PayProtocol

The world's most viable
end-to-end crypto payment platform



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1 Introduction

Payments today are expanding globally and quickly moving toward the internet's online environment thanks to the rapid growth of e-commerce and online banking. Despite such active technological advances in the commercial market, payment methods are lagging behind in innovation. They are still heavily dependent on the existing network of financial institutions and payment processors.

The traditional payment system has two main problems in its structure. The first is the delay from the point of sale and when the funds *actually* reach the seller. Secondly, numerous middlemen participating in the process ultimately amounts to higher fees and lost revenues. Merchants trying to provide a variety of payment options are saddled with cumbersome management and additional operational costs resulting in wasted time and lost revenues.

In the traditional credit card payment network, up to twelve processors participate in a single transaction when making an online payment. Delays up to or in excess of 30 days for transactions to be finalized is commonplace. Transaction and settlement costs account for approximately 5% of the payment, cutting into profit margins and the company's bottom line.

With the advent of blockchain technology, and growing interest in recent years, new attempts are constantly being made to utilize blockchain technology to simplify processes and provide a more efficient payment solution with lower fees. In order for cryptocurrency payment solutions to be widely adopted, the following problems need to be adequately addressed as well:

1) How can regional and network differences be managed effectively and efficiently?
2) How can cryptocurrency be effectively utilized without exposing all parties to its price volatility?
3) How can we overcome the potential challenges with merchants that may lack technological resources?

PayProtocol was established to find solutions to the structural limitations of traditional payments and hurdles faced by cryptocurrency projects by introducing an end-to-end payment solution that is practical and easily applicable.

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2 Pain Points in Traditional Payments

In the fourth quarter of 2017 alone, Visa handled 2 trillion US dollars' worth of transactions. PayPal transactions expanded from 150 billion USD in 2012 to 452 billion USD in 2017 showing an annual average growth rate of 25%.

The digital economy's growth spurt is notable every year. In 2017, the online retail market hit $2.3 trillion, online gaming reached $13 billion, and sales of other digital content exceeded $115 billion US dollars. This also signifies the growth of the payment solutions market, since any transaction in the economy is made through some form of a payment solution.

Although the payments market has expanded to the internet and payments are now increasingly being made internationally, the payment structure itself hasn't evolved to accommodate the coming of this new digital economy. Traditional payment channels are still plagued with complicated authentication and an ever increasing amount of steps needed between merchant and buyer, expensive service fees, and settlement cycles that are not fit for the 21st century digital economy.

2.1 Complicated Payment Process

Though the complexities of the payment process are obfuscated from the average user, a typical credit card payment takes an average of thirteen hops through a tangled web of banks' authorizations and credit card networks until it can be cleared for settlement. Each step incurs an added cost to what could have otherwise been profit for the merchant and/or savings for the consumer.

Figure 1 shows the minimum number of steps required to process a credit card payment. Each step is necessary before payment can be delivered to the seller.

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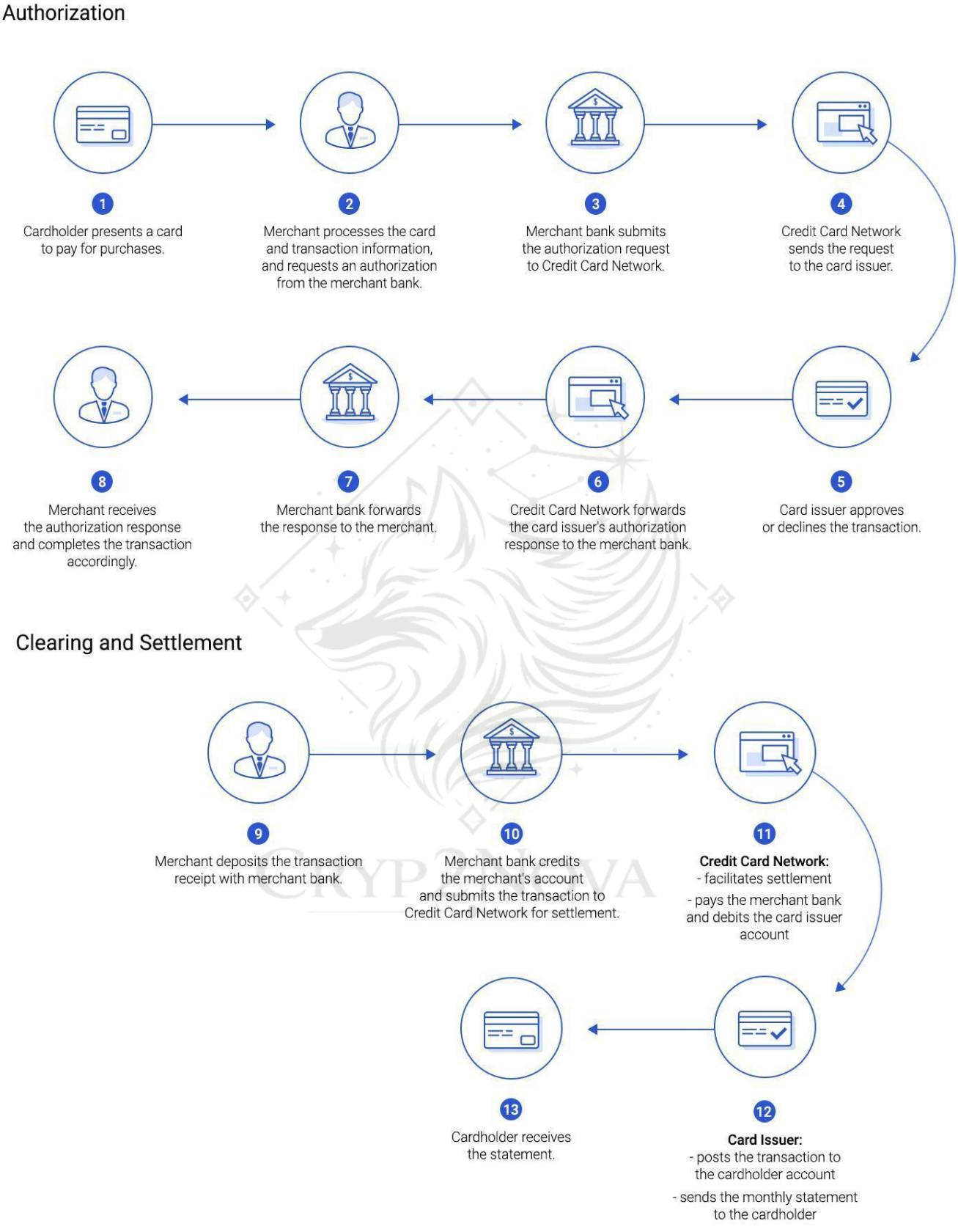


Figure 1. Credit card payments - processing and settlement

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The settlement process focuses on validating the transaction data. Payment processors in the supply chain repeatedly share and verify each other's data to ensure that it is accurate and can be trusted. Due to this, each measure taken to validate, authenticate, and clear a transaction ends up compounding the inefficiency of the system, adding costs and waiting time every step of the way.

