Happiness through my valued data

NTH

Blockchain based data platform
that provides fair rewards for users' data

Whitepaper Version 1.0

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NTH

Blockchain Based Data Platform Using Cryptocurrency

Abstract

With the development of smartphones, many parts of our lives are being made non-face-to-face by using smartphone applications, and the scope is gradually expanding such as information acquisition, commerce, financial transactions, and leisure life. Accordingly, personal information is gradually being collected on smartphones, and many companies are accumulating enormous wealth by analyzing and utilizing personal data of smartphones.

'NTH' is a blockchain service that provides appropriate compensation for personal smartphone and application usage information.

'NTH' users are rewarded with 'NTH' Tokens by providing information on the location information recorded by their smartphone, which applications they install, when and how much they use the applications.

'NTH' analyzes and processes the data provided by the user, makes it valid data for various services, provides it back to the user, and tries to create a virtuous data ecosystem that allows the user to utilize this data for reasonable and useful services.

The data is today's most valuable resource. A legitimate data ecosystem should be able to make a profit for anyone providing their information. The 'NTH' project aims to return the enormous profits generated in the consumption ecosystem to the center of production and consumption, not to the few incumbents.

Most platform providers have accumulated profit by indiscriminately using users' privacy, but have not paid the any compensations back to users.

This centralization of information has concentrated wealth on some who can control over the information, and the majority of participants have suffered long-term losses.

The 'NTH' project aims to increase the legitimacy of the information ecosystem based on decentralization of information by paying fair compensation to users who are information producers.

The 'NTH' project aims to transform the user's data into the user's own assets, and to participate in various services and businesses based on this.

This does not mean that users simply add value to their information and sell it to generate revenue, but providing an environment whih are given the right to receive reasonable services by using the information provided, and receive fair profits as participants in various businesses.

1. Introduction

With the development of Internet services, platform operators in various fields have emerged. It has evolved from a service focused on information sharing, which is the basic goal of the early Internet, to a service of various types of user participation, and is developing into a more personalized and segmented form.

The data that platform operators collect from users is expanding from simple service use histories to various forms of personal information such as the user's lifestyle, interests, personal connections, and etc., and the collected user data is utilized in various forms to generate huge profits. .

The majority of users are not aware of what information about 'I' is collected and in what way revenue is generated while using various services, and they do not receive fair compensation for the revenue generated by data about 'I'. .

The monopoly of information like this was an inevitable situation for the development of the Internet, and various solutions have appeared to solve it, and the most effective method is the blockchain, which was first proposed as the backend engine of Bitcoin. Blockchain enables value exchange between participants without the intervention of a central administrator, prevents forgery/falsification of data, and secures reliability as its contents are transparently disclosed. This means that the ownership of data is prevented from being directed to a specific platform

operator and is shared with participants participating in the network, and the revenue generated through this can also be distributed fairly.

The 'NTH' project utilizes blockchain technology to ensure that users receive fair compensation for the data they provide to service providers. In other words, we want to apply a positive ecosystem to various business fields so that 'my' data can be used in a useful direction for 'me'.
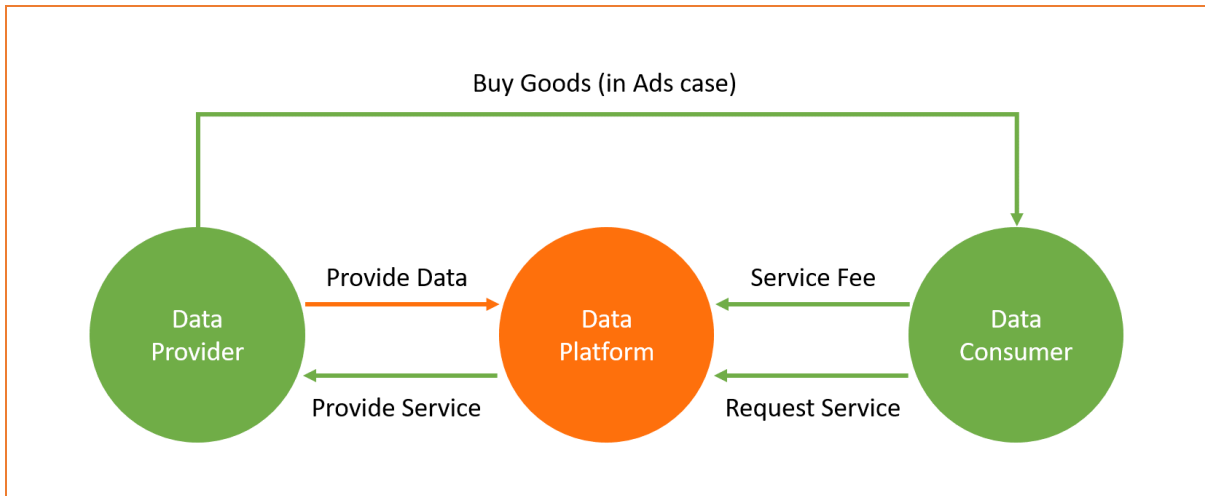
2. Business

2.1 NTH Data Business Scheme

As shown in figures 1 and 2, 'NTH' platform establishes an ecosystem based on 'NTH' tokens, a currency that naturally connects the system. Fig. 1 shows the ecosystem flow of the current, data-based market. Data providers mean social media users. In 'NTH,' they also refer to all people who produce data, such as donation beneficiaries, ads beneficiaries and consumers. Data consumers perform projects using the data in the ecosystem and include donors and advertisers. As shown in the figure, in the existing ecosystem, the data platform and data consumers make profits. Fig. 2 shows the data ecosystem changed by 'NTH.' The beneficiaries in the data market based on 'NTH' are data producers and consumers. 'NTH' aims to remove or minimize brokerage fees in the data market and return the benefits from the market to the actual subjects who participate in the data market. This chapter observes the problems of the data market of donations, ads, and commerce transactions and explains how 'NTH' can play a role in such an ecosystem.

Users provide smartphone and application usage information and receive 'NTH' tokens as a reward, and 'NTH' analyzes, researches and processes them and provides them to various application service providers.

The service provider who receives the processed data of 'NTH' reflects it in the service and provides it, and uses 'NTH' Token in return for using it.

Buy Goods (in Ads case)

Data
Provider

Provide Data

Data
Platform

Service Fee

Data
Consumer

Provide Service

Request Service

[Figure 1] Current Data Market Ecosystem

Buy Goods (Use 'NTH')

Data
Provider

Provide Data

'NTH'
Platform

Service Fee ('NTH')

Data
Consumer

Provide Service

Reward ('NTH')

Request Service

Buy 'NTH'
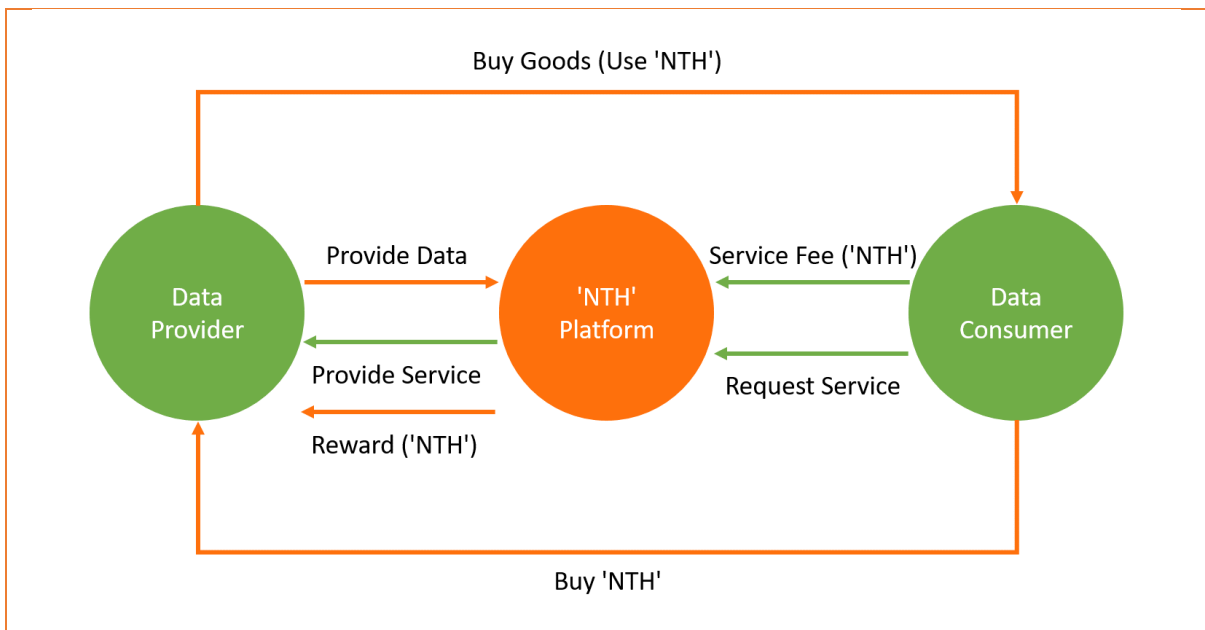
[Figure 2] 'NTH' Data Market Ecosystem

'NTH' refers to the information it collects from users as 'Context' data, which can increase reliability independently or in combination with other data.

'Context' data refers to data representing the usage history of smartphones. This can be interpreted in a broad sense, such as information on smartphone terminals, usage history of basic functions, application installation and usage behavior, etc. In the modern era of high dependence on smartphones, it can be seen that the meaning is the same as 'data about individuals'.

'Context' data is viewed by many companies as a resource that creates future wealth with the development of artificial intelligence. As if reflecting this, there are various data markets that trade these data recently, and they are some of them become social issues.

In addition to the view that the use and transaction of personal data by Google and Facebook may cause legal problems, they are often resold by data brokers in the name of consenting to the provision of third-party data. Apple made $73 million from selling personal information of Chinese customers. Such cases occur very frequently all over the world.

Most of the problems related to 'Context' data arise in situations where a third-party intermediary is trying to gain unfairly. In other words, it comes from selling goods or services to other people (or companies and institutions) who need personal data collected for the sale, and the seller monopolizes the sales proceeds. In order to

overcome this problem, 'NTH' seeks a direct data trading market in which the data it produces is provided to the people who need it and the price is directly paid.

'NTH' intends on constructing a fair data transaction ecosystem by providing a platform in which users can directly trade their selection of personal data. That is, in this data transaction market, data transaction is processed in a transparent manner by having a user provide personally produced data to those (person, company or institution) in need of such data and directly receive reward and compensation.
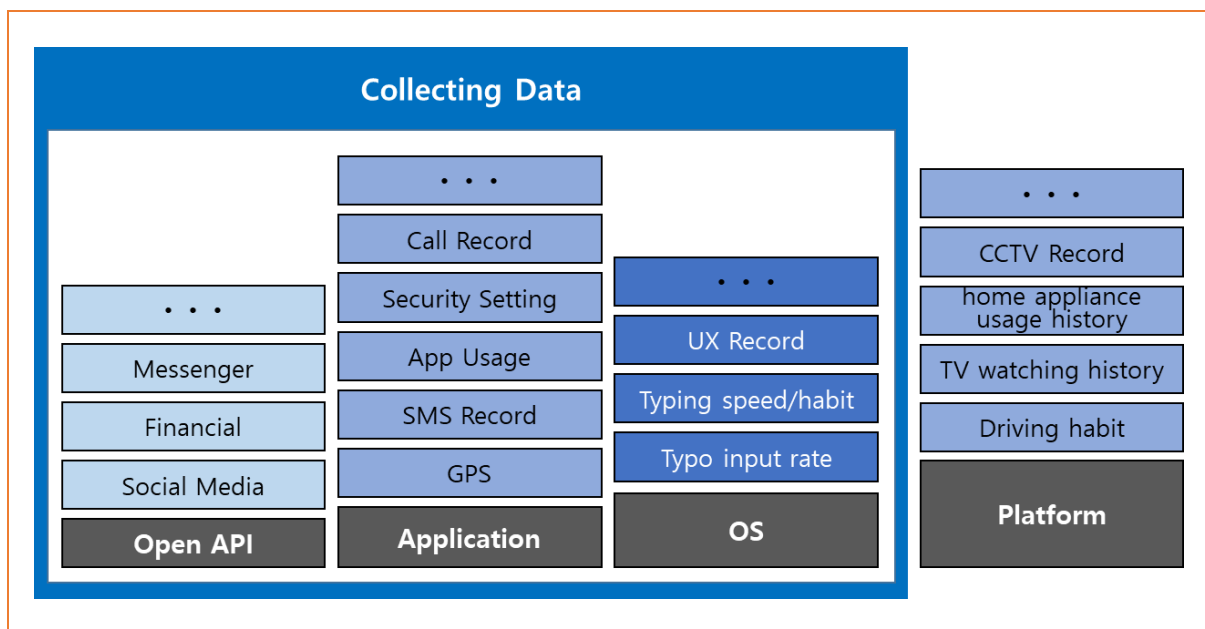
[Figure 3] Example for 'Context' Data

'NTH' Token is a virtual asset that is rewarded according to the amount and quality of data it provides within the 'NTH' platform. The rewarded 'NTH' Token can be used in various services within the 'NTH' platform.

