



THEIA Protocol

BUSINESS PLAN 1.0

THEIA LABS

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Abstract

With the development and supply of Internet and mobile devices, the existing payment systems, including billing, are facing a moment of upheaval. In particular, as the entrance of FinTech companies into the payment service market expands, multiple financial services are being provided. Along with that, the users' acceptability of these services increased, which led to the acceleration of the transition towards the digital payment system.

Nevertheless, while small businesses account for the major part of businesses in Korea and Southeast Asia, these payment systems and networks are not available for them and they are not experiencing this change. Therefore, THEIA LABS aims to create an ecosystem which can accommodate all payment methods even in a limited circumstances by providing mobile POS solutions to small businesses.

Furthermore, we will selectively provide management solutions, such as merchant chains, with low costs and commissions by establishing THEIA HUB, the integrated solution platform for merchants.

Unlike Big Techs, THEIA LABS is not a project created with a grandiose purpose to innovate financial initiatives from absurdity, pursue VANLESS, or provide new network and hardware systems. We just want all businesses to start with the same environment. Conventional payment systems like POS (Point Of Sales) and CAT (Credit Authorization Terminal) terminal devices require cost and space. Some small businesses are not comfortable with the introduction costs and initial contract or cannot pay the minimum level of hardware system maintenance fee. And some stores have limited spaces due to various situations. For them, we are planning to provide Mobile PoS, which includes all functions that the existing payment systems secure.

PAYPLUG, one of our partners, contracted as a franchise and jointly operates mobile POS as payment platform with all credit card companies in Korea, local VAN companies, and simple payment service providers. It also provides an Android-based payment system combined POS and CAT payment terminal.

Android-based payment terminals are already used in Korea in the form of POS, CAT, KIOSK, however they have not been broadly applied. This is because there are still several issues which have not been resolved, such as the addition of post-payment card method and the distribution of auxiliary terminals which accept payment methods. THEIA LABS has solved these issues and provides a differentiated system with both safety and additional functions.

THEIA LABS provides its own delivery service using regional social networks based on the cooperation with a delivery-specialized company, one of our partners. Delivery platforms have grown exponentially since COVID-19. Platform operators are demanding high costs and standards, and it is difficult for many small businesses to meet standards. THEIA LABS doesn't require high commissions and marketing costs, unlike the existing delivery platforms. This is because providing this service meets our goal to allow all businesses to start in the same environment.

Mobile POS basically provides various information that merchants can use with the purpose of marketing products. Many small businesses have been alienated from this information. To this end, they couldn't perform appropriate marketing activities, witnessed a slowdown in sales, and went through a vicious cycle. We are trying to resolve this inequality of information. The owners of merchants will be able to create a virtuous cycle

of performing suitable marketing activities using the sales information that THEIA LABS provides and contributing to the sales growth.

Vision

The payment method used in Korea allows users to pay through a system infrastructure provided by VAN (Value Added Network) companies that signed a contract with credit card companies. In overseas countries, one must go through financial companies with global card brands, like conventional big EMV (Europay, Master, Visa). All these payment systems have the networking structure of exchanging data through POS (Point Of Sale) or CAT (Credit Authorization Terminal) hardware terminals and VAN system. existing card payments must go through these hardware systems to exchange data. Thus, most stores secure computing systems linked with POS and CAT payment terminals. Of course, globally, most stores might account for a small proportion or be limited to a particular country or city.

Therefore, it is an essential requirement for stores to do business. Moreover, POS and CAT payment terminals and VAN systems play a more significant role in some stores since they are integrated payment systems that manage sales information and data of stores. In recent days, Big Tech companies providing payment services through QR code payment, not through hardware systems, have also entered the market. Yet, they still haven't surpassed the existing hardware systems installed in most stores.

Again, THEIA LABS is not a project created to pursue VANLESS like the Big Techs nor provide new hardware systems. It provides mobile pos to most small businesses that cannot easily introduce or use additional payment methods due to cost and space issues to use essential tools for conventional payment systems, such as POS and CAT payment terminal systems. We can fully perform as the financial network based on traditional payment systems. With that, businesses that couldn't participate in the existing large delivery platforms can use delivery services closely linked with mobile pos. We will embrace all types of payment methods, from credit card payment, NFC payment, QR code payment, simple payment systems to Cryptocurrency like CBDC. It will be possible for users to pay with the payment method they want to use.