2.2 Expensive Service Fee

The average amount of a transaction that payment processors take is around 2~3% for credit cards, 2% for debit cards, and a staggering 25% for prepaid or top-up cards. Especially in Southeast Asia, South America, and other regions where payment services are not as accessible, fees can reach as high as 50%.

The reason for such high fees is that each payment processor takes a portion for their work. To handle the authentication, transaction, and reconciliation, at least 4 to 5 processors participate in one settlement process. Consequently, fees are added at least 5 times for every transaction. In addition, there are also wire transfer fees and foreign exchange fees to process international payments that need to be accounted for as well.

Retailer (Merchant)	Net margin (%)
General	2.32%
Grocery and Food	1.62%
Online	3.72%
Distributors	3.93%

Table 1. Merchants' net margin by category

According to a NYU survey in January 2018, the average net margin of retailers in the US is below 4%. When compared with 2~3% fee for credit cards and fees for other payment options, it is evident how impactful the high fees can be for merchants. If a retailer had a 1% profit margin for the year, and could reduce their fees from 3% down to 1%, that could effectively triple their profits. Compound this year over year and the amount is staggering.

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2.3 Long Settlement Cycles

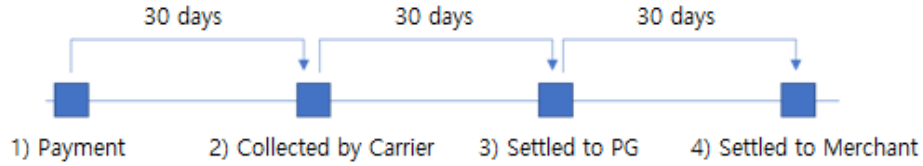


Figure 2. Carrier billing settlement procedure

When a credit card payment is made online, merchants are paid after 3 to 90 days. While transactions are completed immediately, settlement takes a considerable amount of time. Because of this discrepancy, merchants must actively manage working capital. Working capital, also known as net working capital, can be defined as current assets minus current liabilities. Every payment that hasn't cleared is money that cannot be used, and essentially is counted as a liability.

Capital management is a burden to most merchants. If raw material cost is deducted before income, merchants are essentially paying out of their own pockets. Therefore, an increase in transaction volume also increases the amount of working capital. Couple that with the increasing global nature of payments, and the transaction processing gets even more expensive and costly.

In recent years, mobile payment systems such as Alipay and WeChat Pay have been developed and used in China. These systems take the form of an end-to-end structure to tackle cost and time inefficiency. However, these payment platforms must also face a complicated settlement structure and high fees when payments become cross-border, as existing financial networks are used.

With PayProtocol, we plan to substitute intermediary processors in traditional payment systems with smart contracts and a coin economy to develop a new solution that can solve both the unnecessarily complex and slow payment environment as well as the high fee structure.

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3 Solution



Figure 3. PayProtocol service model

PayProtocol is an end-to-end platform that directly connects users and merchants. It will provide a fast and affordable payment solution by replacing the roles of processors in the existing payment system with blockchain-based smart contracts and coin economy.

However, even with such implementation, there are still many obstacles to overcome in order to introduce a practical payment solution that truly incorporates the benefits of cryptocurrency. Payment environments-such as which sales terminals are used-can be different online and offline, and for each geographical region. Not only that, the majority of merchants are still technologically unprepared, causing a lot of resources and investment to educate them on crypto-based solutions.

A large amount of time taken, trial and error are to be expected to deploy cryptocurrency payment solutions. Therefore, we plan to approach each obstacle systematically and holistically that will result in a seamless experience for both the user and merchant.

3.1 Online and Offline Payment Platform

Danal, the parent company and technological partner of PayProtocol, provides highly customizable payment solutions to 100,000 online shopping malls and 80,000 retail stores in 8 countries. In addition, various payment methods such as carrier billing, barcode and QR code payments, gift certificates, store points, etc., have already been developed and commercialized. They are expected to be applied immediately once integrated into the cryptocurrency payment module.

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PayProtocol is designed to be a blockchain-based combination of services such as Square for offline payments and Stripe for online. Square and Stripe deliver easy-to-use solutions to merchants, which PayProtocol hopes to learn from and improve upon. Our goal is to provide a friendly platform that any user can leverage to send and receive payments.

APIs and SDKs for online integration and developer-friendly tutorials will be made available to the PayProtocol community, and constantly updated with helpful and reliable information. Danal's experience developing payment modules fit for various online businesses such as gaming, e-commerce, web comics, music streaming, and movies will help develop and support effective tools easily and readily available for merchant integration.

Based on Danal's experience, various types of businesses have different needs when it comes to payment solutions. For example, digital content providers and retail sellers have very different characteristics in terms of payment methods, settlement schedule, and the number and type of business.

Retail sellers desire complete, irreversible payments. Sellers have set costs for production and distribution, and buyers have clear purpose for their purchase. Once the payment is complete, there should be no faults in the item's delivery and its condition upon arrival. Refunds or chargebacks can revert the flow of money or postpone the settlement cycle, so payment processors and merchants require skills in areas such as financial management and customer trust.

For digital content providers, once the content is created, its reproduction cost is very low, and there are no damages or losses in the delivery process. In most cases buyers immediately consume the product, so the number of payments made and settlement cycles are shorter compared to retail. As there is no shipment involved, competitive pricing is much more important for digital content providers. Responding flexibly to marketing policies is key to these sellers.

PayProtocol will make use of Danal's operation experience and understanding of the market to create a cryptocurrency payment platform that is readily applicable. In the offline environment, PayProtocol will provide all the necessary tools such as development API for POS providers and smartphone POS applications for small merchants. Additionally, Danal owns a barcode payment infrastructure that is connected to over 80,000 stores in South Korea. Notably, the infrastructure is being provided to the top three brands of convenience stores, supporting more than 70% of South Korean convenience stores.

In South Korea, the cost of installing one POS device is approximately 1 million won, which is a heavy investment for small business owners. In developing countries where POS infrastructure is old and outdated, mobile payments are on the rise. PayProtocol will launch a

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mobile POS application, which will be built on existing Danal infrastructure, and create a cryptocurrency payment platform that can be used instantly by offline merchants.

3.2 Crypto-agnostic

Volatility must be solved to successfully use cryptocurrency in the market. Many projects suggest stable coins as a solution, which can be a good alternative in theory.

However, stable coins are highly vulnerable to speculative attacks. A stable coin's value is stabilized by pegging to assets of relatively low volatility such as fiat or ETH. Unfortunately, it is difficult to maintain the stable coin's value when the amount bought or sold exceeds the total amount of the stable assets pegged. Considering the fact that the volume of assets securing stable coins is very small in traditional financial and economic markets, it is a risky solution.

