CitySwap Whitepaper V1.0

DeFi of the cities around the world

October 2020

CONTENTS

1. Motivation

Defi(Decentralized Finance) transfers the trust and credibility previously held by traditional financial institutions by recording all transactions on to blockchain. It allows anyone to use the financial services provided without a centralized institution through P2P mechanisms. Uniswap[1], a Ethereum based protocol, has contributed immensely to the explosive growth of Defi in recent periods. Uniswap connects the Ethereum wallets of each user and allows users to trade any ERC(Ethereum Request for Comment) token with Ethereum. In previous DEX(Decentralized EXchanges) such as Etherdelta and Forkdelta, users consistently suffered from the inefficient convenience, cost and most importantly lacked liquidity due to the shortage of buy/sell orders on the orderbook. By implementing an AMM(Automated Market Maker) that uses a liquidity pool creation support system, the Uniswap is able to operate without an orderbook. Along with its AMM, the efficient cost structure and direct interfaces of the Uniswap solved the issues previously held by DEX and created an environment for Defi projects to thrive.

Yield Farming is one of the many methods that implements the Defi concept. Yield farming allows the users that provide liquidity to the pools supported by the Defi protocol and collect rewards for providing liquidity. This concept gained its popularity on the Compound[2] platform in which the platform allowed its users to lend or borrow cryptocurrencies in exchange for high profit rates even with a low deposit amount. This concept is very similar to the crypto staking concepts implemented in POS(Proof Of Stake), DPOS(Delegated Proof Of Stake), Masternodes, etc. Similar to previously mentioned concepts, Yield farming effectively “locks up” user held tokens but differs in its method of “lock up” and rewards. Yield farming’s “lock up” means that the locked up assets provide liquidity to a Smart Contract. In rewards, liquidity providers are rewarded LP tokens and LP tokens can be used to earn other rewards. In the case of Yield farming, users are incentivized to provide more liquidity by finding a higher APY(Annual Percentage Yield).

Although the concept of Yield Farming can make the token price in the market as stable, some recent Yield Farming projects have promised excessive APY to its liquidity providers thus disrupting the market. Many of these projects do not have clear purposes and its methods, team members and even whitepapers are non-existent. The current marketplace resembles 2018, when many Masternodes were created but ultimately failed. CitySwap aims to provide a simple APY, in which not all focus is on the APY itself but on a healthy virtuous cycle of the ecosystem. We will and hope to be an additional step forward towards the greater goal of creating a decentralized financial network

2. An Overview of Crypto Statking Networks

The concept of Crypto Staking first designed by Sunny King and Scott Nadal in 2012, aims to solve the excessive energy consumption for mining Bitcoin. The method adds blocks by the number of coins held rather than the previous method of calculating computing power. Based on this method, Peercoin was invented in 2013 as the first token to use both the previous method of mining but also POS.

Crypto staking is similar to depositing money to a bank and collecting interest. Holding crypto serves to not only prevent sell pressure of the coin but provide benefits to the holders. In recent times, Defi has received immense attention as an alternative decentralized finance ecosystem for people around the world. Thus, interest in Crypto staking has increased and has led to a creation of numerous different types of concepts and applications of Defi. This chapter will summarize the creation and implementation of crypto staking over the years.

a.POS (Proof Of Stake)

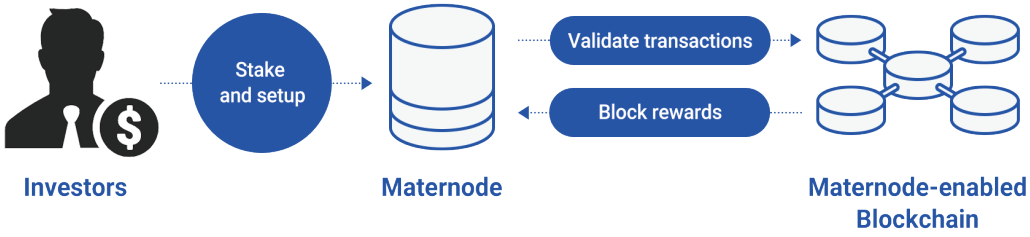
POS method is different from POW method in that, instead of competing to mine blocks over finding available hash, rewards are giving by the amount of assets deposited. [3][4] Therefore, POS is similar to POW in the sense that all nodes but have a consensus to add data to the blocks. The major difference comes from the fact that unlike POW where all nodes must have physical hardware, POS allows nodes to be involved with relative ease. [5]