Users install the 'NTH' application, upload data from their smartphone regularly and irregularly, and receive 'NTH' tokens according to the uploaded data. The 'NTH' platform analyzes and processes the uploaded 'Context' data and combines it with data from various service providers to provide customized services for users.

2.2 NTH Service Platform

'NTH' is provided in the form of a media service in which users record their lives.

The user directly records various information along with data such as time and place and application usage history recorded on the user's smartphone and receives 'NTH' Token as a reward. Users can choose to share the recorded data with others and receive more rewards by posting the data.

The 'NTH' service platform includes a wallet service that can manage 'NTH' tokens along with media services. Users can store the 'NTH' Token received as a data reward in the provided wallet, send tokens to others, use various services linked to the 'NTH' service platform, and pay 'NTH' Token in return.

The 'NTH' wallet service can store 'NTH' points and 'NTH' tokens. When the first user provides data to the 'NTH' platform, 'NTH' points are provided as a reward, and when 'NTH' points reach a certain amount, they can be exchanged for 'NTH' tokens.

This has the effect of minimizing the transaction load and payment cost on the blockchain network and speeding up data compensation. In addition, by automatically staking up to the accumulation of 'NTH' points for 'NTH' token exchange, it also has the effect of preventing inflation due to the rapid market inflow of tokens.

The 'NTH' project plans to provide (or connect) users with various services such as e-commerce, advertising, donation, and finance through the 'NTH' service platform.

Services linked to the 'NTH' service platform will have an ecosystem that organically collects data and provides services through the 'NTH' token.
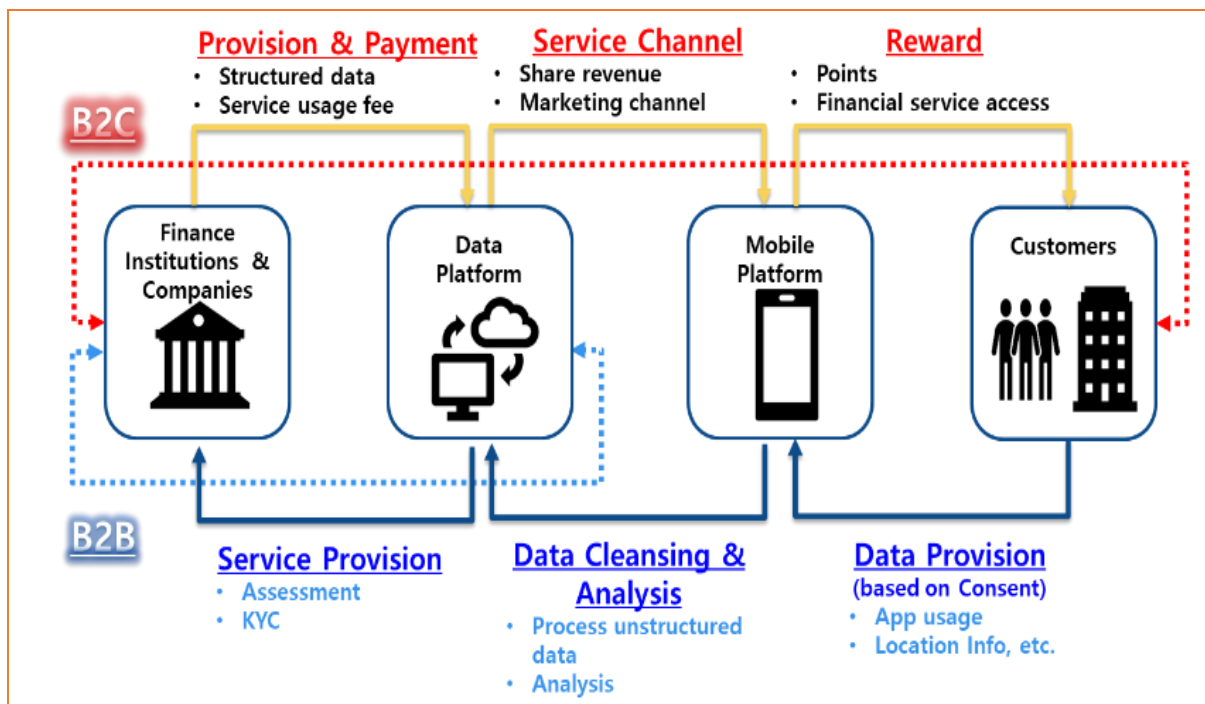

[Figure 4] 'NTH' Service Flow

2.3 NTH-linked service: credit evaluation business

As many commercial transactions are converted to mobile due to the development of mobile technology, the demand for mobile financial transactions has exploded. The concept of money has changed from exchanging money as a physical entity, to transmitting numerical values on electronic data. In addition, new business models such as non-financial credit ratings were born by utilizing financial data that was impossible to process with the development of big data technology. Nevertheless, there are 1.7 billion unbanked and underbanked people worldwide, and this portions is 25% of the world's population.

[Figure 5] shows the global non-financial population density. Most of the non-financial population is located below 30 degrees north latitude. In particular, most of the financially underprivileged are in the South Asian region, which includes Indonesia, the Philippines, and India.
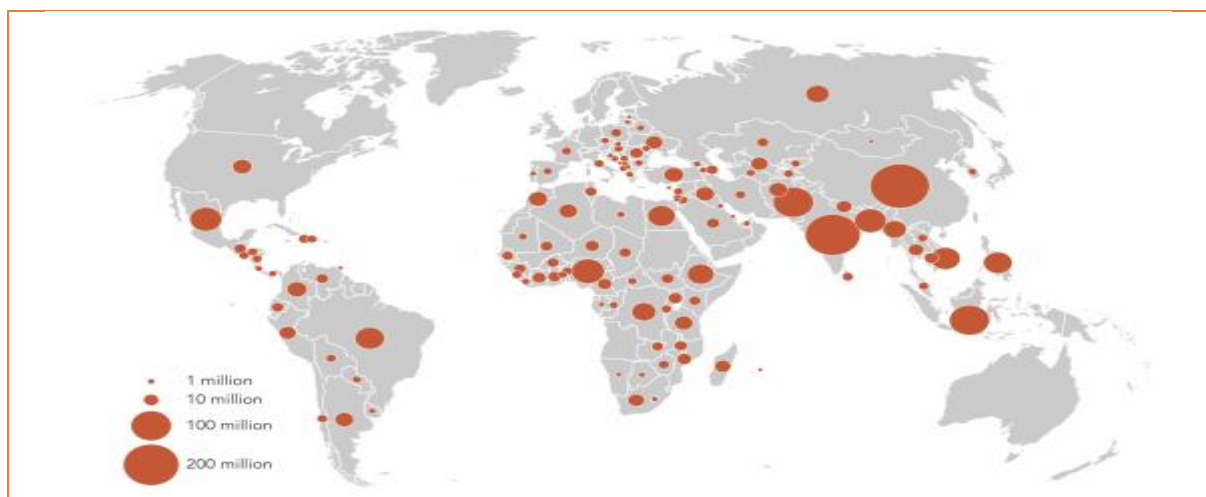

[Figure 5] Worldwide non-financial population density

'Bottom of Pyramid (BoP)' is a concept that was first used by Professor C.K. Prahalad in 1997, and refers to the class whose per capita annual income is less than $3,000. These low-income groups make up 70% of the world's population.

The 'NTH' project aims to experiment with inclusive financial services through fintech technology, taking Indonesia as the first entry point in the region where the BoP market and the financially underprivileged overlap. Indonesia's population is about 270 million as of 2020, the 4th largest in the world. In addition, the average age in Indonesia is 30.2 years old, which is lower than the global average age of 30.4 years. A low average age means a relatively large number of economically active people. Nevertheless, the bank account holding rate in Indonesia is only 36%. This is far below the global average adult bank account holding rate of 69%. If an account can be provided for them and, furthermore, financial services can be provided, it is expected to create a cyclical structure in which both businesses and consumers can benefit.

Financial alienation refers to a situation in which credit evaluation is impossible or access to institutional financial services is not possible due to low credit. The financially underprivileged class in the BoP market does not have a credit rating based on the financial transaction records used in the traditional financial market. Therefore, the goal is to provide an environment where services can be used at reasonable financial costs by providing atypical credit ratings using 'Context' data.

Through this, a user's financial service history is generated, which enables the establishment of standardized credit rating information based on financial transactions, thereby lowering the barriers to using financial services for the financially underprivileged class, and furthermore through the combination of structured and unstructured data. It enables the provision of detailed services.
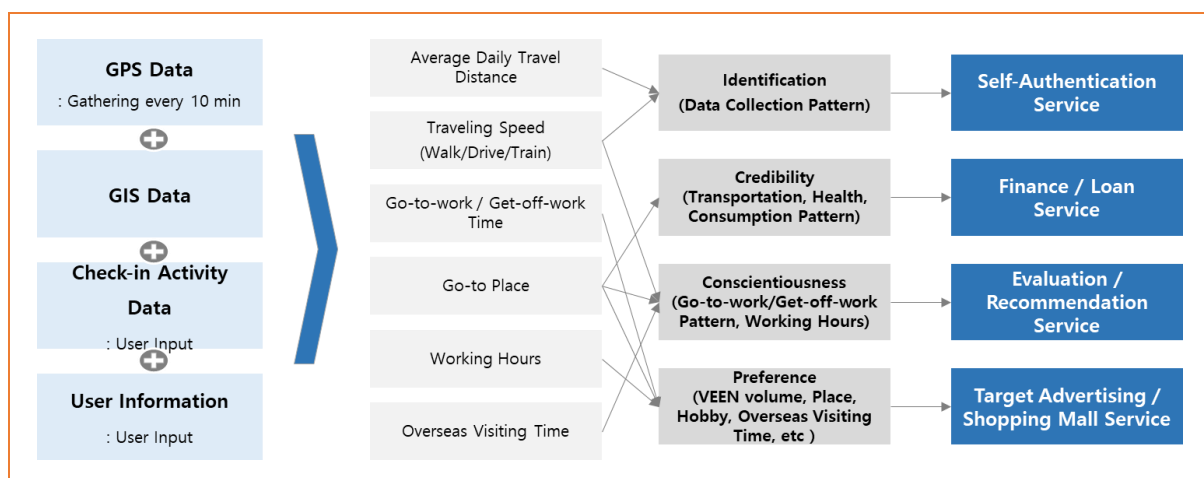
[Figure 6] The Value of collected data in 'NTH' platform

2.4 NTH Linked Service: Real Estate Development with Local

In the existing real estate development, local residents living in the vicinity of the area suffered inconvenience in the process of conducting the project, but in the current system, specific private companies monopolized development profits in most cases. Accordingly, the preferential treatment and excessive profit bias are causing many social problems.