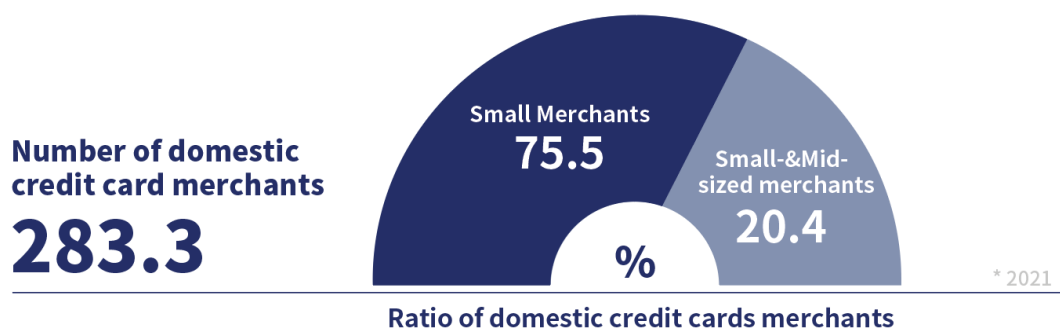
The vision of THEIA LABS is to become a platform company that provides solutions in all areas necessary for small businesses to run their businesses. We will provide all necessary solution to every merchant that use MOBILE POS with low cost and commissions.

We provide payment and marketing utilization information, and functions linked to delivery services. In addition, various financial services such as integrated online markets and tax reporting service, and business support including zero contact card issuance, merchant recruitment and marketing consulting service will be available at low costs and commissions.

Current state

3.1 Current state of Korean small businesses

As of 2021, the overall number of credit card merchants in Korea was 2.833 million. Among those merchants, 602,000 are small- and medium-sized merchants (20.4%), and 2.231 million are small merchants (75.5%). In terms of the small businesses that account for the majority of credit card merchants, the POS and CAR payment terminal systems are the primary payment systems. Therefore, they have no choice but to use them.



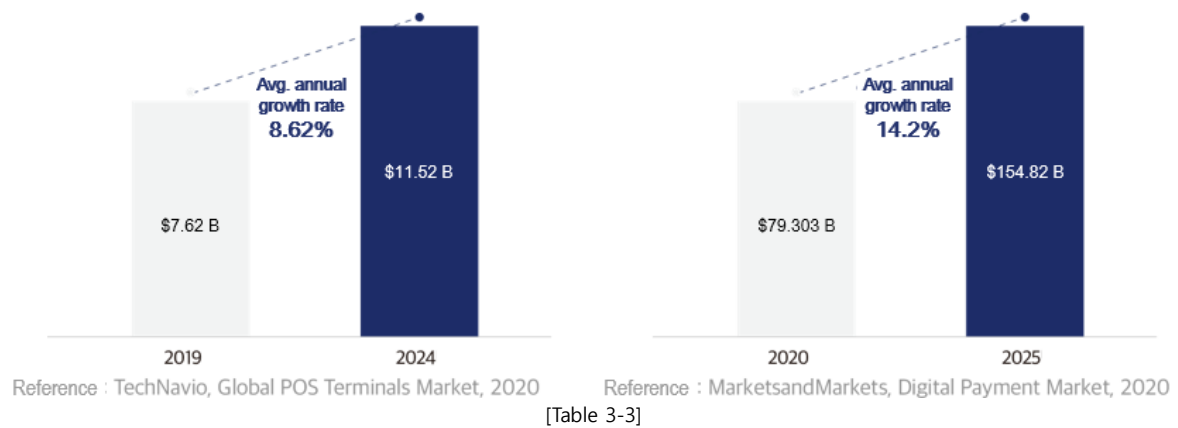
[Table 3-1]

Category	Annual Sales	Applied commission rate	
		Credit card	Debit card
Small merchant	₩300M or less	0.8%	0.5%
Small- & Mid-sized merchant	Over ₩300M, ₩500M or less	1.3%	1.0%
	Over ₩500M, ₩1B or less	1.4%	1.1%
	Over ₩1B, ₩3B or less	1.6%	1.3%

[Table 3-2]

3.2 Global market trend

The global POS terminals market was worth \$7.62 billion in 2019. And with an average annual growth rate of 8.62%, the market is expected to reach \$11.52 billion in 2024. Regarding the global digital payment market, it was worth \$79.303 billion in 2020. And with an average annual growth rate of 14.2%, the market is expected to reach \$154.82 billion in 2025. The digital payment market has surpassed the growth speed of the conventional fixed POS terminals market. And the market is changing rapidly with active investment and participation of global companies.



Major companies in the global POS payment terminals market are Fiserv (US), HP Enterprise Development (US), Ingenico Group (France), Oracle (US), Panasonic (Japan), and so on. They all reflect the growing trend of the global digital payment market by actively investing and developing conventional terminals, financial services, and software for merchants.