The above mentioned merits to POS serve as its conceptual building blocks. However most participant's purpose in staking is the rewards involved in the process. Staking rewards that can provide anywhere from hundreds of percentages of returns serves as factor in increased demand and price. DPOS methods that involve proving one's stake and appointing a delegate to participate in the staking and reward process has similar conceptual ideas as POS. The most notable examples of POS/DPOS are projects such as EOS, Tron, NEO, Cosmos, Tezos, etc. These projects have been able to manage price, interest, liquidity and risk well enough to attract many investors and participants over the years.

b.Maternodes

The Matsernodes, originally introduced to Darkcoin as an engineering effort to support the mixing process used in Darksend implementation, was firstly described in April 2014 by Evan Duffield.[6] Although the concept of Masternodes seems to be similar with that of POS in the method of rewards, the nodes in Maternodes cannot participate in generating

block but validate transaction. This difference can allow the crypto projects to support not only the POS method but also the POW method in its realization. Projects such as Dash/Pivx are recognized examples of Masternode projects that apply both POW/POS. The Masternodes projects have a major benefit of higher interest rates for its holders compared with POS. However, the Masternodes usually request the minimum amounts of coin to join the nodes, restricted IP, continuous acceleration time, and monitoring.



[Image 1. The Flow of the Masternodes]

In 2017, thousands of masternode projects were created based on Dash protocol. Many offered hundreds to tens of thousands percentages as its ROI(Return on Investment) and created a market size over $2 Billion USD.[7] Due to projects offering unsustainable ROI, the supply demand balance collapse and the uncertain token economy, most of these projects disappeared. However, few notable projects remain waiting to capitalize on the next opportunity.

Coin Name	ROI	Daily income	Price 24h	Volume	Marketcap	Node Price
+ Dash (DASH)	8.29%	$15.36	-0.6%	$332,406,345	$657,586,482	$67,654.12
+ Zcoin (XZC)	0%	$0.00	1.14%	$9,297,009	$50,100,938	$3,939.61
+ ImageCoin (IMG)	22.41%	$0.31	-13.42%	$2,456,051	$514,704	$501.51
+ Vitae (VITAE)	11.83%	$16.91	1.67%	$1,269,419	$57,738,788	$52,175.01
+ SafeInsure (SINS)	81.26%	$0.45	4.05%	$1,056,080	$114,494	$201.98
+ SafeCapital (SCAP)	185.84%	$0.65	12.19%	$966,259	$199,581	$128.00
+ SysCoin (SYS)	7.88%	$1.04	-0.59%	$863,468	$28,765,687	$4,828.38
+ Lobstex (LOBS)	51.14%	$0.42	-0.27%	$521,055	$2,099,004	$296.35
+ PIVX (PIVX)	8.65%	$0.88	1.69%	$334,683	$23,738,807	$3,696.19
+ ZERO (ZER)	16.37%	$0.40	-9.14%	$253,119	$812,992	$901.35
+ Deviant (DEV)	58.13%	$5.57	-9.34%	$189,495	$20,643,003	$3,499.88

[Image 2. ROI of Masternodes in 2020] [8]

c.DeFi(Decentralized Finance)

Projects that apply Defi can be categorized into two major categories. First is replacing existing financial services such as asset management, derivative products, etc. Some notable Defi projects are: Maker Dao, which uses a stable coin to provide secure loans, Synthetix, which provides derivative products using tokenization and blockchain, and Compound which collects deposits of cryptocurrencies from users in exchange for interest payments. The projects mentioned above are not like POS or Masternodes in that they do not serve as protocols of a token but have an investment purpose for its users. The second type of Defi projects are services that provide decentralization through Smart Contract on services that were previously centralized. Decentralized exchanges such as Uniswap, Etherdelta and Forkfelta are examples of such services. As mentioned in chapter 1, Uniswapp uses an AMM and thus provides an efficient and effective method to trading for its users and shows the potential of future decentralized exchanges. Its liquidity provision on Defi tokens and ERC-20 tokens is now crucial to the market.