The 'NTH' project analyzes and verifies the collected user data so that local residents can participate in development investment in the form of citizen participation. And the participating locals aim to share in the development revenue.

Users who install the 'NTH' service application and continuously update information obtain real estate development information in their area. And based on this information, we make it easy to make investment decisions by the users.

The 'NTH' platform verifies whether the user participating in the real estate development is a local resident through the analysis of the collected location information. Then, the collected funds are entrusted to a trustee institution to be used as funds for development. The funds entrusted by the user are used to purchase land for real estate development, etc. And the 'NTH' platform provides digital assets that are issued (not the NTH Token) based on the entrusted funds to the participants and lists them on the exchange. This gives the opportunity for participants to liquidate even before the real estate development is completed.

In general, real estate development can predict its profits through initial feasibility analysis, so digital assets listed on the exchange form a price between the initial investment and final profit, and participants can earn stable profits. And by giving an early investing chance to local residents who are most inconvenient in the overall development process, we ensure that they get the most profit. This method can be expected to have the effect of returning to the local residents privileges such as various licenses and permits that cause land price increases in the real estate development process.

In addition, the profits accrued after the development project is closed can be reinvested in other development projects without liquidation. This decision can be made in accordance with democratic decision-making targeting only the local residents through the analysis of user location information on the 'NTH' platform. This can create a structure in which the value of newly issued digital assets for real estate development is not fixed to the value of a single development project but continuously increases. This means creating a system in which local residents in the area can become participants and receive fair profits.

It is expected that the utilization of such local resident participatory real estate development will become a business model that establishes a protocol economy in which local residents are participants, investors, and beneficiaries. This can create a structure in which some companies and organizations that have monopolized huge profits in existing real estate development participate in the business by purchasing digital assets securitized by local residents to participate in the business.
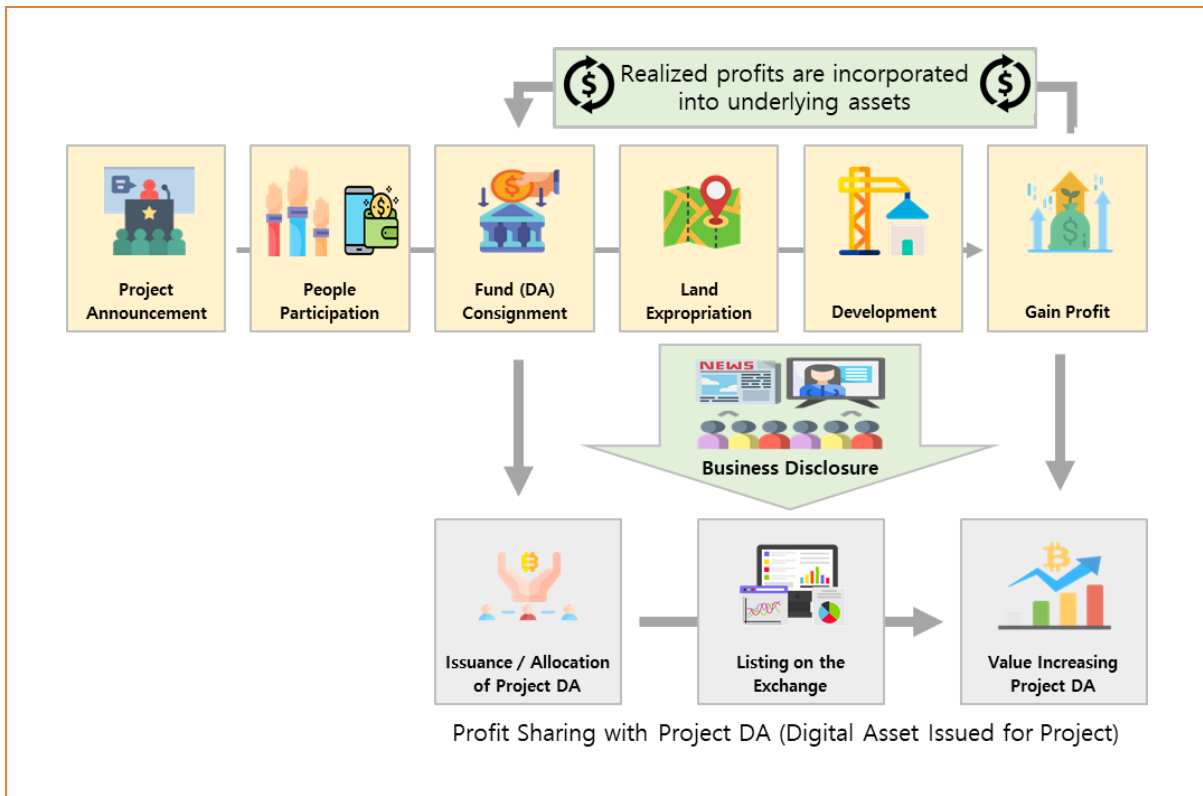
[Figure 7] Real estate development process involving local residents

2.5 NTH-linked service: advertising and e-commerce

'NTH' intends to provide advertising and e-commerce services based on the collected user data.

The 'NTH' service platform infers lifestyle and interest through the data provided by the user and provides customized product information. Users can receive 'NTH' tokens as a reward by watching advertisements provided by the 'NTH' service and purchase products provided using the 'NTH' tokens.

This means that the advertising revenues provided to consumers are provided with the data necessary to select advertisements and are distributed fairly to consumers who view advertisements.

Product sellers can execute more effective advertisements by providing product information by targeting consumers who are more interested in products based on the information inferred by the 'NTH' platform. In addition, for the execution of advertisements, product sellers must pay a certain amount of 'NTH' tokens to the platform in return. User can purchase products by using the rewarded 'NTH' Token and the 'NTH' Token received through advertisement viewing. Due to this circulation structure, inflation of 'NTH' Token can be prevented.
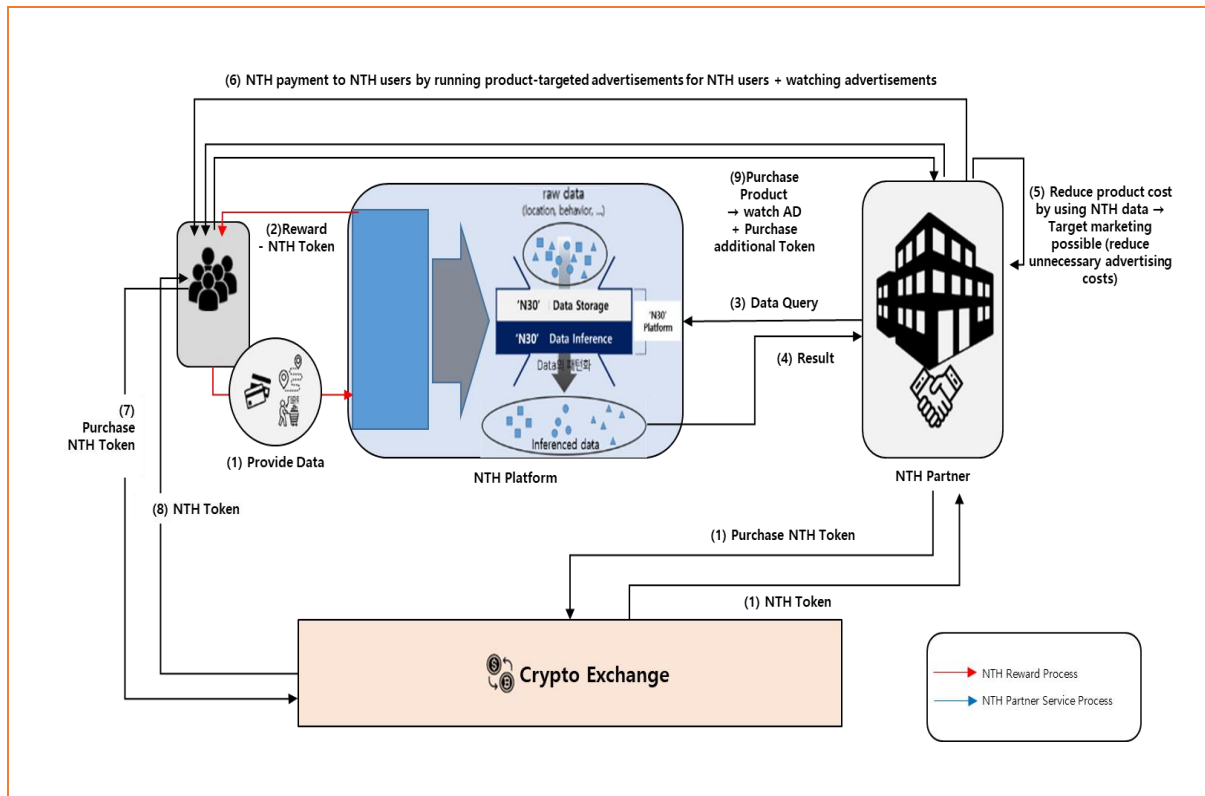
[Figure 8] Overview of Platform Advertising and Ecommerce on NTH Platform

The e-commerce service provided by 'NTH' does not simply refer to the consumption ecosystem of 'NTH' Token.

'NTH' aims to maximize the effect by activating the consumption ecosystem itself by providing installment services in financially marginalized areas that combine financial services by using personal credit data calculated on the platform.
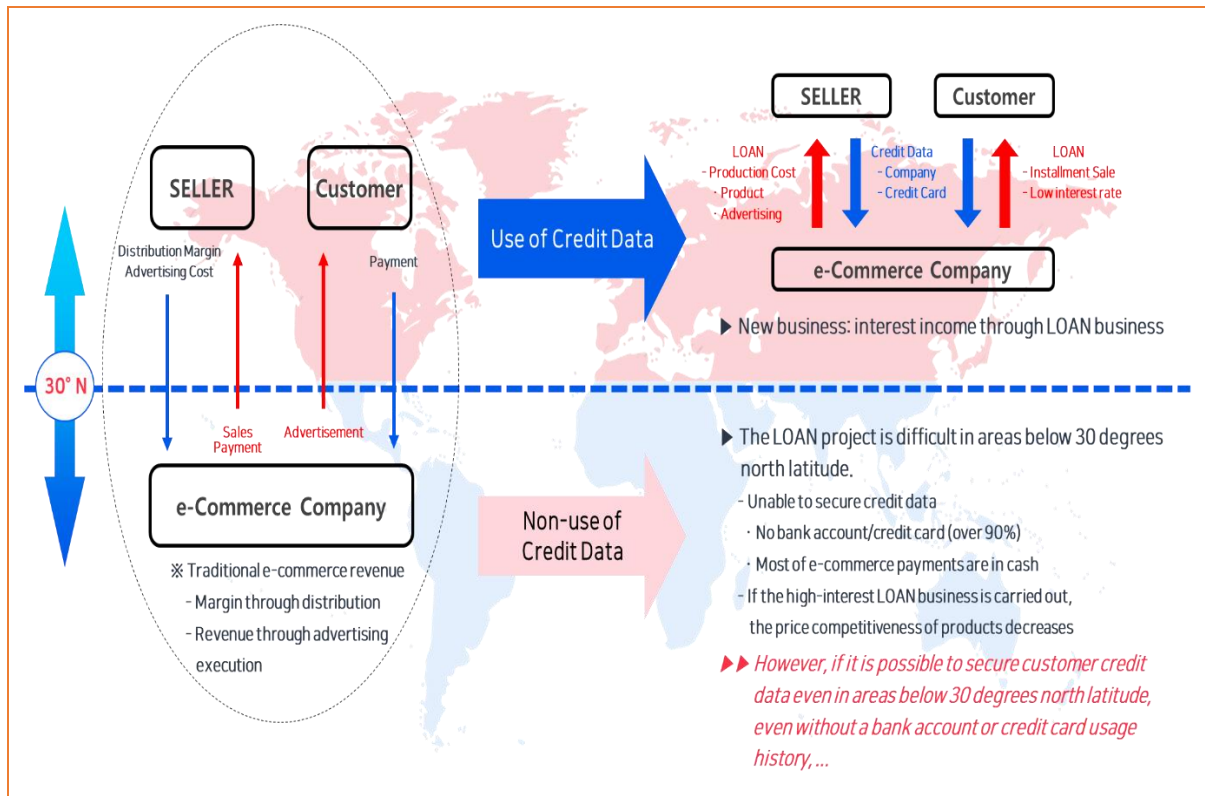
[Figure 9] Extension e-commerce model linked wih 'NTH' platform

2.6 NTH-linked service: authentication

As many traditional financial and commercial transactions converted to mobile transactions with the development of mobile technology, the number of users authenticating themselves through mobile services also increased rapidly. In other words, online and mobile-based non-face-to-face services start with the identification of users. While this improves the convenience of users, the technology brings the risk of users' authentication data being used in various crimes and is already being exploited in cyber crimes. The 'NTH' data can patternize the usage information of a user's smartphone. The user's movement

can be patternized through the accumulated geolocational information of the user, which determines whether the location of authentication matches the user's patternized data, adjusting the difficulty of authentication accordingly.

