of human trust and interaction.

One of the most promising concepts spawned from smart contract adoption is **tokenization**. Differing from traditional cryptocurrency, a token allows for business logic and relationship models to be imbued in the token - providing unprecedented efficiency to **value transfer, contractual relationships, and capital management**. This not only has the potential for immense impact on modern digital constructs, but also brings several opportunities to revolutionize traditional business models. Since the inception of Ethereum, hundreds of new businesses have been conceived on this new decentralized medium, forming an entire new industry of blockchain-centric companies.

The adoption of the tokenization model has been substantial within the blockchain community, with innovation atop smart contracts bringing us closer to a more collaborative and fair economy. But to inspire wider utilization amongst traditional industries, we need to overcome obstacles imposed by barriers of entry, insufficient standards, and a lack of supporting infrastructure.

Technical Barriers

The process of development and execution of smart contracts is often complex, time-consuming, and error-prone. The demanding requirements of technical expertise and industry experience for blockchain-based development limits its benefits to a handful of groups. These groups, such as early adopters and established corporations financially capable to hire the necessary talent, cover a small spectrum of those willing to explore and incorporate the technology to business needs.

Lack of Standards

The rapid growth of the tokenization ideology spawned a variety of ways to perform token system design and distribution. The chaotic development of the ICO market in 2017 was a testimony to how the lack of standards can put both investors and businesses at risk. It is impractical to expect a non-blockchain-centric business to enter the space and navigate the technology without ending up on a similar path. A standardized process for designing business and value generation models based on crypto-token systems and distribution needs to be set in place.

Economical Infrastructure Support

Once a token is established and deployed. It needs to be fluid on the open market to maximize its potential. However, the interests of cryptocurrency exchanges are not aligned with the interests of businesses. Enormous listing fees and artificial volume inflation are unsuitable for genuine businesses that need a stable, transparent and sustainable marketplace for their tokens.

Widespread adoption from the general public, and non-blockchain-centric organizations is essential to realize the full potential of blockchain technology. We introduce ContractLand as a foundational platform to drive this effort by reducing barriers of entry and grounding blockchain technology in real business use cases.

Road to a Collaborative and Transparent Economy

In a not-so-distant future, anyone will be able to use open networks, such as Ethereum, to create and execute contractual relationships through code. Exchanges will not only serve traders, but also serve businesses and their end-users as a point of conversion and settlement for tokens. With the progression of such technology, decentralized exchanges will inevitably replace centralized exchange in fulfilling the needs of businesses with the advantages of superior transparency and security. There are currently approximately a mere 30 million cryptocurrency users worldwide. As more businesses adopt blockchain technology, and end-user applications such as wallets and exchanges become more user friendly, more users will enter the space for non-trading or investment purposes.

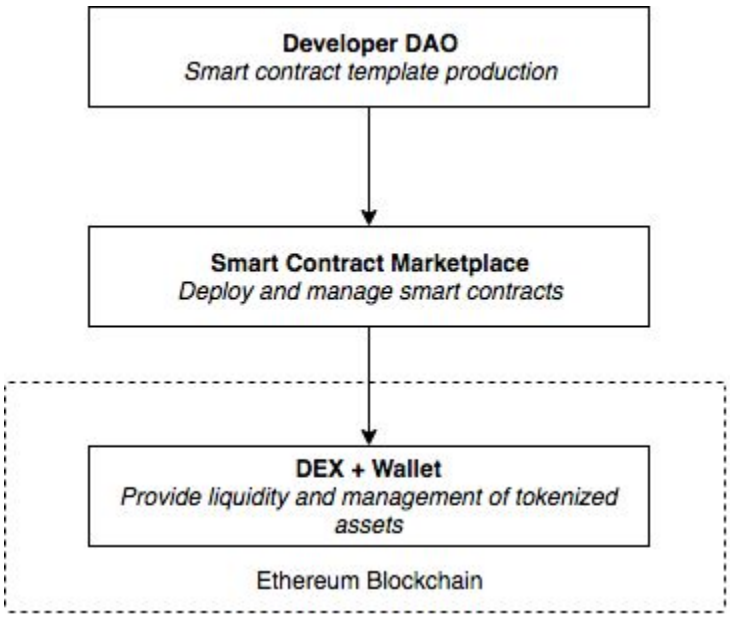
Therefore, exchange will ultimately integrate with businesses and enable users. ContractLand as a decentralized exchange and wallet based smart contract service marketplace will ground itself into this new economic ecosystem, and accelerate the adoption of blockchain technology through:

- Simplifying the utilization of smart contract and tokenized assets
- Standardized design, implementation, and integration practices
- Building supporting infrastructure to enable liquidity of critical mass
- Improving end-user experience of blockchain and cryptocurrency

The ContractLand Platform

Platform Layers

The ContractLand platform is vertically integrated through the connection of a developer DAO and DEX to either side of a smart contract marketplace. The purpose of the integration is to facilitate organic and effective smart contract development while providing liquidity and market exposure for businesses through this new medium.



The three layers of the ContractLand platform

Developer DAO

The ContractLand DAO is a Decentralized Autonomous Organization that is focused on producing smart contract templates for business use cases. The DAO is powered by community developers, where developers of the DAO are incentivized by token rewards to produce a rich pool of robust and practical templates with real business needs.

Smart Contract Marketplace

Templates generated by the DAO are integrated into the smart contract marketplace. Enterprise users can pick, deploy and manage their desired templates through the

platform's user interface. The platform abstracts out the technical complexities of creating smart contracts, and provides plugins to make them easier to interact with for end users.

DEX and Wallet

ContractLand's decentralized exchange and wallet acts as the foundation layer for the ecosystem. The smart contract marketplace seamlessly integrates with the DEX so that assets created from the marketplace become instantly tradable on the market. By making the exchange logic immutable and decentralized, we can create a market that is both fair and transparent.

Platform Life-Cycle

The life-cycle of the ContractLand platform can be described as the following.

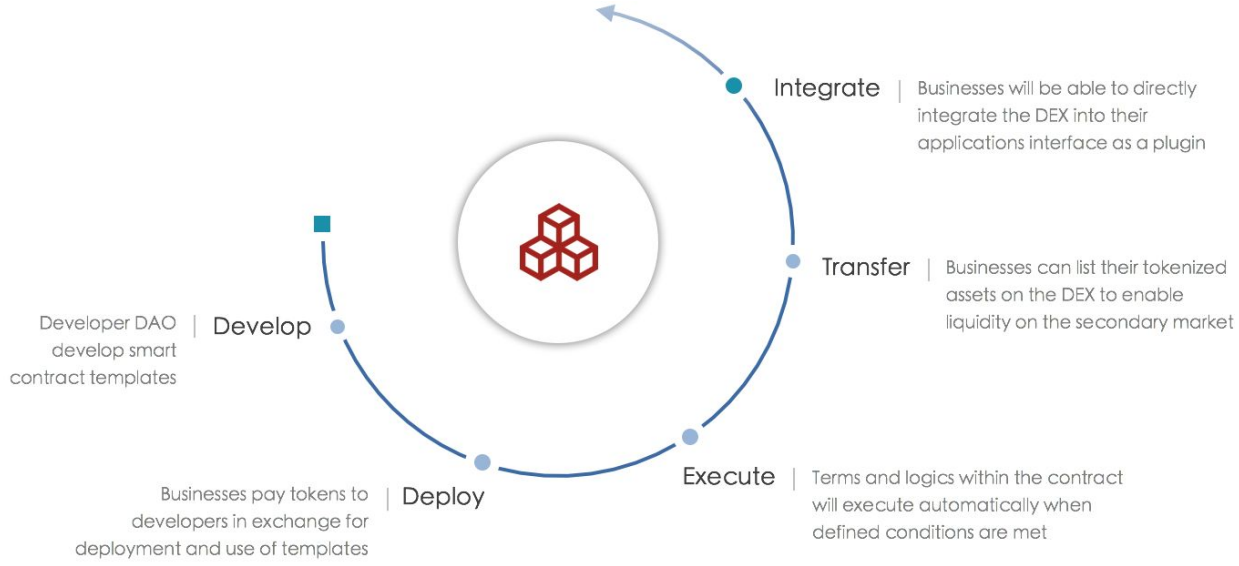


Illustration of the ContractLand's tokenization service cycle

Smart Contract Service Scenarios

In this section we present a list of use cases of smart contracts for different business scenarios.

