The Berith White Paper

Blockchain Business Platform

Ver 2.1

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1. Summary

I. Introduction

1. Preface

The Berith Project initially launched to help people easily access membership platform services based on blockchain. There have been many changes since the ICO presale in September 2017. We have conducted market research to identify and analyze market needs and in-depth interviews with companies, franchisees, and small business owners who will be main users of our service. As a result, as following the domestic and international blockchain trends, we developed a service to improve the business process, taking it even further than ERC20, to having its own blockchain platform for more diverse services.

Now Berith, a comprehensive business platform based on a membership economy, took a giant step forward. It builds a platform as in BaaS (Blockchain as a Service) for companies, small businesses, and other organizations to easily utilize the blockchain.

Open API of Berith Platform provides key functions of blockchain and CRM for membership marketing. That will enable enterprises to easily create their DApp to provide various services on the Berith Platform for their customers.

In the near future when Berith is commercialized, the following applications are possible.

Berith Platform - Membership and Marketing Service
-    A coffee chain, which has its own stores in Korea, China and Japan, can manage the global membership through Berith's Membership Management Service. Its events and promotions take place in all three countries at the same time using Berith Membership and Marketing Services. To that account customers can earn and use points in all countries.

Berith Pay

- An airline creates online reservation and ticketing system where Berith Pay provides a payment service in 72 countries around the world. Its customers now can pay with cryptocurrencies such as Bitcoin, Ethereum, Quantum, EOS or Berith. It would benefit both Airline A as it pays less than 1% of the charge and its customers as they earn 1% of their purchase in Berith Coin.

Berith Smart Contract

- A city council issues T juvenile tokens for juvenile welfare budget using Berith Smart Contract. Smart Contract can be used to set restrictions on usage and area to make it easier to monitor the transactions. The city council hopes to contribute to local economy by issuing cryptocurrency for diverse groups in age, gender, or district.

Berith BaaS Platform

- A large corporation rebuilds its own membership service using Berith BaaS Platform. This has drastically lowered the infrastructure development and operational costs. In information is placed on the blockchain, transparent management with low cost has become possible.
- A capital company, which provides P2P loan services, has been able to market to many prospective customers using Oauth login and marketing services provided by Berith BaaS Platform. In addition, with Berith's KYC service, P2P loan service can be easily built on the blockchain.

Berith G_Cont

- Large Corporation, L has implemented a series of internal contract management processes using Berith G_Cont. All processes can now be carried out through electronic contracts without the need to use or store paper pledges, and more reasonable services and products can be provided by reducing the cost of managing contracts and verifying performance in the sales and distribution process.

- Composer A used the original proof function of smart contract to store the hashcodes and original data of the music he composed on the Berith Blockchain. Now you can prove your copyright on the song you made.

- The contract between the curriculum and the instructor of L Department Store Culture Center needs to be renewed every semester. Now L Department Store can easily renew a contract in the form of an electronic contract using Berith Smart Contract.

2. Background

Blockchain, which has recently begun to attract a lot of attention, is recognized as the core technology that will lead the 4th industrial revolution. A majority of experts who participated in the World Economic Forum (WEF) in 2016 predicted that before 2025, blockchain-based services would account for about 10% of global GDP. Experts at the World Knowledge Forum (WKF), which was held in the same year, predicted that using blockchain will not only reduce financial transaction costs, but will also be an essential technology in various fields.

As a distributed ledger technology that enables all participants in the network to simultaneously verify, record, and store transaction information, blockchain provides security, transparency, P2P-based, and instantaneity advantages. Due to such advantages, blockchain is rapidly spreading into the non-financial sector as well as the financial sector. Many enterprises and organizations are looking for a variety of ways of investments in or partnerships with FinTech and IT companies. Especially, collaboration with ICT is used in different industries.

This indicates that the needs of blockchain applications are enormous and that the recent industrial paradigm based on integration has turned into a paradigm based on blockchain. In the future, blockchain applications are expected to expand further and greatly affect the whole economy.

1) Blockchain to strengthen the competitiveness of a business

To enhance competitiveness in a digital society should open innovation through collaboration, transparency, knowledge sharing, and distribution of power follow. In recent years, digital and ICT technologies are closely connecting person to person (P2P), person to machine (P2M), and machine to machine (M2M).

Currently, blockchain is mainly used in the following fields.

- Financial services including wire transfers, payment, authentication, and all other operational services

- Platform services supporting business processes at blockchain research   and development

- Management services where integration of blockchain with enterprise applications or for different industries

The blockchain has many potential benefits – it can cut out additional costs, improve data reliability and so on. For this it can be actively used to track products, record transactions, collect financial data, manage manufacturing processes, and moreover, share the massive amount of financial data.

In fact, the blockchain is mostly used and occupied by big companies, but still weak and rare to function as a business platform, which is supposed to be easily accessible to every user. It helps that there are only few affordable business platforms. For that reason, we think it is the perfect time to introduce a new business platform anyone can use without deep understanding of the mechanism to generate profit, improve services, and enable to easily manage. That is, a service platform that can be applied to the business of anyone without understanding and developing the blockchain from a large company to a small business owner is a true blockchain technology that strengthens company's competitiveness.

2) Various Blockchain application in business

Blockchain platform can be a viable tool for the new opportunity to lower transaction costs and efficiently manage risk of being hacked in person to person transactions, especially for transfers, payments, and authentication. In addition, Smart Contract technology, which is to create a contract that can automatically generate based on when certain variables are achieved without any human legal intervention, will be in use. Once it is in wide use it is expected to lower the additional management costs and the risk of contract failure. Likewise, digital democracy will also be in use to eliminate the problem of centralized elections by increasing the transparency of the system that would not only allow voters to verify that their individual votes were counted correctly, but also allow citizens to conduct an independent "audit of the ballot box" by scanning the blockchain where all votes are cast.

Possibly, manufacturers can leverage IoT and predictive analytics in their service parts supply chain to proactively repair equipment before it ever breaks down. In this blockchain can provide an increased level of visibility, as it would allow an entire supply chain to see when and where parts are moving to ensure the repair is made just in time. Or, blockchain to trace the supplier of the faulty parts more efficiently, containing the issue and reducing time and labor costs. As data held within a blockchain is decentralized and shared across nodes, the technology can be used to create and maintain a shared and continually-reconciled database.

Despite that there are experimental blockchain applications for many different industries, the technology is not relatively known to public yet. It suggests that blockchain will likely develop in the form of a highly accessible business platform that can be easily used by anyone. Sonner or later, blockchain will become an innovative technology that will lead the industry by creating enormous economic ripple effects in terms of improvements in productivity, efficiency, security and cost savings.

3. Proposal

1) Blockchain Applications : Blockchain with Usability

Building a blockchain-based platform is now a mandate for companies. Global companies have already put its concept to test in their new businesses to enhance business processes, improve service quality and productivity, and reduce operating and managerial costs.

Although most companies are clearly aware of the advantages of blockchain, they are not able to properly apply the blockchain platform to the enterprise due to the lack of resources including blockchain experts and operations management.

Berith Platform Project started with this idea expanding by answering the question, "Is there a business platform that simplifies business processes, improves productivity, easily operative and at the same time, affordable to everyone?"

To answer the question, in the course of developing Berith Platform we analyzed and reflected the needs of experts and users in various fields to further refine the ideas and expand the scope according to the requirements. Berith Platform leverages its comprehensive membership and fintech, which is based on the existing blockchain technology, and provides various functions optimized for the marketing business as well as enhancement of related functions, as well as sales of real marketing and product services, user-centric access through business processes and various add-ons. We have taken a step forward to a high business platform and upgraded to an easily accessible professional business platform.

2) Blockchain application : Blockchain based business platform

The Berith Platform is a business platform for Membership Economy, as a Berith comprehensive business platform that can affect all business activities with broker-free

transactions and various services based on the reliability of the distribution and encryption method of blockchain.

As taking a step forward from the existing marketplace, the users can register their identifications then make transactions over their financial, digital, or service assets on blockchain platform. It provides a marketing service, cryptocurrency payment system, member rewards system, and BaaS (Blockchain as a Service) for a smaller unit operation and management.

Such comprehensive business platforms have not been available nor affordable to small business owners due to economies of scale. Berith will enable each user to be the operator in marketing, CRM, events, rewards programs, planning events and even more. That each user has control over the business process implies unlimited potentials and huge influence. In particular, Berith will help improve productivity with automated business processes, from making a contract and transactions to execution and settlement, and plan business activities and marketing from the data analysis.

3) Suggestion : Business platform configuration and platform service provision

Berith Platform, a membership economy based comprehensive business platform.

Berith Platform introduces blockchain technology for any type of company to easily join and become a part of membership economy, acting as a driving force for sustained sales and stable profits for companies and small businesses. Berith Business Platform provides platform services through Blockchain as a Service (BaaS) to support a variety of membership businesses.

With BaaS, users can create new businesses in the platform business ecosystem and use various functions provided by Dapp. Berith Platform provides membership CRM and rewards, a digital wallet to manage cryptocurrency, payment services, and marketing for customer management. We provide platform services through Blockchain as a Service (BaaS) to enable these platforms to be used by unit stores, local economies, and government agencies.

II. Summary

1. Berith Hybrid Blockchain Platform

Berith Hybrid Blockchain Platform includes Berith Enterprise Edition which reflects company needs and Berith Public Edition for cooperation, evidence processing and decentralization between companies and companies, and companies and customers.

Berith Platform supports diverse membership businesses in a complex business environment. It constitutes and provides stable and systematic platform due to the characteristics of distributed ledger such as reliability, security and peer-to-peer base. It is also able to construct independent service environment by using the service provided in connection with the Berith business platform and using the Blockchain as a Service (Baas).

1) Berith Enterprise Edition

Berith Enterprise Edition proposes a solution for a company that want to take advantage of blockchain, but do not have blockchain technology or are burdened with time and money. HyperLedger or Ethereum, which is provided by existing open source, requires expert knowledge in the field to build and can be difficult in installation and management due to inexperience in the installation process despite its expertise. But with Berith's solution, companies can easily build, manage and monitor without blockchain technology.

The platform provides a web installation and administration site that facilitate installation

and management even when a company builds blockchain based on HyperLedger or Ethereum. It also allows to easily execute the node and check the results through the server information input.

In particular, Berith Enterprise Edition has been upgraded to use MongoDB while the existing HyperLedger uses Apache CouchDB (CouchDB). When using the Couch DB, performance is not sufficient when processing large amounts of data. This problem is solved by using the MongoDB.

In addition, if a service developer wants to develop a new business system using a blockchain, BaaS can be easily used as a blockchain service using the Rest API. If the developer wants to use Ethereum based network, various networks can be installed such as Mainnet, Ropsten, Kovan and Private network over multiple networks and it supports Geth / Parity with multiple clients.

It also supports solidity-based Smart contract creation and distribution, and provides technical support for Berith Transaction Stabilization (BTS), which can do distributed processing large volumes of transactions.

2. Berith Business Service

Users of Berith platform can use the integrated business service, including Berith Smart Wallet and Berith Smart Pay and so on. In particular, small and micro enterprises who have difficulties in applying BaaS can use various CRM services including integrated membership services and marketing through Berith platform service.

Berith BaaS service is a combination of SaaS (Software as a Service) and BaaS (Blockchain as a Service) using a blockchain platform. Through the services of Berith BaaS, various companies, organizations and associations can easily provide various businesses with membership. In particular, an enterprise who provides services does not need a technical

understanding of the Berith Platform or a technical understanding of the blockchain. By using the functions and services provided by the Berith Business Platform, it is possible to easily extend the service of the enterprise. In addition to the basic membership services, Berith Smart Wallet and Berth Smart Pay, you can have your company's specialized services through Open API and DApp provided by the Berith platform if you want to expand your services and separate channels.

Berth Platform's BaaS service is similar to the SaaS concept of cloud services. Furthermore, it provides the membership economy based business services various functions so that the service provider can easily manage and operate it.

1) Berith Membership

The CRM function in Berith Platform plays a very important role. Through the membership service of new paradigm, It can integrate unit membership economies and contributes to the change in marketing CRM system across the society.


Evolving platform in our real life

Berith is an evolving organic marketing platform through participation of members.

It contributes to systematic marketing of service providers by issuing cryptocurrencies based on mileage and points.

In particular, small and medium sized business groups and small business owners have not been able to provide membership services due to economies of scale, but they would be able to share the membership and reward service and CRM know-how through Berth Platform's membership service. By using blockchain technology, user-centered membership services can be provided other than corporate-centered.

● Joint Economy Membership Platform that can distribute benefits by integrating membership economies
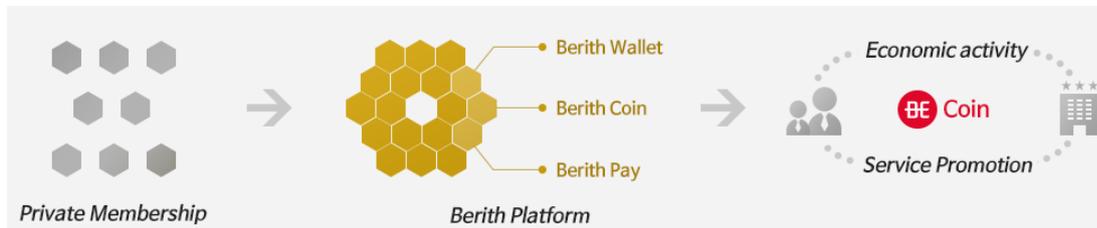
Berith Membership combines unit membership blocks into a single membership and provides the skills and know-how to operate each membership block. Based on this, distributed membership blocks are integrated and a business ecosystem is formed. The integrated membership environment is able to expand the scope of new business based on more active and enterprising business environment and ideas through various services provided by Berith Platform.

(1) Membership service market environment

The membership system is one of the most successful marketing platforms. The first reward system starting with the airline mileage system expanded to various industries and evolved into various marketing techniques such as royalty and CRM.

In addition to various marketing such as accumulation and use of points, free coupons and promotions, member-based services, lifestyle-care memberships, and rental services are provided throughout various industries.

① Current situation : the effects and challenges

According to a recent survey, 56.3% of companies responded that "the effect of sales promotion is greater in depression period" to the question on the effectiveness of membership services in the report on "Membership Service

Utilization and Future Prospects" conducted with 200 companies that provide customer compensation services.

Also difficulties in adopting membership services and management is due to the various obstacles such as 'operating cost of membership service', 'lack of operational know-how', 'lack of information analysis capability', and 'difficulties in finding their partners.'

Even though the marketing effect is obvious, it is still not easy to introduce membership service. In reality, services are provided through large corporate centered membership system, and small and medium-sized enterprises, small business owners, and unit stores are failing to provide a systematic and efficient system. Even if they provide similar loyalty marketing services, they do not offer comprehensive membership services but offer offline-based coupons and stamps.

② **Implications of global membership services**

Already, membership services have evolved into a customized service marketing platform that utilizes customers' information beyond the current benefits offered to customers such as accumulating mileage points. In the United Kingdom, TESCO uses membership services and Big Data to analyze consumers' patterns and their nutrition balances , to reduce or encourage the purchase of specific products. Also, Life Fitness' in the United States linked personal computers to treadmills It offered service marketing that the data about users' favorite TV program and past exercise record was gathered during their exercise time.