This allows the establishment of an ecosystem that enables active authentication through data analysis rather than passive authentication that requires any action from the user. Thus, this form of authentication service prevents various abnormal transactions in cyberspace.

Address fraud occurs frequently, causing societal problems. In most cases, authentication of residence consists of registering at a competent authority and submission of documents, and such proof is used by various financial institutions and government agencies. Such system is highly likely to cause issues in the future, since the authentication is not processed until the documents are submitted.

In the case of Korea, fraudulent registration of residence is often used for higher profit from real estate investment or for an assignment to a school with higher level of education.

Also, a systemetic loophole in residential authentication arose when a Canadian couple that operates a casino company faked their move to an area with vaccination priority, causing social problems.

'NTH' allows for an establishment of a transparent authentication system through the analysis of a user's accumulated geolocational information collected at certain intervals and authentication of actual residential and workplace information, and this system will be applied to various industries including real estate and financial sectors.
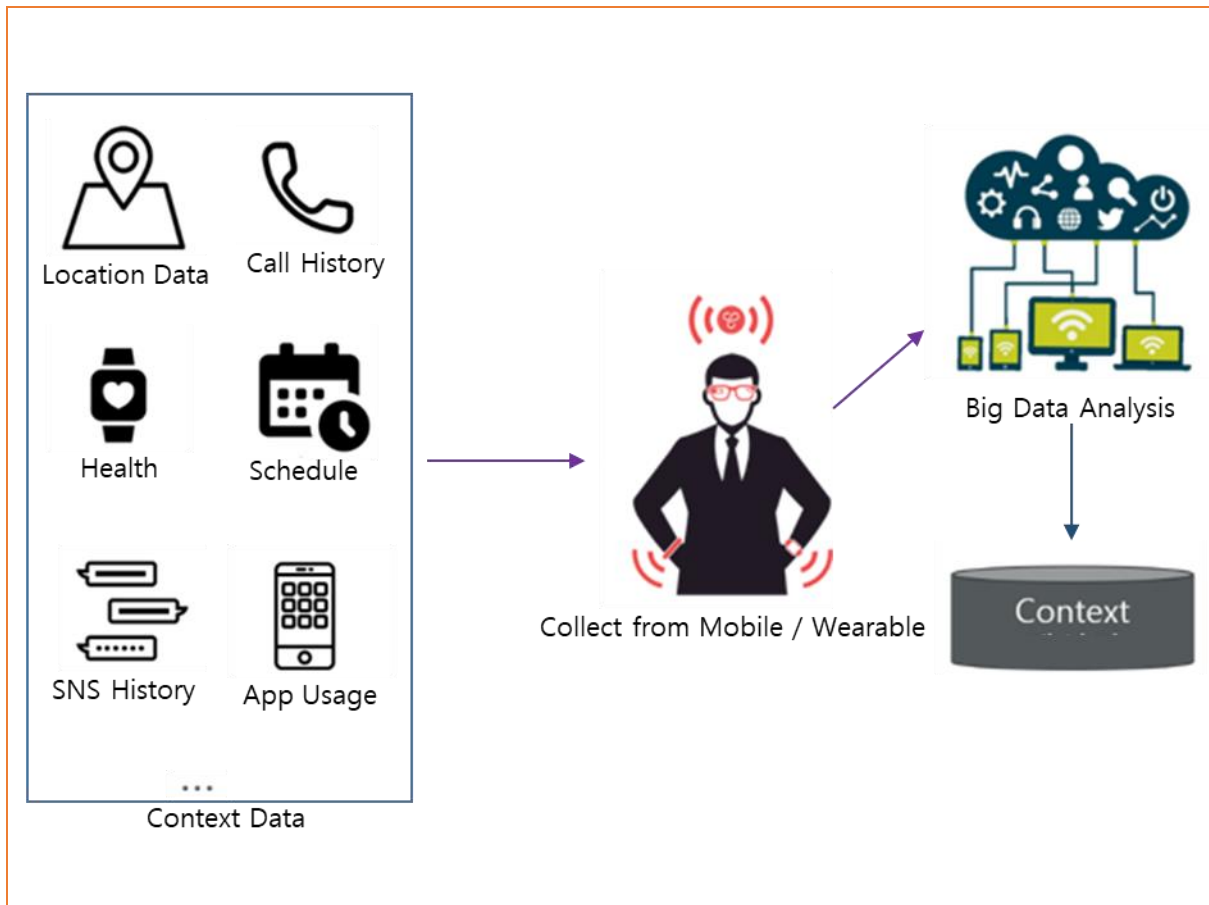
[Figure 10] Example of Authentication Process by 'NTH' platform

3. 'NTH' Implement Technique

3.1 System Architecture

In this chapter, the overall architecture of the 'NTH' platform for improving the data transactions and donation ecosystem is proposed and explained. Shown in Fig. 11 is the general overview of the 'NTH' architecture.

'NTH' Service Platform	
'NTH' Machine Learning	'NTH' Query
'NTH' Private Blockchain	
'NTH' Token	'NTH' Wallet
Blockchain Platform (Public Blockchain)	
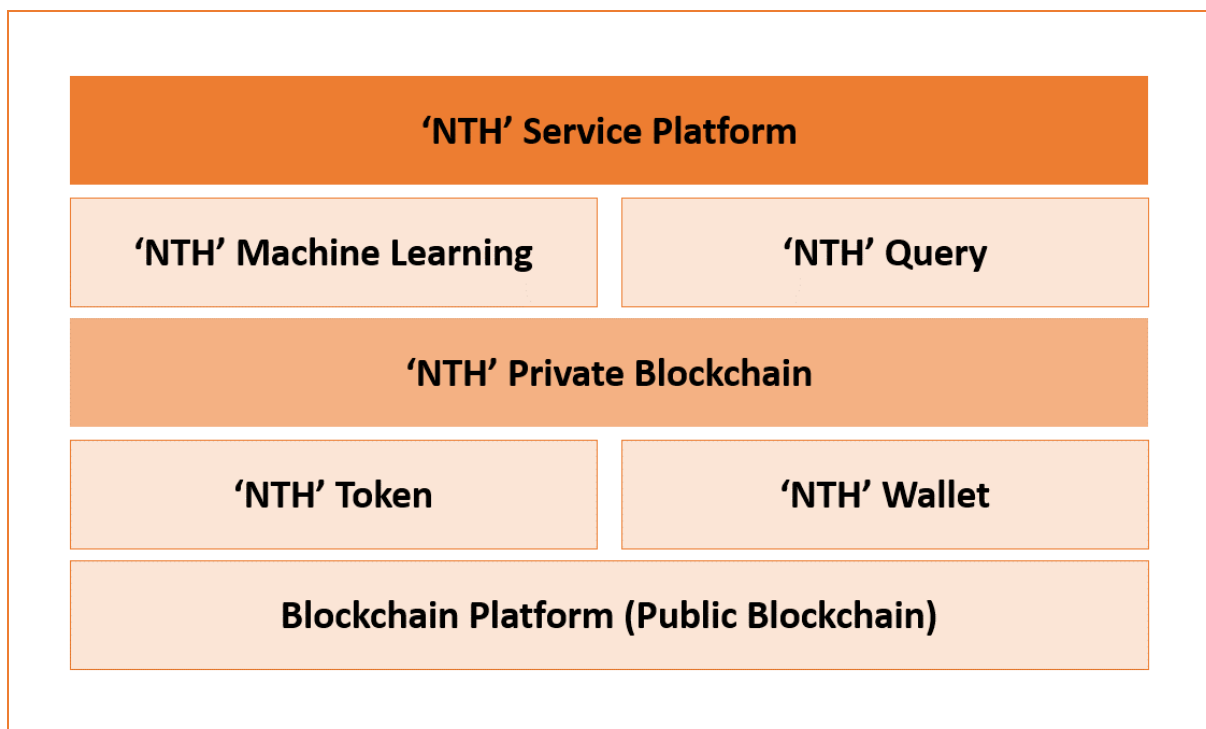
[Figure 11] System Architecture of 'NTH'

