

HUPAYX

Next-Generation Blockchain Powered Payment Platform
with Scalable O2O Ecosystem

Whitepaper V.3.3



www.hupayx.com



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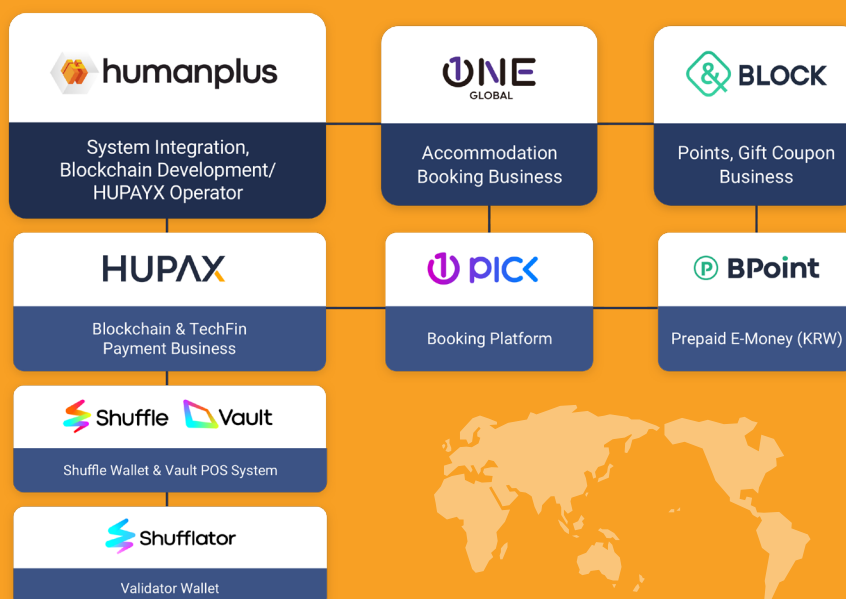
1.Introduction

Blockchain has been evaluated as ‘new core technology to change the world’ after the invention of the Internet and it has risen as a leader of the fourth industrial revolution. Blockchain is a technology that enables P2P trade to procure reliability without an authorized third party by all nodes sharing identical trade information in real-time. Differentiated reliability can be retained through blockchain technology in various industries such as finance, manufacture and distribution, and public service. It is expected that creating new value is available by brokerage commission reduction as well.

The most highly utilized industry among various business fields is finance, that is, the transfer and payment service market. While overseas remittance using SWIFT usually takes 2 to 3 days currently, if you use blockchain-based cryptocurrency, it only takes around 30 minutes to complete the transfer. Furthermore, the time required for cryptocurrency transactions gradually reduces with technology development.

As above, reduction of remittance time and payment fee with cryptocurrency are available. However, there are some problems to resolve for introducing cryptocurrency actively. It can be difficult for users to accept cryptocurrency due to price fluctuation and complicated payment methods even if cryptocurrency is introduced to the real economy. To prove blockchain’s value and to introduce & utilize cryptocurrency-based finance service actively, we need a new service model that is different from the legacy model.

The Human Plus shows HUPAYX project, which enables to use convenient and rapid payment service anytime and anywhere with all digital asset including cryptocurrency. HUPAYX is an open payment system for every main agent of economic systems such as government organization, finance company, medium-sized company, retail shop, distribution company, and fin-tech company.





2. Background

" Banking is necessary, banks are not " <Bill Gates>

The fourth industrial revolution and banking industry

"Banking is necessary, banks are not." The remark from Bill Gates in 1994 becomes the conversation topic. The fourth industrial revolution, which super-connected and super-intelligent is happening in every industry, is creating a data-driven economy. This makes a change in the data-based financial business. 'Fintech', which is a new financial technology service, emerged in every industry such as a legacy bank, stock, insurance, card company and made existing financial service disappeared and now a new type of system is on its way to settle.

Fintech and differentiation of financial business

Due to the growth of the fintech industry, the financial service business is differentiated. The duty of the legacy financial company can now be carried by financial company and fintech company. To be specific, the range of legacy financial business's service is changing in payment, insurance, savings and loan, funding, investment management, market infrastructure, and new fintech company is replacing it. The functional unbundling of financial business is expected to be intensified. It will reduce the effect of scale and scope economy and weaken earnings foundation such as loan-deposit margin and payment related fee.

Functional unbundling of financial service

The biggest field that blockchain is creating a new system is "payment and transfer". In the meantime, fintech service is already replacing a lot of parts, "asset management field" is expected to develop focusing on collaboration between financial and fintech company and to differentiate market targeting different customer base. In the "savings and loan" field, the importance of legacy bank's function and role is expected to be maintained. The area that would be replaced slowest is "digital asset", as a currency. This is because it is predicted that it will not grow up to the level to replacing existing currency and payment method. High price fluctuation, low scalability, risk of theft or loss by hacking remains unresolved.

Fintech and blockchain

The biggest function of the blockchain is the reduction of arbitrator. Blockchain reduces and replaces the role of arbitrator in digital asset trade, and it is evaluated as influential technology that can solve the problem of commission due to mediator, corruption, financial engagement, information monopoly, security. Blockchain is widely used as a generic technology of cryptocurrency that is issued by private enterprise, and digital currency issued by financial company and central bank. Also, many projects are ongoing in multiple industries, which requires transaction information process focusing on global financial company and IT company and in financial service, overseas remittance, fund transfer, stock issue, etc.



2. Background

The present of cryptocurrency

In May 2019, the number of 'tradable cryptocurrency' listed on CoinMarketCap

(www.coinmarketcap.com) is around 2,600. The number of currency exchange supporting cryptocurrency trade is around 18,700 and market capitalization is approximately 250 billion dollars. However, cryptocurrency is still investment goods and it is difficult to be found in real-life use.

The main reasons are as follows:

- High price fluctuation of cryptocurrency
- Difficulty of key management
- Transaction time (slow process speed)
- Complicated transfer procedure
- Lack of payment infrastructure

The future of cryptocurrency

Blockchain technology is an essential one to all financial companies who try to survive in the fourth industrial revolution and to all fintech companies who want to create new market. Cryptocurrency is highly recognized its high possibility as next generation currency that can replace cash, yet it is still on the verification step. If the verification complete successfully, digital technology utilization area will be extended, and innovation will be accelerated so that there will be considerable changes on overall financial service area.