Large corporations and large scale membership services are evolving based on the membership platform which enables analyzing information, establishing marketing strategies with the analyzed data, integrating management of customer information, and various recommendation marketing. This paradigm shift requires small and medium sized business groups and small business owners to adapt to the new

environment and here the need exists to integrate totally separated individual membership platforms to one unified comprehensive membership platform.

(2) Features of Berith membership service

Berith Membership supports a variety of marketing functions based on membership services. By offering functions for marketing and promotion of companies such as reward services and membership events by purchasing goods and services and event functions for non-members, small companies, small business owners and unit stores are also able to operate specialized membership services.

① **Membership service without restriction on the area and scale**

Berith membership uses block-chain-based technology to secure the convenience of settlement and processing by using blockchain technology in the ledger used in membership, and to provide global services such as accumulation/use by issuing cryptocurrency in the platform.

② **Offerings using blockchain**

Coupons are issued in the platform based on blockchain. Various services such as coupons, gift certificates, electronic prepaid cards can also be issued. Management of usage record and change of ownership are easy to make.

③ **Membership services for SMEs**

Berith membership provides standardized processes and service platforms for small business owners and small and medium sized franchises lacking in membership expertise and service know-how, and offer customized event and coupon offerings and CRM by providing pattern data based on user behavior through analysis of big data.

④ **Accrual and redemption of rewards with cryptocurrencies**

Berith Coin is issued, which can be used on the membership platform. Berth Smart Wallet and Berith Smart Pay modules are linked with payment settlement and discount functions. Some of the usage amount is re-accumulated as membership rewards and provides management indexes such as the setting of the discount, discount rate and statistics and settlement.

⑤ **Unit operation and integration operation using membership platform**

stores operated by small business owner and merchant are also able to provide membership services. They offer integrated membership services by linking single stores themselves. It is also possible to operate with specialized membership in case stores want to operate independently.

2) Berith Smart Wallet

The Berith Smart Wallet provided by Berith Platform is a service provided for the use of cryptocurrency. 'Berith Smart Wallet' is a multi-electronic wallet that can store various cryptocurrencies at the same time in addition to the Berith coin issued in Berith platform.

Berith Smart wallet replaces the role of the existing cryptocurrency wallet, and has user convenience function and more secure storage system, and provides real-life wallet services linked with Berith Smart Pay.

It is an integrated wallet that can provide a user-friendly electronic wallet with DApp method and store various cryptocurrency. For example, MyEtherWallet could only keep

ERC20 tokens based on Ethereum, but Berith Smart Wallet can store a variety of tokens based on different cryptocurrency platforms through the functionality of multi-wallets. Also, it provides convenient additional services such as ICO Listing and KYC authentication for other projects' ICO.

(1) Smart Wallet service market environment

① Current situation : the effects and challenges

Recently, a variety of electronic wallets for cryptocurrency have appeared and they can be divided into software wallet and hardware wallet. Though the category of wallets are divided again by the range of cryptocurrency that can be stored, in fact there is no wallet that holds the real concept of wallet until now.

In fact, almost all the services of the current wallets can be regarded as a form of safe for the cryptocurrency. It has functions for deposit and withdrawal of coins, storage of coins and tokens, and it is also possible to deposit and withdraw cryptocurrency through authentication using a private key.

Smart Wallets for cryptocurrencies, which have the same form as an electronic safe, usually have usability issues. It cannot make actual payments and is not easy to manage various types of cryptocurrency. In case of loss of private key, probably the only way of authentication, there is a risk of losing the entire wallet and its tokens, moreover, the full liability falls on the owner who lost the key when hacking.

② Implications of Smart Wallet

Almost all types of smart wallets, except cryptocurrency, are included in the payment market, and are linked to various Pay services through the integration of FinTech technology. Smart Pay system is mainly provided through mobile services and can be divided into online and offline services. According to the report, the

domestic offline payment market exceeded 700 trillion KRW by the end of 2016, and the smart pay market exceeded 10 trillion KRW.

Payment service for cryptocurrency has begun with the development of cryptocurrency, and it is time to change the concept of cryptocurrency wallet. It reflects the advantages and usability of smart wallets that do not use cryptocurrency, and it should revive the characteristics of cryptocurrency. In other words, it plays a role as a digital safe which can freely enter and withdraw a cryptocurrency, constitutes a characteristic service linked with a cryptocurrency, supports the use of a cryptocurrency by linking with Smart Pay applied in real life, and protects information for securing usability and stability and security.

(2) Berith Smart Wallet service

Berith Smart Wallet is a software wallet designed to provide convenient and secure services. Multi-wallet structure can be used to store and use cryptocurrencies in many ways, and payment service can be used through Berith Smart Pay. Accrued membership points stored in Berith Wallet in cryptocurrency can be used as cash or it can be traded at the exchange.

You can also check the ICO list and participate by registering the KYC certificate and one step authentication.

① Multi-wallet for various types of cryptocurrencies

Berith Smart Wallet Berith Smart Wallet is a multi-wallet to manage various cryptocurrencies. It is distinguished from existing wallets that it handles Bitcoin, Ethereum based ERC20 tokens or Quantum, and further can switch BER Coin on Berith network to/from BRT Token on Ethereum network.
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② **Fast and safe authentication and recovery of private key**

It is a double authentication structured in which login is proceeded with ID / PW authentication and private key. To ensure usability and convenience, we provide the following private key management services.

● Private key in private storage

Existing cryptocurrency wallets let users store the key themselves, of course, in case the key is lost, users are liable for the lost tokens. Berith Wallet gives options to users to save the key into server, phone, or app on their demand.

● Private key in server storage

After accepting the terms of server storage, the private key is encrypted and stored in the Berith Wallet server according to the policy. Private key can be restored after authentication of the individual or family in case of loss or unexpected accident.

● Private key in APP archive

Private key is stored in mobile application so that it can be used easily, less concern about loss of private key, easier recovery when key is lost, but dependent on mobile device.

③ **Participation in ICO and KYC authentication**

Existing cryptocurrency wallets are mainly used for exchanging and participating in the ICO. Berith Smart Wallet provides a list of validated ICOs for your convenience and a variety of additional features such as KYC authentication with

which users can participate the ICO easily.

3) Berith Smart Pay

Berith Smart Pay is a service that enables cryptocurrency to actually be used in real life. Along with Berith Wallet, various cryptocurrencies can be used in real economy. It provides payment and settlement services for cryptocurrency and provides online services such as DApp as in mobile app or web app.

A settlement module for the settlement of the cryptocurrency, an accounting module for the actual payment, and a manager service for the statistics and management.

(1) Smart Pay service market environment

Smart Pay service sounds like a new concept, but it is not much different from the payment service with credit cards. It has changed in that market has moved from offline to online, especially, mobile service. Smart Pay service, known to be simple, is rapidly increasing in the mobile payment market due to increase in smartphone users and development of Fintech.

Local mobile payment transaction amount

(Unit: One billion won)
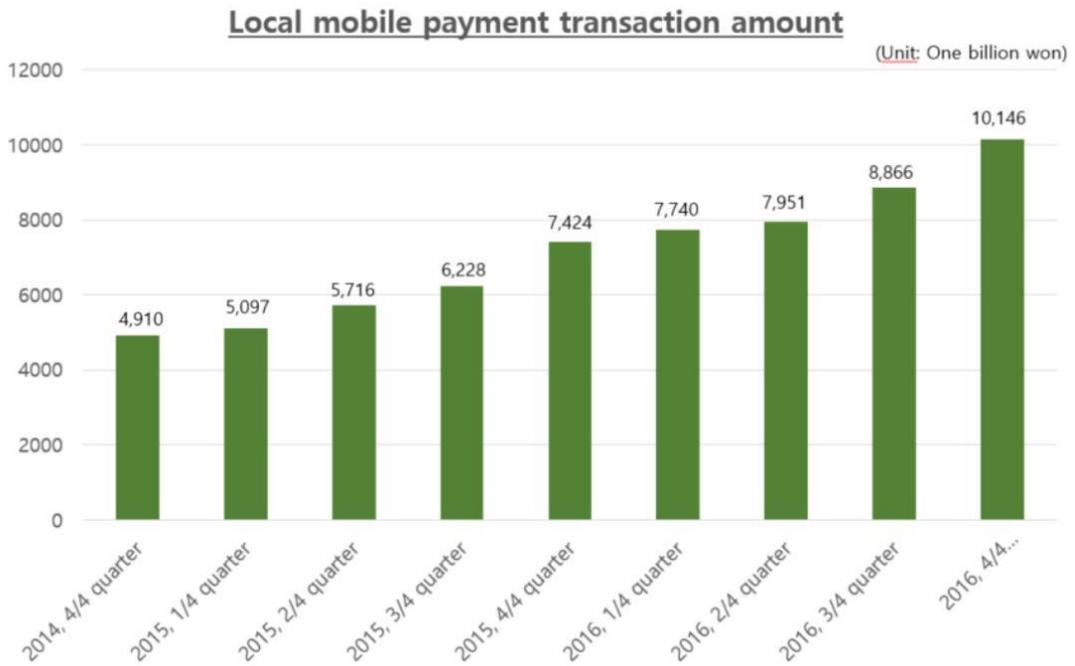
According to Gartner, an IT market research firm, the global mobile payment market will grow by 30-40% annually, reaching $ 618.8 billion by 2016 and $ 721 billion by 2017. Also, it is expected that the emergence and use of cryptocurrency will grow and the smart pay service would be introduced.

It is also very likely to develop a more sophisticated and enhanced payment system with various technologies and to provide global pay service through domestic and overseas cooperation. We will strengthen our competitiveness by providing vital services accordingly.

① 모바일 금융 서비스와 스마트 지급 결제 시장 현황
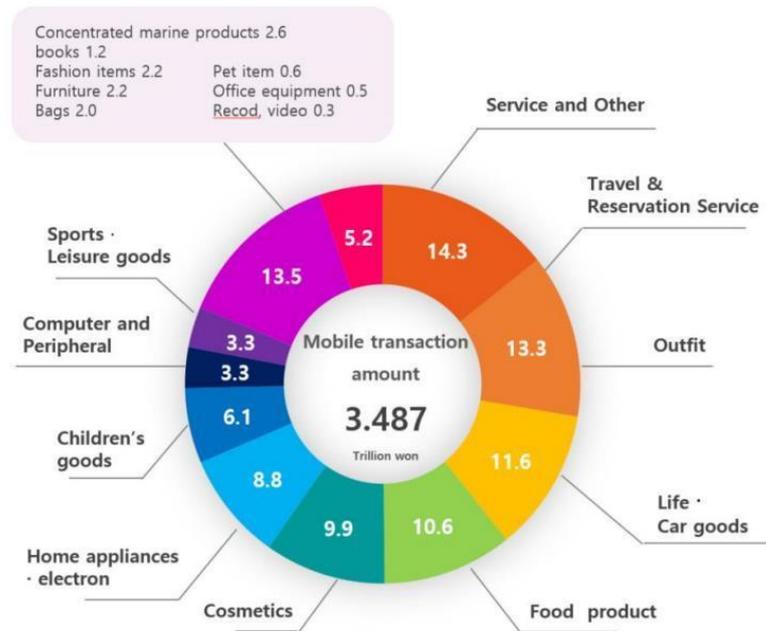
<Figure 5> mobile transactions, KOSTAT(2017)

Mobile financial services are becoming more sophisticated through the development and integration of financial technology. Financial companies are continuously growing with the launch of differentiated payment services for various companies in mobile financial services, which include mobile banking, mobile remittance, and mobile payment. In 2016, the Bank of Korea survey showed that mobile payments grew by 9.4%.

The domestic mobile payment market is launching payment services by various entities such as credit card companies, distributors, mobile carriers, manufacturers, platform companies, and PGs in 2017.

② **Implications of cryptocurrency payment system**

Governments around the world and the central banks are also interested in the possibility of the use of the decentralized ledger system, and some central banks are using the distributed ledger technology such as blockchain to directly issue digital currencies or apply them to existing payment systems. It is under study.

Particularly, in the private sector, a payment service using a blockchain and an ATM are installed and some of them are utilized, and this trend is expected to increase gradually.
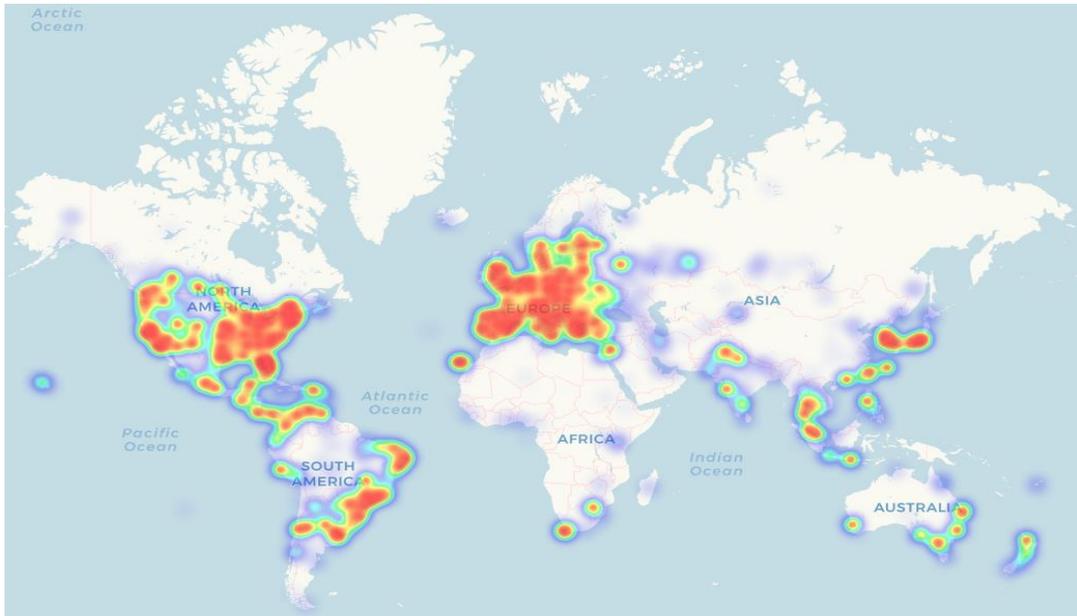
However, any business model to apply cryptocurrency in real-life has not been released yet, we realized the need. Ever since we have tried to respond to that need.

(2) Berith Smart Pay Service

① Offline payment module designed in a user-centric way

Berith Smart Pay 는 Wallet 내에 보유중인 암호화폐의 한도 내에서 결제 모듈을 통하여 결제를 지원한다. 사용자 편의성을 고려하여 기존의 모바일 지불결제 서비스와 유사한 형태의 바코드와 QR 코드를 사용하여 손쉽게 결제가 가능하다

● Berith Smart Pay supports payment through the payment module. Considering user's convenience, it is possible to make payments easily through barcode and QR code similar to existing mobile payment service.

● Berith Smart Pay is a smart payment platform that supports cryptocurrency in the real economy. Easy and fast payments are made using mobile APP provided to users and payment modules provided to operators.

● The company adopts the billing system of the cryptocurrency and can make payments with Berith Coin or convert it to cash at the rate when transaction was made.

● It is linked to the exchange API and the amount to be paid with cryptocurrency is determined by the price the corresponding cryptocurrency at the time of the transaction. Crediting merchant account and settlement will be done the next day regardless of the currency exchange rate changes.