'NTH' is realized as a token in the smart contract platform of a private Ethereum network. [1] Therefore, 'NTH' tokens and 'NTH' wallets are realized via smart contracts, and 'NTH' social network service or 'NTH' platform call these services to process 'NTH' token transactions. Also, there is an 'NTH' pri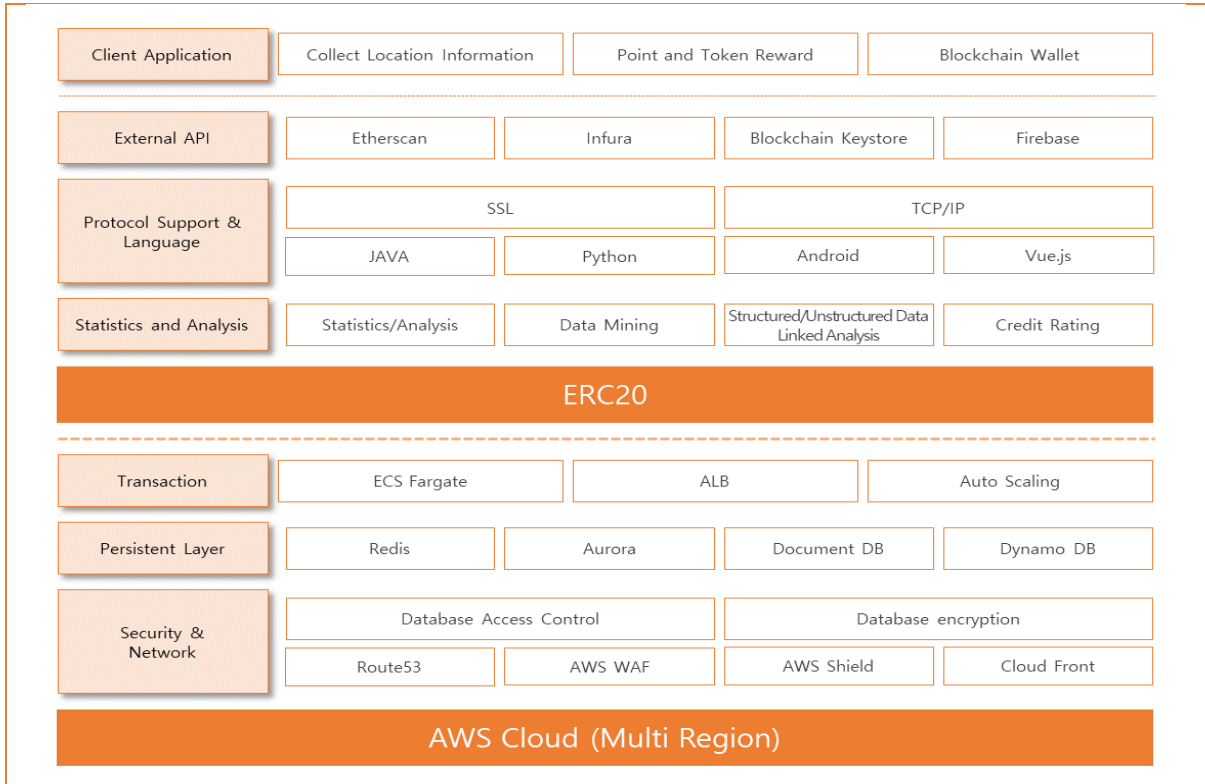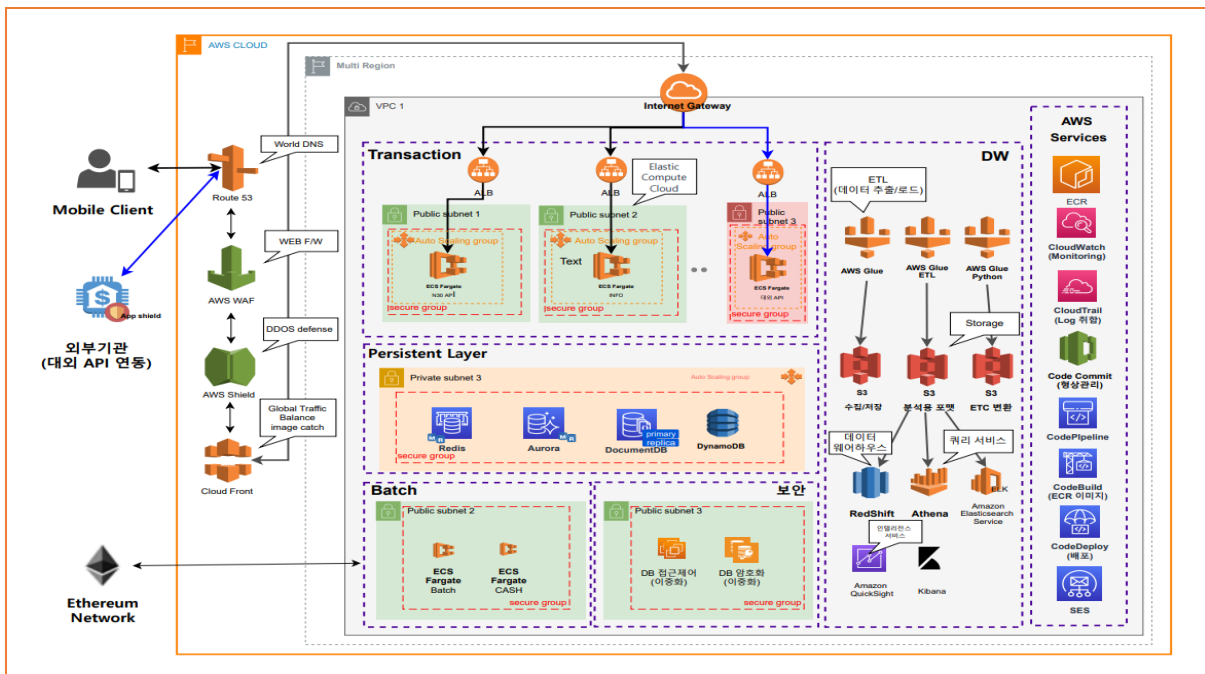vate blockchain for the content data management of 'NTH' service data (contents created by users). This is a high-performance blockchain that can process big data and is used mainly to safely store data created by users through 'NTH' social media or to calculate the value of data produced by users. This blockchain uses a method that proves the value of data produced by users by evaluating them and distributing 'NTH' tokens accordingly. 'NTH' query is offered as a smart contract of 'NTH' private blockchain, which analyzes and determines the user data to extract user information that the platform needs and other statistical processing and machine learning purposes. The smart contract platform like Ethereum instigates continuous operational costs, and therefore, it will be replaced by the 'NTH' operational foundation's own open blockchain platform 'NTH' Chain.

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[1] Blockchain network hard-forked from Ethereum

[Figure 12] Technical Architecture of 'NTH'

Client Application	Collect Location Information	Point and Token Reward	Blockchain Wallet

External API	Etherscan	Infura	Blockchain Keystore	Firebase

Protocol Support & Language	SSL		TCP/IP	
	JAVA	Python	Android	Vue.js

Statistics and Analysis	Statistics/Analysis	Data Mining	Structured/Unstructured Data Linked Analysis	Credit Rating

ERC20

Transaction	ECS Fargate	ALB	Auto Scaling

Persistent Layer	Redis	Aurora	Document DB	Dynamo DB

Security & Network	Database Access Control		Database encryption	
	Route53	AWS WAF	AWS Shield	Cloud Front

AWS Cloud (Multi Region)

[Figure 13] Cloud Infrastructure of 'NTH'
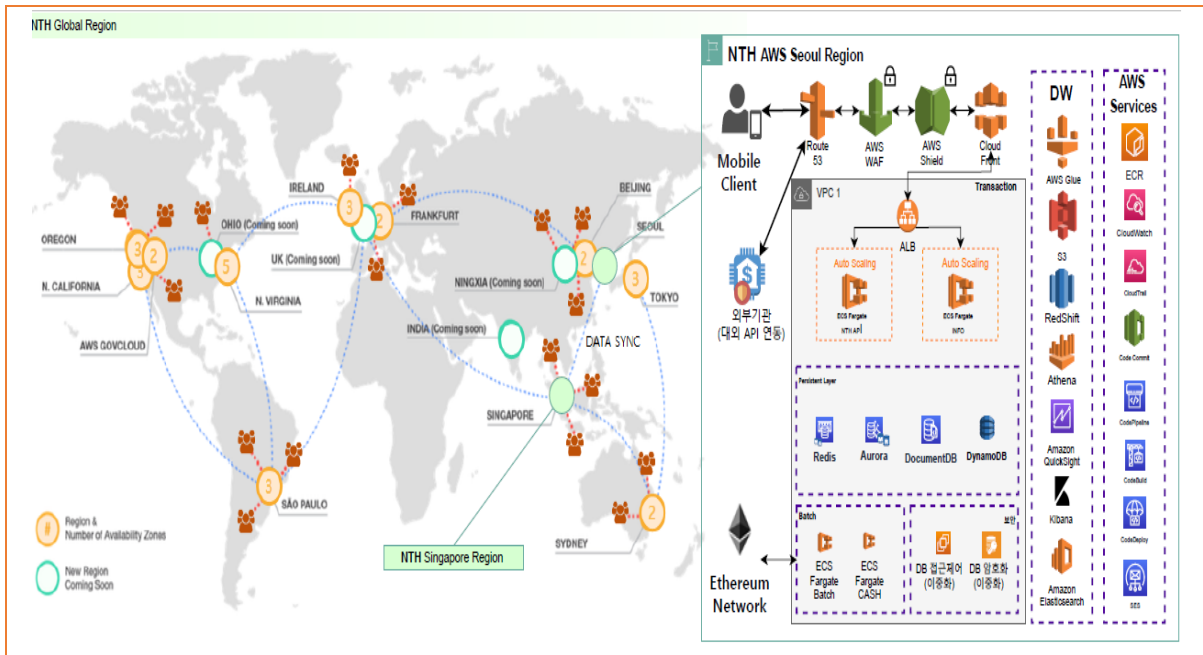
[Figure 14] Cloud Infrastructure (Global Architecture) of 'NTH'

Before the launching and the application of 'NTH''s independent blockchain platform, as shown by Figures 10, 11, and 12, the first 'NTH' service will be composed mainly of the widely used AWS (Amazon Web Service) using cloud computing resources.

3.2 'NTH' System structure and Process flow

3.2.1 'NTH' Point: 'N.Cash'

As shown by figure 15, the 'NTH' service collects data based on a mobile application ('NTH' Dapp) and N.Cash ('NTH' Points) are provided as a reward.

'NTH' Dapp consists of 'NTH' token wallet and 'N.Cash' wallet, which constitutes the

‘NTH’ ecosystem.

A user can freely utilize ‘N.Cash’ within the ‘NTH’ ecosystem, and ‘NTH’ tokens can be exported through a 1:1 exchange rate.

‘N.Cash’ allow for fast transactions within the ecosystem, thus increasing the usability of the points. These points will be issued based on the amount of ‘NTH’ tokens owned by the foundation.
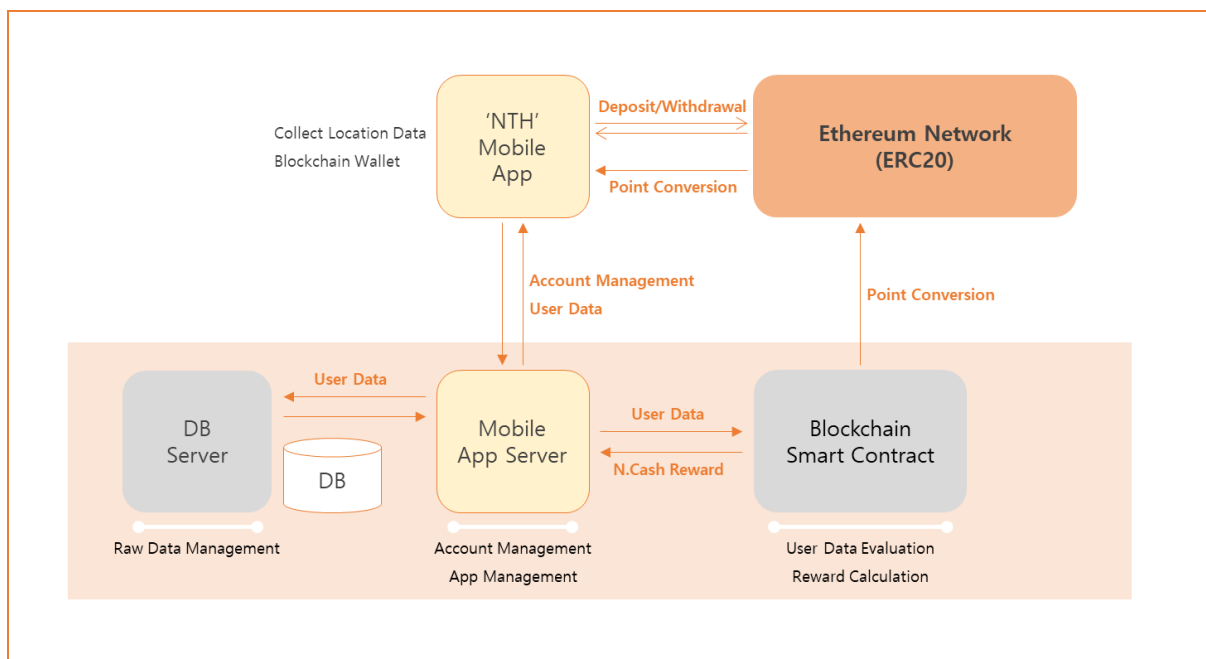
[Figure 15] Process of ‘NTH’

3.2.2 Management of ‘NTH’ Service Data: Private Blockchain

‘NTH’ service user can utilize the ‘NTH’ Dapp to agree with the collection of their location information data at certain intervals.

For the sake of data integrity, the location data collected with the user's agreement

will be collected and stored on blockchain network and will not be able to be edited. The stored data, through a reward calculation algorithm, will provide the users with a certain amount of 'N.Cash' once every hour.

As shown by figure 14, for the transparency of the reward calculation algorithm, the 'NTH' service will use blockchain network for the calculation. The storing, rewarding, and calculation logic of the collected data will be executed using smart contract.

The rewarded 'N.Cash' will be transferred to a user Dapp's 'N.Cash' wallet, and once the number of 'N.Cash' is accumulated to a certain number, the 'N.Cash' can be traded in for 'NTH' Token, and the traded 'NTH' Token will be transferred to 'NTH' Token wallet within the 'NTH' Dapp.