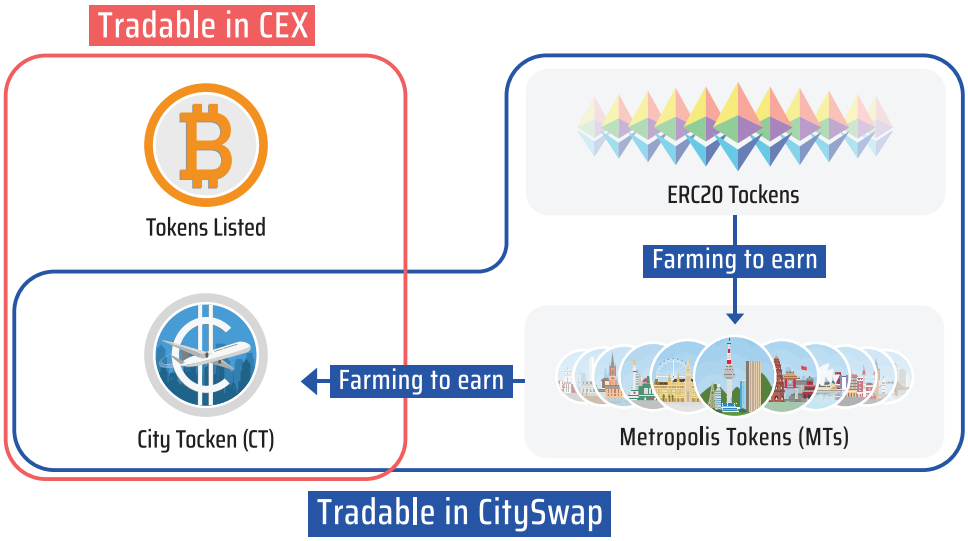
	Traditional	DeFi
Issuing money	The State	Proof of Work and Proof of Stake rewards
Transferring money	Cash	Cryptocurrency and token transactions
Lending / borrowing money	Banks	Tokenized P2P debt
Exchanging assets	Exchanging & Brokers, like Nasdaq	Decentralized exchanges
Investing money	Stocks, Bonds, etc., accessible through banks and exchanges	Tokenized financial products (ICOs, STOs and token baskets)

[Image 3. Traditional financial method vs Defi]

Yield farming is the process in which liquidity providers to the pool of a Defi protocol receive interests. Although this process is similar to Compound, it differs in the fact that users are not just depositing tokens but providing liquidity and benefiting ERC-20 tokens. Some notable Yield Farming services include Curve Finance, Balancer and Yearn Finance.

Curve Finance provides a more steady swap for stable coins. Balancer enhances the fluidity of the pool composition on Uniswap and Yearn Finance maximizes earnings based on farming. Sushi Finance which recently successfully secured massive investments shows that users are still drawn to high APY based products that maximizes returns.

The above mentioned Defi projects use decentralized systems and thus prevent the loss of credibility that many fintech and P2P services suffer from. Moreover, contracts being conducted and executed through Smart Contract decrease the physical and time constraints to participants and allow anyone in the world to access the products easily. In the beginning, the Defi was mostly only used for asset backed loans. However, after the creation of Uniswap, its use of AMM and Yield farming service has led Defi to develop into a legitimate financial service.



[Image 4. CitySwap Token Economy]

CitySwap's token economy consists of City Token(CT) and Metropolis Tokens(MT) to support its Defi Yield Farming. MT names were chosen after 30 major cities such as Beijing, Seoul, Singapore, etc, where the cryptocurrency industry has thrived. CT is the main and governance token of the CitySwap project and will maximize the value of MTs. These components of the ecosystem along with CitySwap's own decentralized exchange will create a healthy token ecosystem and play a crucial part in a sound Yield Farming system.

a. Metropolis Tokens(MTs)