● Berith Smart Pay's on-and-offline payment module is scalable and can be used for a variety of online marketplaces, offline POS and mobile payments.

② **Cryptocurrencies to be accepted as payment**

Berth Smart Wallet, including Bitcoin and Ethereum, can make payments with cryptocurrency so that cryptocurrency are used in the real economy to improve accessibility to blockchain technology.

③ **Payment system and adjustment for business owners**

● Mobile payment modules for small businesses owners are provided to make P2P transactions, and payment can be made immediately using smartphones.

- Berith Smart Pay's management feature provides various functions related to sales and settlement such as payment management function, payment method, membership rate, coupon and discount application.

- Berith business members are provided with basic administrator functions. Through the administrator function and payment module, users can make payments in cryptocurrency, provide related services, and be credited and settle the transactions.

- Merchants may choose to be credited and settled in Berith Coin or cash.
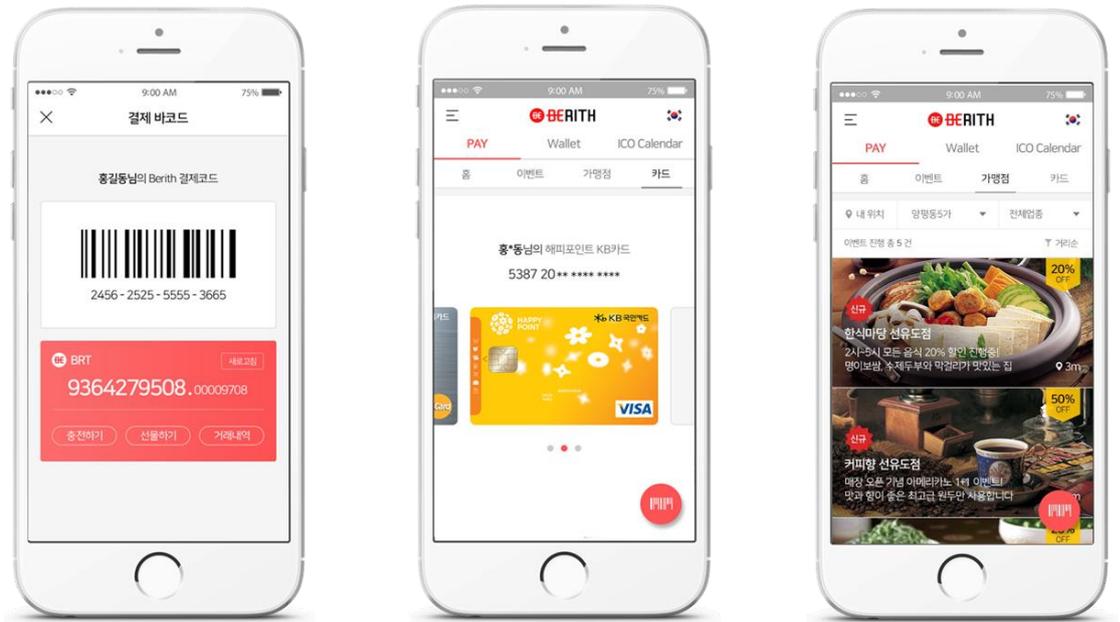
4) Berith G_Cont

Berith G_Cont provides an open blockchain electronic contract platform using Ricardian Contract.

A general smart contract is a command that allows you to execute a response based on an event that has occurred. However, in order to reflect actual contracts, accidents and circumstances that can occur between the contractor and the contractee have countless

number of cases, and situations that cannot be implemented with smart contracts in a practical circumstance are bound to occur. The Ricardian Contract is the kind of security which complements this. This is a document that summarizes the intent and specific actions of the contract, and is processed as text that can be read by the general public. In addition, it enables interpretation through machine language so that the contract can be executed with stability in a more diverse contract environment. It is an open blockchain electronic contract platform of Berith G_Cont that utilizes this.
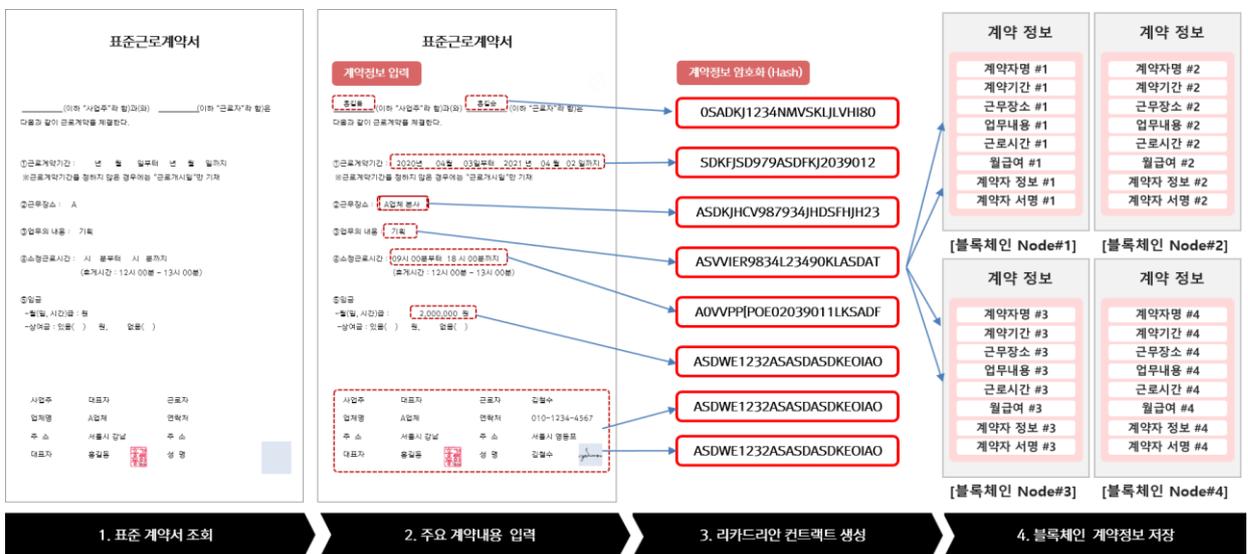
(Examples of standard work contracts using Ricardian Contracts)

(1) Electronic contract system configuration

Blockchain-based electronic contract (G-Cont) enables complex contract relationships to secure trust between contracting parties through an open platform through multi-party contract sharing and signing technology even for complex contracts, which is difficult to consider in smart contracts. By presenting clear guidelines for complex and high-level contracts in reality, a high-performance open-ended blockchain platform that can diversify services and handle various contract work has been constructed.
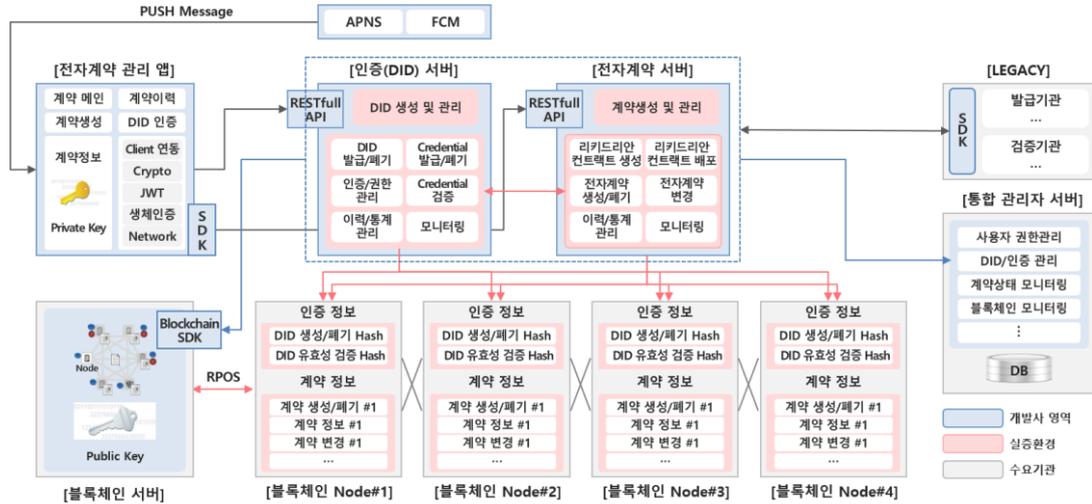
(개방형 블록체인 전자계약 플랫폼 시스템 구성도)

(2) Key functions of Berith G_Cont

| Issuing DID self-certificate and signing electronic contract	• Blockchain DID self-certification is automatically issued through SMS self-authentication
	• DID certificate can be easily signed by replacing electronic signature
Signature between multiple contractors	• Contractors and interested parties submit and sign DID certificates issued to each
	• Create a transparent and reliable electronic contract by storing signed content and supporting information on blockchain information
Ricardian contract-based electronic contract creation and management	• Contract conditions are set with a simple UI, and the contents are saved in a blockchain smart contract to ensure the convenience of work and the reliability of the contract.
Electronic contract information Blockchain storage management	• Electronic contract content and signature information are stored in smart contract and blockchain, respectively
	• When the electronic contract is signed, a DID contract certificate is issued, enabling secure proof of the contract.
Blockchain server installation support management	• Provides installation and management function of blockchain server by providing web GUI
Blockchain server monitoring and control management	• Provides operation information of blockchain server
	• Provides a notification function to the person in charge when a block chain control item reaches a threshold

(3) Service Features of Berith G-Cont

① **Secure contract signing**

As scalability is added to existing smart contracts, users have no choice but to review safety. This is because if the personal information in the contract is unintentionally exposed or the contents of the contract are not verified, the contract does not have its original value.

For trust and secure contract signing, Berith G_Cont applies DID self-certificate issuance and signature technology through decentralized identity authentication technology to provide security for contract content, personal information, etc. and to control access outside of the party.

For complex contracts, etc., the transparency and stability of contracts are enhanced by allowing complex contract relationships to be verified in real time through open platforms in order to ensure trust between the parties to the contract through multilateral contract sharing and signature technology.
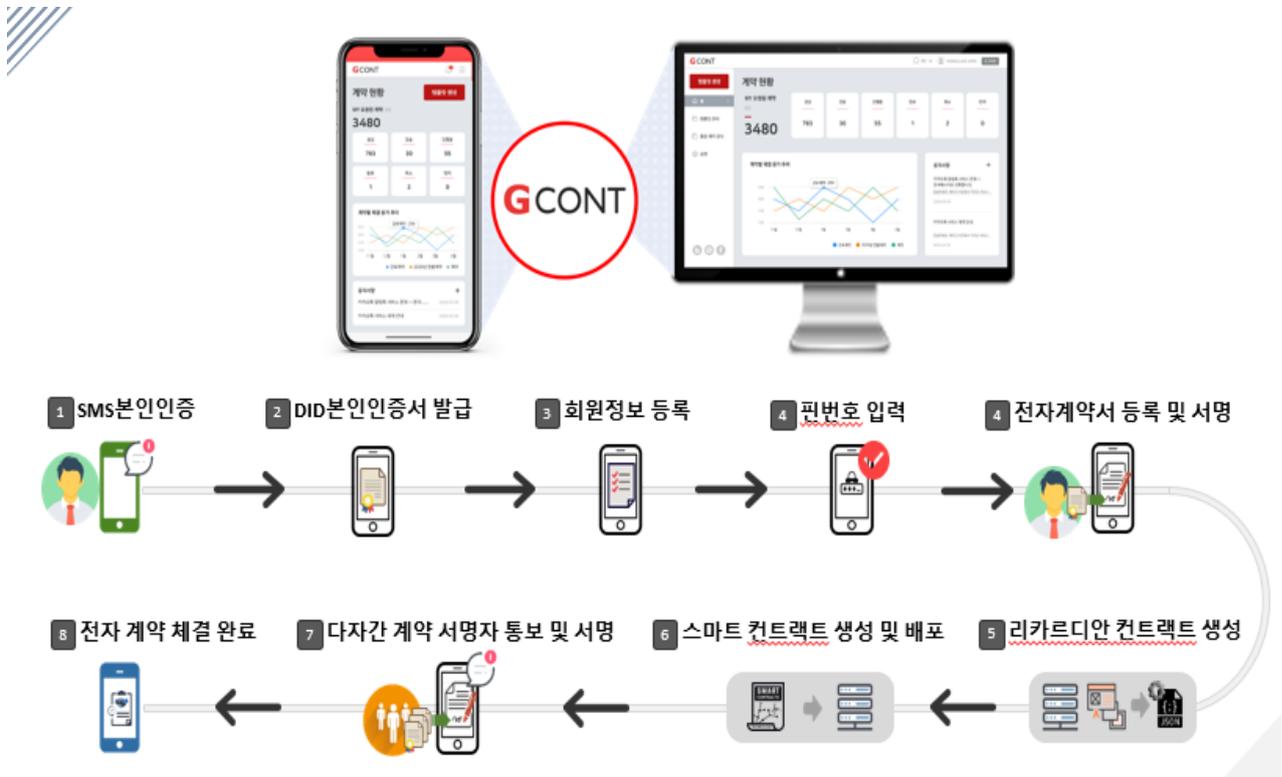
By processing electronic signatures between contracting parties and storing key contract information distributed on the blockchain, it proves the integrity that the created electronic contract has not been modified or removed without permission. This increases the reliability of the contract between the contracting parties.

By removing the connection information (CL) for personal information, privacy and security issues can be solved, and through issuance and verification of the certificate based on zero knowledge, other people can check and access the contents of the contract without permission and personal information of the users so that safer contracts can be made.

② **Convenient signing of a contract**

Berith G_Cont supports the general people to conveniently utilize the open-blockchain electronic contract platform without professional knowledge. By utilizing Ricardian Contract, users can create, execute and review contracts using Berith G_Cont as they would see and read general contracts and provide voice support services through the application of TTS (text-to-speech) and STT (speech-to-text) technologies through the Google Cloud Speech API.
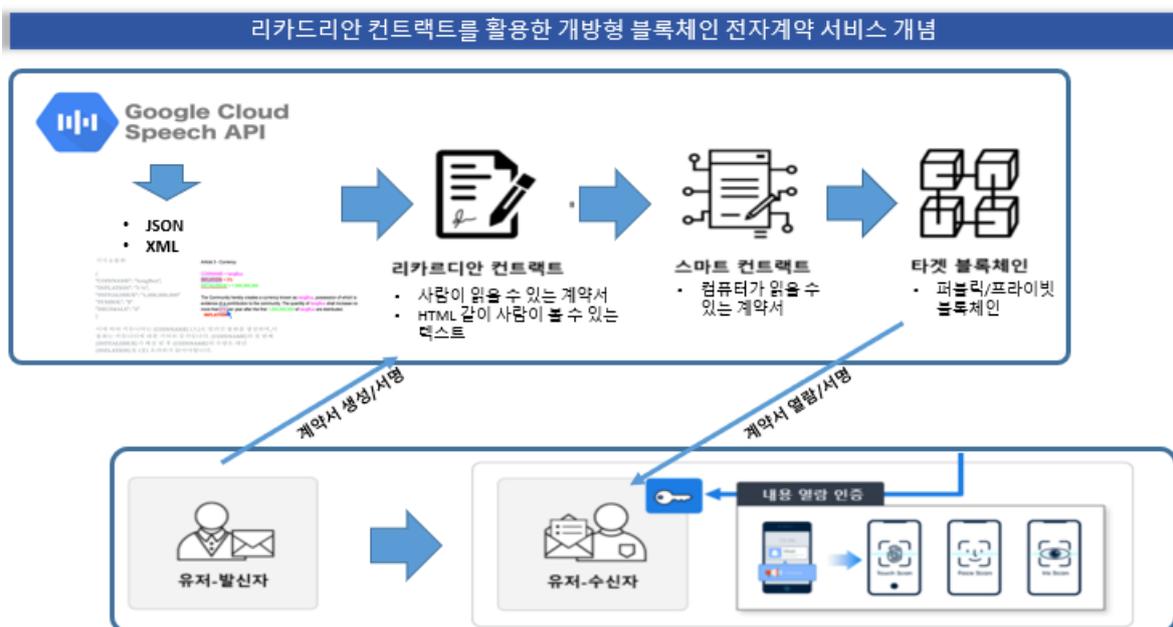
In addition, access to contract, implementation, review, and settlement processes was increased through UI/UX, which increased the utilization and accessibility of WYSIWYG-based Drag & Drop.