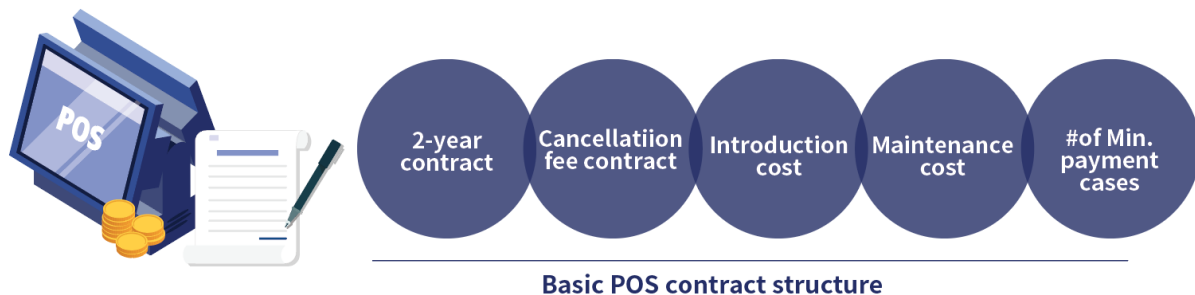
Issues

4.1 POS

POS system is the most broadly used point of sales system. Simply put, it is the system that gathers and keeps a record of information related to product, goods, and service sales, along with the location and time that a certain product is being sold. Its hardware is the same as a computer, and it uses Windows and Linux operating systems (OS). What's different is that it installs a separate software and customizes it according to the store. In general, it uses Internet networks. When it is impossible to use the Internet network, you can access the system through wifi.

However, in order to use these hardware and software, merchants are obliged to sign a 2-year contract, and pay introduction cost, monthly maintenance cost and certain amount of card transaction fee.

There are also additional payment terms, such as contract termination. This creates a high barrier for small businesses and provides an important reason to choose CAT terminals over various sales data, which is the strength of POS systems.



[Figure 4-1]

4.2 CAT

Unlike the POS system, the CAT system only plays the role of simply delivering authorized data when paying with a credit card. Through the CAT system, the credit card data will be sent to the credit card company to see whether the card user can pay the input amount with that credit card. After confirming that the user has enough card balance or has no issue with credit, the card company will authorize the payment. And the authorized data will again be delivered to the CAT system. At the same time, only the amount and the credit card approval number will be printed on the receipt and delivered to the consumer. A CAT terminal is worth at least \$200. And some companies require a monthly fee and require users to sign a contract. However, many small businesses are using this since it can be installed and used at a relatively lower price than the POS system. Still, it is completely isolated from marketing activities using sales data because it doesn't provide a point of sales and additional data for running a store.

4.3 High commissions among networks

Current financial services, online platforms, and delivery platforms are based on the conventional systems of CAT and POS payment terminals. These large financial companies and platforms require excessive and unreasonable commissions and standards. We understand their point of view. There are significant differences between the cost generated due to the use of traditional structures, such as hardware, software, and system infrastructure, and the cost of Mobile POS with the structure of using the Internet and personal mobile devices. What's clear is that the price those small businesses are required to pay within the conventional type structure is too high.

Solution

5.1 Mobile POS

Mobile POS the 'integrated management system' including all necessary functions to run a store. It allows users to easily use all functions by registering as a merchant through signing up for a membership and installing a free application on an Android/iOS device. In addition, Cryptocurrency methods, such as credit cards (including post-payment transportation cards), zero pay, virtual assets, and points, can be accepted with a single Mobile POS. The Mobile POS also provides various features necessary to run a store, including order delivery, putting delivery charges on a card, credit card sales check, deposit management, open banking service, simple payment (QR code payment, facial recognition payment), store sales analysis, pre-settlement, order app, sales analysis, public free order, personal bank statement, tax invoice, cash receipt, amount of tax payment, food materials management, and so on.



T Mobile POS UI/UX

[Figure 5-1]