Proposal of The Human Plus

HUPAYX is a Hybrid Blockchain (private & public blockchain)-based mobile payment solution provider coupled with TechFin business model, which is operated by The Human Plus - a System Integrator and Development company based in Seoul, South Korea. HUPAYX strives to create a new global paradigm in blockchain based everyday economy, by bringing never before real-life application of blockchain powered payments to both consumers and merchants and enables them to pay and accept payments in their desired payment methods. HUPAYX has features as follows:

- Open type payment network that innovates payment system with coexist and collaboration, not competition
- A network that dynamic expansion is available to guarantee QoS (Quality of Service) for users all over the world
- A service that let anyone such as government, bank, company, distribution company utilize the payment system
- Tokenization
- Payment gateway for crypto asset trade
- Mobile infrastructure for user convenience



3. HUPAYX Network

3.1. Public Payment Network

In the legacy cryptocurrency payment system, payment could not have been settled directly.

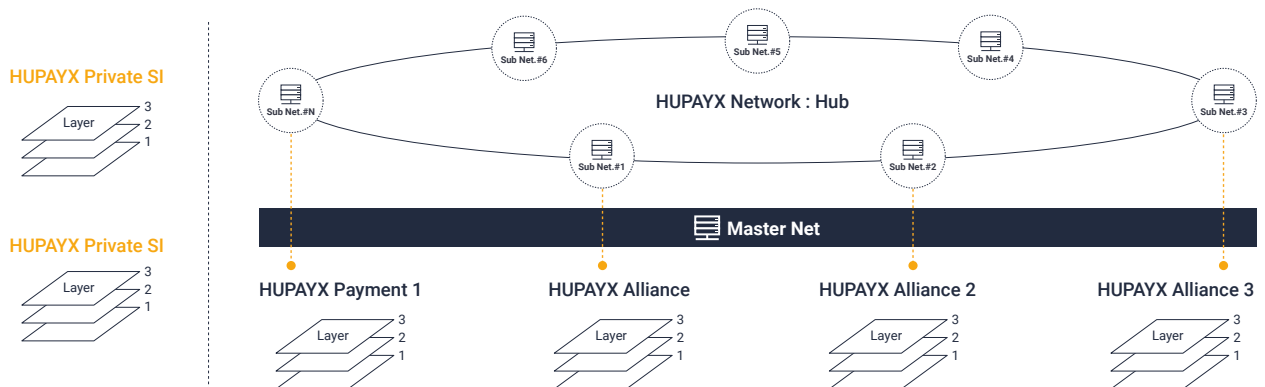
For instance, if we pay 1 Bitcoin as the price of goods, the trade is completely finished by the store receiving 1 Bitcoin. However, there are more than 2,000 cryptocurrencies issued and moreover, in the point of there will be more cryptocurrency will be issued in the future, there is much inconvenience to pay goods with cryptocurrency because the means that the user pay for goods (cryptocurrency) and the means paying in the store is not identical.

Besides there are various payment · settlement method by regional · business character, payment · settlement method can be differed by fluctuation of cryptocurrency value. In case of general small merchant, Stable Coin, which is not affected by value fluctuation, would be preferred due to its fixed value.

For the next thing to consider is about performance. As well-known, for Bitcoin it handles 7 TPS, for Ethereum 20 TPS, and EOS 1,000 TPS. The figures are poor to apply on payment system, which requires immediate approval time. The inconvenience thresholds that cryptocurrency is used as payment method are as follows:

- Diversity
- Price fluctuation
- Performance problem

HUPAYX network added blockchain network, ‘HUPAYX Payment Gateway (hereafter HUPAYX PG)’ to resolve the problems above. HUPAYX PG is made up of matching between various means of payment and settlement exchange, stable exchange, and value storage of transaction buffer function to resolve the performance problem. HUPAYX PG is made up of decentralized system, which uses a method that matches the means of payment automatically by settings of users and stores based on P2P.





3. HUPAYX Network

3.2. Dynamic Scale-Out Network

The method of recording all transactions in a single ledger and sharing them significantly reduces performance of network. Therefore, problem of scalability is top priority that blockchain technology company should resolve. To solve this problem, there are lots of technical studies ongoing to extend network performance in vertical or horizontal.

HUPAYX network solves scalability problem by horizontal network expansion.

HUPAYX is unity of independent network considering regional · business features. Each network provides identical service, theoretically unlimited horizontal scale-out is possible. For value exchange between each network, master network will be operated. Master network is a single ledger that saves value exchange transactions between all networks. To classify general network and master network, general network node is called as sub network.

3.3. Disintermediation

Let's continue the discussion about payment method embrace with assuming "Central Grand View", a well-known resort in tourist site. The resort receives service fee through payment method such as Paypal and Visa credit card. The resort is paying 2% of payment price as payment commission. It has no complaint about paying this commission to payment system supplier half a world away because the supplier enables customers to pay the accommodation cost. Because the resort includes the payment fee into accommodation fee, it considers that there is no loss. However, neighborhood resort, 'P2P Grand View' introduced cryptocurrency payment system and pay roughly no fee. Also, it had promotion by using interface with users who used the payment. Is there any reason for Central Grand View resort not to introduce cryptocurrency payment system after recognizing this fact?

Fintech companies such as PayPal, Alipay, Apple Pay, Samsung Pay reduce payment commission and provide convenience to users by shortening mediator participation step in legacy payment system. Now fintech companies keep its growth rate higher and expand its business and compete fiercely to go into personal finance platform that provides more services. If we look at how existing fintech company became massive, it comes from payment efficiency and customer data monopoly. If so, can't customer who uses payment method like Central Grand View use disintermediated payment method or have independence of payment method?