(Example of open-Blockchain electronic service)

③ Effective contract execution

As a difference from other electronic contract services, it includes additional functions for a more practical and efficient approach from the user's point of view. A representative example is the 'blockchain electronic contract execution real-time tracking system'.

This allows Merkle tree verification to prevent changes to the status of contract information after a transaction occurs, while tracking and managing the execution of the current contract in real time.


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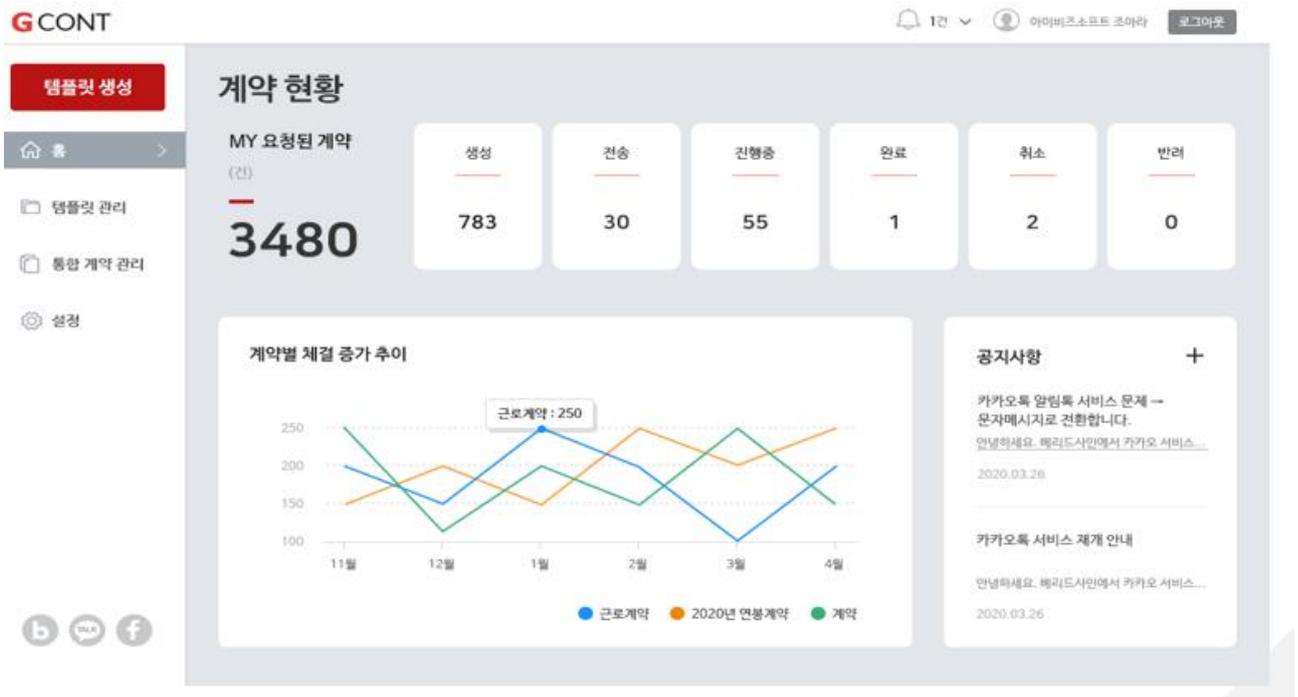
(Example of Blockchain electronic contract service dashboard)

III. Technology

1. Outline

Various services provided on Berith Business Platform run on diverse blockchain technology that satisfy the global business platform standards. The entire system consists of the followings.
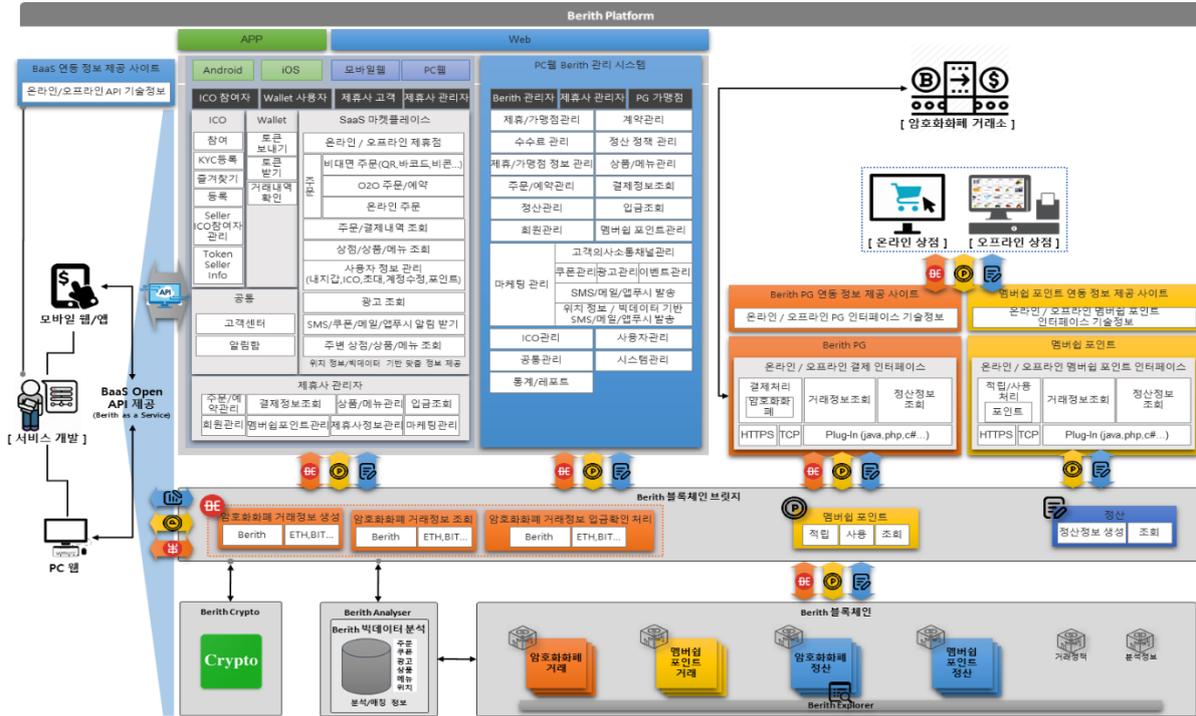
< System Architecture of Berith Business Platform >

The services provided by Berith Business Platform operate in conjunction with other components at the right place at the right time. The logical architecture is as follows.
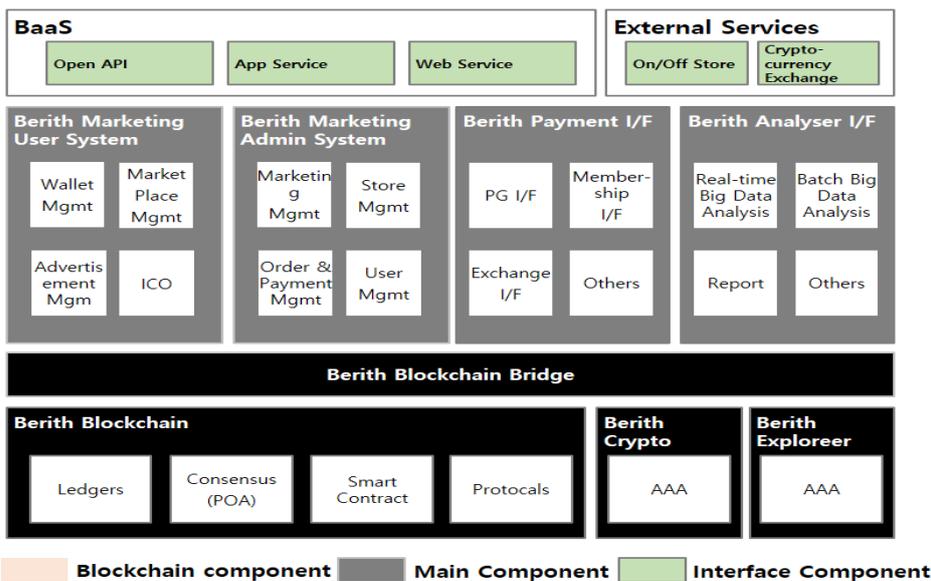
< Logical Architecture of Berith Business Platform >

Berith Business Platform's system structure is represented as an organic relationship on a blockchain network. The following is a diagram of the system structure.
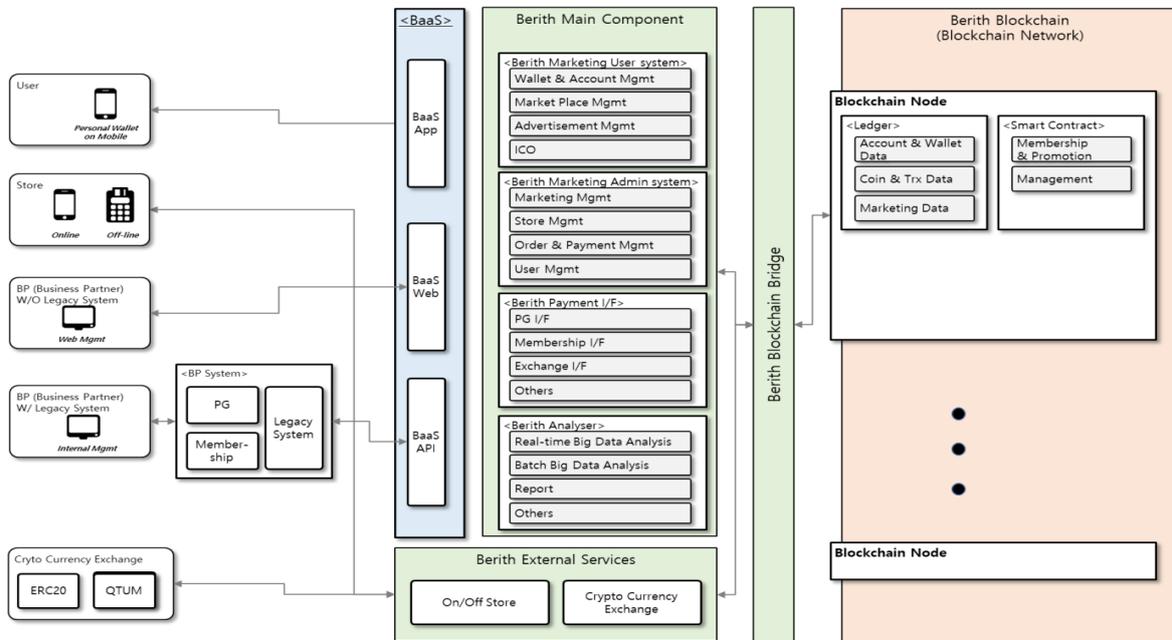
< System Operation Structure of Berith Business Platform >

2. Major components

1) Berith Blockchain

It is the fundamental component of all services, saving the transaction history of the cryptocurrency and membership points. PoW (Proof of Work), the most widely used algorithm, is known for its problems in transaction verification so that it cannot be applied to non-dependency transactions. PoW consensus algorithm is inefficient in terms of transaction throughput and block generation speed, and therefore, is not suitable for environments requiring real-time performance.

Initially launched Berith Blockchain used the PoA (Proof of Authority) consensus

algorithm to speed up transmission and eliminate commissions. This ensures the integrity of blocks and transactions.

It also has the advantage that it can quickly deal with transactions (real-time consensus) because every node it deems trustworthy agrees.

Berith Blockchain has planned to support PoS (Proof of Stake) algorithm after PoA. In PoS, if each node owns more than a certain amount of cryptocurrency then only it can become a Master-Node. Reward is given in cryptocurrency depending on the amount of cryptocurrency a node owns. This rewards will benefit both merchants and customers.

Anyone (merchant, individual) can be a node in PoS who is participating in the network of Berith Blockchain and they have to buy some Berith Coin for initial investment. BerithBlockchain does not require any advance investment to provide services for small business owners. We started with PoA which has no transaction fee and before it goes global as accordance to the master plan, we are planning to change(hard fork) to PoS consensus algorithm.

In PoS ecosystem, those who participated in Master-Node by holding more coins than the predetermined amount in Berith Network, can participate in transactions. In this way whether it is PoA or Pos, one can use their nodes to become a decentralized platform.

In addition, Berith Blockchain is configured as Hybrid blockchain and it is maintaining its wallets of wallet oriented public blockchain and decentralized platform. In previous years, we have utilized the reliability and stability of the front office such as cryptocurrency transfers and wallet management. This enable us to manage, collaborate and support specific areas such as marketing strategies which Berith pursues in business.

It also enhances security by adding elements of Personal Identification, Confidentiality, and Role-Based Access Control around personal accounts. It also gives support to those who are actively using marketing with back office functions

such as statistics and monitoring, back office, analysis of individual big data, and etc.

The pattern of use is similar to real life cash use by allowing the above users to own multiple wallets per device, and by restricting the movement between wallets, maximum amount of use, maximum amount of hold, and etc. (for example, wallets, bankbooks, credit cards, etc.), the back-office segment that companies need embodies the 1:N relationship between individuals and wallets in the front office that consumers need.

2) Berith Proof of Stake Algorithm

Berith Proof of Stake Algorithm(will be used as BPoS for the rest of the text) is an algorithm to verify blocks which are produced by Berith Blockchain. Proof of Stake is used as the proof method and Round Robin is configured depending on the probability score of stake and period.

The traditional PoW blockchain stake algorithm has lower processing performance of transactions due to the large amount of work time and computing power. We cannot see it as a safer algorithm as many Alt coin hacking has been reported after the cloud mining rental system has started. The consensus algorithm of PoS is also known to be a major problem because not only there is no defense against malicious acts of majority stakes; but it is evaluated as an undesirable case that actively destroys the security and decentralization by eliminating the DPoS-based EOS Merkle tree with improved transaction processing performance and by operating 21 fixed delegate system.

PoS is applied in the majority of cases to be adopted to reduce resource consumption and gain efficiency in transaction speed. Because of the problems that could arise here, Berith came up with two propositions:

1) Topics of Research to Improve Transaction Processing Speed

A. The speed of transaction shouldn't be improved by damaging decentralization such as DPoS.

B. The speed of transaction shouldn't be improved by deleting Merkle Tree.

2) Topics of Research to find the cases of blockchain hacking and exploitation(security).