In this process, by storing the collected data on blockchain network, 'NTH' can ensure the reliability of its collected data as valued data.
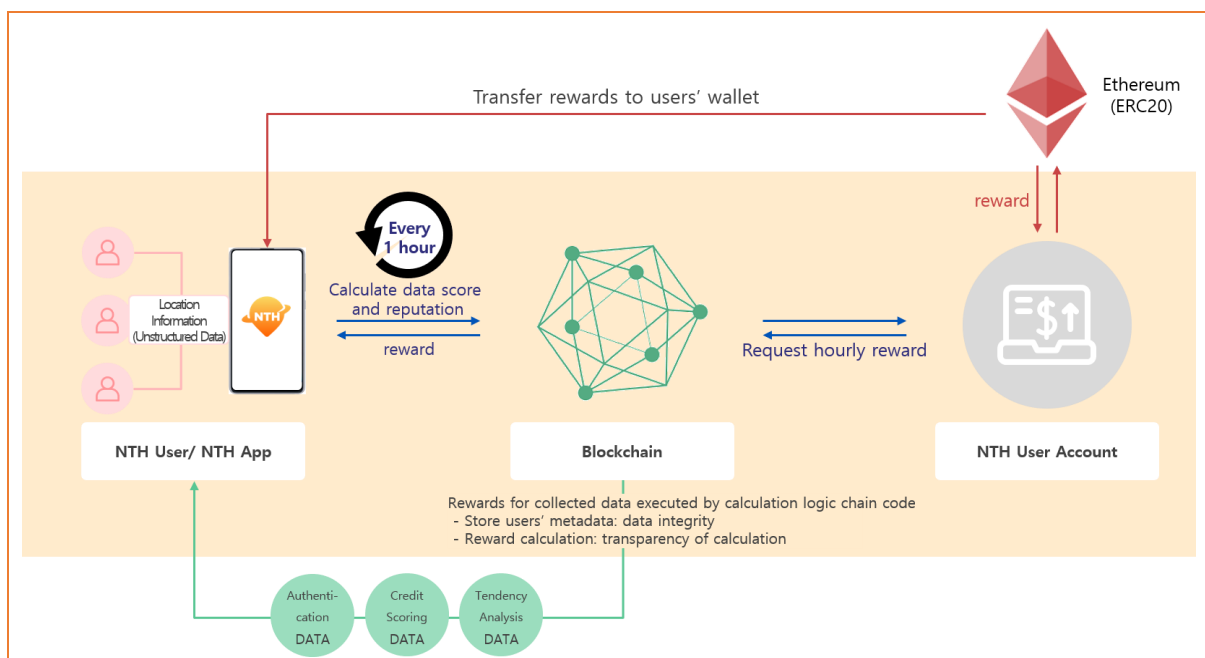
[Figure 16] The Process of 'NTH'

3.3 'NTH' Public Blockchain Network

3.3.1 Background

Mainnets used for blockchain Started with Bitcoin in 2008, subsequently followed by Ethereum, Ripple, Tron, and other numerous mainnets. Yet, the reality is that their usage was limited to proving the rights of digital assets. In a regular case, blockchain has three factors contradicting each other: scalability, decentralization, and security. Hence, the relationship between the factors is called the 'Trilemma of blockchain.' Such intrinsic restrictions limit the use of blockchain technology. Ethereum, which can be seen as a mainnet with its own independent ecosystem, officially released a new version – Ethereum 2.0 – in December 2020 to resolve this limitation. However, it is estimated to require 6 phases of roadmap for the trilemma to be resolved, and Tim Ogilvie, from cryptocurrency company Staked, estimates that it will take at least 2 years to reach phase 2.

Ethereum also has a transaction fee issue. The average transaction fee reached up to $4.19 on June 14th, 2021. This prevents micropayment, which was one of the advantages of blockchain technology at its early phase.

For reasons including these, the goal of 'NTH' is to overcome the limits of existing blockchain services, and create an independent blockchain that matches the characteristics of the industries that 'NTH' services will take place in.

3.3.2 Concept

'NTH' Chain is designed for it to function under a data business domain. Therefore, the 'NTH' Chain must fulfill the following conditions:

① Availability

Considering the inflow of new users, the 'NTH' Chain will start with a proof of work consensus algorithm. As time passes, however, it is necessary to distribute and store the increasingly accumulated blockchain data. 'NTH' Chain will implement local sharding techniques to separate the large capacity of blockchain, which may overload a node, into sections. In local sharding, node groups are separated or put together to complete transactions depending on the amount of transactions needed to be completed. By doing so, each node can verify information effectively and efficiently.

Also, as the number of users passes a critical point, 'NTH' service will transition to proof of stake consensus algorithm. Proof of stake is a consensus algorithm that allows for the production of blocks proportionally to the ratio of owned mainnet coins. Unlike proof of work consensus algorithm, proof of stake consensus algorithm does not contain energy requiring processes. Therefore, unnecessary calculations would be reduced, improving the inefficient rates of transactions.

② Micropayment

'NTH' service rewards 'NTH' tokens to users after determining, at certain intervals, the value – amount, quality, etc. – of the data produced by the users.

Since a small amount of rewards are given to users through 'NTH''s smart contract at certain intervals, the maintenance of the service would fail if a transaction fee similar to that of Ethereum existed in the system. Also, another reason behind the removal of a transaction fee is to allow 'NTH' users to transfer rewarded tokens in small amounts. Hence, 'NTH' chain may require a deposit from the users for free remittance. If a user deposits 'NTH' tokens in a certain wallet, then no transaction fee occurs during the transfer of 'NTH' tokens while the tokens are deposited.

③ Security

Threats to a blockchain usually occur in the wallet (storage) area. The solution is for the 'NTH' chain to provide a multi-signature service in a transaction. A multi-signature address consists of n personal keys. To remit from the multi-signature address, one must sign m signatures out of n personal keys in total. The 'NTH' chain will require 3 personal keys and 2 signatures for a transaction to go through.

4. NTH Service Application

The 'NTH' platform is one in which donations, advertisements, and e-commerce activities can be performed based on the data accumulated via 'NTH' social media services. This chapter discusses this platform.

The 'NTH' platform utilizes 'NTH' tokens as a medium of exchange to create an organically linked ecosystem. A user supplies data while using social media platforms provided by 'NTH,' and uses the rewarded 'NTH' tokens in associated services.

Advertisers, retailers, etc., who comprise the 'NTH' service ecosystem, provide effective and satisfactory services through 'NTH' query to their selected target of service. In the 'NTH' ecosystem, each and every member has a role of a producer, seller, and a customer. 'NTH' service utilizes the 'NTH' Dapp to collect user data and rewards 'NTH' tokens and 'N.Cash' in return.
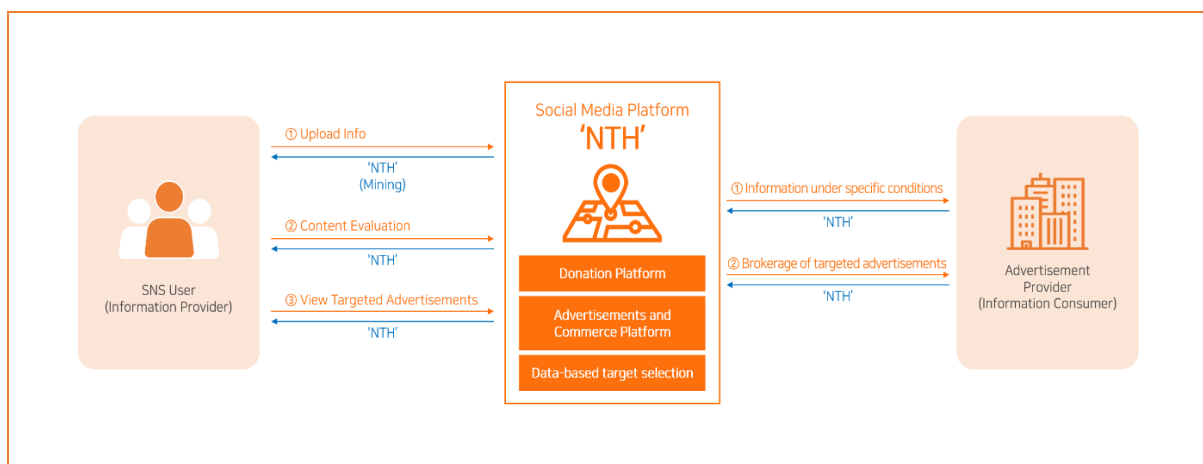
[Figure 17] 'NTH' Service Process

4.1 'NTH' Query

The 'NTH' platform selects target users through data-based queries. In other words, the target users can be extracted by the location data, social data, and personal history data that users registered. The extraction can be done with various conditional texts.

Shown in Table 1 is an overview of 'NTH' query words. This query will be further refined by marketing specialists and include simple queries to AI-based decision making. Once 'NTH' query words are activated, many AI developers will make decision-making logics using 'NTH' data. The development of an ecosystem platform where the data can be sold will be the research task of the 'NTH' project.

Category	Explanation	Category	Example	Explanation
Selection Text	Sex	WHO	WHO IS 〈Woman〉	Woman
	Characteristics	HAS	HAS CHILD	A person who has children
	Education	EDUCATED IN	EDUCATED IN 〈Seoul〉	Educated in Seoul
	Location	LOCATED IN	LOCATED IN (〈Seoul〉)	Located in Seoul, Busan
	Interest	INTERESTED IN	INTERESTED IN 〈Fashion〉	Someone interested in fashion
	Language	LANGUAGE IN	LANGUAGES IS 〈Korea〉	A person whose mother tongue is Korean
	Mobile Device	PHONE IS	PHONE IS 〈IPHONE 6S〉	A person who uses iPhone 6S
	Age	AGE BETWEEN	AGE BETWEEN 18, 26	Between 18 and 26 years old

[Table 1] Sample Query in the 'NTH' Platform

4.2 NTH Dapp

The 'NTH' service is formed around the 'NTH' Dapp from the users' perspective. The 'NTH' Dapp is divided into user data collection service, users' 'N.Cash' and 'NTH' Token wallet management, and an ecosystem that connects to donation, e-commerce, advertisement, and other services.