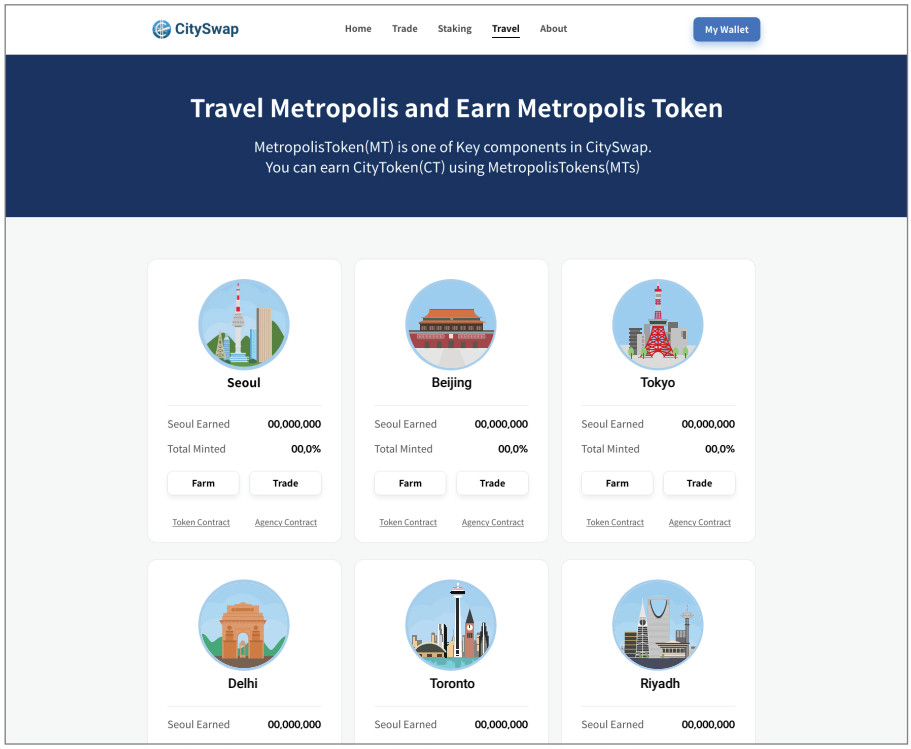
With the creation of the genesis block in January of 2009, Bitcoin[9] became the world's first decentralized currency. The inventor of Bitcoin, Satoshi Nakamoto, created a decentralized system where the currency will not depend on a decentralized agency but on the participants of the network on a P2P basis. In modern times, Bitcoin has become a major currency that can be traded without bank accounts or credit scores, anywhere in the world. To honor the philosophy of Bitcoin's original founding, the name of 30 tokens belonging to MT was derived from the major cities in the countries that actively use the bitcoin and crypto currency. The total supply of each MT is limited to the number of the population of each city at the time of Bitcoin's birth, 2019. For example, Beijing, which is one of 30 MT, will have a total supply of 17,550,000 tokens. The supply of each MT token is shown in the image below:

Country	Token Name	Population (Token Volume)
China	Beijing	17,550,000
Japan	Tokyo	36,609,000
India	Delhi	21,285,000
Canada	Toronto	5,623,450
South Korea	Seoul	10,040,000
Saudi Arabia	Riyadh	5,041,000
Switzerland	Zürich	366,800
Mexico	Mexico City	19,958,000
Sweden	Stockholm	1,335,000
Singapore	Singapore	4,988,000
Italy	Rome	2,724,000
Turkey	Istanbul	12,129,000
Poland	Warsaw	1,699,000
Iran	Tehran	7,987,000
Germany	Berlin	3,438,000

Country	Token Name	Population (Token Volume)
Spain	Madrid	6,328,000
Russia	Moscow	10,540,000
Vietnam	Hanoi	6,472,200
Greece	Athens	3,172,000
Australia	Sydney	4,099,000
South Africa	Cape Town	3,512,000
Venezuela	Caracas	2,896,000
Argentina	Buenos Aires	14,058,000
United Kingdom	London	7,878,000
Austria	Vienna	1,680,000
Indonesia	Jakarta	9,498,000
France	Paris	2,230,000
Brazil	São Paulo	19,377,000
Hongkong	Hongkong	6,973,000
United States	New York City	7,991,000

[Image 5. Lists for Metropolis Tokens]

Each MT will gradually start farming based on selected blocks in the next two years. Through having a limited supply that is gradually released, inflation will be limited and increase in price can be expected as demand grows.