A. In the case of PoW, the Hash power should not be able to modulate the ledge of the chain.

B. In the case of PoW, , the stakeholder with highest stake should not be able to modulate the ledge of the chain.

C. Once a block is produced, it is irreversible.

The node structure of BPoS and Child Chain(will be explained later) is shown below.

<Network topology applying the BPoS consensus algorithm and the role of each node>
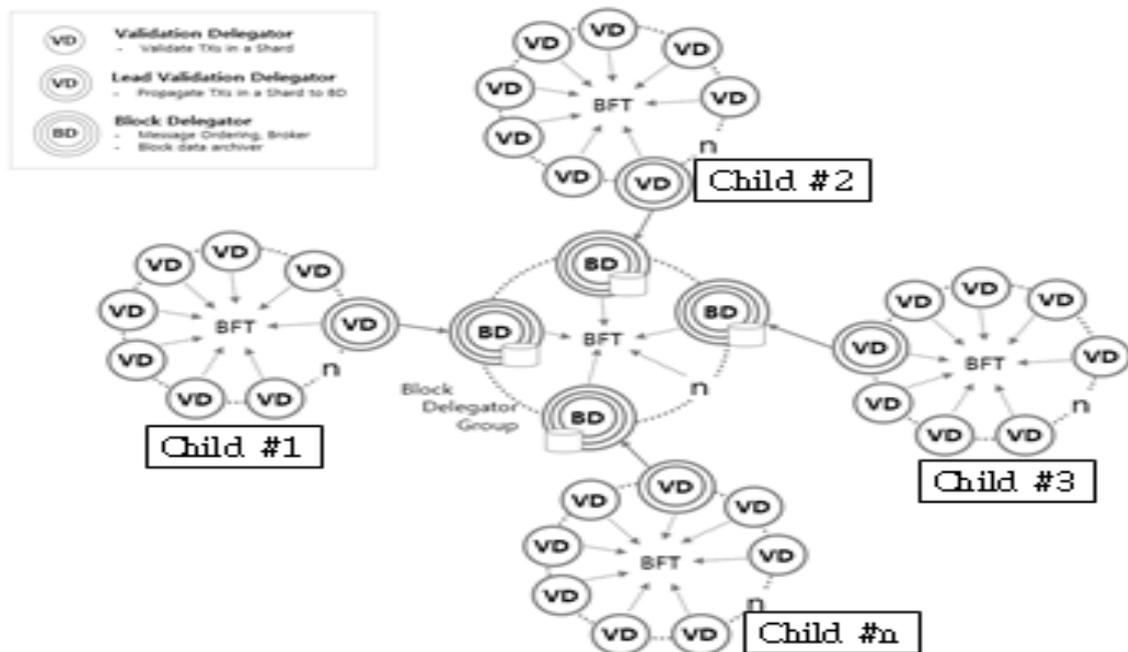
| Catagory	Details
Child	Unit group blockchain that performs parallel and distributed transaction processing
VD	**Validation Delegator :** Delegate to verify transaction integrity in Child.
BD	**Block Delegator :** A delegate who verifies the process of storing the confirmed transaction groups in a block as a block.

BPoS basically follows the ideology of liberal democracy, It adopts a capitalist consensus based on the logic of the market economy. The more coins you have, the more likely you want the node to be stable and The longer someone has maintained a node, they are more likely to protect it. Therefore, those who have larger stake or longer stacking time, has more chances in block creation in.
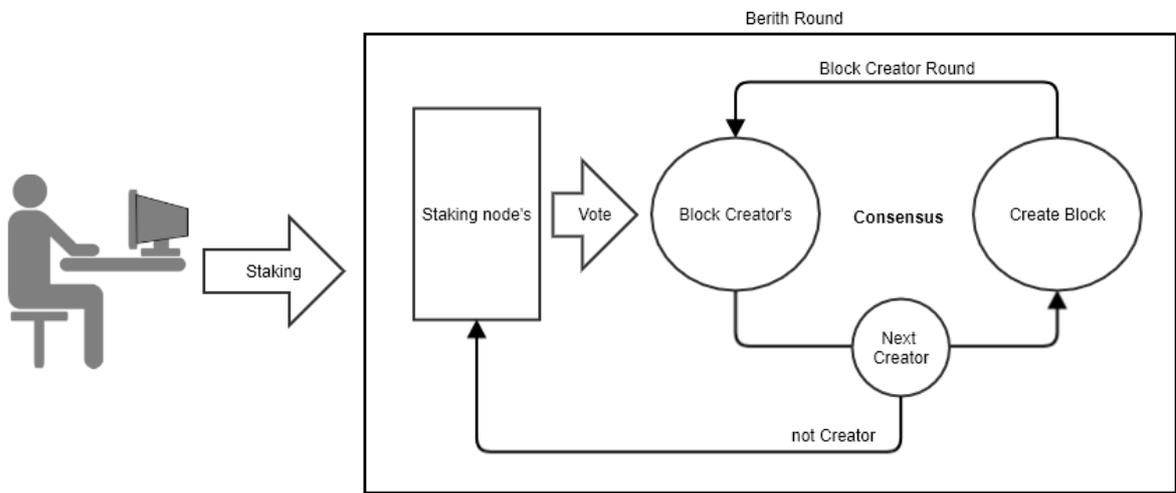
Berith Staking Round Robin repeats the rounds according to the structure shown above. 1 round is configured with 360 block producers but their confidence level is 95%, Margin of error ±5.17%, hence it will secure credibility.

The calculation of the adjustment point, S depending on the amount and period of staking is as follows:

$$Sadjust = fadjust(stake, reward, fadv)$$
$$= (Account\text{-}stake + Account\text{-}reward \times Cadjust) \times (1 + fadv)$$
$$fadv = (Block\text{-}now - Block\text{-}stake) \div (1.2 \times 10^6)$$

The calculated adjustment point is further used to calculate Selection Probability, P.

$$Pn = \frac{Account(n)\text{-}point}{\sum_{k=1}^{total} Account(k)\text{-}point}$$

The probability range, R is finally extracted by the selection probability which was found by the calculation above.

$$Rn = \sum_{x=1}^{n} Px$$, Max(R) = 999,999

Pn	값	누적	확률범위 R
P1	154	154	0 ~ 153
P2	35,446	35,600	154 ~ 35,600
P3	388,135	423,735	35,601 ~ 423,736
P4	224,235	647,970	388,136 ~ 647,970
P5	85,465	733,435	647,971 ~ 733,435
P6	256,871	990,306	733,436 ~ 990,306
P7	8,705	999,011	990,307 ~ 999,011
P8	989	999,999	999,012 ~ 999,999

(Example of calculating of probability range R)

The final configuration of BC matrices for the data above is shown below.
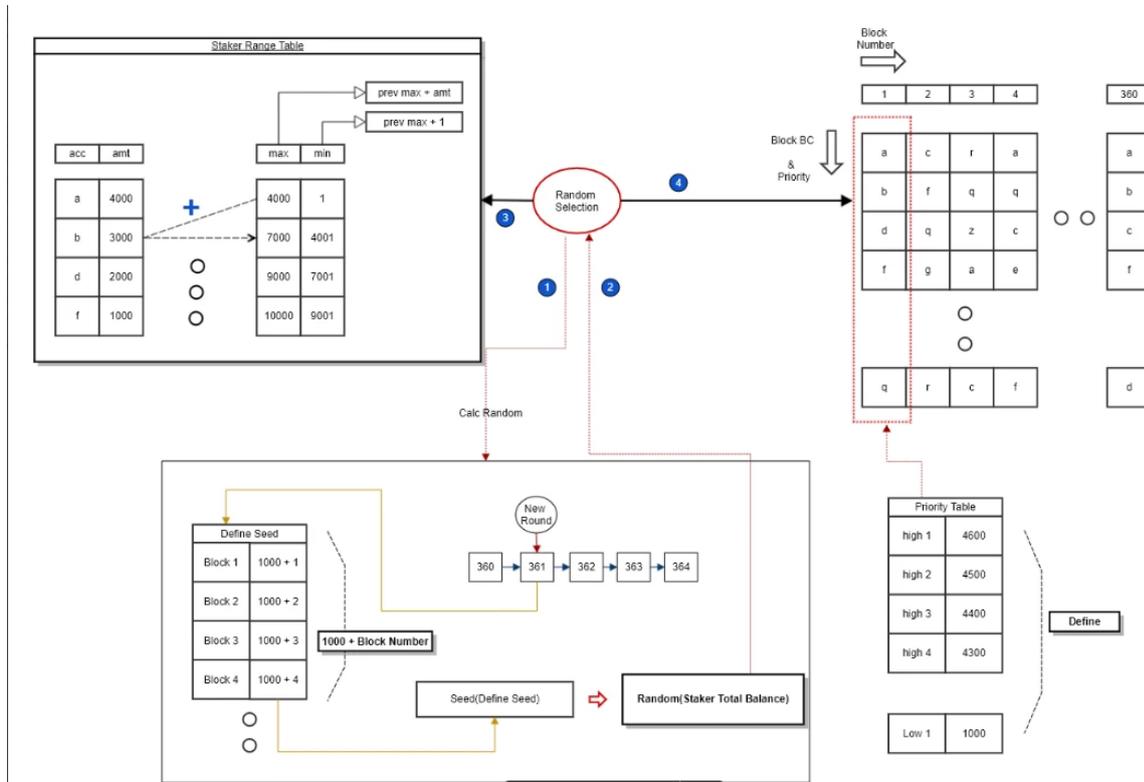
Even though it is a very simple equation, It is a simple, more rational, democratic, capitalist election method. Each block producer candidate gets the chance to participate in the Round with the probability range, R he/she acquired. Also, the Parent Hash will be selecting 360 block producers who have same probability across the nodes through the randomized function with Seed. If someone participates in the Round who was selected as a block producer, only then he is authorized to create blocks. If the block is successfully created, the block producer is rewarded with 31 coins. As a result, a total of 5billion Berith Coin can be mined for over a hundred years. In addition, the accounts which are staked can get rewards according to the maintenance of the nodes.

A person has to move at least 100,000 coins to the Stake Balance from the Main Balance in order to Staking. One can participate in the real Round only after passing the minimum verification time of the coins which are staked. The staked coins can be retrieved if someone cancels the staking, however the benefits of the staking

period(fadv) will be lost. Nevertheless, Additional staking is possible even when a certain amount is already staked. The benefit is calculated from the last added block.

$$\frac{Block\text{-}now - Block\text{-}laststake}{1,000,000} \times 50\%$$

The reward is added in Reward Balance. In this case, the adjustment point, S is calculated after subtracting the amount of adjustment constant, C. The adjustment constant is set as 0.5. The amount added in Reward Balance can be moved to Stake Balance without any additional loss and in this case the adjustment point, S is applied 100%.

The calculation of profit over time is as follows:

p : Number of previous stacking

n : Number of additional stakes

r : staking point used as selection criteria

b : current block

(The current block is based on a ratio of 7.2 million blocks per year when creating a five-second block.)

ratio = b / (7.2 million + previous staging block) //(2 decimal places, cannot exceed 1)

adv = p * (p / (p+n) * ratio) + n

r = p + adv

1. Configuring Account Balance

The account consists of 3 Balances (Main, Stake, Behind).

The role of each balance is as follows.

Type	Description

Main	Balance handling Transaction and Fee
Stake	Balance used when staking
Behind	Balance used for Confirm of Reward
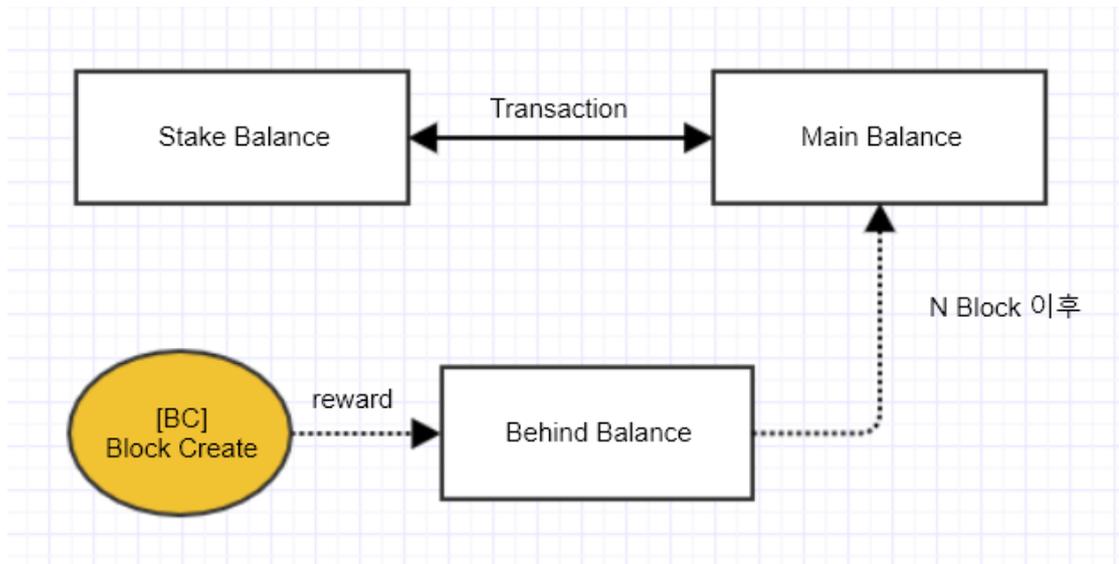
[Relationship between 3 Balance]

[Main Balance]

-Main Balance is used for Transaction, Fee payment, etc.

-It is the balance that becomes the subject when transferring and staking to other accounts.

[Stake Balance]

-When staking, the designated amount of coins can be moved from Main Balance to Stake Balance by paying a certain fee.

-The minimum staking quantity is 100,000.

-After 360 blocks during staking, the user becomes a BC candidate and selects a BC among the candidates.

[Behind Balance]

- This is the balance used for confirmation of Reward.