If the stable coin's value is stabilized based on algorithms, risk for speculative attacks grows. This can be confirmed by the crisis we've already experienced in the traditional financial system including the Thai baht, the British pound, and the South Korean won.

Second, in order to use stable coins worldwide, we need a stable coin corresponding to the fiat currency of each country. This would mean that one independent solution must formulate and maintain the entire world's currency economy system.

To utilize stable coins, we must cater to the exchange rate between each stable coin and the fiat currency it's connected to, and must also procure fiat currency for pegging. Realistically, it is nearly impossible to secure and manage fiat money solely for the purpose of creating stable coins.

If we were to create stable coins for fiat using algorithms and manage exchange rates internally, the fall of any one stable coin can impact the entire system of algorithms.

Rather than focusing on stabilizing the volatility of cryptocurrency, we want to concentrate on the dissemination and expansion of payment solutions and user experience. In addition to PayCoins issued by PayProtocol, currencies including BTC, ETH, Stellar Lumens, OmiseGO, and stable coins such as USTD can be used as an exchange in PayProtocol's ecosystem.

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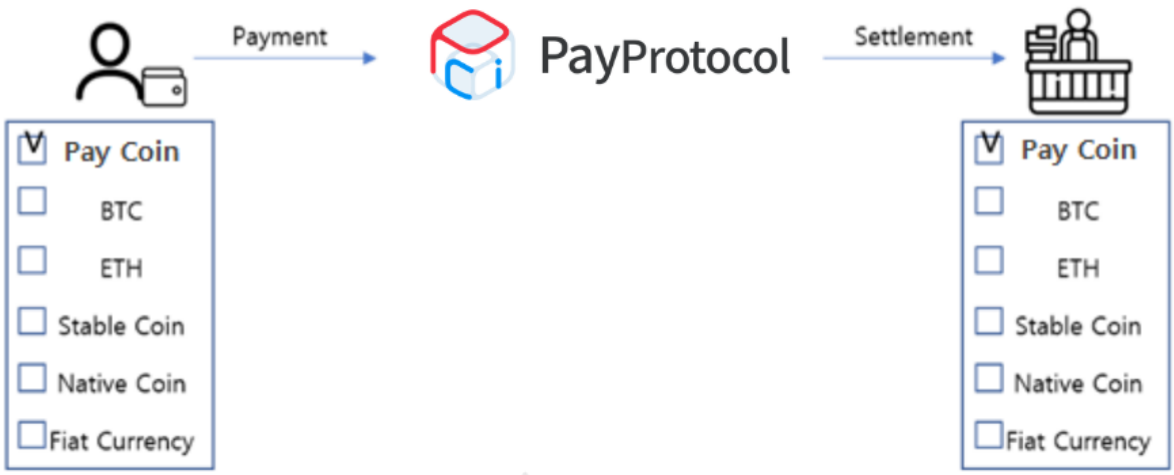


Figure 4. PayProtocol Multicurrency Payment

Freedom is a key feature of our platform. Both buyers and sellers will have the option to choose the cryptocurrency they wish to pay and receive, and the vast majority of cryptocurrencies currently in the market will be supported.

3.3 Merchant Management System

Marketing is essential for merchants. Diverse promotional methods and tools are constantly being planned and structured which range from simple discounts to bundling, gift rewards, sweepstakes, coupons, gift cards, installment services, and more. Despite so many options, small businesses have difficulty offering attractive marketing options on their own. Costs to equip the necessary infrastructure for each promotion add up in no time.

PayProtocol provides an easy-to-use marketing toolkit at extremely low costs, available whenever merchants wish to use it. Through Danal, a variety of marketing promotions for both online and offline businesses will be provided using smart contracts. Our goal is to offer an environment in which merchants can immediately apply promotions within their desired budget.

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Service	Description
Instant Discount	Apply instant discount in payment amount tiers
	Apply instant discount regardless of payment amount
Subscription Discount Coupon	Offer discount coupon depending on the subscription cost, in tiers
	Offer discount coupon regardless of subscription cost
Fixed Discount Coupon	Fixed percentage discount in payment amount tiers
	Fixed percentage discount without tiers
Free shipping	Waiver shipping cost
No refund or exchange fee	Waiver additional fees in case of refund or exchange
Extended warranty	Offer additional warranty period

Table 2. Services available on the Merchant Management System

As listed above, merchants can choose from different promotional items and select further, more detailed options using smart contracts.

Another important management function for merchants is the ability to check transaction details and analyze sales to calculate net profit, estimated amount of refunds, and credit amount in real time. PayProtocol leverages years of in-depth collective understanding of merchants and data processing skills, obtained through Danal, to provide the necessary tools.

Whether the payment is made online or at retail stores offline, merchants can manage all payments made through PayProtocol using a single tool. By using the Transaction Management Tool, merchants will be able to efficiently manage and leverage various transaction data such as volume, frequency, and purchase pattern for each channel.

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4 Circulation

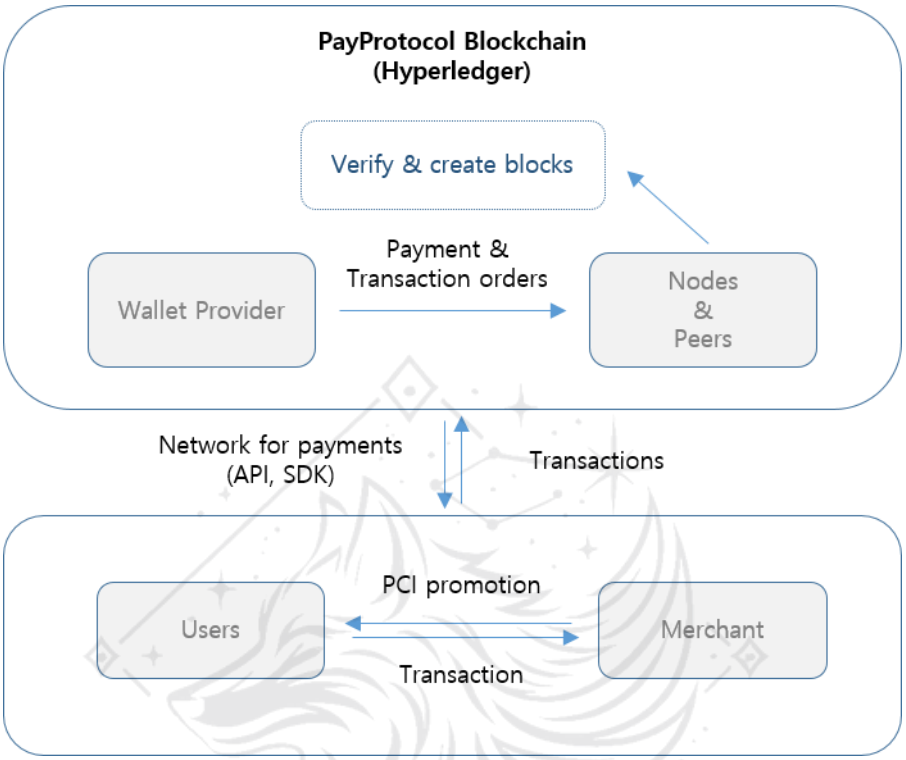


Figure 5. PayProtocol Circulation Model

In reality, the circulation of money is executed under different system that are responsible for each of its role. For instance, payment system is one of the most basic functions that ensures the operation of the entire economy.