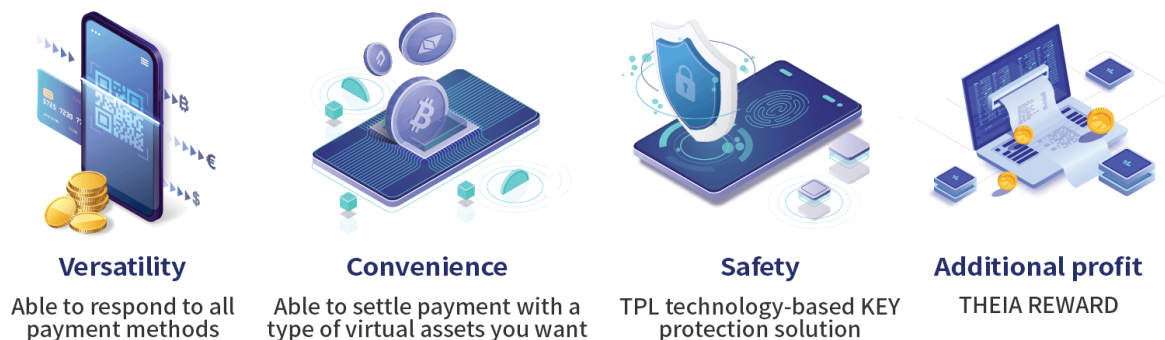
5.2 Low commissions among networks

Mobile POS is closely linked with the integrated solution platform (THEIA HUB) that THEIA LABS provides for its merchants. We've established a network through an organic collaboration with our partners. With this network, small businesses can use payment services for free. And with it, they can use selective services like delivery service, online market, marketing solution service, taxation agency service, contactless issuing of credit cards, and merchant registration service with a very small commission and price.

Mobile POS

Not only in Korea but also other overseas countries, there always existed the POS and CAT systems. Recently, Big Techs are pursuing a payment system with a printed QR code, but they are connecting it with the POS and CAT systems to effectively manage merchants. Samsung pay is operated through the terminal connected to POS and CAT systems. Like this, the POS and CAT systems performed when payment is made play a crucial role. And these will be the inevitable systems in countries or cities that don't have these systems.

Mobile POS is provided in Android systems. POS is based on Windows and Linux, and CAT is a terminal type without OS. It is also possible to integrate POS with CAT system which is largely used by small businesses, and it is possible to provide as a single system. A point-of-sale information management, which CAT system doesn't offer, is supported and additional functions are included. In addition, through single application, we provide a service that simple payments can be made through various payment methods such as Zero Pay, local currency and Cryptocurrency.



[Figure 6-1]

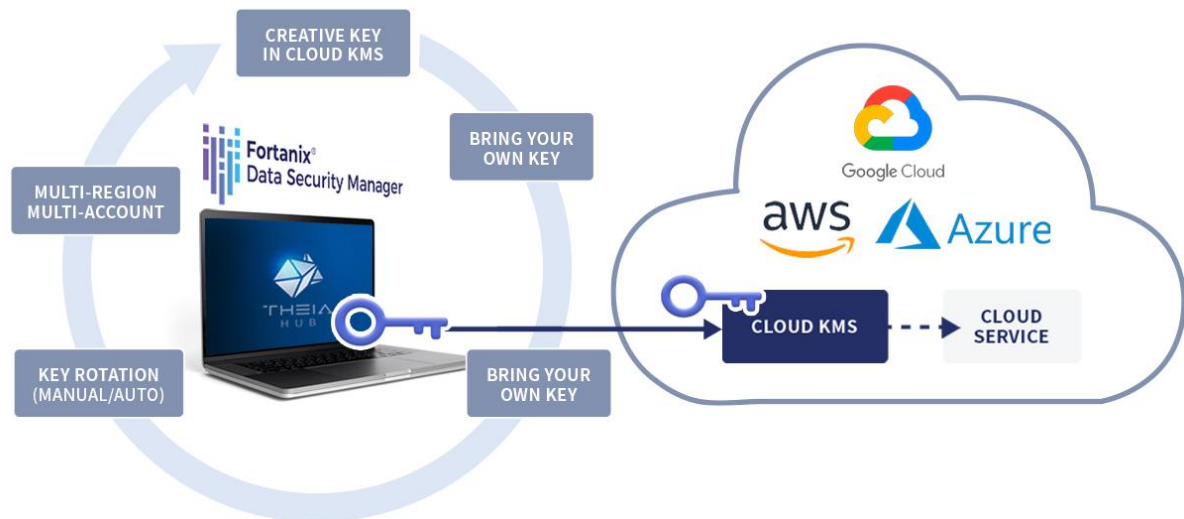
6.1 Versatility

Mobile POS secures expandability so that it can accept payment with every existing payment method. The payment system through the conventional VAN and PG companies is already established. It also provides compatibility with the new payment method using IC card, QR code, NFC technology, and facial recognition technology.

Additionally, it is supported with e-wallet which is built in the service in order that it can be adapted to Cryptocurrency at any time.

6.2 Safety

The information collected from mobile POS is recorded in Blockchain ledger through THEIA Protocol, and it offers safety and transparency. THEIA protocol is based on TPL (THEIA Protocol Legacy) technology which can process more than 7,000 transactions per second, and it provides near-perfect Key management thanks to FORTANIX HSM, a global Cryptocurrency security device.