- If you do not have a confirmation, a problem that the received Reward disappears may occur. This is a phenomenon that occurs when the chain is forked, and it is Behind Balance that was created to minimize this.
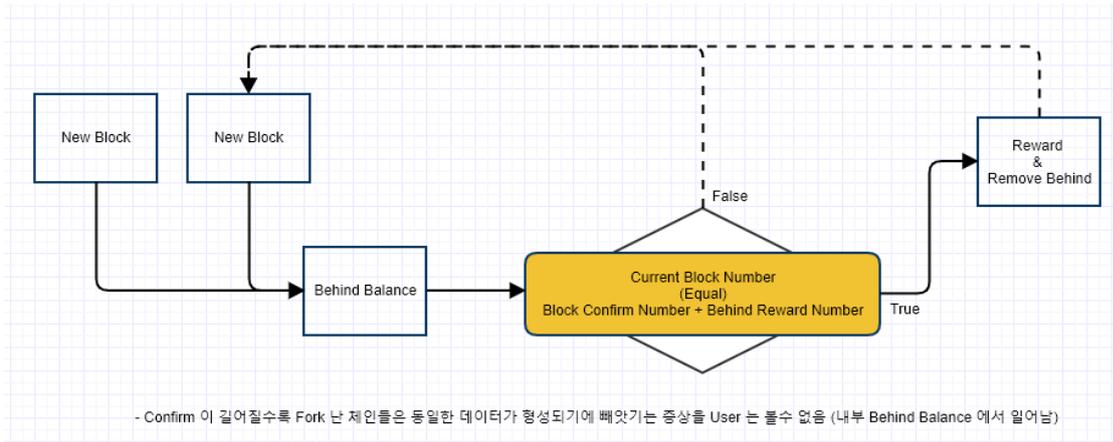
[Behind Balance]

2. Staking

- Staking is processed through Transaction, which pays a fee.
- It was decided to use Transaction to prevent malicious attacks, and it has the following procedure.
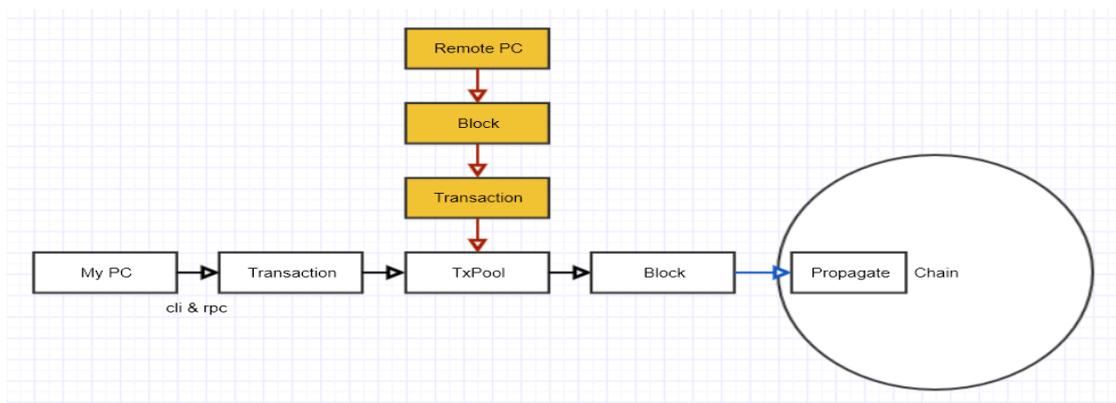
[Transaction Staking]

3. Round

- 360 blocks per round, and users who staking become BC candidates after 360 blocks from the time of staking.

- The selection criteria are selected based on data 360 blocks before the current point in time.
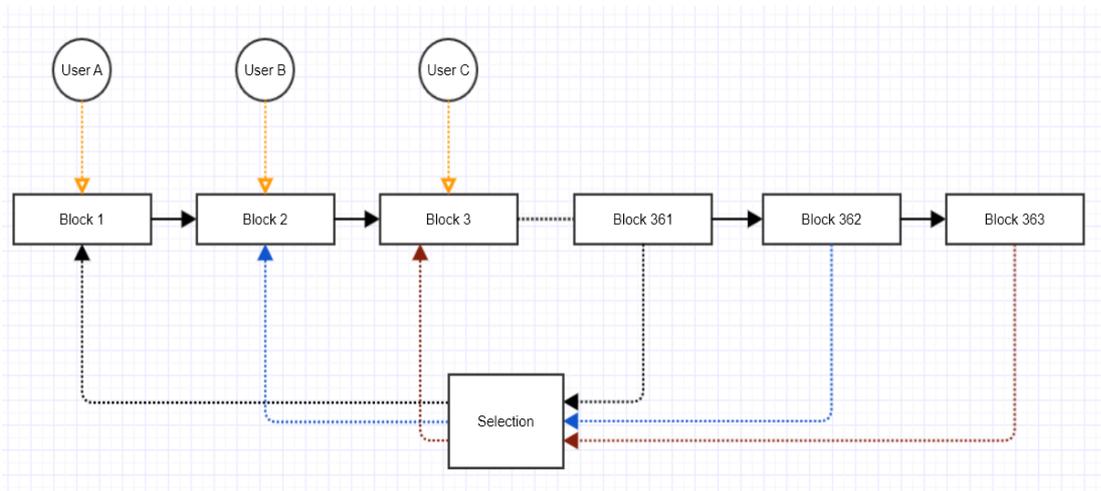
[Round]

4. BC Selection

- BC is elected from BC candidates.

- BC has the authority to create blocks, and the BC who creates blocks can receive rewards.

- BC will elect 1st priority 1 and 2nd priority 5 people, and if the 1st priority cannot create a block, the 2nd priority will create and compete for a block after 3 seconds.

- A new SRT is created based on data from 360 blocks past each block and elected.

  [SRT – Staking Range Table]

- This is a table that sets the priority of block generation of all Staking Accounts.

- Compose a table based on the amount of stake in Stake Balance.

Staker Range Table
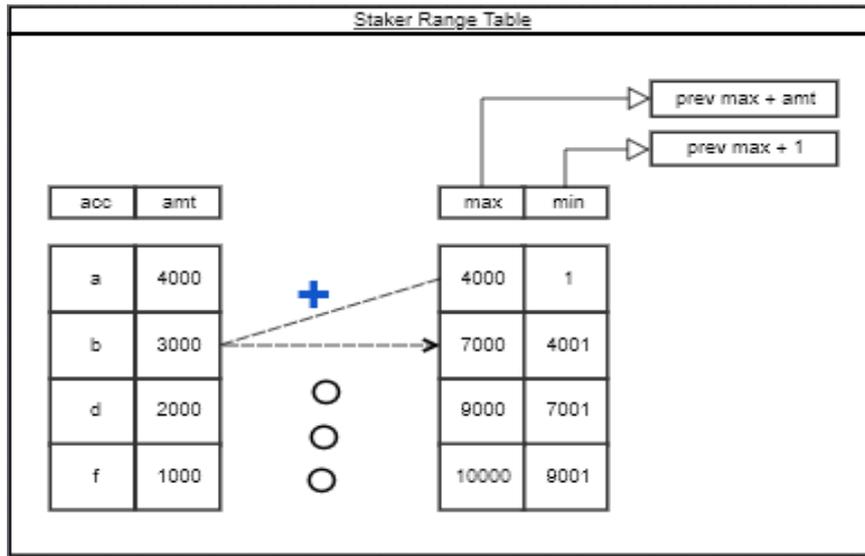
[Selection]

- The random number using Total Staking Balance is substituted for SRT and elected.
- Random standard is used as Define value. (Limits malicious attacks as much as possible)
- Repeat the operation at each block creation.
- A total of 6 people will be elected, and the first elector will be the first.
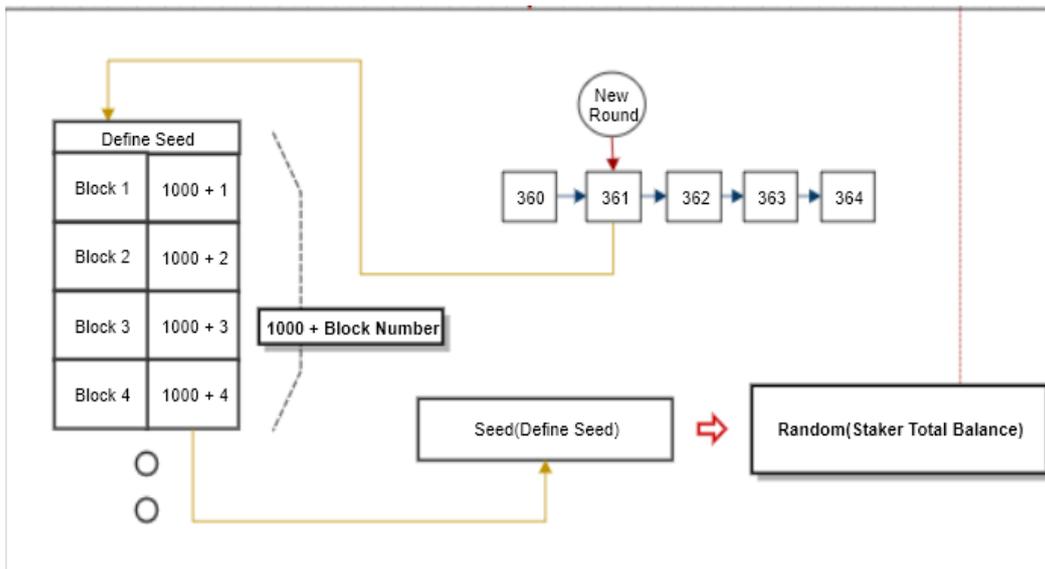
[BC 선출]

[Priority Table]

- A table that prioritizes the merging of Fork.

- Prioritized chart is given in the order selected.

- The tables will be created based on the amount of stock staking and the priority chart of the tables in the order in which they are elected. (Add Total Staking Quantity to Prevent Malicious Attacks)
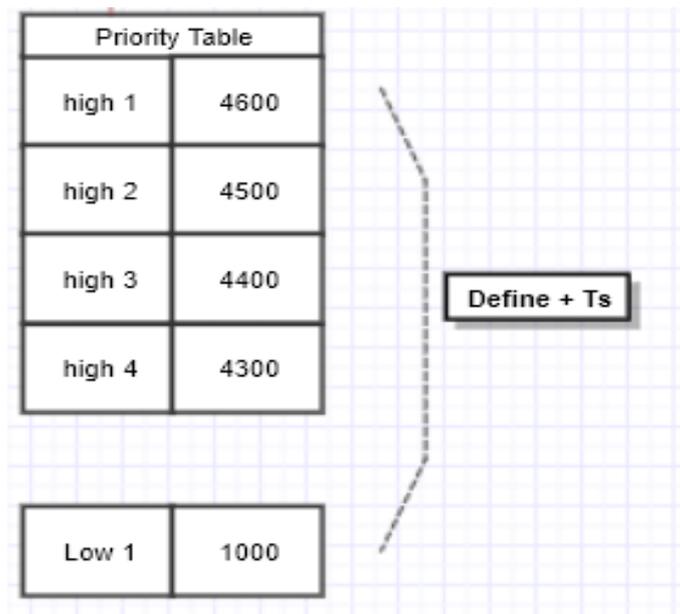
Priority Table	
high 1	4600
high 2	4500
high 3	4400
high 4	4300
Low 1	1000

Define + Ts

[Advantage]

- This is a privilege given to those who have maintained the node for a long time.

- The longer a person staking, the higher the probability of being elected than a user with the same amount of staking.

- It has the concept of -Point, which is used as a number used for election.

- Point is a number given as the amount of stake + preferential staking period.
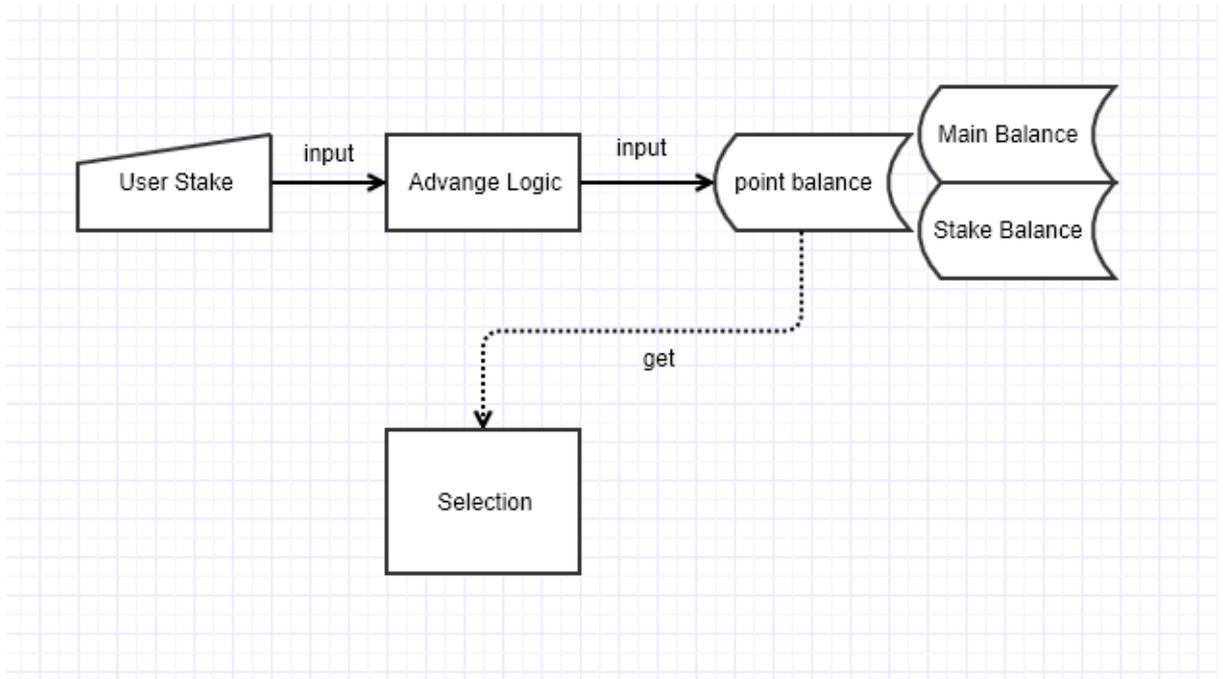
[Point]

[Penalty]

- If the BC elected during the first round fails to generate more than 70% of the elected blocks, he will be excluded from the election during the next two rounds.

(The failure to generate more than 70% of blocks may be due to environmental factors such as network and PC, but it is judged that it may adversely affect the chain)

3) Berith Explorer

Let's take a look at Berith Blockchain. Anyone can access the current block of Berith Blockchain, a transaction verified and validated within a block, a wallet that owns cryptocurrency, and Smart Contract. It is similar to Bitcoin blockchain explorer, BlockExplorer, BlockCypher, BTC.com, and Ethereum's blockchain explorer, Etherscan, Ethplorer, and etherchain.

Berith Blockchain, a global service, has hundreds of transactions in a second. We use the Document Store Database Engine to store such a large amount of transaction history. In order to access large volumes of data quickly, indexing should be done through the search engine. The accumulated data will be processed with the Berith Analyzer explained later.

Berith Blockchain can store various types of metadata that cannot be stored in blocks. Such metadata can be used to create services by applying BaaS (Blockchain as a Service).

4) Berith Blockchain Bridge

The blockchain components and explorer mentioned above are easily accessible using this Bridge component. Berith Platform Developers needed an internal library that all components could use in common. Berith Blockchain Bridge solved a performance issue native to blockchain happens when directly accessing the blockchain.

It is a kind of library-like concept for using the Native API more systematically and easily. Applications can implement each function using this Bridge components and support various program languages such as JAVA, C#, and PHP.

Bitcoin CLI (command line interface) API or Ethereum JSON RPC API are native APIs close to the blockchain. Berith's services, including membership, points, and Wallet, combine APIs that are closer to this native, providing a more API-friendly service. BaaS API is more like developer-like API.

5) Berith Analyzer

Marketing data from the Berith Business Platform is created using the Berith Analyzer component. The extraction of marketing data is the core project that

analyzes huge amount of big data. This Big Data Analysis Project is a combination of a batch-based analysis engine and a real-time analysis engine to extract necessary data.

Marketing data may require marketing data that is valid in place by the customer, and there may be valid marketing data later.

When customers walk along the street and go next to a store where there are products that they are interested in, it is the start of marketing that makes them visit the store once, even if it is an impulsive purchase. Such data can be generated through a real-time analysis engine.

Things you should buy carefully must be expensive. Customers will think carefully and decide on the purchase. It is wise to buy items after weighing various items over time. To show these merchants products to our customers. This is marketing data created through a batch-based analysis engine.