If we examine the payment system, it would be easy to tell that the currency flow in such system is one way only – from users to merchants. In other words, circulation only happens when merchants use the money received from users to buy other goods and services from another merchant, or to pay salaries and wages to their employees, who would again purchase different goods and services for certain purposes.

PayProtocol will be responsible for the payment sector in a cryptocurrency-based economy, and will aim to provide the corresponding services and infrastructures to ensure seamless circulation in the crypto-economy.

By implementing blockchain into payment network, benefits that users and contributors receive are rather straightforward – significant decrease in the cost for processing and verifying payment

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data. Therefore, with lower transaction fees applied in payment services, merchants can utilize the network to foster their payment businesses easily.

PayProtocol's coin circulation is established by four different roles, each interacting with another to ensure a safe and stable payment environment. It includes (i) the PayProtocol network, (ii) wallet providers, (iii) merchants and (iv) users.

PayCoin (PCI) is the cryptocurrency that circulates in PayProtocol's network. It is used as transaction means and rewards that will fuel and incentivize the network contributors that runs and maintain the entire PayProtocol's ecosystem.

4.1 PayProtocol Network

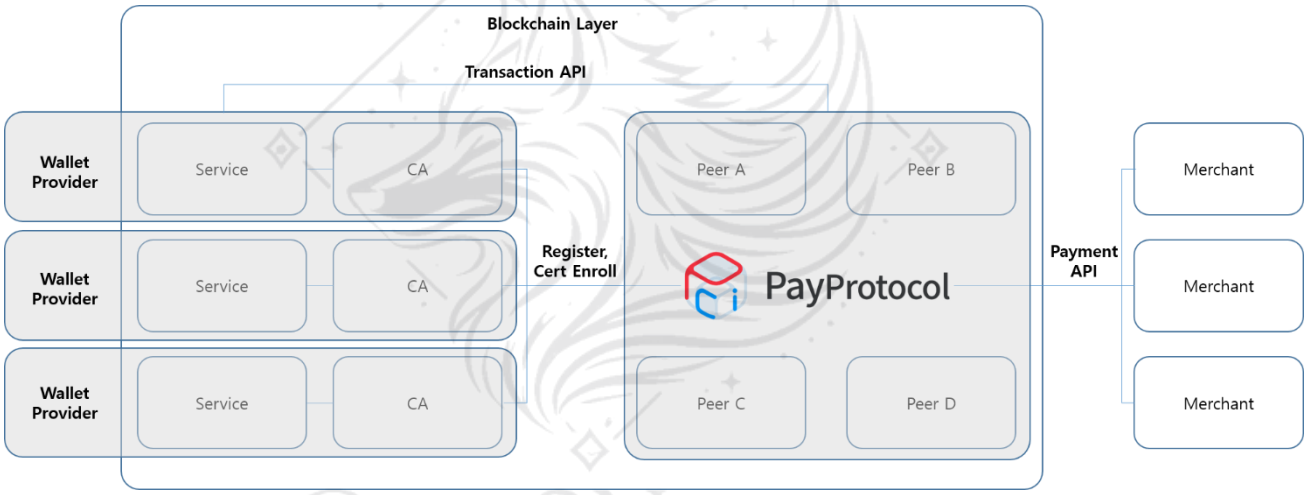


Figure 6. PayProtocol Network Model

PayProtocol blockchain is in charge of verifying and handling payment and transactions orders. Within this network, there are several key features that ensure the interoperability within the network itself, and between the PayProtocol ecosystem contributors.

The blockchain itself is a Hyperledger Fabric based that stores all of the transaction data on chain. Only permissioned nodes and peers are allowed to create blocks, and handle payments, transaction orders coming from users and merchants. Due to the nature of permissioned blockchain, it is secure, stable and highly scalable.

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4.2 Wallet Provider (W.P.)

The other feature within the PayProtocol blockchain is the gateway for wallet provider, also known as W.P., which provides the payment network through API and SDK. The fundamental function of W.Ps. is to provide wallet services that supports PCI payments and transactions. In return, W.Ps. receive a certain percentage of the transaction fees depending on its user base, which incentivize W.Ps. to optimize user experience for its target.

To be qualified as a W.P., it is required to provide the basic functions – payment / transaction – of PCI. Additionally, they are required to oblige the KYC and AML law of the corresponding country that the services are being provided. PayProtocol will be in charge of verifying and selecting among the W.P. candidates.

4.3 Merchants

Merchant takes one of the largest part in the PayProtocol ecosystem. They are the partners that interact with the users directly through the payment system. Merchants receive payments in PCI from users, and once the payment order is confirmed by nodes and peers, merchants will then provide goods and services to their customers. Merchants can give away PCI as rewards as marketing and promotional use, in return for user contribution. PayProtocol network provides transaction fees under 1% and various marketing and promotional solution to merchants.

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4.4 Users

Users are the parties that hold or use PayCoin (PCI) as means of payment to purchase goods and services within the PayProtocol ecosystem. There are different ways users can maximize their benefit in PayProtocol ecosystem. Users can receive rewards through various channels provided by both merchants and W.Ps. These various reward program will encourage the use and circulation of PCI to foster the growth of PayProtocol ecosystem

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5 Business Model

PayProtocol applies the transaction fee model that most of us are used to today. When users use PayProtocol for payment, there will be 0.2% of the transaction fee for the network and rest of the amount, 99.8%, will be sent to peers who would then execute the remaining process. When users use PayProtocol to transfer coins (PCI) to another user, there will be 0.1% of the transaction fee for the network. In this case however, receiver will be receiving 100% of the coins sent, meaning that the sender will need to have 0.1% of the transaction fee in their account in order to successfully execute the transfer function. The transaction fees received by the network will be later distributed as rewards depending on users' contribution to the network.

PayProtocol is established upon private blockchain that only allows permissioned peers to handle transactions within the network. Peers do not receive fees for the work they put into maintaining the network; instead, peers receive additional resources that PayProtocol provides as benefits.

Just like how different entities execute their roles as customers, merchants, and etc. in reality, entities joining the PayProtocol ecosystem will execute different roles to create its business model. For instance, while wallet providers can join PayProtocol as peers or merchants, peers and merchants can also join the network as other entities in PayProtocol. Such open business environment enables PayProtocol to be more than a simple payment network, and become a business infrastructure that can be used in various environments.

Below are some of the possible business model examples. As long as it supports the PayProtocol's service, and has no intention of any illegal activities, wallet providers, peers and merchants can choose the business model that best fits their business.