Token Issuance and Management

There are, in general, three type of tokens: payment tokens, utility tokens, and security tokens. Payment tokens are used as a means of currency. Utility tokens are intended to provide access to an application or service. Security tokens are digital assets representing traditional financial products possessing ownership and governance properties.

Tokens can benefit businesses in a multitude of ways such as raising capital, payment processing, and community building. They achieve this by being more liquid, efficient, and transparent than their traditional counterparts. ContractLand's platform offers general implementations of these tokens that are customizable for specific business use cases on a per-deploy basis.

Reward Points

Reward points are widely used in the service and commerce industries. They derive value based on their transferability and ability to gain access to goods and services beyond the original cash value. Tokenizing reward points aides in increasing transferability while providing transparency to the reward system. This leads to a better experience for both issuer and user, and also increases incentive for end users to earn reward points due to its potential appreciation of value. ContractLand provides a platform that allows for the implementation of generic tokenized reward systems that businesses can expand on top of.

Factoring Contract

By the end of 2016, the size of the global factoring market had reached US$ 2.6 trillion, and most of the factoring business was based on traditional paper contracts. It requires a lot of manpower to verify the authenticity of the contract, resulting in low efficiency and liquidity. ContractLand permits the utilization of blockchain and smart contracts to implement factoring contracts that can be authenticated automatically, and transferred instantly, greatly reducing the overhead involved in the handling of factoring contracts, and increasing their liquidity.

Technical Design

General Approach

Our team's general approach to development follows the principle of Evolutionary Architecture, where the fundamental concept is designing for incremental change in a system. This has been a popular practice in classic software development because change has historically been difficult to predict and expensive to retrofit. If evolutionary change is built into the architecture, change becomes easier and cheaper, allowing changes to development practices, release practices, and overall agility. However, applying this principle in smart contract development is a challenge. Unlike classic software development where the application logic runs in a centralized server, deployed smart contract codes are immutable and un-iterable. To overcome this, we have designed a framework to enable upgradable smart contracts.

Framework for Upgradable Smart Contracts

The key thing to consider when upgrading a smart contract is how to preserve the state of the original contract. In classic software engineering, data of a application are separated from its functionality. This approach can also be applied to smart contract development, allowing multiple contract iterations to share the same state.