The payment for services such as donation and e-commerce that are within the 'NTH' Dapp can be made through the 'N.Cash,' and external partner services not included in the 'NTH' Dapp can be used through the utilization of 'NTH' Tokens.
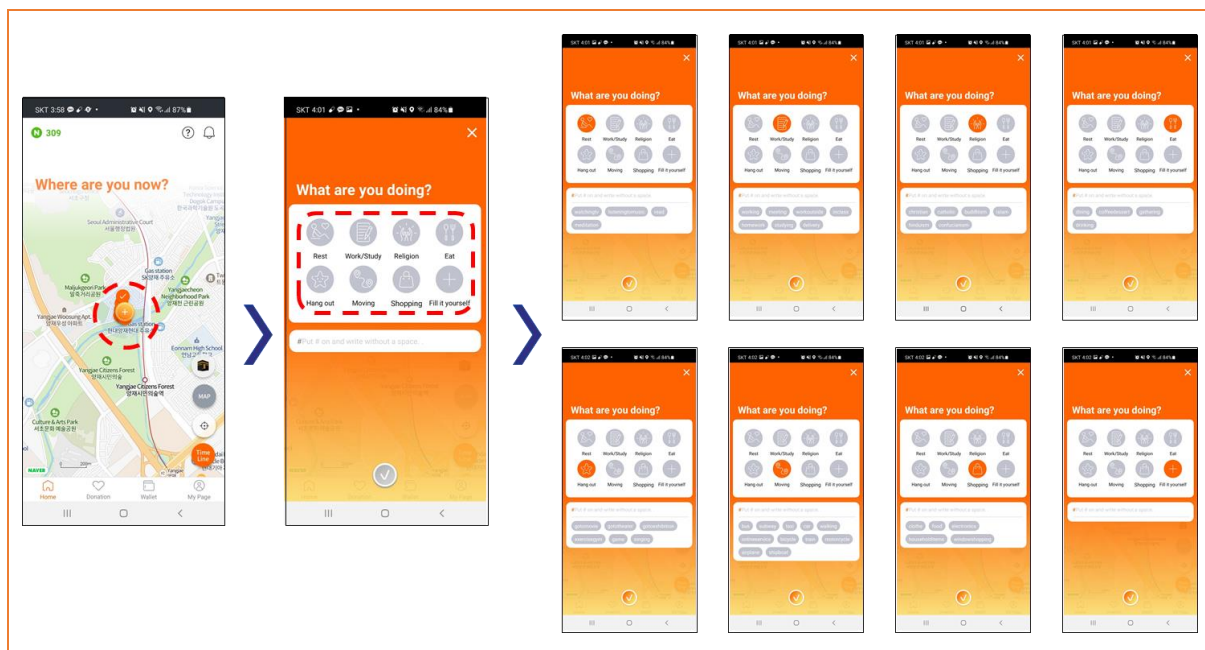
- Collection of user data
- Collect users' location information at certain intervals
- A user can input their activity at a particular location
- Divided into various categories and users can easily upload the details of their activity-related information
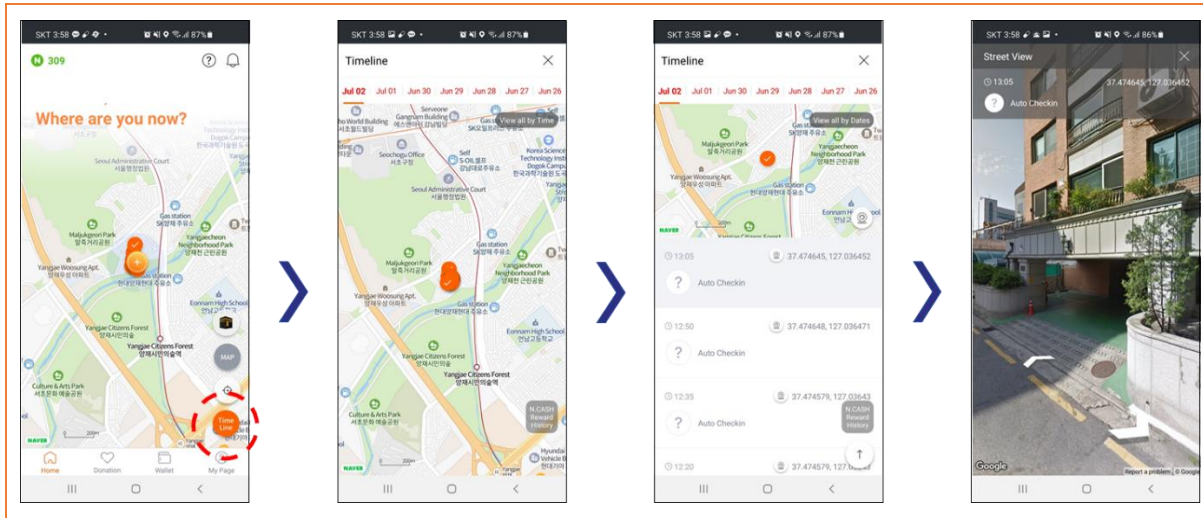
- Users can view the pattern of their past activities through the recorded data
- Users can track their path through the map and sync with streetview for more information
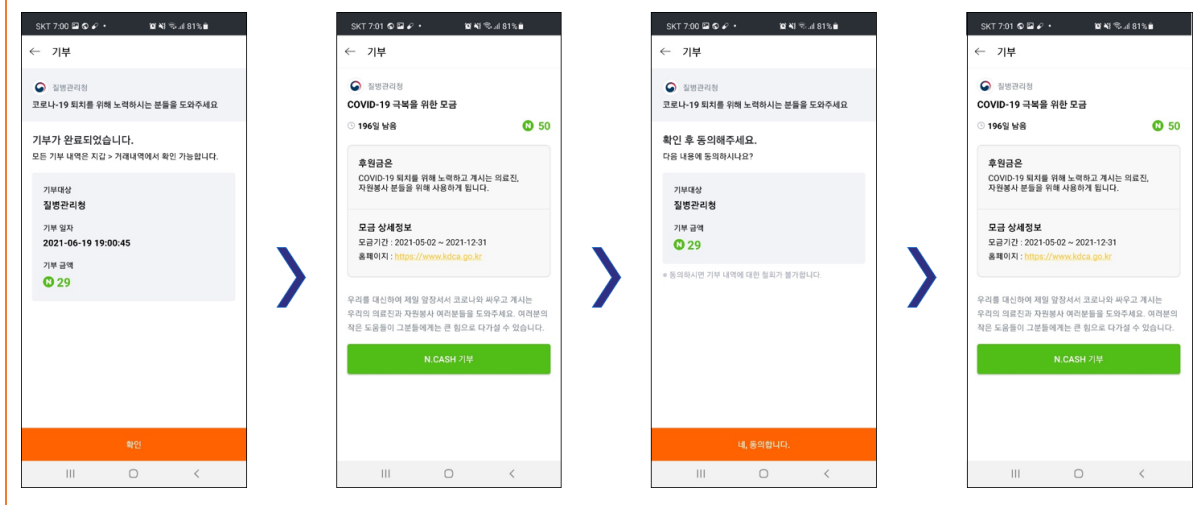
- Users can transfer their 'N.Cash' immediately within the ecosystem
- The ecosystem will be launched after the expansion of services such as donation and e-commerce through various partnerships
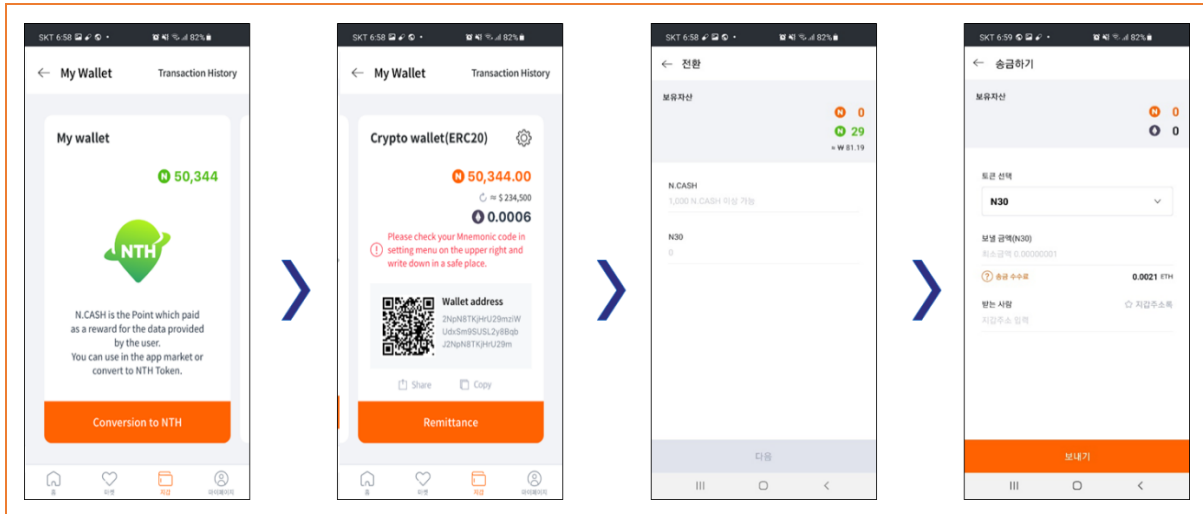
- Provide a wallet that manages users' 'N.Cash' and 'NTH' Tokens
- 'N.Cash' wallet: manages and stores rewarded 'N.Cash,' and can be traded in for 'NTH' Tokens
- 'NTH' Token wallet: manages and stores 'NTH' Tokens which can be transferred on the blockchain network

[Figure 18] 'NTH' Dapp

4.3 Project Roadmap
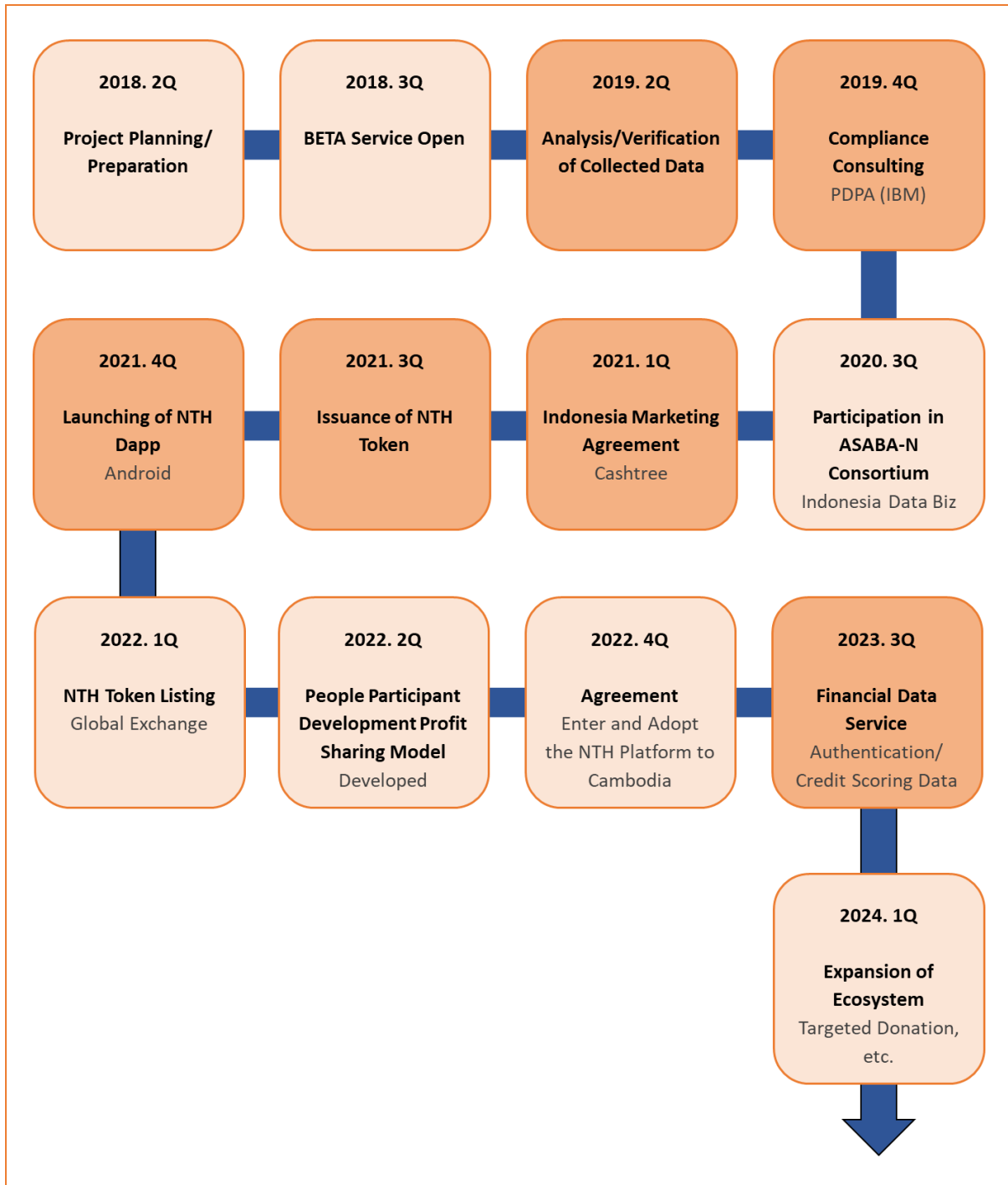
[Figure 19] Project Roadmap

5. Issuance and Distribution of 'NTH' Tokens

5.1 Issuance and Circulation Policies

Until the official launching of 'NTH' mainnet – an independent blockchain platform – 'NTH' tokens will be issued annually in the market through smart contracts under special regulations.