[Image 6. Farming pool of each MT]

Each MT will have local partners suited to the local crypto environments. Using MTs and other local partner tokens, pools will be created and LP tokens will be given for users to use in farming. Currently, CitySwap project is cooperating with a diverse group of partners around the globe to create a synergy that is mutually beneficial. MTs will be the only farming pool component in the farming of City Token. This means that to farm City Token, pools that consist of only MTs will be created and the limited supply MTs can lead to an increase in demand and price. Moreover, as MTs that have finished farming are used in the pools of MTs that are gradually released in two years, an increase in liquidity and demand can be expected.

b. City Token(CT)

CT is CitySwap's governance token and is the crucial component in maintaining a healthy virtual cycle of the ecosystem. CT can be acquired by yield farming but as mentioned in 3.a, the LP tokens acquired by pools that consist of only MTs can be used. This creates a symbiotic relationship between MT and CT.

CT token farming pool's APY will be based on two factors explained below.

i) Based on the information from CitySwap, each MT's APY will fluctuate depending on the exchange rate of the currency of the country that the MT is based in.
For example, the Seoul token's APY on farming CT will fluctuate derived from the rate given on BKRW(Binance KRW). This process creates a connecting link between MT and fiat currency.

ii) Based on gradual release of the MT farming(See 4.Activation plan), newly opened MTs in the farming pool will gain a temporary boost in APY. This will create an increase in demand in newly opened MT in the farming pool as well as a continuous demand in its liquidity.

Based on the given information, each pool's APY will follow the below equation.

$$APY_n = \frac{w_n(t)}{APY_{total}} \cdot \left(\frac{ER_n(t)}{ER_n(0)}\right)^{\alpha_n} \qquad (1)$$

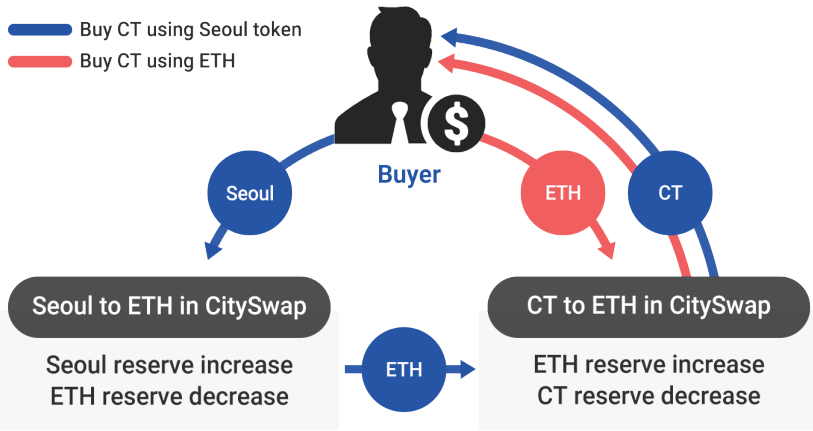
$$APY_{total} = \sum_{i=1}^{30} APY_i$$

In the above equation, n refers to the number of the farming pool of MT, t refers to the time, wn(t)andERn(t) are the weight function and exchange rate of nth farming pool, respectively. In addition, ERn(0)refers to the exchange rate on the nth farming pool once it is opened, andrefers to the parameter of the exchange rate change. If n=0 in (1), the exchange rate can be ignored in calculating the APY of nth farming pool.

The CT will not only be used as a yield farming coin but also be used for the governance token of CitySwap. For example CitySwap will increase the pool liquidity by periodically distributing a portion of the totally farmed CT tokens to the users who add the liquidity in CitySwap. Moreover, a portion of trading fees in CitySwap will be distributed to the CT holders like staking systems.

c. CitySwap Exchange

Due to the fact that Uniswap uses an AMM model to provide liquidity to its pools, it has a potential to be used in various methods. CitySwap is a decentralized exchange forked from Uniswap.