Berith Analyzer is a component that can analyze marketing data from these two perspectives, real-time and batch. From the perspective of the sellers and consumers Berith Analyzer's objective is to produce such filtered data. The Berith Analyzer was developed for this purpose.

To help you easily extract this powerful marketing data, Berith Platform's BaaS provides developers with a very simple API.

6) Berith Crypto

Berith Business Platform is a software responsible for security component. This component is used by all components within the platform, including OAuth Token for membership services, xMAC for PG services, private keys for wallet services, and API keys for Bass Open-API services. Details are omitted for security reasons.

7) Berith BaaS (Blockchain as a Service)

Berith BaaS is provided as an easy-to-use developer for the functionality of the above mentioned components in the form of Open-API, from Berith's blockchain platform to business services.

Berith Blockchain can be used to create Smart Contracts, store and retrieve necessary data in the blockchain API to extract merchant marketing data, APIs for accumulating and using membership points. All of these Berith Business Platform features are provided in an easy-to-use OPEN-API.

Berith BaaS App

It is a server side node that is connected to User Wallet App and provides service. The node belongs to the Berith main platform and is configured to be scalable according to the number of user wallets.

- Wallet & Account Mgmt: Security is maintained by preventing simultaneous access to multiple wallets by simultaneously authenticating the PKI-based wallet and the account.

- Coin Trx & Exchange: Supports coin usage, payment, and collection and cooperates with exchanges to assist in coin conversion and cashing.

Berith BaaS Web

It is a server side node that provides services for management. The node belongs to the Berith main component and is configured to be scalable according to the number of store wallets. Also it can handle business tasks such as settlement, collection without BP API or BP BaaS.

- Account & Wallet Authentication: Establishment of Blockchain service that uses only specific groups by setting permissions on account to maintain security by preventing simultaneous access to multiple wallets by simultaneously authenticating and authenticating the wallet based on PKI It is possible.

- Membership & Promotion service: Membership & Promotion service allows you to apply membership compensation and promotions under specific conditions.

- Business Trx: Supports business transactions for collection and settlement.

- Store Search Service: Provides a list of search functions and event information for coin-enabled merchants.

- Registration UI / UX: As a pre-registration process, registration of partners for registration of partners, registration of bank accounts for virtual currency and cash collection, issuance of tax invoices and other business operations is supported.

- Payment & Clearance UI / UX: Activate the payment process function and support the settlement request process.

- Membership & Promotion UI / UX: Supports the site to enter conditions and logic for membership and promotion.

- Reporting & Analysis UI / UX: You can check and download statistics and reports for all actual transactions, and support big data analysis of customer usage patterns and membership and promotion relationships.

Berith BaaS API

The Berith BP API Service Node is a node that provides an API for services such as Payment & Clearance or Membership & Promotion marketing or Statistics & Report to a business partner who owns Legacy (ledger system, customer service).

Provide private key and public certification based on Business Partnership to maintain through its communication for security

● API

- Blockchain Service: Blockchain Service: An API that saves and verifies trustworthy information such as contract, authentication, and copyright in the Berith Blockchain Platform using a blockchain storage and inquiry service.

- Smart Contract Service: Berith Smart API to create contract and apply various rules.

- Registration UI/UX: Registration as a pre-registration process for exchanging private key and public certification for secure communication and authentication, bank account registration for digital currency and cash collection, issuance of tax invoice and other business operations.

- Payment API: For store-driven payment API through POS or App-to-App, business authorization required, and wallet registration.

- Clearance API: API to cash out the digital currency of the wallet, transfer to a pre-registered bank account.

- Membership Promotion marketing API: API to enter conditions and logic for membership and promotion.

- Reporting & Analysis API: An API that can check and download statistics and reports about all actual transactions, and analyze big data related to customer usage pattern and membership / promotion.

8) Berith Sidechain

Sidechain is one of the consequences of using technologies such as multi-signature, Metacoin, and Coloredcoin. It connects two or more blockchains and allows assets in different blockchains to be securely transact.

This technology is to solve the problems with coins such as Bitcoin and Ethereum. It is a technology to overcome the functional limitations such as the relatively slow transaction speed and the ability to transmit only one coin in one blockchain. The different blockchains can take advantage of each blockchain and interact with each other. For example, if Bitcoin can be used on Ethereum blockchain network, it will be able to utilize a variety of DApps and smart contracts, speed up through ripple, etc. or increase the confidentiality by taking advantage of Dash .

Sidechain technology is also used to complement the scalability of existing blockchains. Ethereum's performance is insufficient to meet the requirements of the services Berith wants to offer. However, the versatility of the Ethereum is attractive enough, so we have connected the Ethereum blockchain to the Berith blockchain as the Sidechain. Using this technology, Berith has become a true hybrid blockchain that can use its own capabilities as well as the versatility and scalability of Ethereum. Moreover, due to Sidechain technology, the stability of Berith main node is increased more by distributing frequent transactions used for deposit and withdrawal between exchanges and transactions for using Berith services.

9) Berith Childchain

<Berith Childchain Model>
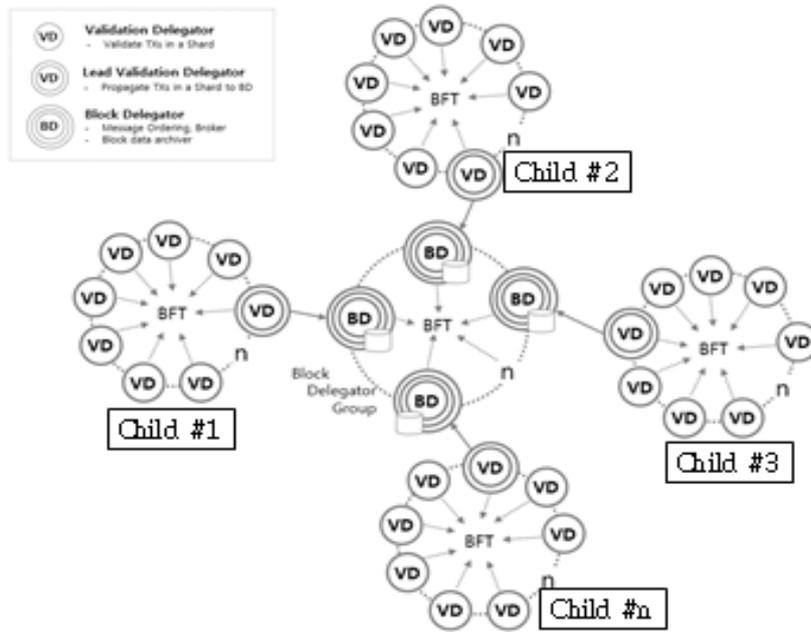
Berith also operates in the form of a Childchain. This was aimed at applying to take the advantage of Chaildchain's scalability in Berith.

Childchain is a technology that links two or more blockchains using the same format to safely store data in different chains. This creates sub-chains that can be distributed/paralleled, processes the transactions quickly and reflects the end result in the main chain. In addition, Childchain can deal with not only internal transactions but also mainchain. It has a distributed environment and all functions such as voting, account management, data information, storage, and so on. By adding more Childchain as needed, it will be able to use more smooth and various services. It provides BaaS services to public institutions and private companies and provides an environment to operate them as the members of Berith platform. This technical and security aspects also allows Childchain to be enjoyed through Mainchain.

With this, Berith blockchain can solve transaction bottleneck problems in the system, ensuring stability, scalability, and versatility through sidechain.

Adding to the above, many structures and systems have been designed to configure Berth Hybridchain to provide more services and technologies. Besides, Berith's Hybridchain is aimed not only to link between existing blockchains, but to easily put a variety of data, which was just a database, to a blockchain. In other words, if a user

wants to build a blockchain but does not have the capacity to build it, he or she can easily use the blockchain. This structure allows us to increase the usability and accessibility of BaaS provided by Berith and makes the advantages of Sidechain and Childchain more versatile and scalable.

These structural features are designed to enable users of diverse classes to exist as the members of Berith Platform ecosystem based on Berith Hybridchain, and to be able to maintain the smoothness of many transactions even when it is swamped with transaction volume.

10) Berith Ricardian Contract

Ricardian Contract is a contract that is written in human-readable text, specifies the legal definition between two or more parties, and allows verification through a signature that has gone through an encryption process. The difference from a general contract is that, it is a contract that can be read by not only humans but also machines. Unlike smart contracts that perform simple transaction conditions, it can fulfill a prior agreement or pre-engaged and defined contract to the arbitrator. This allows Ricardian Contract to bring legal binding force between the parties and fulfill the responsibility for the transaction.
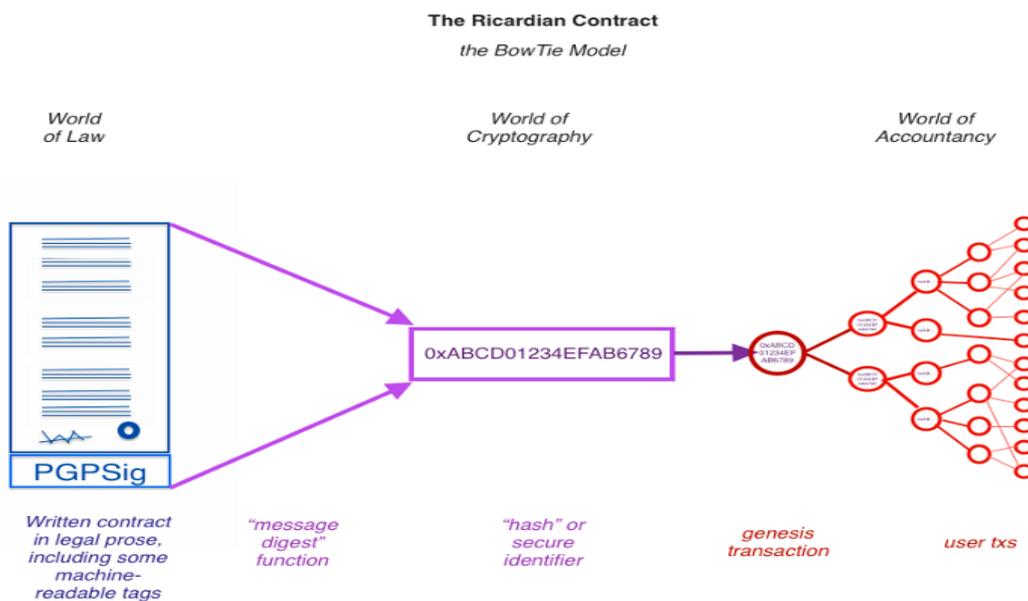
(Ricardian contract)

The Ricardian contract was created based on the Ricardo model of Ian Grigg, a financial cryptography researcher and programmer, and in order to demonstrate the effectiveness of the Ricardian contract, the conditions of transparency, security, and stability must be met.

The importance of the Ricardian contract is shown in the proof of the legal validity of the contract.

The dictionary meaning of a contract means a legal act aimed at generating a bond in which two or more expressions of intention that are opposed to each other in the legal sense coincide. The contract does not legally require a specific form of contract, and the contract takes effect from the moment an agreement is reached. It is not necessary to write a contract, but a written or electronic document to prove the agreement under the contract.

In this respect, there is a possibility that contracts through existing smart contracts will be recognized as contracts in court. However, the smart contract may not be recognized for its value as a contract. That is because smart contracts are simply automated in the implementation of contracts, their intentions, results and related provisions are omitted. It contains only the facts of the conclusion of the contract, and there is a lack of proof. In addition, smart contracts are programmed contracts, so there is a risk of interpretation inconsistencies or writing errors in the process of transferring real-world contracts to code.
As a countermeasure to this, the Ricardian contract can easily contain the intent, content, and related provisions of the contract through a configuration that both humans and computers can understand, and unlike smart contracts, the integrity of the contract can be verified through security.

11) DID(Decentralized Identifier)

Through the blockchain based Decentralized Identifier (DID), it improves the security of the certificate issuance and signature parts. By doing so, privacy and security issues were solved by eliminating the connection information (CL) for personal information, and

convenience and security of services are increased through easy issuance and verification of the certificate based on knowledge and knowledge.
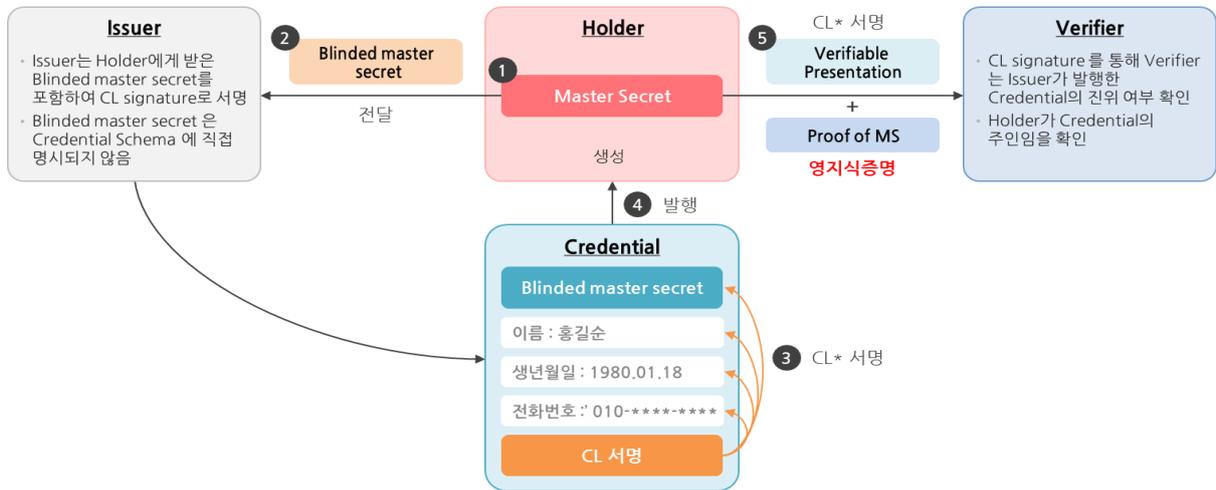
(Credential issuance and verification procedure)
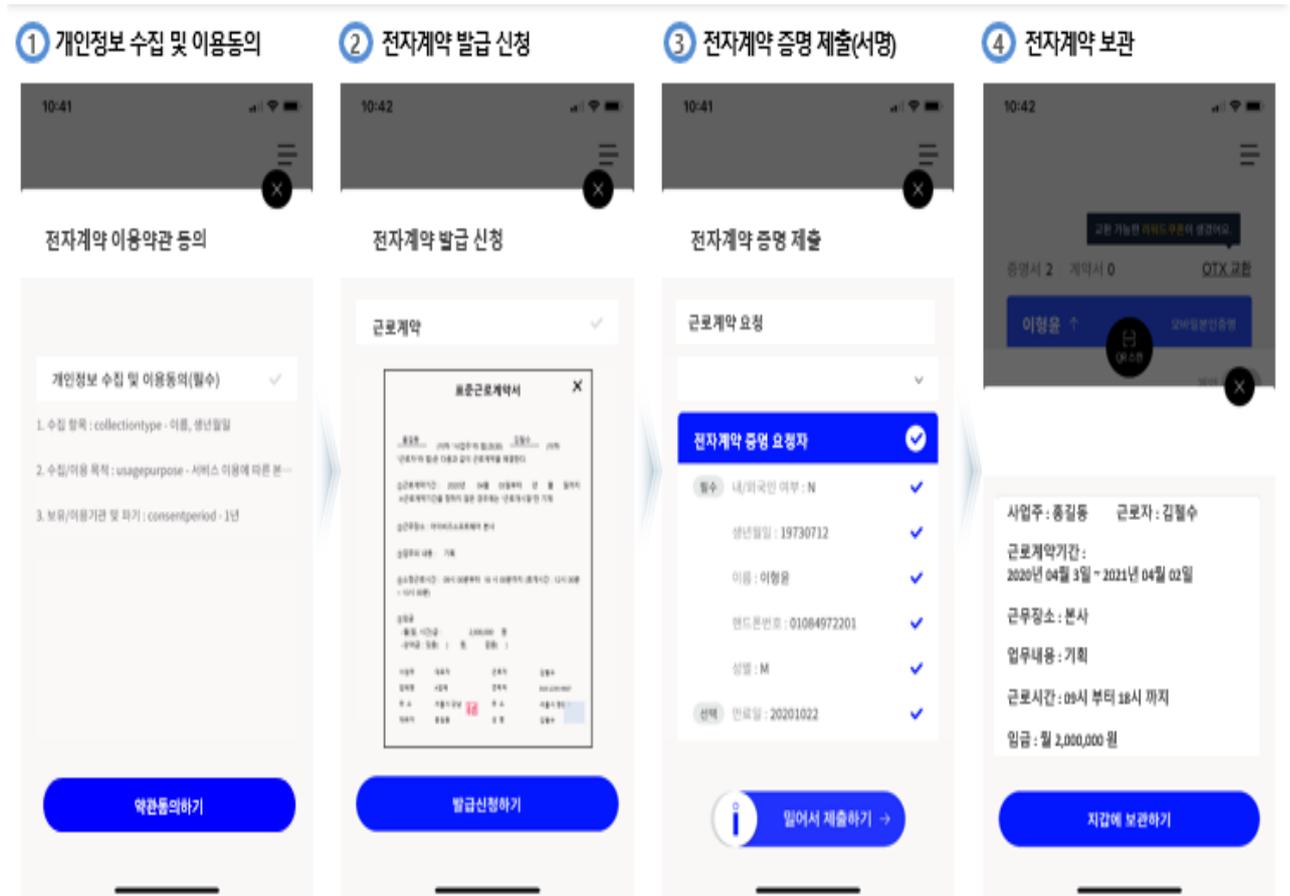
(Example of DID-based identity authentication and credential submission)