5.1 Wallet Provider

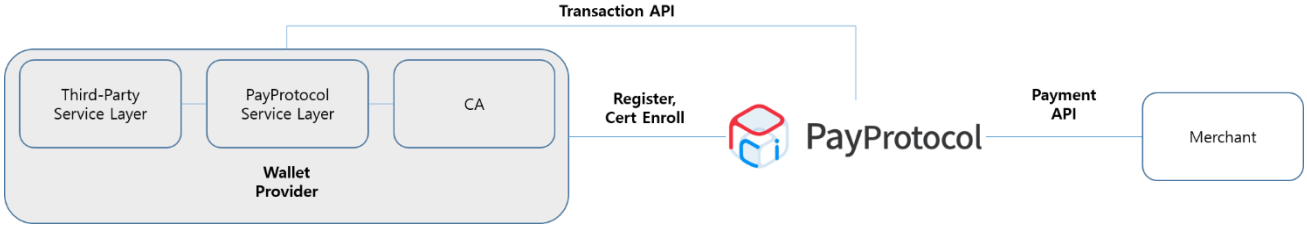


Figure 7. Wallet Provider B.M Example

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In order for a wallet provider to create its own business model, it is required to run its own CA server and oblige to the KYC and AML requirements in its location of service. Through integrating PayProtocol, wallet providers can either provide simple service such as CryptoWallet, or become a merchant itself to act as a business entity.

Take mobile shopping mall as an example, there are different options of business model that it could consider. The shopping mall itself can become the merchant that utilizes PayProtocol, or it could also become a wallet provider that allows customers to use PayProtocol as payments.

5.2 Peer's Business Model

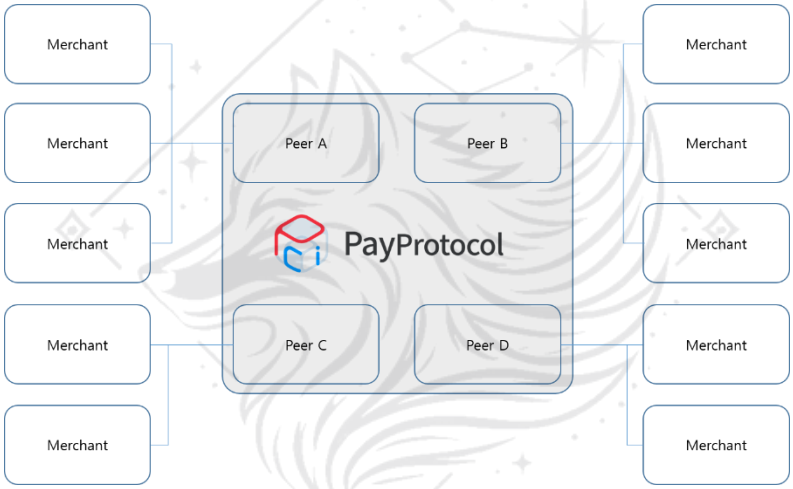


Figure 8. Peer B.M Example

As block validators, peers are responsible for creating, broadcasting blocks onto the chain. Since PayProtocol are utilizing private blockchain, peers will not receive transaction fees or whatsoever from the network as its incentives. Instead, PayProtocol will provide its merchant network to peers and provide opportunities to expand peers' business network. For instance, a peer can join as a master merchant to provide PayProtocol payment service to its partners, and in return, receive additional maintenance and operation fees from its partners.

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5.3 Point Swap

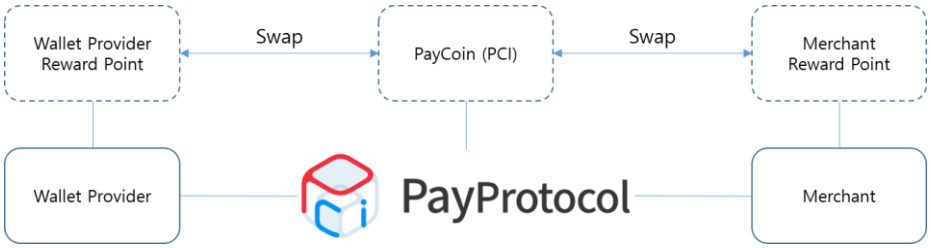


Figure 9. Point Swap

In the case that PayProtocol entities, such as wallet providers, peers, merchants and etc., have existing point system for customer rewards, implementation of PayProtocol will expand the use of points that customers receive. For instance, by combining reward points both on-chain and off-chain will enable wallet providers to provide its services to broader customer base.

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6 Value Proposition

PayProtocol is designed based on the following principles.

- Distribute economic gains and values that have been concentrated on intermediary processors to those who make up and contribute to the ecosystem, the users.
- Decrease the amount of time incurred due to overlapping work of each intermediary, minimizing the time taken to settle payments.
- Customers and merchants should have the option to choose means used in payments.

6.1 Users

PayProtocol provides users with various discounts and promotions when they use PayCoins. Our solution's service fee is significantly lower than those of existing payment providers. These deducted fees are returned to users in the form of discounts and other promotions. Thus, compared to other payment service providers, users can obtain the same services and products cheaper through the PayProtocol platform.

Users can use most of their cryptocurrency via PayProtocol's wallet application. Not only do PayProtocol's merchants offer exquisite promotions, but users can also utilize various third party services available on the platform to get access to additional benefits.

User experience is one of the most important factors when constructing a platform targeted to consumers. To meet user demands, our solution is designed for convenience and accessibility by always putting the user experience first. In addition to the self-developed wallet application, PayProtocol will also integrate with wallets developed by other crypto projects, allowing users to use the platform without having to install wallets separately.

6.2 Merchants

Settlements to merchants will be handled faster than other payment services. While traditional systems take over a day to deliver payments to merchants, PayProtocol's smart contracts will complete merchant settlements at least three times faster than traditional settlement methods.

Additionally, merchants will be able to receive payments in the currency of their choice, ranging from the platform's native coin, or major cryptocurrencies such as Bitcoin, Ethereum, and even some stable coins such as USDT and BitUSD.

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7 PayProtocol Architecture

7.1 Blockchain

Considering the nature of payment service and future scalability, PayProtocol is developed based on HyperLedger Fabric (HLF). A customized chaincode has been developed to issue PCI on HLF, and separate APIs has been developed in order to implement each of its services.

Each block of PayProtocol stores individual's information including transaction details and personal information. For this reason, only entities such as merchants, wallet provider and other participants in the PayProtocol network have the access to these information in order for entities to verify transaction status of requested by their users.

PayProtocol creates minimum 1 block per second when a transaction occurs, and if more than 500 transactions occur during minimal block interval, block creation time decreases to less than 1 second.

Each block of PayProtocol records not only the user's payment and transaction information, but also any change in Peer settings and status of each ledger. By sharing the trusted ledger with all network participants, managing necessary information for payment and settlement could be integrated into whole, which ultimately reduces the overall administrative costs.