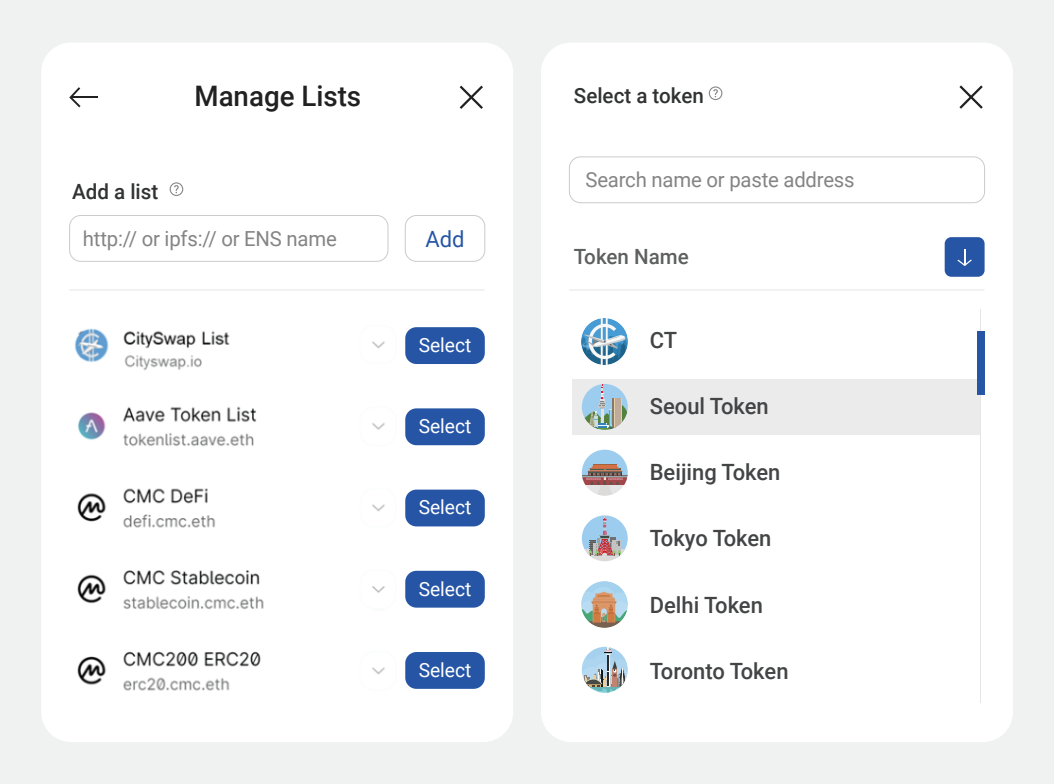


[Image 7. Trading Flow in CitySwap]

Image 7 shows the flowchart on trades occurring on CitySwap Exchange. This process is identical to Uniswap[1]. The price determination method is also same with Uniswap, but it can be affected by by changing the trading fee value, 0.003 in (2), as follows:

$$(S_1 - 0.003 \cdot S_t) \cdot (B_1 - 0.003 \cdot B_t) \geq S_0 \cdot B_0 \qquad (2)$$

In (2), S refers to the total value of the tokens held, and B refers to the total value of the tokens the user wants to purchase. Of the 0.3% fee CitySwap exchange gains from trades, 0.25% will be distributed to liquidity providers and 0.05% will be distributed to CT holders referred to 3.b..



[Image 8. Samples for the listed CT and MT]

Image 8 shows the samples for selecting the CT or MT to trade in CitySwap. As shown on the above image, CT tokens will secure various methods of trading by listing on major exchanges and MTs will be available on pools created within CitySwap.

4. MetropolisToken Activation Plan

A total of 30 MTs are scheduled to start farming according to the schedule below, and expected to be completed around June 23, 2021 with New York Token. (Farming will start according to Ether's block number, and the start and end date may change.)