HUPAYX's public payment network is P2P based payment system that no mediator intervenes. Trading credit is secured by blockchain technology and exchanging value is available in anywhere in the world through cryptocurrency without complicated procedure. The payment method is owned by public, data is owned by public as well so that no one can monopoly it.



3. HUPAYX Network

3.4. Asset Tokenization

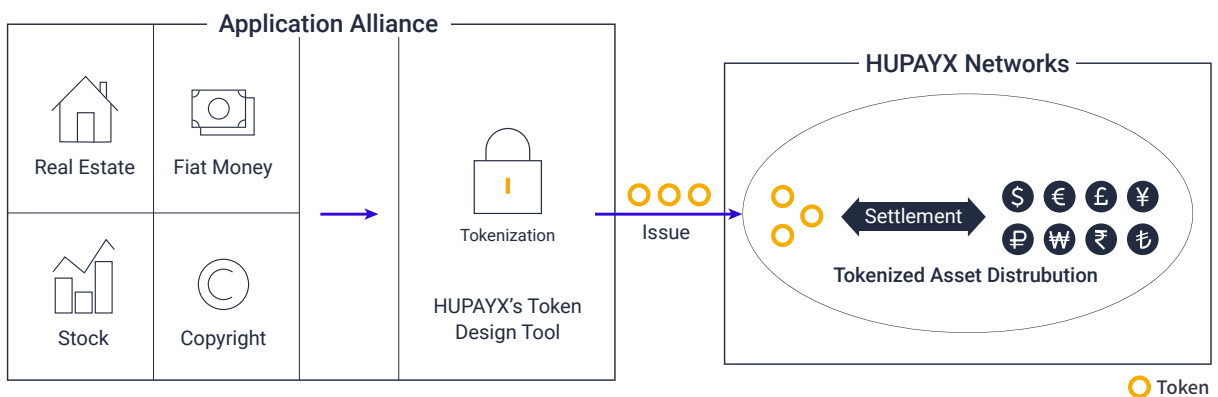
The most likely area for change and innovation in relation to blockchain is 'Asset Tokenization'. 'Tokenization' means substituting actual article, digital asset and legal tender to tradable token in network. From art piece to jewel, real estate, business license, patent license, copyright, software license, all assets can be the object of tokenization through blockchain distributed ledger technology. The tokenized asset exists as hash asset on completely opened P2P electronic network without any centralized authority who mediates bank or government.

By tokenizing actual article and digital asset on blockchain based network, companies can change trade process and create new business models. As an example, blockchain that tokenizes real estate is rapidly rising. Real estate investors and consumers can buy and sell actual articles on blockchain or can repay rent and loan so that real estate owners can do additional investment through this. Recently, cryptocurrency field that tokenizes legal tender (cash) is utilized actively.

Capitalization of token is basically for trade. Countless asset token should be payment gateway for payment or settlement or be tradable in exchange. HUPAYX Network's major goal is that providing real time payment system of all cryptocurrency including this token.

In HUPAYX, a network participant who tokenizes assets by cryptocurrency and trade, is called 'Application Alliance'. Cryptocurrency, asset token can be issued by anyone and whoever, whatever organization can be 'Application Alliance' and can participate in the network.

HUPAYX provides P2P service that tokenizes and distributes asset on network. Asset token service requires commission about transaction, the commission will function as HUPAYX network's fuel.





3. HUPAYX Network

3.5. Decentralized Payment Gateway

HUPAYX network operates not only native currency (HPX) remittance and payment function, but also P2P base payment gateway network function to distribute another cryptocurrency and asset tokens. HUPAYX PG works on network level with Middleware, supports another cryptocurrency trade.

HUPAYX PG is a blockchain network that has self-blockchain ledger. Database such as ledger for HPX trade, Order Book as payment method for another cryptocurrency or token payment, Order Book as payment method, ledger for recording processed transaction, user verification DB, online user wallet will be stored in blockchain based distributed ledger respectively.

3.6. Mobile Payment Infrastructures

Anyone can use blockchain based payment network if they have mobile devices. Without help from any financial facility or non-financial facility, just choose proper network, create wallet, transfer token, and use it. HUPAYX aims to supply network and infrastructure such as trust ID, mobile wallet, mobile POS that can help cryptocurrency payment network.

» Trust ID

Trust ID is a preparation for loss or breakdown of device. It is an NFC smartcard equipped with user ID on safe hardware secure chip. It can be used as payment means for O2O (Online to Offline) payment.

» Mobile Wallet

Mobile wallet is an essential application for using HUPAYX payment. Recently, secure function such as biometrics function is added so that mobile device develops into safer device. Everywhere in the world, by downloading free user mobile wallet, users can use goods and service by using not only cryptocurrency but also existing payment method such as credit card, prepaid card. Continuous upgrade and operation of mobile wallet will be managed by HUPAYX foundation.

HUPAYX's mobile wallet is developed as 2 types. It provides SDK to support the third-party application

- Standard mobile wallet: Integrated payment application including QR payment, NFC payment, App Card payment (credit card)
- Messenger interlocked type wallet: Integrated with messenger such as telegram, support remittance service between members
- Wallet development SDK: When legacy electronic wallet-based services try to connect HUPAYX network, providing SDK and supporting payment service interlock



3. HUPAYX Network

» Mobile POS

HUPAYX POS aims people all over the world who does business transaction online and offline to use payment system safely and conveniently. POS is a convenient and intuitive communication method with customer. To reduce the fee due to card and POS use, HUPAYX supports not only pay POS but free POS.

HUPAYX's mobile POS supports various payment methods (QR code, barcode, NFC card, contact card, BLE, etc.), and also legacy payment means such as credit card. A commercial version of mobile POS has not only basic payment function but also additional functions such as promotion, order management, stock management, human resource management, customer management. Pay version POS's bill can be paid with HPX.

3.7. Integration with SNS service

All around the world, roughly 2.9 billion people are using SNS (Social Network Service). With sharing each private's life, using 'like', 'share', 'hashtag' function to the page that they like becomes everyone's daily life.

HUPAYX aims to expand business to real time cryptocurrency payment solution and platform that satisfy the consume pattern of consumers by integrating with worldwide SNS platform.