7.2 System Architecture

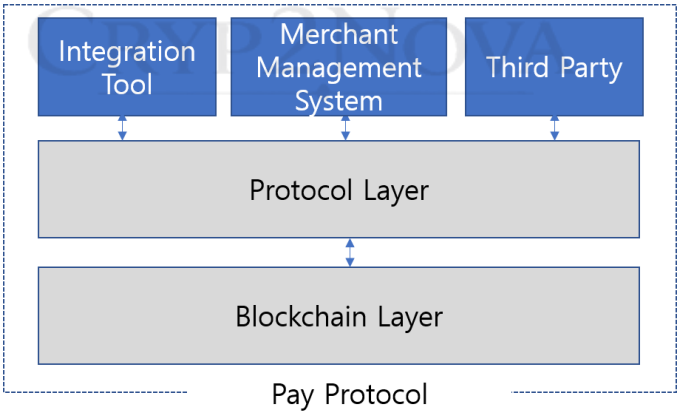


Figure 10. PayProtocol architecture

PayProtocol consists of three layers: The Blockchain Layer for storing smart contracts and the payment ledger the Protocol Layer, which acts as an API that connects the Blockchain Layer

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and the core of the service; and Service Layer where the front end of a service is developed.

The Service Layer consists of Integration Tools, Merchant Management System and Third Party API. The Integration Tools are where PayProtocol's integration API, SDK, and PoS Integration Tools can be found. Merchants are directly connected to PayProtocol through the Integration Tool. The Merchant Management System linked to the Protocol Layer allows merchants to easily manage smart contracts without knowledge of blockchain.

The Third Party API is a channel that provides various functions including wallet providers, mobile POS API, and other dApps that are to be supported in the future. It enables third parties to access PayProtocol's blockchain and generate transactions.

7.3 How It Works

The Integration Tool contains Online Integration API and SDK, Offline Integration Tool, and m-POS. Once integrated with PayProtocol, merchants can select the tool they need to use the functions offered by the platform.

An administrator page provided separately gives access to the Merchant Management System, of which the UI allows smart contract management and viewing transaction data.

Merchants can use the aforementioned functions to easily manage promotions and view transactions, and all details managed via the Merchant Management System are stored in smart contracts.

All functions for wallet, m-POS, and wallet providers provided directly by PayProtocol are linked to the blockchain through a Third Party API, and the APIs will be continuously developed for third party participants. This will allow us to expand the platform's capacity in such way that our business partners can create new revenue streams and added value within their businesses.

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8 PayCoin (PCI) Issuance, Distribution & Lock Up Plan

In order to use PayProtocol's service, registration is required via PayProtocol's wallet application, available as of April 16th for both iOS and Android. Additional information must be provided to satisfy various global KYC and AML laws, and certain customers may be restricted from access during this KYC stage. Information on PayCoins is described below.

Item	Description
Name	PayCoin
Symbol	PCI
Type	Native coin - based Hyperledger Fabric
Coin Supply	3,941,000,000 PCI
Value	PCI only has potential value and is not backed or associated with any assets
PCI does not represent any ownership, rights or interest in PayProtocol or its products	

Table 3. PayCoin details

8.1 Distribution

The ultimate objective of PayProtocol is to make Virtual Assets easily usable for payment all over the world, without any boundaries between online and offline, and mobiles and PC. It aims to go beyond the 5 trillion Korean Won annual domestic mobile payment currently handled by the parent company of PayProtocol, Danal, and to eventually replace various payment methods including credit cards, international and domestic payments with Virtual Assets.

Therefore, proper amount of PCI will be unlocked and utilized as reserved for the expansion of PayProtocol's Roadmap and merchant expansion. Additionally, to prevent loss of value as a means of payment, the supply of PCI will be controlled to meet the actual demand of the market.

At the initial release of PayProtocol's Mainnet, The total supply of PCI is 3,941,000,000, which was released at the initial launch of PayProtocol's Mainnet. This will be unlocked accordingly to PayProtocol's Roadmap. PCI issued is being allocated for each of the following purposes:

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- Huobi Korea Prime (0.35%)
- Payment Reserve (57.74%)
- Partnership Reserve (15.00%)
- Marketing (1%)
- Ecosystem Incentive (11.71%)
- PayCoin Co.,Ltd Operation (4.20%)
- Team & Company (5%)
- Advisors (5%)

1) Huobi Korea Prime (0.35%)

0.35% of PCI's total supply was released to the market through Huobi Korea Prime.

2) Payment Reserve (57.74%)

Payment Reserve will be used as both off-chain swap and reserve to ensure a secure and stable settlement for the network participants like Wallet Provider and Peer, as well as for other Virtual Assets that will be supported in the PayProtocol's Multi-Currency Payment feature.

When settling fiat to merchant, PayProtocol may fund the settlement fee through Payment Reserve if there are insufficient fund due to changes in value of PCI at the time of settlement. Therefore, PayProtocol may retain a certain amount of PCI in the Payment Reserve according to its contracts and agreements.

In addition, if the Virtual Assets that will be supported in PayProtocol are having technical difficulties in connection via Atomic Swap, PayProtocol will swap the Virtual Asset and PCI at a contracted price and execute payments and settlement within the scope of the swap. In such case, businesses who wish to utilize other Virtual Assets for payment in PayProtocol can reserve a certain amount of PCI and maximize the stability of their own payment service.

Moreover, each entity at PayProtocol that holds a Payment Reserve can leverage its PCI to prevent sudden changes in the value of PCI (in the event such as increasing demand for PCI payments) and utilize the Payment Reserves to ensure and sustain its customers' benefits.

3) Partnership Reserve (15.00%)

PayProtocol collaborates with various strategic partners to jointly expand the payment network. Partnership Reserve is the amount reserved for all the potential future partners.

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This can be used for marketing purposes through various channels, including airdrops, promotions, or for business models affiliated with their memberships.

4) **Ecosystem Incentive (11.71%)**

From the beginning of its service launched, PayProtocol has been putting efforts and large amount of resources to make it easier for merchants to quickly adopt PCI as means of payment.

Ecosystem Incentive is the allocated for these merchants to encourage their customers to use PCI in payments, and provide various benefits. The specific amount distributed to the merchants differs depending on the weighted average price of the product, trade volume and size of the merchants. Additionally, in order to prevent excessive supply of PCI due to such promotions, a certain amount of Ecosystem Incentive are being locked up for a certain period.

5) **Marketing (1%)**

PayProtocol aims to maximize the value of PayProtocol, and proceeds with various marketing to become a unified payment platform. The amount allocated in Marketing will be used for such marketing costs.

6) **Operation – PayCoin (4.20%)**

Same as PayProtocol, PayCoin Co., LTD is the subsidiary of Danal Co., LTD and it is responsible for the operation of PayProtocol's business model.

PayProtocol has set aside 4.2% of PCI's total supply as the operating costs for PayCoin's actual operation and business initiatives. In long run, PayCoin will generate its own revenue through its own business model through utilizing PayProtocol.