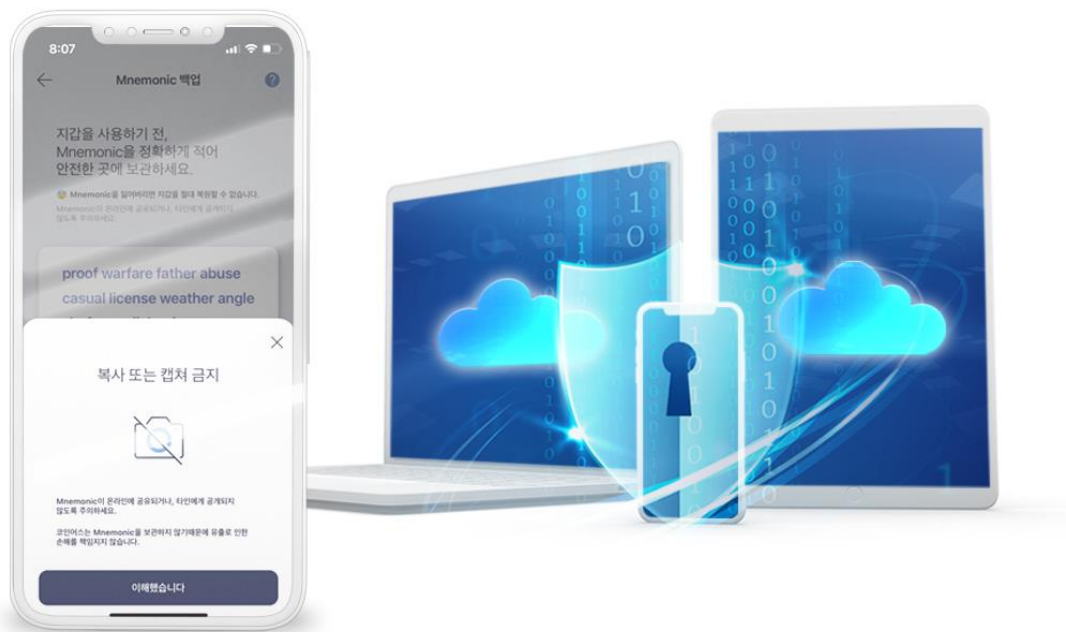


[Figure 6-2]

THEIA WALLET

7.1 Private Safe Service

THEIA E-wallet, which is provided for both payment providers and general users, is offered as a service built into mobile POS for payment providers in order that they can receive Cryptocurrency in a wallet. For end users, it supports services that can generate Mnemonic Key and safely store in HSM (Hardware Security Module) simultaneously, which is not possible with existing decentralized Cryptocurrency wallets and seen as the biggest problem.



[Figure 7-1]

Until now, once the Mnemonic Key, the recovery key of the decentralized wallet, is lost, access to the blockchain is fundamentally blocked, and there is no way to prove the ownership of Cryptocurrency.

LEDGER, a classic cold wallet, safely manages private keys through physical hardware. However, if the Mnemonic Key for recovery of LEDGER is lost, it is impossible to recover the wallet in the event of loss and damage of LEDGER.

Furthermore, despite the centralized wallet, which is certified through KYC, provides a service that can restore the recovery key using the user's personal information, the users must fully trust the wallet company and there are cases where users cannot find assets due to bankruptcy, hacking or service termination of the wallet company.

Above all, it is against the initial idea of blockchain, aiming for self-sovereignty and as a result, the large number of decentralized wallet users.

THEIA LABS defines Cryptocurrency as personal cash, thus it provides a decentralized e-wallet. The decentralized wallet, which is same as cold wallet, can be used at any time if the Internet is connected, and the authority to access the personal safe is designed to be only accessed through the user's unique biometric information.

The authentication method is designed in the same way as the method provided by financial institutions. Biometric information is stored in a separate intermediary organization's server instead of FIDO structure which stores information on a mobile. Thus, it is possible to recover Mnemonic Key even in the event of a new mobile replacement from a damage or loss.

7.2 Cryptocurrency Settlement and Liquidation

THEIA LABS aims to support Cryptocurrency information which is recorded and stored in a blockchain network because we define Cryptocurrency as digital cash. In other words, we intend to define Cryptocurrency from a different perspective in order that Cryptocurrency can serve as digital currency.

Until now, digital currency has meant electronic information recorded in each service provider's recording and storage device.

Credit card, debit card, account transfer, and simple payment support payments and remittance by recording and storing digital information on each operator's independent storage device.

In the event of offshore payment or remittance, a third-party operator intervenes to provide gateway service which enables comparison and contrast of each business's electronic information.