One billion 'NTH' tokens will be issued initially, and part of it will be distributed for

R&D and Marketing purposes before development and application of the mainnet

Category	Ratio	Amount	Notes
Sales & Liquidity	15%	150,000,000	Sales, Business Development, etc
Operating	15%	150,000,000	Operation, Research & Development, etc.
Marketing	20%	200,000,000	User-targeted Events, Airdrop
Team & Advisor	10%	100,000,000	Team Incentive
Eco-System	35%	350,000,000	Reward from Service Ecosystem
Reserve	5%	50,000,000	Reserve
Total	100%	1,000,000,000	

[Table 2] 'NTH Token' Issuance Plan
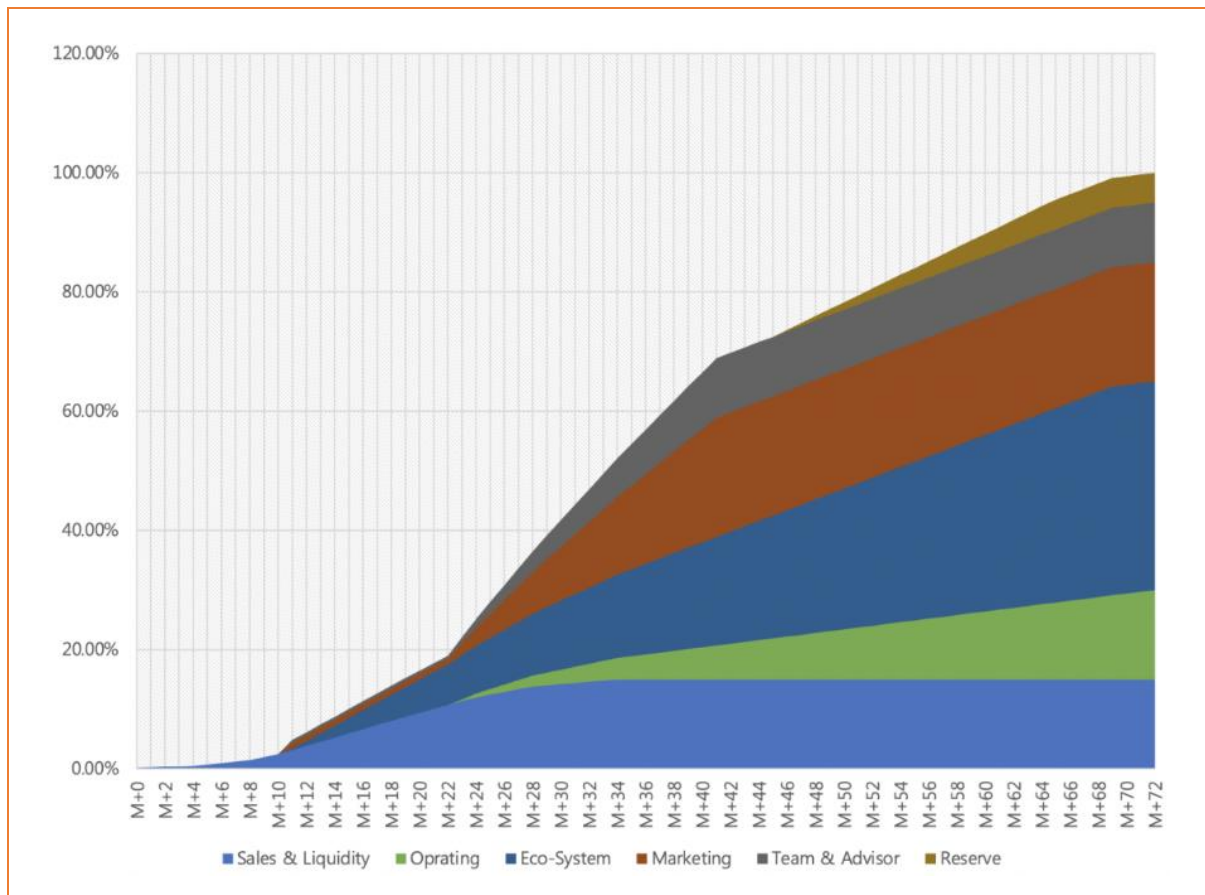
[Graph 1] 'NTH Token' Supply Plan

* Burning of 'NTH' token

The burning of 'NTH' tokens will be processed through a voting system among the 'NTH' project operators, and the content will be announced through sources such as the official website

- Burning, carrying-over, and designating remaining NTH tokens that were allotted for Liquid Provision, Marketing, and Team & Advisor

- Burning, carrying-over, and designating NTH tokens that were allotted for the ecosystem

∗ Freezing of 'NTH' tokens:

  The 'NTH' tokens may be frozen under the following conditions

  – Freezing of 'NTH' token account due to implementation and violation of smart contract

  – Freezing of 'NTH' token account that was utilized for illegal plundering and crime-related activities

∗ Marketing coins are used for advertising, events, and partnerships, and may be consigned if necessary

∗ Once 'NTH' Chain launches, issued 'NTH' tokens will be traded in with 1:1 ratio

∗ Depending on 'NTH''s operational status, the total amount of 'NTH' tokens and its distribution may be determined through a voting system among the operators, and the content will be announced on the website or other announcement boards

5.2 Eco-System Staking

Staking functions will be implemented naturally within the system to maintain the value and prevent potential inflation of 'NTH' tokens.

By providing data to the 'NTH' service platform, 'N.Cash' will be rewarded, and a certain number of 'N.Cash' will be required to trade in the 'N.Cash' for an 'NTH' token. Thus, the usability of the 'N.Cash' will increase within the 'NTH' ecosystem and less 'NTH' tokens will be exported out of the system. This halts the remuneration through 'NTH' tokens, which prevents inflation. As the number of

users increases, the staking effect also increases due to the competition among the users.

6. NTH Project Team

6.1 Founder & Director

Kwonho Lee

· B.A. in Business Administration

· Hanyang Securities
· KTB Securities
· KTB Investment
· MCTT (CEO)
· Salt&Pepper (Director)

· NTH Project

K-Rok Suh

· B.S. in Computer Science
· MBA

· SK Teletech
· Pantech
· SK Telesys
· SK Indonesia Office
  (President Director)

· NTH Project

6.2 Advisor

Heung Soon Chang

· Ph.D in Electronics

· Sogang Univ. Professor
· Blue Kite (CEO)

Min Jang

· Ph.D in Machine Learning
        Data Mining

· LG Electronic
· Hancom Group
· Bilibit (CEO)

· NTH Project

Joo Phil Jeong

· Samsung Group
· Blockchain Today
  - Media Publisher

· NTH Project

Jong Soo Kim

· B.A. in Commerce and Trade

· Samsung Electronic
 - Headquarter
 - Brazil Office
 - Portugal Office
   (President Director)

Dallen Kim

· Neople (COO)
· Soltree (CEO)
· Pt. Cashtree (CEO)
· Yteams Pte. Ltd. (CEO)

Louis Ko

· Ph. D in Computer Science

· Nonce Lab (CEO)
· Finotek (Engineer)
· Sogang Univ. (Lecturer)
· Shinheung Univ. (Lecturer)
· Saehan Information System
  (Engineer)

6.3 Project Team

Daniel Jeong

R&D Center Director

· B.S. in Computer Science

· Intoby Co., Ltd.
· Finotek Co., Ltd.

· Managing R&D Center
· Web Development/Operation
· NTH Project Leader

Sungyoun Hwang

**Senior Engineer
Lead Client Developer**

· B.S. in Information Statistics

· Intoby Co., Ltd.
· Finotek Co., Ltd.

· Android/IOS App Developer
· Client System Developer
· NTH Project

Hyunwoo Gwak

**Senior Engineer
Lead Back-End & Server
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· B.S. in Information Network

· Q & Solve
· Nubicom
· Harex Info Tech
· Finotek. Co., Ltd.

· Mobile Payment System
· Financial Institution's
  Demon System
· Electronic Registration System
· NTH Project

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Software Architecture
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- Astra International
- Xuenn Software Solutions
- AXA Services Indonesia
- PT. Cashtree for Indonesia

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- Cashtree CTO
- NTH Project

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- PT. HDI for Indonesia
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- Cashtree Project
- NTH Project

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- PT. Cashtree for Indonesia

- Cashtree Project
- NTH Project

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Full Stack Developer**

- B.S. in Game Programming

- Copersons
- IX2 Games
- Finotek Co., Ltd.

- Web Board Game Developer
- Mobile Game Developer
- Macro Program Developer
- NTH Project

Jinyoung Lee

**Senior Engineer
Financial System Developer**

- B.S. in Computer Science

- IU Net Co., Ltd.
- M-Page Co., Ltd.
- Intoby Co., Ltd.
- Finotek Co., Ltd.

- Registration System for
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- Web/Mobile Site Develop &
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- NTH Project

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• Purwadhika Startup
• PT. Cashtree for Indonesia

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• Cashtree CTO
• NTH Project

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• Back-end and Android
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• NTH Project

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• PT. Aneka Search Indonesia
• PT. Cashtree for Indonesia

• PHP Programmer
• Cashtree Project
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• IX2 Games
• Finotek Co., Ltd.

• NTH Project

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• NTH Project

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• Intoby Co., Ltd.
• Finotek. Co., Ltd.

• NTH Project

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- B.A. in Visual Communication Design

- Hakuhodo Inc.
- Electronic Solution
- Adhya Graha Kencana
- Topindo Lucky Sport
- PT. Cashtree for Indonesia

- Cashtree Project
- NTH Project

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- B.A. in Visual Communication Design

- Cerahati Digital Media
- Axioma Grafis
- Auromedia Brand Agency
- Fresh Creative / Love Dapoza
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- Cashtree Project
- NTH Project

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- B.F.A. in Communication Arts

- Pariwara Media Kreatif
- Paragon/Wardah
- Pesona Aura Biru
- Wow Communication
- PT. Cashtree for Indonesia

- Cashtree Project
- NTH Project

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- B.F.A. in Arts

- Design Talk
- Coconut Creative
- Arizoma Creative
- PT. Cashtree for Indonesia

- Cashtree Project
- NTH Project

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Product Developer

- B.S. in Information System

- PT. Media Baru Digital
- PT. Cashtree for Indonesia

- Product Development Manager
- Project Operation Manager
- Cashtree Project
- NTH Project

Nur Asiyah

Junior Manager
Quality Assurance

- B.S. in Information System

- PT. Bank UOB Indonesia
- PT. Bank HSBC Indonesia
- PT. Cashtree for Indonesia

- Telemarketing
- Quality Assurance
- Cashtree Project
- NTH Project

Juha Lee

**Senior Engineer
Information & Security
Developer**

・ B.A. in Visual Design

・ M-Power System Co., Ltd.
・ Finotek Co., Ltd.

・ Infra and System Developer
・ NTH Project

Juhyun Choi

**Junior Engineer
Full Stack Developer**

・ B.S. in Resource Engineering

・ N-Node Co., Ltd.
・ JM Net Co., Ltd.
・ Finotek Co., Ltd.

・ NTH Project

Juhyun Myung

**Assistant Engineer
Client Developer**

・ B.S. in Computer Science

・ Finotek. Co., Ltd.

・ Macro Program Developer
・ NTH Project

7. Partner

ASABA - N Consortium

ASABA Group, Djarum Group (BCA)

N Company / Finotek / S Company

Cashtree
BAGI BAGI HADIAH TERUSS!!

Marketing Partner

Mobile AD Platform - 20 million users

yteams

Mother Company of Cashtree

Publishing Company for ASEAN Advertisement, Application and Games

Cynergy Cube

New Paradigm for Housing & House
Social Revenue Sharing System
Development & Platform Services for House & City
Fintech based on House and Asset

SnC property

Real Estate Development, Sales and Marketing Company

BILIBIT

Blockchain-based IT Service Company
Services for New Businesses
: Integration of AI and Blockchain

FAVORs

Providing the best Human Life Care service based on creativity and a spirit of constant challenge.

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서울천문대

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education, and sharing dreams and
romance in downtown Seoul

NTH
Happiness through my valued data

Fnotek

Member of ASABA - N Consortium

No. 1 Fintech Company in Korea

PUBLOX

Corporation established in Korea for
project management of NTH
  : Company entrusted by
    N30 Foundation Limited