For this, HUPAYX firstly will launch telegram-based wallet. Based on this, HUPAYX will expand functions to a large size SNS channels such as Facebook.





4. Technical Architecture

4.1. Network Features

HUPAYX network is designed as multilayer model to configurate a network independently by load balancing and business character.

» HUPAYX Blockchain

Networks that participate to HUPAYX can have its own blockchain. Here, blockchain is called as 'HUPAYX blockchain', and it operates by protocol of HUPAYX.

» Interchain Transaction

HUPAYX supports transactions between HUPAYX blockchains. Transactions between networks cause double payment problem in network level. For example, if there are HUPAYX blockchain A, B, C, Alice in A blockchain can double pay her asset to two different account in B, C. To solve this problem, HUPAYX operates master blockchain.

All trade between blocks are recorded to master blockchain. Therefore, double payment in network level can be blocked by verifying this master blockchain's transaction history. A network that operates master blockchain is called as 'Master Network', and independent sub network is called as 'Sub Network'.

» Master Blockchain / Network

Master network that verifies and saves transaction interchain only synchronizes transaction history by consensus algorithm combined BFT and DPoS. In master network, at least 11 block producers should participate in consensus and block producers can be added by voting of network nodes.

» Network Alliance

HUPAYX sub network that established independently by regional reason or business features elects representative node to participate in master network and can support transaction between other blockchains. HUPAYX network is made up of sub network alliance. Participation of network alliance is decided by total vote share ratio of the network and previous network's vote. Representative node of the network alliance has the obligation to verify the transaction between blockchains in master network.

» Network Identification Number

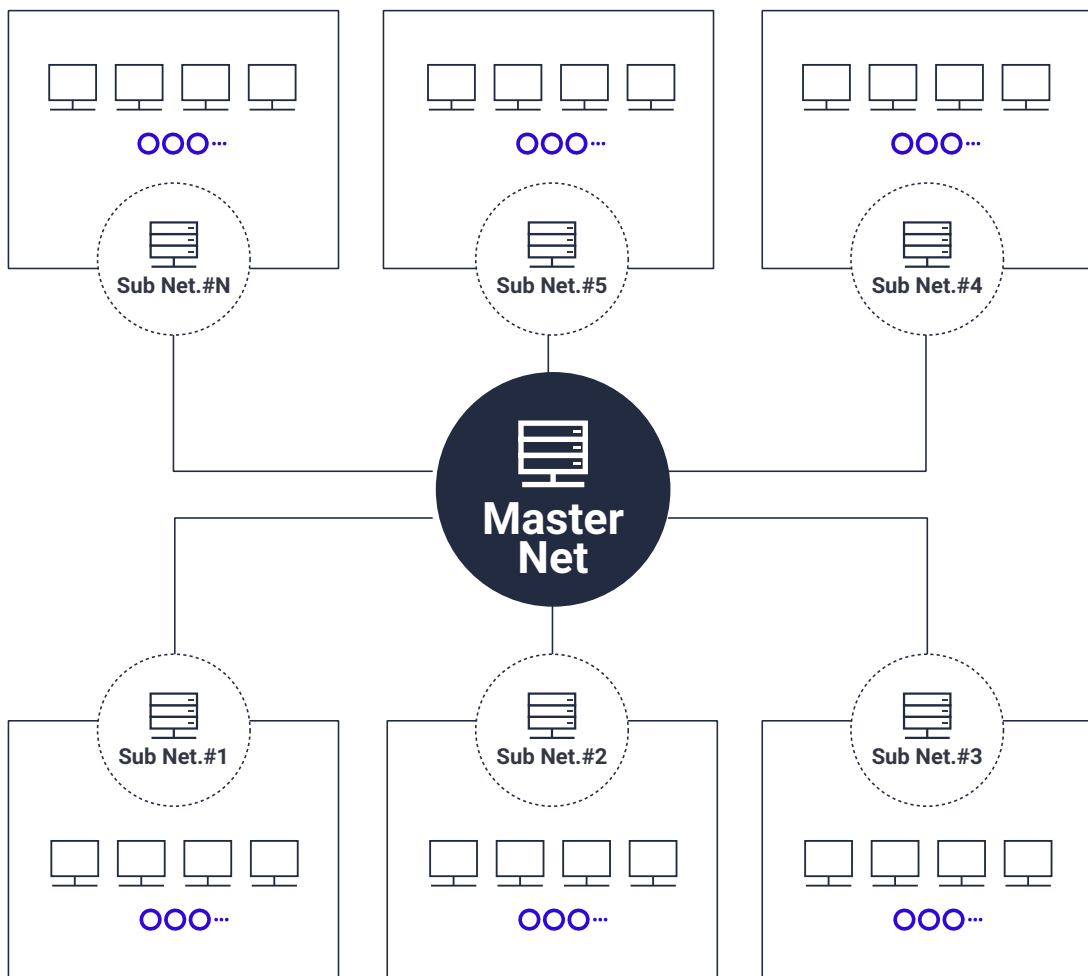
In the prefix of HUPAYX network wallet address, network identification number is included. Verification node refers this number and mediates transaction message.



4. Technical Architecture

>> Network Identification Number (ID Number)