Metropolis	StartBlock	Starting Date	Closing Date
Beijing	10,824,969	2020-09-09	2020-09-26
Tokyo	10,846,100	2020-09-12	2020-09-28
Delhi	8,701,578	2020-09-22	2020-11-22
Toronto	10,930,903	2020-09-25	2020-11-25
Seoul [NEW]	Renewal	2020-09-28	2020-10-10
Riyadh	10,950,148	2020-09-28	2020-11-28
Zurich	10,970,881	2020-10-01	2020-12-01
Mexico City	10,995,366	2020-10-04	2020-10-04
Stockholm	11,007,701	2020-10-07	2020-12-02
Singapore	11,068,181	2020-10-14	2020-12-23
Rome	11,128,661	2020-10-21	2020-11-27
Istanbul	11,189,141	2020-10-28	2021-04-16
Warsaw	11,249,621	2020-11-04	2020-11-30
Tehran	11,310,101	2020-11-11	2021-03-03
Berlin	11,370,581	2020-11-18	2021-01-06

Metropolis	StartBlock	Starting Date	Closing Date
Madrid	11,431,061	2020-11-25	2021-01-10
Moscow	11,491,541	2020-12-02	2021-04-28
Hanoi	11,552,021	2020-12-09	2021-01-26
Athens	11,612,501	2020-12-16	2021-01-29
Sydney	11,672,981	2020-12-23	2021-02-17
Cape Town	11,733,461	2020-12-30	2021-02-17
Caracas	11,793,941	2021-01-06	2021-02-14
Buenos Aires	11,854,421	2021-01-13	2021-07- 28
London	11,914,901	2021-01-20	2021-05-09
Vienna	11,975,381	2021-01-27	2021-02-19
Jakarta	12,035,861	2021-02-03	2021-06-16
Paris	12,096,431	2021-02-10	2021-03-12
Sao Paulo	12,156,821	2021-02-17	2021-08-04
Hongkong	12,217,301	2021-02-24	2021-06-02
New York City	12,277,781	2021-03-03	2021-06-23

[Image 9. Activation Plan for MTs]