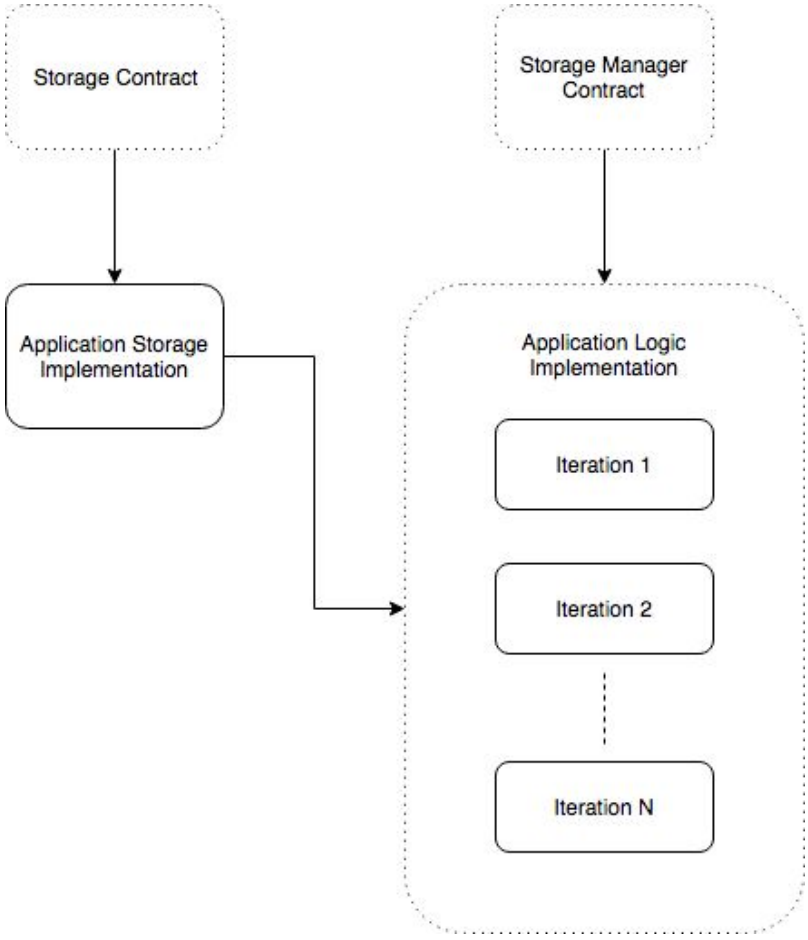


Illustration of the decoupling of data and logic in the upgradable contract framework

The framework provides abstract interfaces of a *storage* contract and a *storage manager* contract. The *storage* contract is designed as an universal data store containing all data storage types that a smart contract application will need. The contract is meant to be an immutable singleton where the expandability of the contract should allow any modification or addition of data to be directly performed on top. Concrete implementations of the *storage manager* should contain the business logics of the application, and can be upgraded frequently. Since most upgrades of an application occurs in its business logic, this decoupling of data and logic enables the upgradability of contracts without losing its existing state.

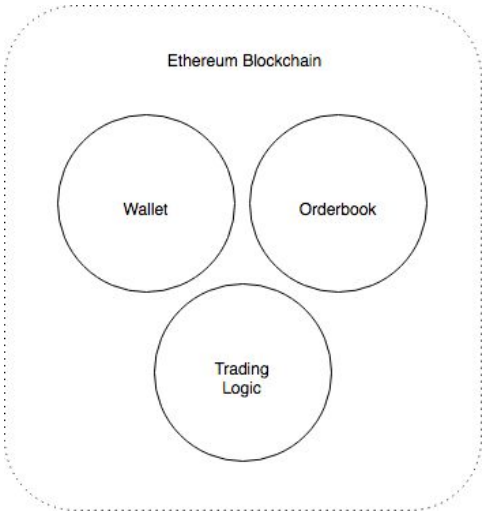
Decentralized Exchange

There are three key components to the design of the exchange; The *wallet*, the *orderbook*, and the *trading logic*. Following the iterative development approach, we have came up with an initial plan to have the exchange developed in 3 stages, with each stage delivering a new set of user value and performance enhancements. The separation of stages leaves

sufficient room to react to changes such as changes in Ethereum's core technology, or business use cases of the exchange.

Stage 1

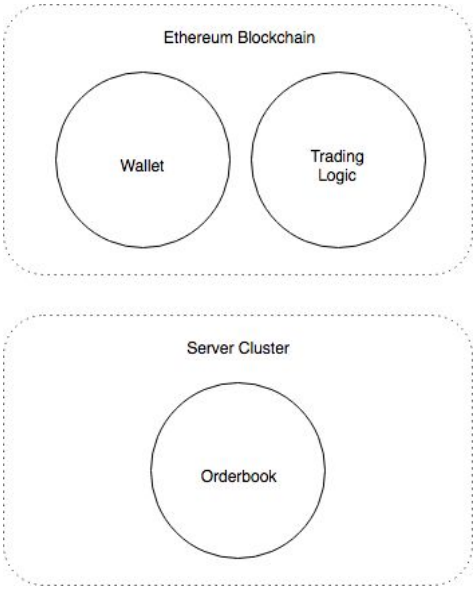
The goal of first stage of the exchange is to enable basic trading functionalities in order to provide liquidity for tokenized assets. In this stage, all three components will be implemented on-chain via smart contracts. Since all functionalities such as deposit, withdraw, order creation and execution are implemented on-chain, we expect the initial performance of the exchange to be quite slow with relatively high end user costs (due to ethereum gas costs). But it should be sufficient to support the platform's initial needs as both the amount of assets created on the platform and trading volumes will be modest.