7) **Team (5%)**

PayProtocol was developed with the full support of PayProtocol and PayCoin Team, and the parent company, Danal Co., LTD, and several other related parties. PayProtocol has allocated a portion of PCI's total supply to its teams including PayProtocol, PayCoin, Danal Co., LTD and other related parties.

8) **Advisors (5%)**

From the initial planning stage of the project, PayProtocol sought various advice and insight related to the implementation of blockchain into payment system from experts, technical teams in the relative field. Until today, these advisors continue to help the operation of PayProtocol's network and services. PayProtocol has allocated a certain proportion of the total PCI supply to these advisors for their long-term cooperation and consultation.

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8.2 Lock Up Plan

The allocated PCI has a specific lock up period, and will only be unlocked according to its purpose at the specific time.

The lock up schedule is as follow.

1) Lock up Plan first 1 year

Category	2019-04-16	2019- 05-16 ~ 09-16	2019-10-16	2019-11-16	2019-12-16	2020-01-16	2020-02-16	2020-03-16	2020-04-16
Huobi Korea Prime	13,793,500.00								
Payment Reserve	13,413,503.41								232,411,903.00
Partnership Reserve									59,115,000.00
Marketing	39,410,000.00								
Ecosystem Incentive	161,949,447.00	38,359,687.63 / Month	38,359,687.63	16,504,088.96	16,504,088.96	9,114,198.33	9,114,198.33	9,114,198.33	9,114,198.33
Operation - PayCoin	165,533,549.59								
Team									197,050,000.00
Advisors									197,050,000.00
Total	394,100,000.00	38,359,687.63 / Month	38,359,687.63	16,504,088.96	16,504,088.96	9,114,198.33	9,114,198.33	9,114,198.33	694,741,101.33
Percentage	10.00%	0.97% / Month	0.97%	0.42%	0.42%	0.23%	0.23%	0.23%	17.63%

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2) Lock up plan after 1 year

Starting from 16th May 2020, 1 year after the launch of PayProtocol Mainnet, total of 284,627,778 PCI will be unlocked annually - 225,512,778 PCI from Payment Reserve and 59,115,000 PCI from Partnership Reserve.

The amount of PCI to be unlocked each year is divided by month equally until the last 284,627,776 PCI is unlocked on 16th April 2029 – the date that all lock up plan for PCI ends.

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9 Team

In order to achieve our goals, it's important for the team members to understand payments. Members from Danal, who have played crucial roles in the development and global growth of mobile payments, joined together to form PayProtocol in order to lead the movement to the digital currency market.

Anthony Cho

CEO | ex-VP Danal, ex-head of Danal China

Anthony has been part of Danal since the beginning of its payments business. He was in charge of sales and service planning from the early stages of online mobile payments to the expansion to brick and mortar stores. During his six years as head of Danal China, Anthony worked with mobile operators including China Mobile and China Unicom and with payment gateways such as YeePay and 99Bill. He specialized in marketizing cross-border payment services with Tencent, PayPal, and other partners, and is now responsible for directing the PayProtocol project.

Eddy Ryu

CTO | ex-CTO Danal

Eddy led the development of the world's first carrier billing system at Danal. He also oversaw the development of Danal's payment and risk management systems for carrier billing, credit cards, and other payment types as well as fraudulent transaction protection algorithms. Eddy is a payments technology expert and leads the development of PayProtocol's payment solution.

John Lee

COO | ex-COO Danal

As a policy specialist who structuralized and established domestic payment policies and influenced the direction of the nation's payment regulations, John has been negotiating with mobile operators for years. As a member of the PayProtocol team, he is responsible for establishing the company's operational policies, as well as steering company strategy.

David Lee

CSO | ex-CSO Danal

David was in charge of international payment operations at Danal, and has coordinated various payment projects with global merchants and payment processors such as Blizzard and PayPal. He specializes in designing service models and facilitates merchant management.

Young-il Kim

CMO | ex-Senior Manager Danal China

Young-il is a financial payment specialist who was in charge of foreign exchange and foreign investment at various banks in China. In Danal China, he directed cross-border payment services and designed settlement processes. At PayProtocol, Young-il plans the service model and is in charge of Chinese communications.

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10 Business Partners

PayProtocol has relationships with a diverse set of partners including Danal's subsidiary, Dal.komm Coffee, as well as businesses and consultants that have joined to develop cross-border payments. We will continue to explore enthusiastic partners in various industries to expand PayProtocol's ecosystem and actively develop more functions, giving our best to further enhance the value of PayProtocol.