5. CityToken Distribution

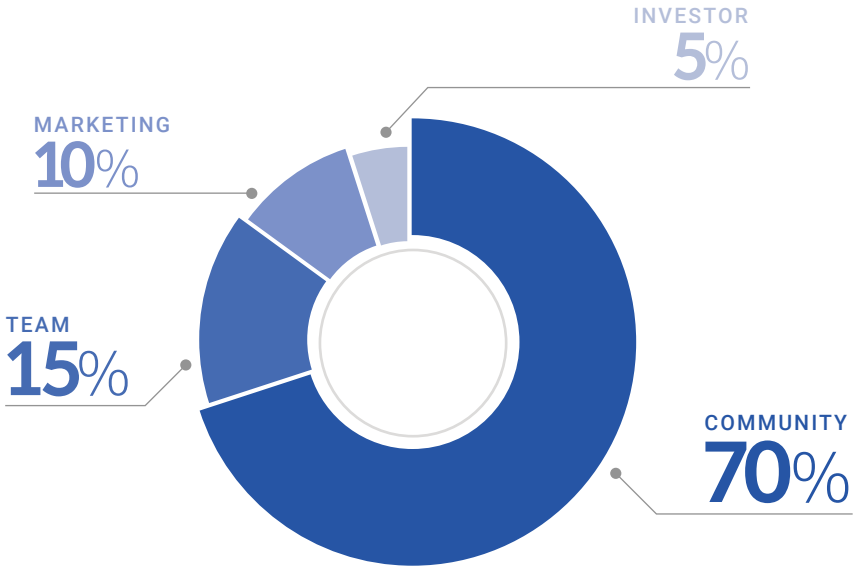
a. Overview

- Symbol: CT
- Total Volume: 6,841,000,000 CTs

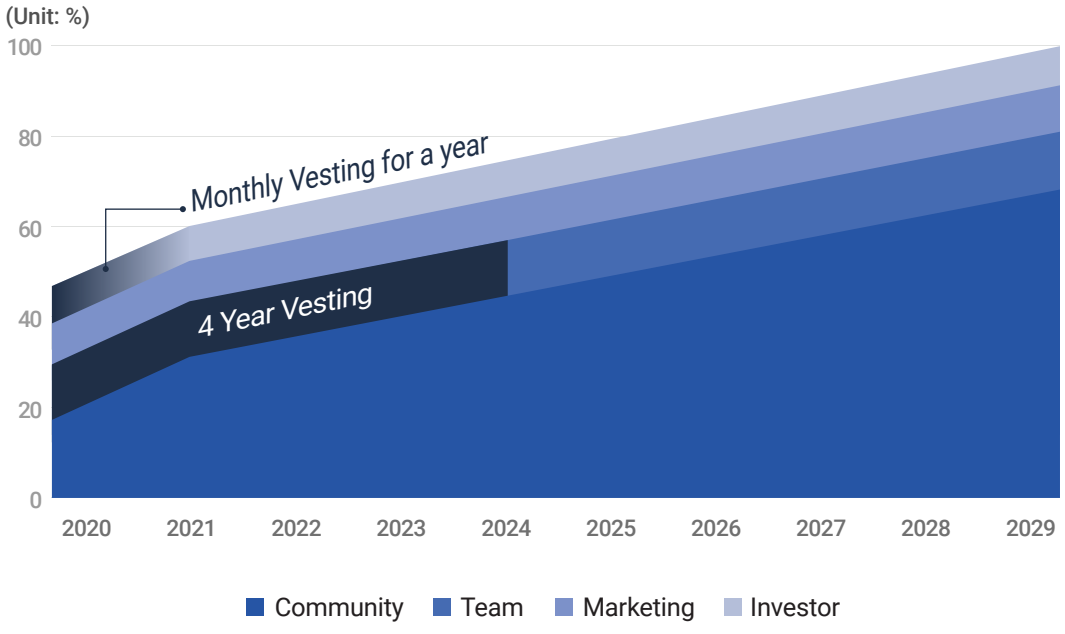
b. CT Allocation

The total volume of CityToken is 6,841 million.
It has been minted at genesis and will become accessible over the course of 10 years.
The final allocation is as follows

- 70% to CitySwap community members (1yr 20%, 2yr 10%, 3~10yr 5%)
- 15% to team members and advisors with 4-year vesting
- 10% to partners for marketing
- 5% to investors for private sale with monthly vesting for 1year



[Image 10. Final CT Allocation]



[Image 11. CT 10 Year Release Schedule]

6. Team & Advisors

a. Team

Joseph Lubanski

- Security Network Deployment Specialist.
- Full-stack Developer
- White Hacker

Shawn Jeong

- Founder, Initialize capital
- Co-founder, Precium Foundation
- Advisory, Binance Korea
- Bachelor of Electronics Engineering, Korea Univ.

Alex Lee

- CTO/Co-founder of Precium Foundation
- Ph.D. of Electrical and Computer Engineering, Korea Univ.
- More than 15 Goverment/Enterprise Projects

Hoon Chae

- Co-founder, Bluehelix
- CSO & Co-Founder, Huobi Korea
- CEO, Kc link Venture capital
- Analyst, Beyond capital
- Bachelor of Journalism, Peking University

Sangwook Lee

- Co-founder, Bluehelix
- CFO & Co-Founder, Huobi Korea
- Investment Principal, Linderman Asia Investment
- Analyst, Robust Asset Management
- Bachelor of Philosophy, Peking University

Bruce Lee

- Founder & CEO, Movilest
- Marketing Director, Appdisco
- Marketing Analyst, LG Electronics LatAm HQ
- Bachelor of Electronic Business, Ajou Univ.

Eric Lee

- COO, KStarLive
- Director NY, Oppenheimer Asset Management
- Stern School of Business, NYU

Jeffrey Lim

- CEO, Glory eng
- CEO, ATO Brand Consulting Company
- Director, Cangku Global

Anon Lee

- Executive Advisor, Hashcos
- CMO, Initialize capital

6. Team & Advisors

b. Advisor

Harry Kim

- Head of Business Development, Huobi Korea
- Director of Korea, imToken
- Sales Planning, SK Hynix
- Co-founder of JS Trading
- GSIS, Seoul National Univ.
- SIS, Peking Univ.

Jongseong Park

- Executive Vice President, SK Digital Consulting
- CEO, Accenture Korea Technology Group
- Master of Industrial Engineering, Korea University

Koo Lee

- Lead Developer & ex-CTO, Riiid!
- Co-founder, Swizzle Global
- Co-founder, Bapul
- CTO, Jisan Education
- Bachelor of Computer Science Engineering, Korea Univ.

Heeyong Lee

- Founder & CEO, KStarLive Inc.
- Founder & CEO, MEDIVentures Inc.
- Founder & CEO, ADVentures Inc.
- Marketing Team Leader, GROUPON Korea

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