Stage 1: Pure on-chain system

Stage 2

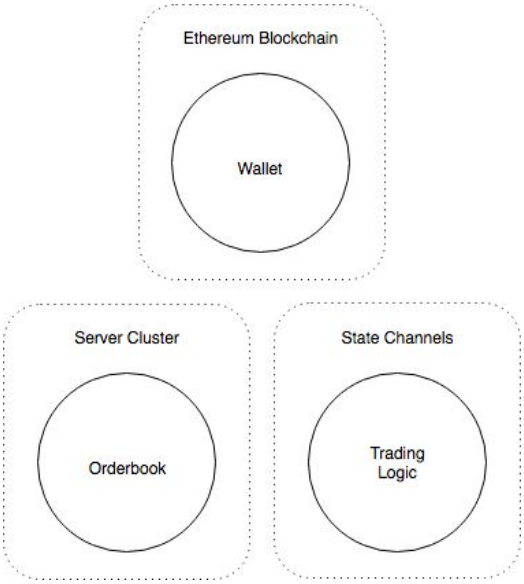
As more assets are created on ContractLand, we need to enhance the performance capabilities of the exchange. We do this by leveraging classic centralized systems without hindering the fairness, and security benefits of the decentralization, and upgrade to a on-chain off-chain hybrid model similar to EtherDelta and Ox with the *orderbook* component managed off-chain for cheaper and faster order operations. In this iteration, the volume and frequency of order creation will increase in magnitudes, while the cost will be reduced to zero.



Stage 2: Hybrid system with orderbook managed off-chain

Stage 3

The third and final stage of the exchange delivers a performance and end user experience comparable to a centralize exchange. This is achieved by moving the *trading logic* off-chain, and be implemented via state channels. At this stage only the *wallet* and fund management functionalities are remained on-chain, securing all exchange operations other than deposit and withdraw with minimal cost and high efficiency.



Stage 3: Hybrid system with funds managed on-chain, orderbook maintained off-chain, and trading logic executed via state channels

Blockchain Technology

Our platform will pilot on the Ethereum blockchain due to its:

- Rich ecosystem of developer tools and community
- Superior decentralization of nodes in comparison with other blockchain networks
- Ethereum Enterprise Alliance (EEA), which provides strong support for business development

While Ethereum is our network of choice at the moment, we recognize that smart contract technology is a young and agile ecosystem, liable to rapid change both in future iterations of existing platforms, and in the emergence of future blockchain systems, and thus remain open to exploring other platforms.

The ContractLand Token (CLC)

CLC will be deployed on the Ethereum network as an ERC20 token.

Token Utilities

- **Template Usage Cost**

CLC is used as the service token for the ContractLand's smart contract template service. Costs for deployment and usage of templates will be charged through CLC, of which a significant portion is paid out to the template developers.

- **Developer DAO Incentivization**

CLC incentivizes the developer DAO to produce high quality templates as the supply and demand of the template market will be driven by free market competition. By using CLC as an incentive mechanism, it ensures a high quality and quantities production of templates.

- **Exchange Listing Fee**

Given the DEX is ran on an open network, it can be accessed and used by anyone. But only businesses approved by ContractLand will be visible and searchable on the official platform. This will be a standard and transparent fee structure applied to all businesses, and minimal compared to traditional crypto exchange listing fees.