- Network Alliance
- Network Alliance Master Node
- Peer
- Variety of Tokens



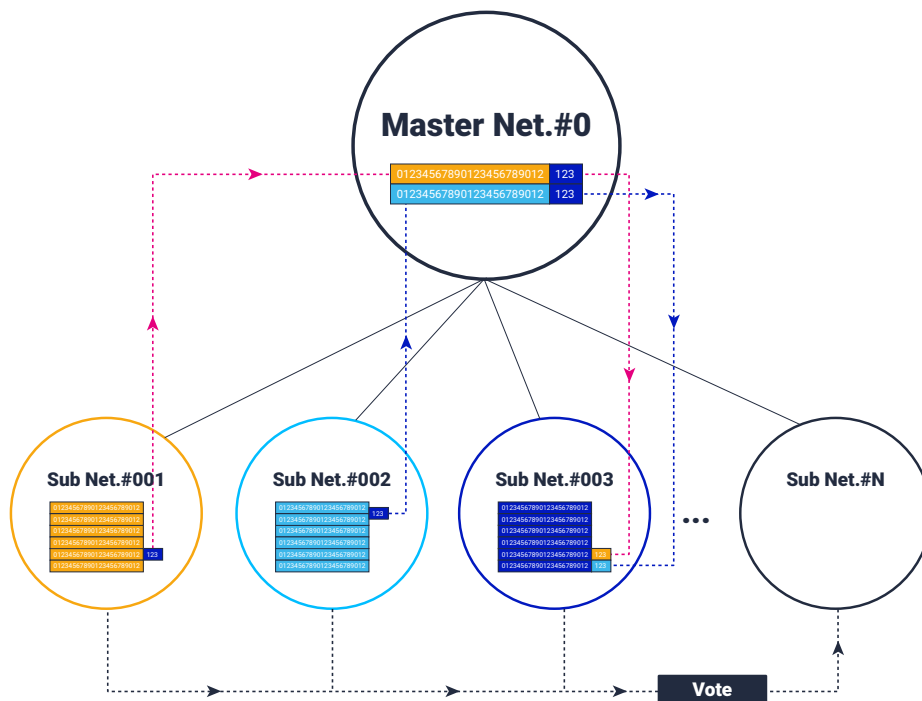


4. Technical Architecture

4.2. Network Expansion

One of the main reasons of establishing multilayer network model is scalability. If single network has 5,000 TPS performance, HUPAYX network that has 15 network alliance should have more than 75,000 TPS theoretically. The speed of HUPAYX's long-term network process speed is more than 200,000 TPS. HUPAYX aims to have identical or better performance than global service companies such as PayPal or Alipay.

The reason why network level expansion is difficult is double payment attack in network level. HUPAYX network resolves double payment attack problem by adding blockchain that verifies transaction between networks to master network.



Transaction history between network addresses that belongs to Sub Net.#001 is only saved in Sub Net.#001. If transaction happens between addresses in Sub Net.#003, this transaction history will be saved in Master Net.#0 and then will be saved in Sub Net.#003. Sub Net can identify transaction history received from other network in Master Net.#0 so that it can prevent double payment.

HUPAYX has a mechanism, which can add network dynamically when needed. Therefore, by the amount of usage, it can expand or reduce network flexibly. Dynamic scale-out is decided through representative vote by existing sub network nodes. To enter new network, certain amount of HPX coin is required. Thus, existing sub network will welcome the network scale-out.



4. Technical Architecture

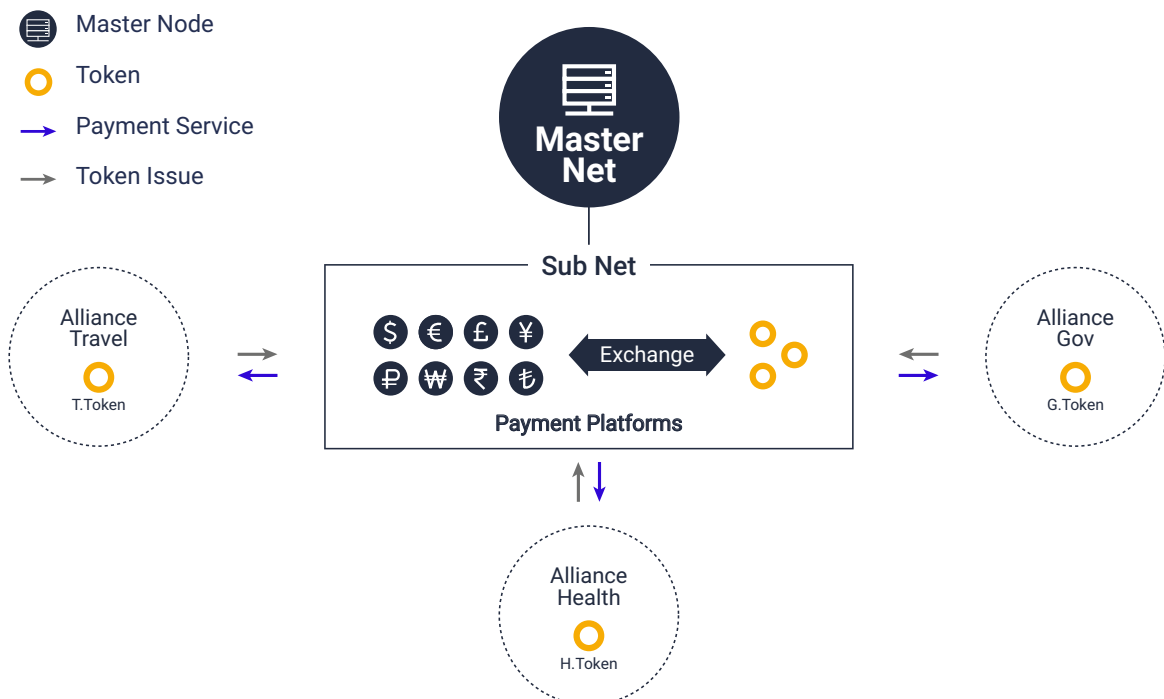
4.3. Application Alliance

HUPAYX sub network provides Payment Platform as a Service (PPaaS) to government organization, financial or non-financial facility that want to have their own payment method or tokenize asset and distribute it. The organization or facility that want to operate service in HUPAYX network is called as 'Application Alliance'.

» Payment Platform as a Service (PPaaS)

Application alliance can provide self-payment service to customer through HUPAYX payment platform or can distribute its own token. For example, a local government who wants to issue regional currency can produce and distribute token consumed in certain area on PPaaS of HUPAYX and distribute this through HUPAYX payment infrastructure. Travel service provider, gift card type token provider distribution company can use this kind of HUPAYX service.

As above, application (service) provider companies that desire to operate its own payment system on HUPAYX network is called as application alliance and network that manages their assets is called as 'application network'.