IV. Vision

1. Roadmap

1) Progress

The Berith Project started with experts in membership business and blockchain and launched the first ICO (Initial Coin Offering) in September 2017, with a membership platform that facilitates the membership business and blockchain engineers. After the successful completion of the first ICO for 15 days from September 12 to September 27.

It expanded into an integrated business platform based on the Membership Economy. It was applied to the Berith Platform by analyzing the business of various industry groups and the online service besides finance and distribution area.

Berith Platform opened Berith Blockchain Mainnet and Berith Smart Wallet services on March 7, 2018 with the goal of "Easy-to-use blockchain business platform."

In order to expand the service of the platform and apply the business, we have carried out an MOU with relevant organizations such as the Korea Food Service Industry Association, gathered the requirements of actual business people, and made endless efforts to apply and expand the business continuously.

| Patent Name	Summary	Patent No.
To reduce labor costs in the service industry non-face-to-face service	Provide non-face-to-face service through wallet and payment system through membership-based marketing platform	10-2018-0009248
Wallet provision method and device for storage and security enhancement of integrated cryptocurrency	Wallet that supports storage of various coins, transactions between tokens within the wallet, simultaneous access prevention and login notification, and wallet's own KYC authentication	10-2018-0009259

Method and device for providing a hybrid blockchain platform that supports public and private blockchain	Simultaneous public and private blockchain support and smarter smart contract	10-2018-0009265 60

2) Roadmap

Berith Platform has a mission that improve business environment using blockchain technology and provides better service by finding business opportunity and relentless

effort in maintaining the affordable business environment for everyone.

베리드 코인 로드맵 및 진행 현황
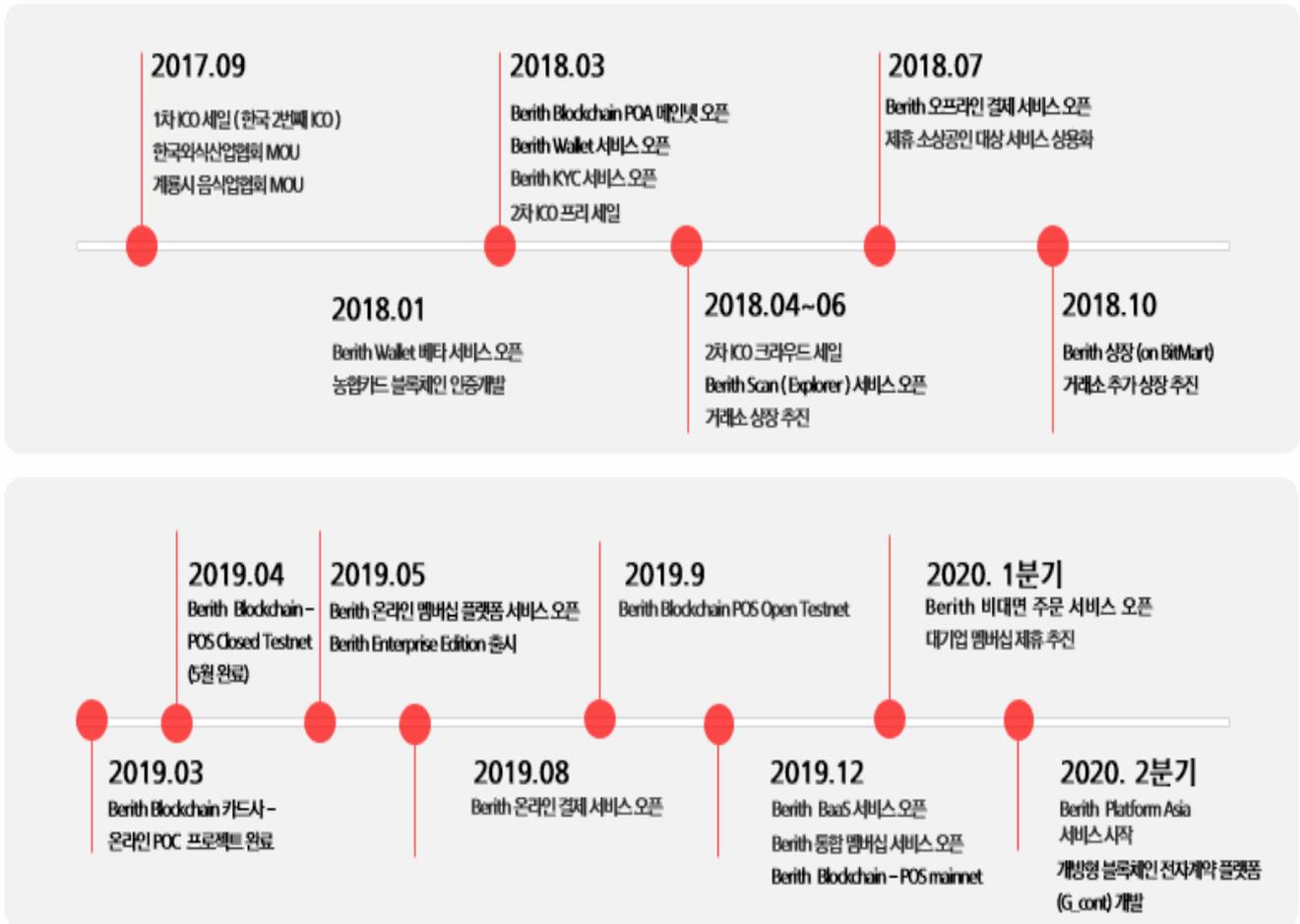
2017.09	-1st ICO sale (Korea's 2nd ICO) -MOU with Korea Foodservice Industry Association -MOU with Gyeryong City Restaurant Association	2019.04	-Completion of Berith Blockchain POS Closed Testnet
2018.01	-Opening of Berith Wallet beta service -Development of Nonghyup card blockchain certification	2019.05	-Opening of Berith online membership platform service -Launching of Berith Enterprise Edition
2018.03	-Opening main-net of Berith Blockchain POA -Opening of Berith Wallet service - Opening of Berith KYC service -2nd ICO Pre-sale	2019.08	-Opening of Berith online payment service

2018.04~06	-2nd ICO crowd sale - Opening of Berith Scan (Explorer) service -Preparing to be listed in exchange	2019.09	-Opening of Berith Blockchain POS Closed Testnet
2018.07	-Opening of Berith offline payment service -Commercialization of Services for affiliated SMO (Small-to-Medium Organization)	2019.12	-Opening of Berith BaaS service -Opening of Berith Integrated Membership service - Opening of Berith Blockchain POS main-net
2018.10	- Get listed on Bitmart -Preparing to be listed on other exchanges	2020 1st Half	-Opening of Berith non face-to-face ordering service -Promoting membership affiliation for large corporations
2019.03	- Completion of Berith Blockchain online POC project with credit card company	2020 2nd Half	-Establishment of Berith Platform Asia service -Development of open-Blockchain electronic contract platform (G-cont)

2. 코인의 발행 Issuance of Tokens

Total of 10 Billion Berith Coins have been issued. 50% of which was from PoS mining, 30% to pay loyalty when used. 20%, that is 2 billion coins, were initially offered and among them, 292,587,390 were sold during the 1st ICO presale, 200 million reserved for the 2nd ICO, 707,412,610 for cloud sale, 200 million for each of investors, development, marketing, and bounty.
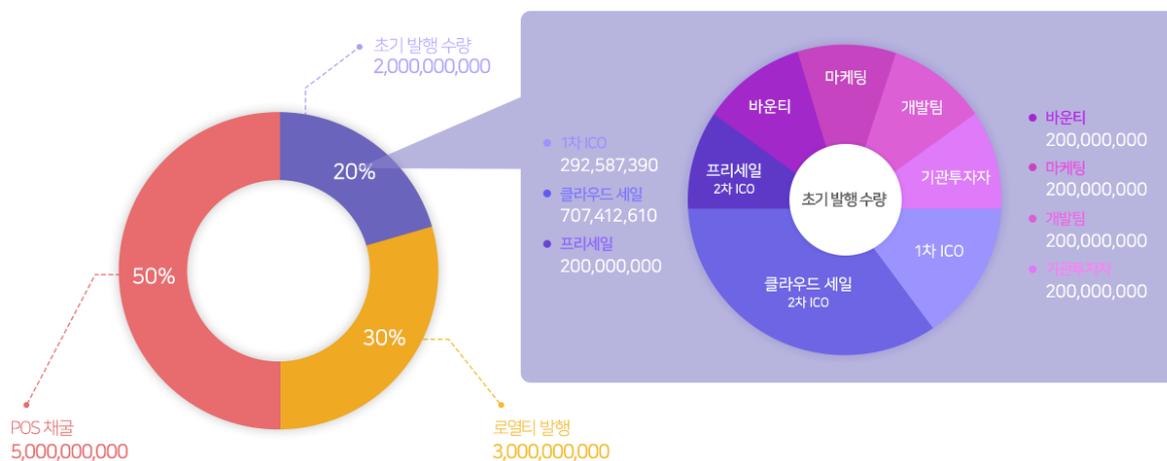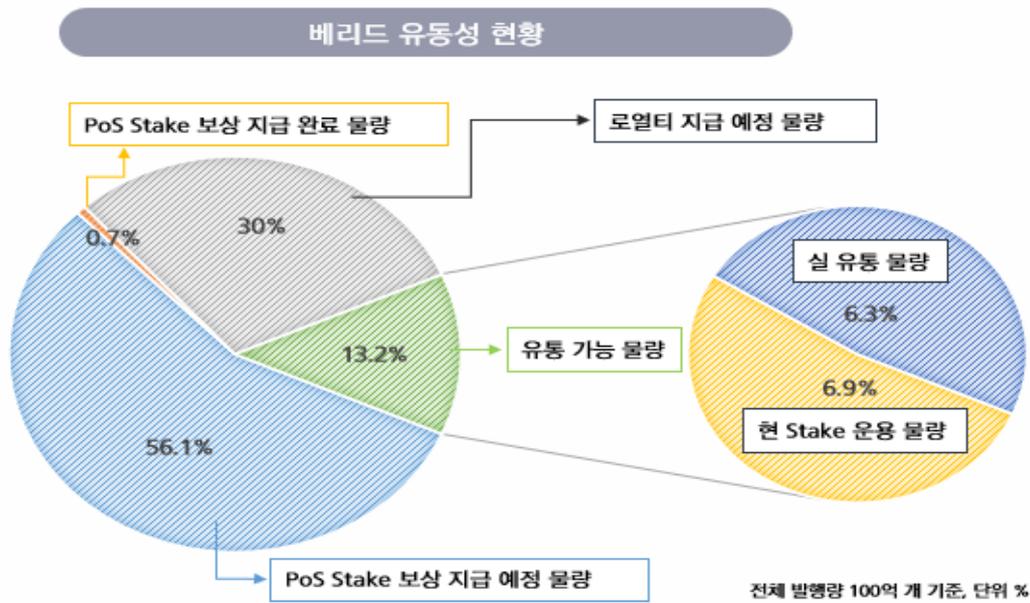
3. Team

The Berith team is comprised of experts from the business team including the membership CRM business, professional blockchain engineers, management, accounting and marketing. The Berith team is also responsible for the development of the Berith Foundation, which is responsible for the issuance and management of cryptocurrency, and IBIZSoftware, a technology partner that actually performs blockchain and membership business knowhow and blockchain development.

1) Berith Foundation

It was established in Singapore for the purpose of "Blockchain Technology for public interest and membership service for all", and is the subject of implementation of the Berith Project. The Berith team has a large number of people who are in charge of the actual work, and it carries out the overall management operation including the management and issuance of the actual Berith Platform and the support of independent corporations in each country.

2) Berith KOREA

Berith Korea is a corporate entity managing Berith project with IBIZSoftware, which is leading the technology development. It has a variety of experiences in application of the membership business and understanding of overseas business and the ability to develop overseas platforms.

3) IBIZSoftware

IBIZSoftware is an IT company specialized in blockchain technology and develops the core technologies of the Berith Project. Since its establishment in 2006, it has accumulated know-hows through the development of membership services such as GS&POINT and CJONE, membership services for HANA Members, Shinhan FAN club. It has developed various technologies ranging from consulting to an integrated development support platform called Jwork Suite Platform that improves development convenience. In particular, based on accumulated technology, it has built a membership platform for Indonesian companies and have various memberships for foreigners such as CGV in China.

V. 기타 법적 고지사항

The Berith service is provided by the Berith team. This white paper isw intended to provide more specific information about our services to those who want to use the services and is not intended to constitute or form part of an offer, recommendation or solicitation to make investment decisions of any kind.

This white paper is written to provide the comprehensive review and the description of roadmap of Berith project. This white paper is not intended to be an investment or contract solicitation, and Berth shall not be liable for any damages, losses, liabilities, or other financial damages incurred to any person who reads this White Paper. Please note that we do not have any responsibility for harms, compensation or any other legal liability. Berith does not guarantee any profits or values for the coins and tokens issued by Berith.

Berith coins and tokens must be used to take advantage of the functions within the Berith platform.

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