- **Exchange Trading Discount**

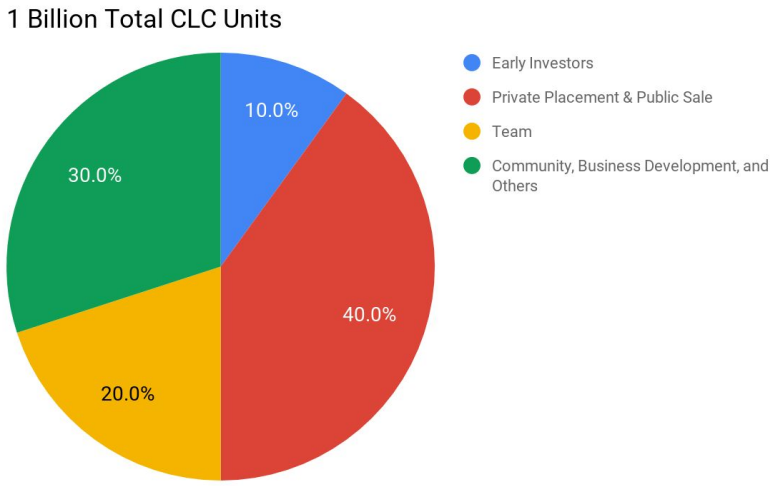
Holders of CLC will receive a discount on the trading fees of the DEX.

- **Token Buy-Back**

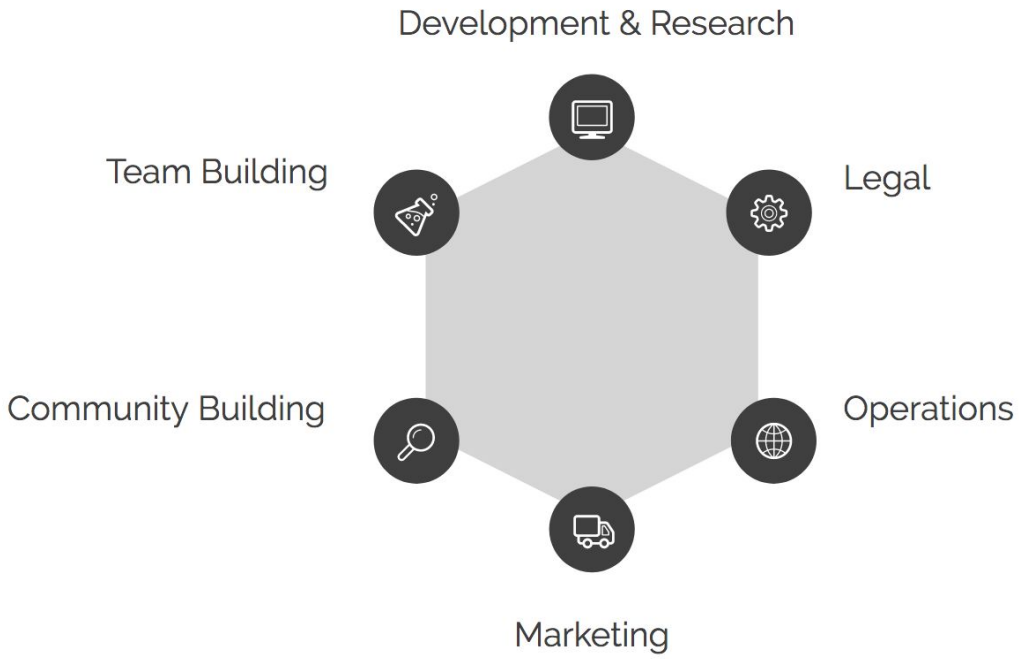
ContractLand will periodically purchase back CLC tokens from the secondary market.