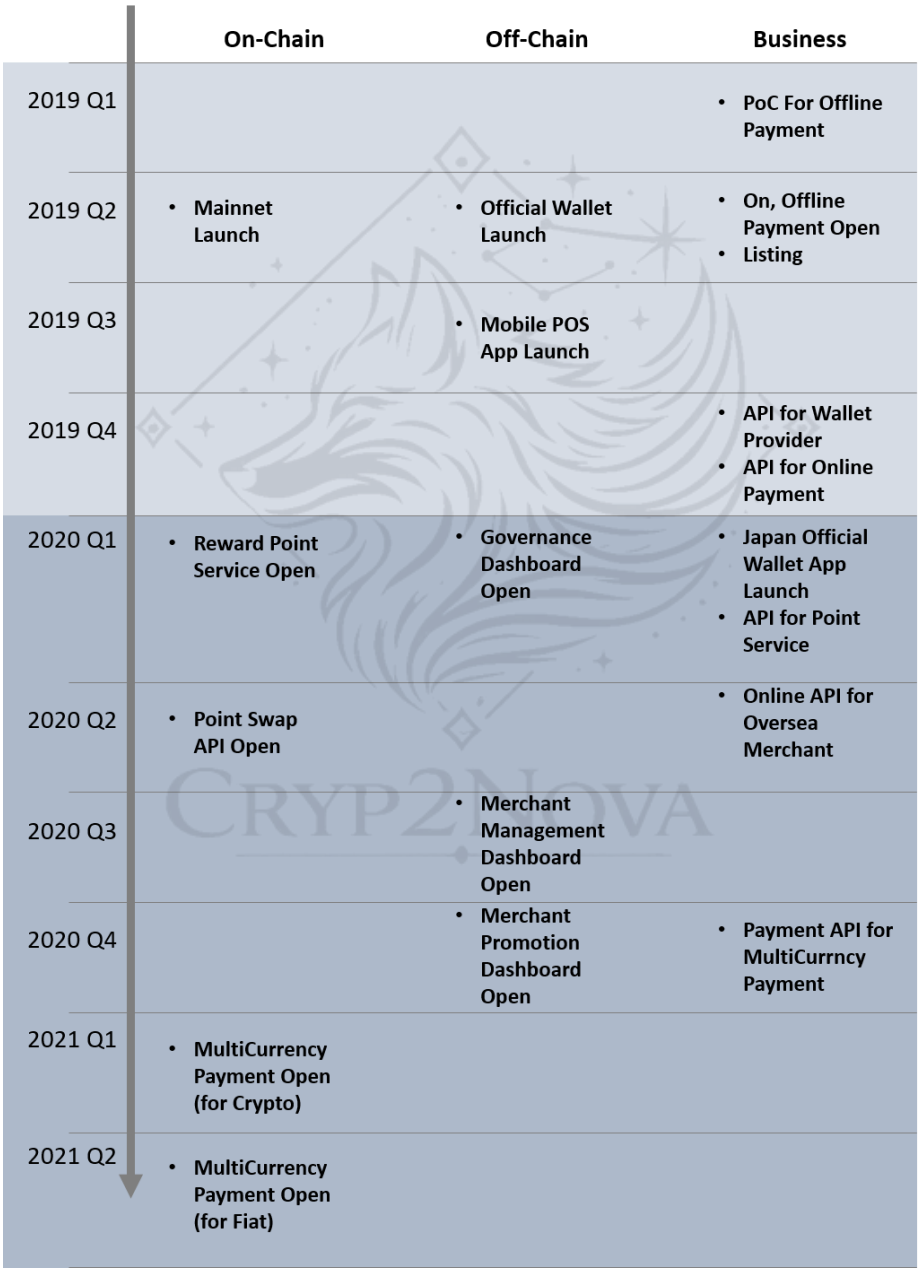


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11 Roadmap

Roadmap of PayProtocol includes both business environment on-chain and off-chain, as well as the API for actual usage by the customers. The ultimate objective of PayProtocol is to enter the global payment market. In order to expand PayProtocol's business opportunities, the team will be focusing on fostering new features and enabling the use of cryptocurrencies in our daily life. Thus, PayProtocol's roadmap includes limitless usage of PCI and other cryptocurrencies worldwide. We truly foresee an environment that crypto can circulate freely.



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11.1 PoC Strategy

PayProtocol developed a working PoC environment and performed various tests at partner stores, Dal.komm Coffee, early this year. Dal.komm Coffee, one of the subsidiaries of Danal, is a coffee franchise with approximately 200 stores in South Korea. It is strategically the most suitable environment to test PayProtocol's solution, as tests can be performed simultaneously across several stores.

The main components of PoCs tested at Dal.komm Coffee stores were the PayProtocol wallet application, offline POS integration, barcode payments, and operation policies.

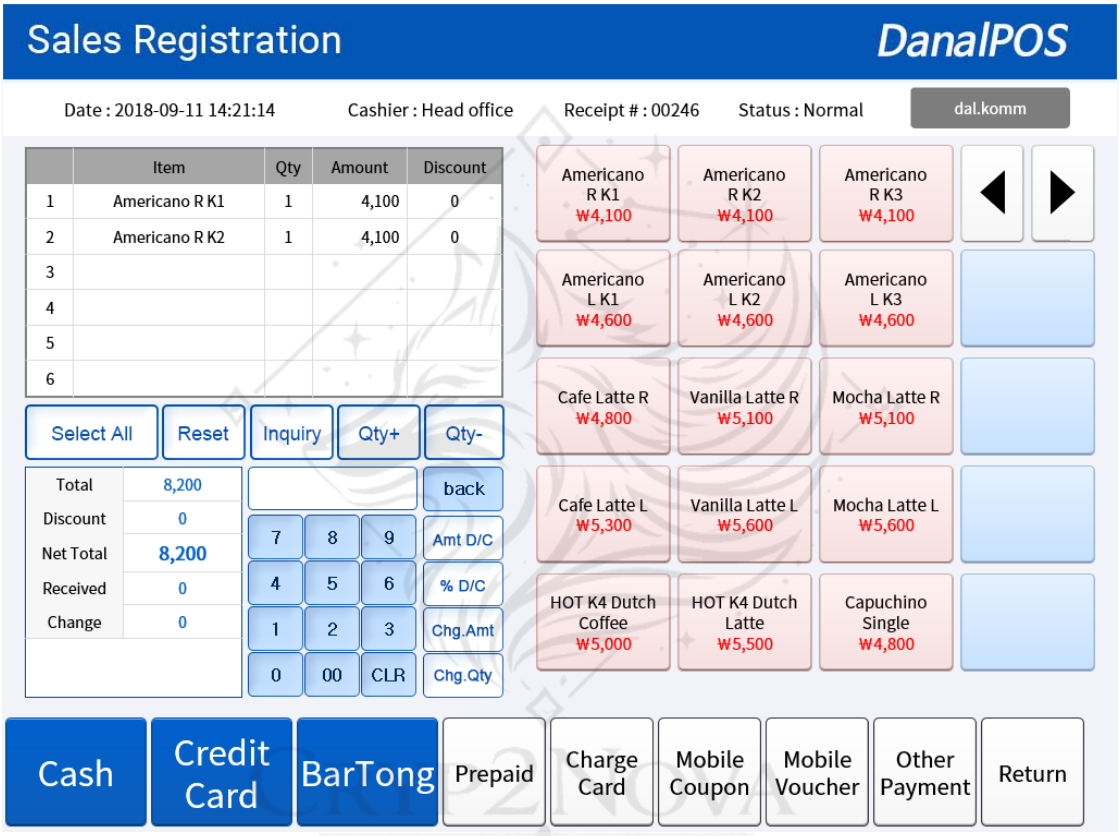


Figure 11. Offline POS system designed for Dal.komm Coffee

11.2 Business Expansion Plans

Through our partnership with Danal, we plan to make PayProtocol available to over 80,000 offline and online merchants. Danal is currently servicing payment solutions to online and offline merchants in 8 countries, including carrier billing, credit and debit cards, barcode payments, and more. PayProtocol's cryptocurrency payment module can simply be integrated with Danal's payment windows for immediate exposure to the existing merchants.

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12 DISCLAIMER

A. This white paper is intended to describe the services of PayProtocol and can be reviewed and revised due to the project's schedule, progress, and other factors.
B. The version of this white paper is based on the date shown on the cover page. The contents of this white paper reflect only the direction and progress of the project until such date, and may be changed at any time after the date of creation.
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taxation, and other actions may occur. Those purchasing may need separate consultation, and PayProtocol is not responsible for these matters.

M. Due to unintended reasons such as system attacks from third parties, natural disasters and force majeure reasons, the ecosystem composition may be delayed or other types of tangible and intangible losses may occur.

N. PayProtocol is not responsible for the buyer's risk caused by loss or leakage of their private key.

O. PayProtocol is not immune from coin depreciation and changes in the market environment, uncertainty, political risk, competition with competitors, etc., and such factors may lead to the halt of the development of PayProtocol or change of service direction and plans.

P. PayProtocol is a technology under development, and any changes in technology that can occur during the development of the technology can have a negative impact on PayProtocol.

Q. PayProtocol does not delegate or assign to any person all decisions, including the ecosystem's operating policies and operations, and all decisions are made at the discretion of PayProtocol.

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