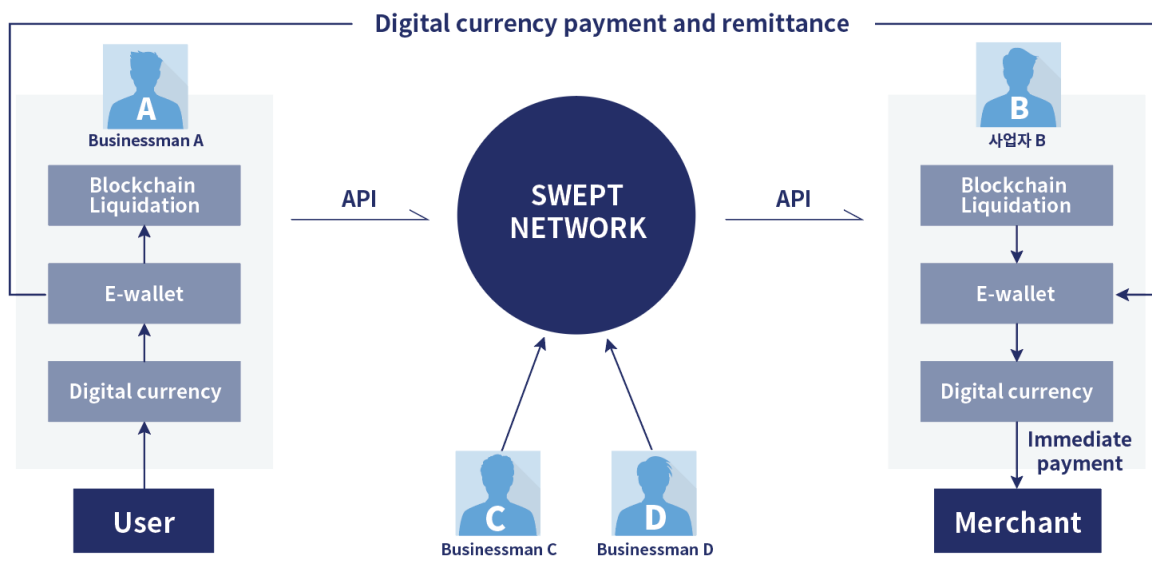
In traditional finance, such digital information is easily checked through the back office.

On the other hand, the electronic information recorded and stored in the blockchain network is no longer developed beyond the level of confirming records via POW, POS and storage history through Explore.

With only function of checking P2P transfer and transactions between wallets, there is a limit to applying it to multiple users and various merchants. Therefore, there had been also an attempt to apply the prepaid payment method and P/G model.

THEIA LABS aims to prove the practical effectiveness of blockchain by recording and storing wallet and payment via a wallet on the blockchain networks, and by supporting back office system in order that each business can compare and contrast transaction history without intervention of third party operators.

In other words, the goal is to build the transaction ledger which has the same level of back office the traditional finance provides.

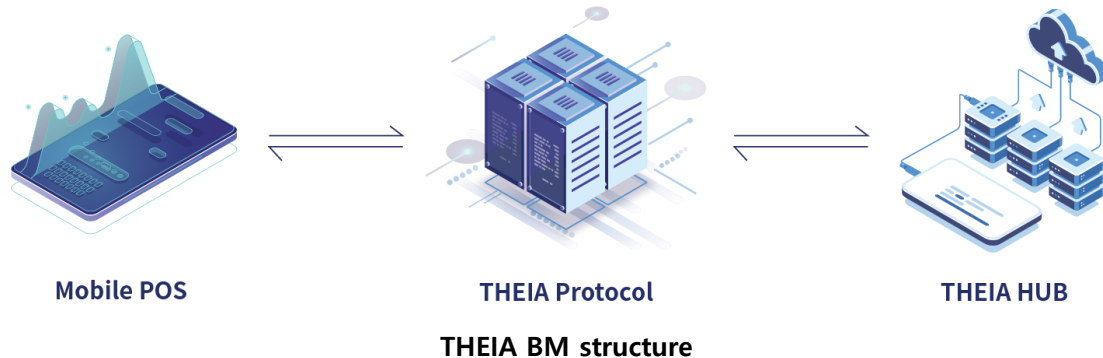


[Figure 7-2]

08

BM

THEIA LABS aims to provide value to small businesses by introducing mobile POS and Cryptocurrency. It is important to build an ecosystem where needs of small businesses are fully reflected and active participations take place. We focus on establishing an easy-to-use THEIA HUB.



[Figure 8-1]

8.1 THEIA HUB

THEIA LABS desires to provide a service that connects back office, which can store all transactions related to Cryptocurrency payments, and e-wallets with the traditional finance system.