4. Technical Architecture

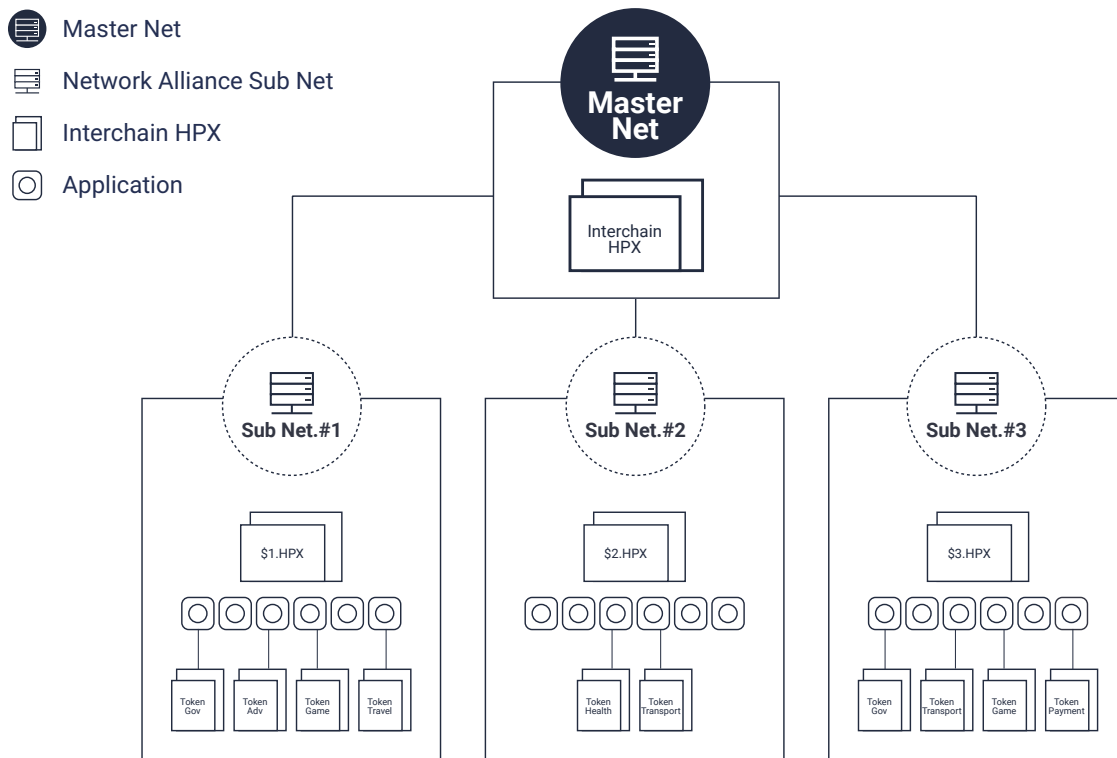
» Application of enterprise blockchain technology

Usually, application provider is not private but organization. For instance, in the hotel reservation and payment system, it is difficult to consider relationship between users and hotel as peer to peer (It is more likely B2C concept). Therefore, blockchain technology used in application network applies enterprise blockchain technology that has features as follows:

- Private network
- Support transaction history concealment
- Expressing ability of complex business rules (smart contract)
- Integration with legacy systems
- Self-token issuance support

» Independent ledger management by application

HUPAYX’s payment platform is managed by independent ledger by application on sub network. The next picture is a diagram of HPX coin and ledger by application in entire network.





4. Technical Architecture

4.4. HUPAYX Payment Gateway

HUPAYX Payment Gateway (HUPAYX PG) is P2P payment network that enables to use crypto assets of application alliance in payment system. HUPAYX PG operates by PPaaS (Payment Platform as a Service) for alliance. HUPAYX PG network is an actual payment system, which is a distributed network that resolved dual security, convenience, PG trust, performance problem.

» Front end solution support issues

HUPAYX's payment system provides not only Back-End in payments, but also a Front-End via online digital wallet called "Shuffle" and point of sale app, and software system called "Vault", which are available for users and merchants. HUPAYX end-to-end mobile payment platform is comprised of 'SHUFFLE' Multi-Digital Currency Wallet on the customer side, where users can easily send, buy, store and most importantly pay in 'SHUFFLE' points (prepaid e-money), which is backed by local currency. Crypto users can import their digital assets, store them or do near-instantaneous P2P transactions between SHUFFLE wallet users for free. Most important function is that crypto users can finally utilize their assets in real life by converting crypto into points inside of the wallet and making purchases at 'VAULT' point-of-sale system supported merchants. VAULT is POS system that covers the merchant side of HUPAYX end-to-end payment ecosystem. Not only we provide free POS systems that can be downloaded to merchant smartphone for free or added to their existing pos terminals, which is very applicable for SME retailers, we also charge minimum scheme fee of 0.5% per transaction if they accept payment in our points (prepaid e-money) and incentivize users via rewards and exclusive discounts inside of our payment ecosystem, which aims at removing unnecessary middlemen and reducing the fees for both customers and merchants alike. VAULT enables street vendors, small coffee shops and various other SME business to simply use their mobile phones as a pos terminal, where merchant can access inventory and simple CRM functions. HUPAYX provides commercial and enterprise-grade front-end solutions, so there is no inconvenience of using a reference-level wallet, and even a merchant or service provider Unnecessary additional development can be minimized.

» Payment Gateway Trust Problem

Unfortunately, most of the cryptocurrency related accident happened in centralized exchange. If we look at the example, there were many cases that the key of large-scale wallet that exchange produced at its pleasure to improve transaction performance was leaked out. And the damage due to this passed on to cryptocurrency owners. HUPAYX PG follows architecture based on DEX (distributed exchange) to solve this problem. In HUPAYX PG, transactions by user Order Book is processed safely in blockchain.

» Problem of DEX System Performance

Increase of safety due to decentralization has the limit of reduced performance. The most common approach to address this is to add additional devices to address security threats with centralizing distributed systems to the appropriate level.

HUPAYX PG operates a dual book for processing large volume transactions in a centralized PG. One book greatly improves performance by accelerating the agreement in a centralized form and monitors the block constructor in that book by receiving an electronic signature from the block constructor that there is no problem with the transaction history. Transactions relayed from this book are then stored in the next book, the decentralized ledger. This is called hybrid blockchain.