Token Distribution & Fund Allocation

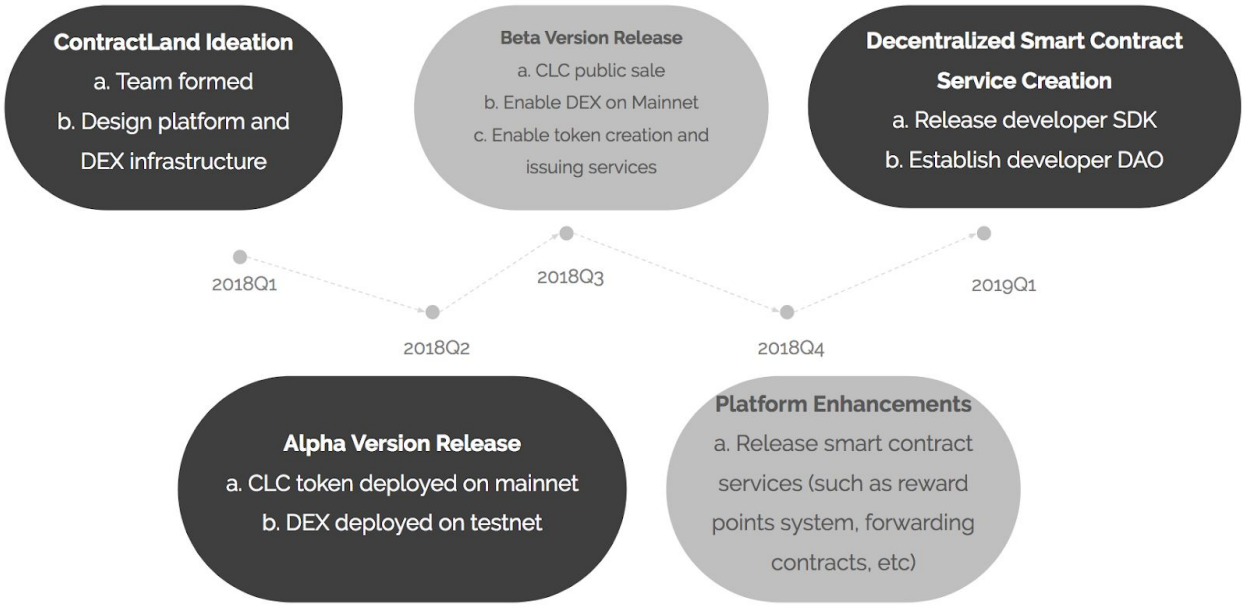
The total amount of CLC tokens will be 1 billion with the minimum unit of division being 18 digits after the decimal point.



Funds raised during the Contribution Period will be used solely for the purpose of development and operation of ContractLand.



Project Milestones



Our Team

Peter He - CEO
Peter is an active entrepreneur having founded Nimbusfly Technology Inc, a medicinal marijuana delivery platform in Toronto out of university. He is also a long-time investor and supporter of blockchain technology. Graduated from Computer Engineering at University of Toronto, Peter has led the effort in creating the first blockchain development community at Bloomberg NYC. Coming from a technical background, Peter is an expert on blockchain and DApp development.

Han Ke - Principle Blockchain Engineer
Han is a former trading and applications engineer at FinTech firm Betterment, and led their first blockchain product in the space. Long-time dabbler of cryptocurrencies. Experienced in blockchain, algorithmic and high-frequency trading, data processing and predictive forecasting, as well as web and mobile frameworks.

Forrest Li - CMO
Forrest is a blockchain Entrepreneur and crypto investor. Graduated from Master of Financial Engineering from University of Toronto. Forrest has worked at Cinda securities, specializing in risk management.

Bingyang Li - Advisor
Bingyang is the founder of Ipetram, a data analysis and mining services for the world's leading scientific research institutions, financial institutions, and consulting companies. He later served as COO of SmartMesh (blockchain mesh network), and has established a strong network in the Chinese blockchain space through his tenure.

Jiahua Xu - Early Investor
Jiahua is the co-founder of Hnapay, one of the first digital payment service in China. He later served as the COO of the Shanghai Culture Asset and Equity Exchange. Jiahua is an expert in digital finance and exchange.

Zeyang Xu - Early Investor
Zeyang has decades of investment and entrepreneurship experience in the digital finance space. He led the design of financial products at the Shanghai Culture Asset Exchange where he served as the Director of Product. He later founded FirstMatrix, a popular fantasy sport platform.

Chang Liu - Early Investor
Chang is an early investor and advocate of culture assets. He is the authorized agent of the Nanjing Culture Asset Exchange, the Beijing Culture Asset Exchange amongst many others. An accomplished trader of commodity assets, and experienced community manager with a strong media network in the blockchain space.