Until now, cryptocurrency, which is recorded and stored in blockchain network, has never been properly merged with the traditional finance. Merging various Cryptocurrency and blockchain networks together would make us possible to advance various areas which have not been resolved and improved by the traditional finance, and provide high quality services.



THEIA HUB [Figure 8-2]

8.2 Cryptocurrency 정산수수료 Cryptocurrency Settlement Fee



[Figure 8-3]

Commission always exists for every transaction. Without commission, there would be no participants who are willing to build payment system and provide services. If the aim is to achieve decentralization through blockchain without commission, there would not be any opportunity to prove the effectiveness of the blockchain. This is considered as a big factor causing the blockchain being minor community.

Cryptocurrency can be used in various ecosystems but above all, it is most specialized in payment and remittance. In order to have a function of currency, various collaterals need to be provided and a form of collateral, similar to currency basket, also has to be added. Many efforts to make Cryptocurrency as money are made.

Cryptocurrency being practiced same as monetary base of M0 would only be possible on a trial basis only in some countries where the finance system is not operating normally. The reality is that it is still insufficient and even impossible to meet the monetary conditions.

Thus, THEIA LABS has decided to support payment limited to Cryptocurrency which payment is guaranteed, and it will be clearly determined at the point of the mobile POS ecosystem being expanded.

8.3 Exchange Spread

Cryptocurrency's offshore payment will be possible with mobile POS.

Through e-wallets of the businesses in payment countries, payment settlement and overseas remittance payment orders are recorded and stored in the form of electronic information on the blockchain network. These settlement and remittance payments are made immediately, and users can enjoy the innovative financial services.

Active participation of franchises is expected as the exchange rate between each country can be provided by minimizing the buying, selling spread cost of exchange rates through THEIA HUB without the intervention of third party.



[Figure 8-4]

THEIA protocol

9.1 Blockchain system

Transaction information is recorded and stored in the bloc of THEIA Protocol when Cryptocurrency payment is made through mobile POS. For general credit cards and other general payments, the transaction is made through VAN or is delivered to the business through the acquirer, and the payment is completed in accordance with the approval process and payment cycle. Recently Cryptocurrency payments are added to those payments but prepaid payment method is applied instead of method recording and storing information in the blockchain.

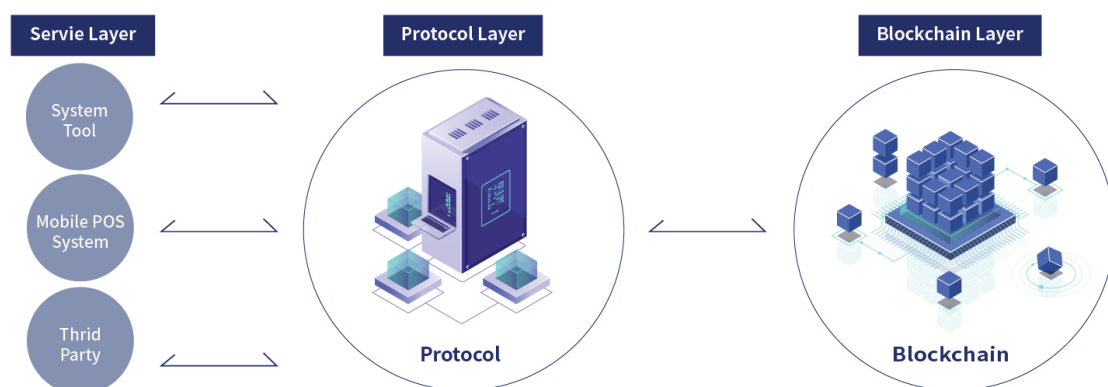
THEIA LABS has built a payment system using practical blockchain that can amend and store Cryptocurrency records through an e-wallet built in the merchant's mobile POS while simultaneously make payment of Cryptocurrency in the user's e-wallet.

Nonetheless, if digital currency payment is processed in this way, it will be a P2P transaction between wallets, and there is a limit for multiple users to use at franchise stores. Therefore, the prepaid charging payment method has been applied until now.

In order to build practical blockchain payment system for multiple users and franchises, identical payment system same as the traditional payment is required. Cryptocurrency settlement, which is identical to back office environment applied to the traditional finance, and liquidation function for offshore payments are essential.

THEIA LABS will build an ecosystem through applying a payment system with blockchain in order that Cryptocurrency can be used by multiple users and merchants without inconvenience and be universalized starting with mobile POS.

9.2 System configuration



THEIA Protocol structure

[Figure 9-1]

There are three layers of THEIA Protocol: a Service Layer that realizes actual services; a Protocol Layer that plays the role of API that connects the service layer and the Blockchain layer; and a Blockchain Layer that saves smart contracts and payment ledger.