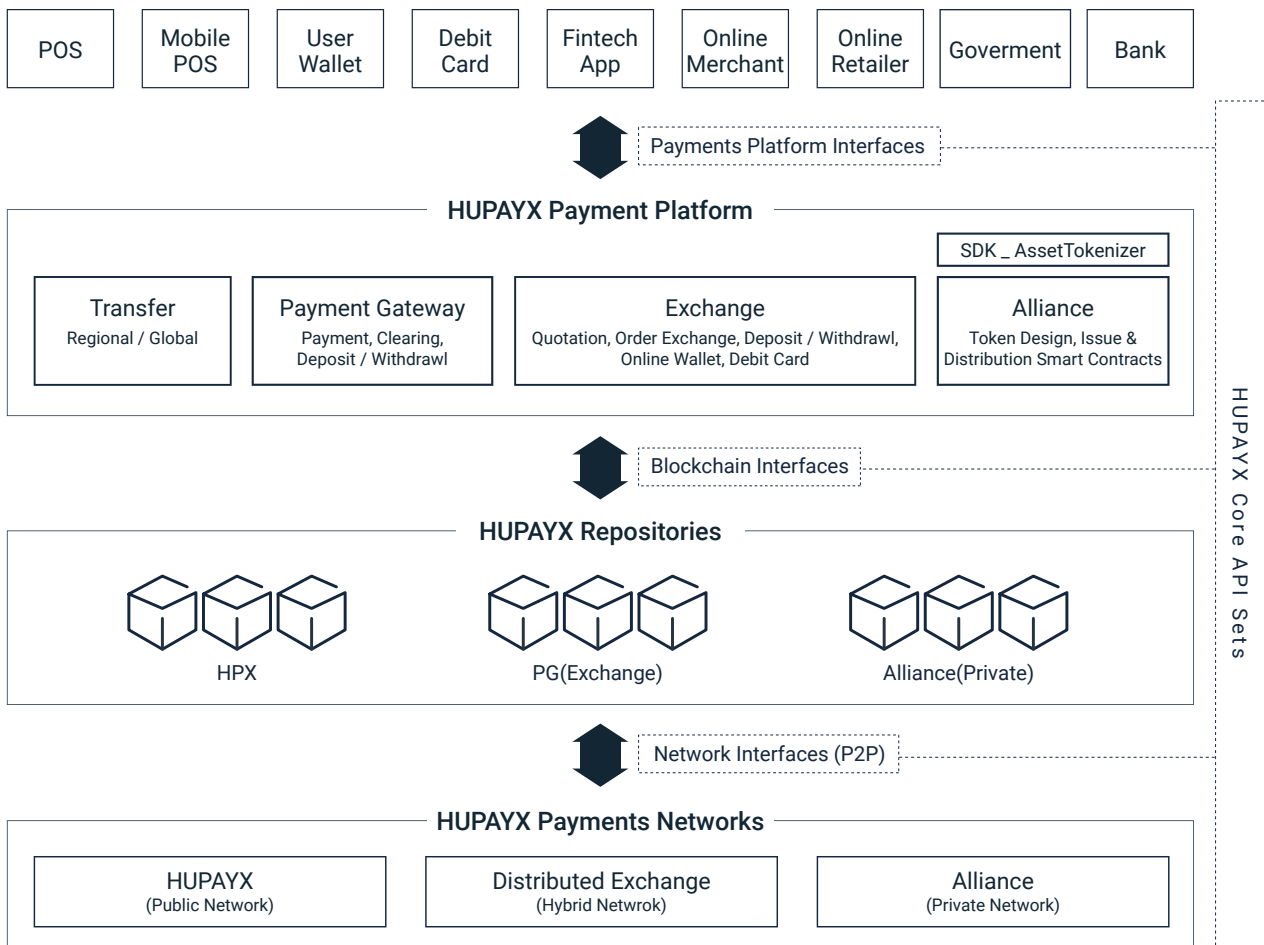


4. Technical Architecture

4.5. Providing Payment Platform Core APIs

HUPAYX Network supports various services such as payment, remittance, and issuance of cryptocurrency assets, and provides APIs to access the system for each layer, including networks, blockchain and platforms. Dapp developers or service developers who want to participate in the network can decide which layer of layer to access according to their applications, use corresponding APIs, and utilize HUPAYX payment systems.

HUPAYX provides development tools (SDK; Software Development Kit) for ease of development.





4. Technical Architecture

4.6. HUPAYX Blockchain Technology

Blockchain technology is evolving by enhancing flexibility, scalability, and interoperability to be applied to various industries. The development of blockchain networks is also evolving into public, private and hybrid chains. HUPAYX is a general-purpose Fintech blockchain solution that uses various blockchain technologies. HUPAYX's blockchain technology consists of public and private technologies and a hybrid technology linking those two technologies.