The Service layer consists of a System Tool, PAYPLUG System, and a Third-party API. And the System tool consists of an API that allows the PAYPLUG that merchants use to perform protocols under the THEIA Protocol, SDK, and POS system tools. Merchants will be directly connected with the THEIA Protocol through these system tools. PAYPLUG connected with the Protocol layer will provide a UI that can allow merchant owners to simply manage THEIA Protocol's smart contracts without the knowledge of Blockchain nor going through a series of complicated processes.

The Third-party API will be used as the channel to provide various features, including THEIA Protocol's PAYPLUG AND DAPPs, which will be supported soon. The third-party participants will play the role of introducing and connecting the THEIA Protocol-based Blockchain system.

9.3 Realization

The system tools of THEIA Protocol consist of online and offline integrated API, tools, SDK, and Mobile POS. merchants linked with the THEIA Protocol will be able to utilize all functions of the THEIA LABS using these tools.

Mobile POS provides a dashboard for each merchant of THEIA Protocol. It will verify and manage smart contracts with a separate page. And it has an intuitive UI to check transaction data. Merchants can conveniently connect to the Blockchain in the same environment as using a general mobile application. All managed records will perform the smart contract through TPBS (THEIA Protocol Blockchain System) connected to the THEIA Protocol.

All features of THEIA HUB, the THEIA LABS-provided merchant solution service platform, will be linked with TPBS using the third-party API. Considering the expandability and versatility of the business, THEIA Protocol will continuously develop the third-party API. In summary, the merchants participating in the THEIA Protocol can check and manage all information, including the existing data and digital currency, through a single integrated Mobile POS.

Management Team



Junhyun Cho (CEO)

Education

2005 Certification of Judicial Research and Training Institute(34th)
2002 Passed the 44th judicial exam
2000 Master of Law,
Seoul National University(SNU)
1996 Bachelor of Law at SNU(Cum Laude)

Work Experience

Current Law firm THE FIRM / Partner
2014 Professor of Wonkwang University Law school
2012 Part leader of Legal and Management Assessment Dept. at Kyowon Co. Ltd.
2008 Johnson and Johnson Medical Korea Limited.
2006 Hanmi Pharm. Co. Ltd.



Seohyun Bae
Chief Operating Officer(CTO)

Education

1992 Bachelor of Management Information System at Hankuk University of Foreign Studies

Work Experience

Current Sehan NFC CEO / Coinplug Advisor
2021 Vice President of Sehan NFC System
2016 General manager of KB Kookmin Bank Cambodia Fintech
2012 Part Leader of KB Kookmin Bank Fintech New Business Dept.



Eunmi Lee
Chief Technology Officer (CTO)

Education

Current Doctor of International Finance at Yonsei Univ. (Expected)

Work Experience

2015 Global futures team of HI Investment & Securities Co. Ltd.
2006 Global Finance team of KEB Hana Financial Group
2003 Interpretation at KOTRA Beijing branch



Hyungmo Gu
Managing Director

Education

2014 Completion of Coursework for Integrated Master-Doctoral Degree of Industrial and Management Engineering at Konkuk Univ.
2008 Bachelor of Sport Industry Studies at Yonsei University College of Education and Science

Work Experience

2016 General Manager of the Strategic planning team at Pernod Ricard Korea OFF TRADE
2012 Regional HQ Manager at Pernod Ricard Korea OFF TRADE
2010 Capital Area HQ Manager at Pernod Ricard Korea TOT

Advisory Committee



Sangcheol Lee
Advisory

Work Experience

Current Auditor General of Tmoney Co. Ltd.
Lecturer of Financial risk management at KBI
2012 Adjunct professor at Yonsei Univ. Risk Management member of the Ministry of Employment and Labor Business advisor of Korea Exchange Bank
2011 Vice President of Korea Exchange Bank, Risk HQ (Chief Risk Officer)
2007 General Manager of Korea Exchange Bank, Risk HQ (Chief Risk Officer)



Youngsik Kwan
Advisory

Work Experience

2013 Planning Manager of VAN business development Dept. at KTFC (Korea Financial Telecommunications & Clearings Institute)
2011 Customer Management Manager of Customer Service Dept. at KTFC
2018 Director of Korea Credit Card VAN Association Managing Director of eBusiness Dept at KTFC
2017 Manager of VAN business at KTFC



Myeongsseop Kim
Advisory

Education

Bachelor / Master of Business at Yonsei Univ.

Work Experience

Former CEO of W Shopping
Former Senior Managing Director of KT Alpha
Former Managing Director of Skylife (Director of marketing / General Manager of new growing business)
Former KT Secretary's office New Media Strategy Dept. Business Research Institute