» Public Blockchain

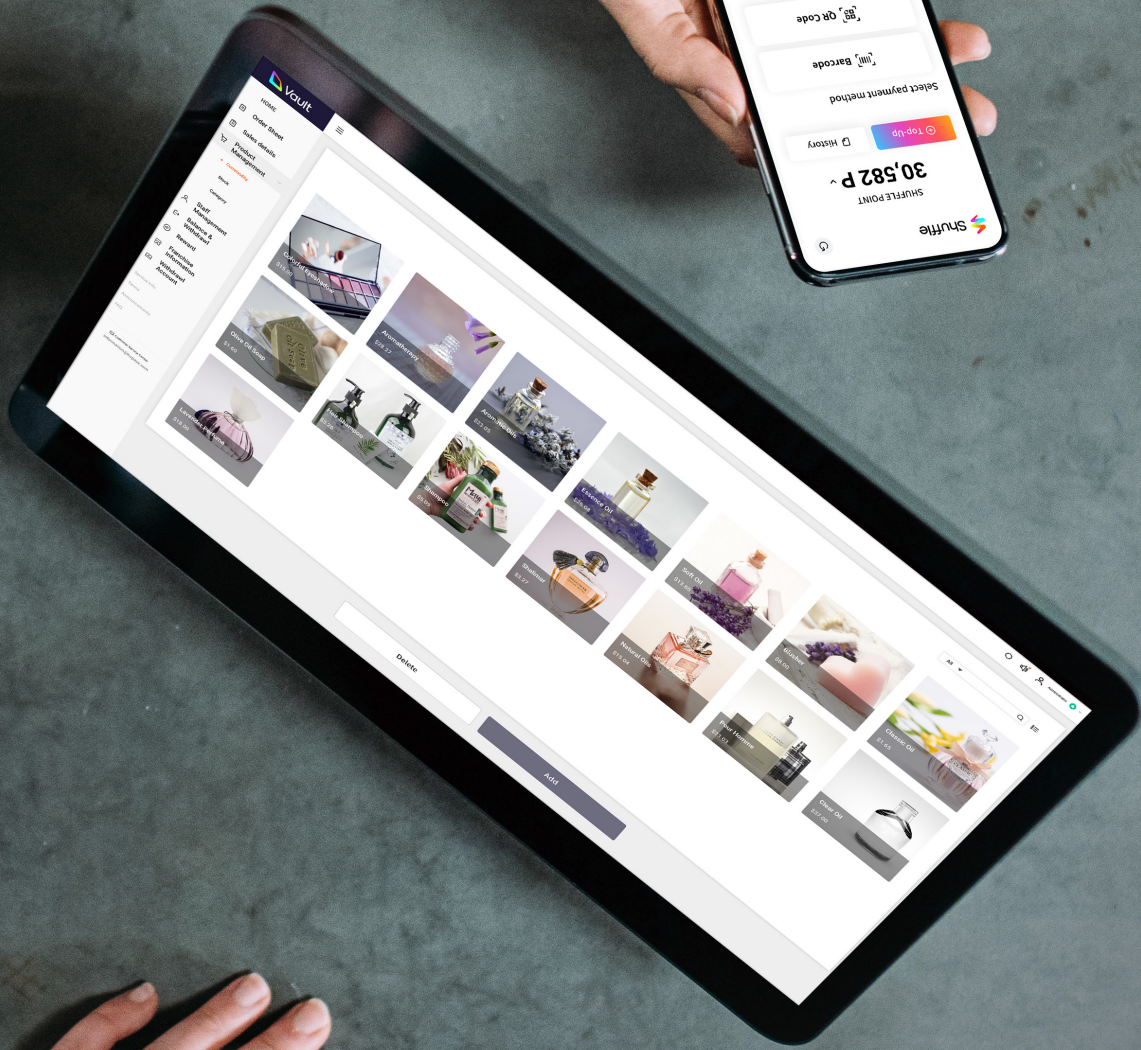
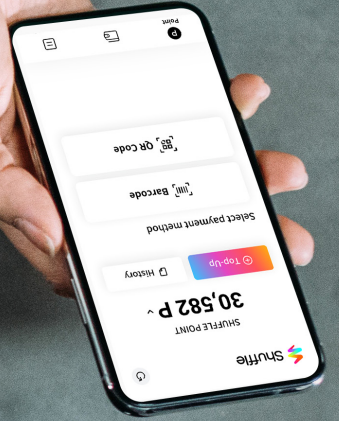
HUPAYX utilizes most important elements in a blockchain-based payment platform, such as performance, completeness, and stability of the transaction. Its blockchain MainNet was built on Cosmos Chain, which utilizes dPOS (delegated proof-of-stake) through Tendermint consensus algorithm and solves problems associated with Scalability and Interoperability of blockchain related solutions. Tendermint is a blockchain that is involved in all three conceptual layers of blockchain: networking, consensus, and application, and provides a universal engine, blockchain networking layer, and consensus layer to create various blockchain applications. The Tendermint Core engine connects to applications through the Application Blockchain Interface (ACBI), and can be configured as a public or private network, with a block time of about 1 second, and can process thousands of transactions per second.

» Private Blockchain

The private blockchain is a permissioned network that forms the trust of the network by using the social and economic status of participating nodes. In order to make the most of the environment of the private chain, HUPAYX performs a single reception window role in the trusted order-stamping authority (TOSA), which is a neutral institution, and grants trust to the centralized system by means of trust, role reduction, and monitoring. Consensus through a single, neutral window has the advantage of being able to perform consensus on an individual transaction basis, rather than block-by-block consensus, by greatly simplifying the consensus process. HUPAYX's private blockchain was developed with TrustSQL technology, the world's first blockchain technology that operates based on a powerful RDBMS engine for data management. TrustSQL has a great advantage in data scalability and interoperability by separating application and data dependencies. In addition, by using enterprise-grade Middleware, users are provided with the same quality of service (QoS), and the system is easy to expand and manage.

» Hybrid Blockchain

Hybrid blockchain refers to a blockchain that uses both above technologies by taking advantage of both public and private chains. In the hybrid blockchain, partial confidentiality of information can be provided, and the process can be distributed and processed by each blockchain technology according to transaction processing cost, performance requirements, and application complexity. In the hybrid chain, the interoperation between the public chain and the private chain is very important, and HUPAYX uses a method of converting data from each chain into an intermediate form of a relational database (RDBMS) and linking it. The relational data model is an optimal intermediate database structure for interoperability of heterogeneous data structures capable of representing most blockchain data structures.





5. HUPAYX Ecosystem

The HUPAYX payment system is open to anyone in the world. Government agencies, financial institutions, small merchants, online and offline distributors, and all individuals and institutions wishing to use P2P - based payment systems may use HUPAYX payments as a validator of transactions or as a user of the network. In HUPAYX, participants are divided into network compliance, application compliance, end users, merchants, and technology partners according to the purpose and method of network participation, and each participant is the foundation for HUPAYX Ecosystem.

» Network Alliance

The HUPAYX network Alliance is the nodes that validate and store transactions. There is a representative of the node for each network, and the representative of the node has the authority to present the agenda for the vote. Instead of providing verification node resources, they benefit from transaction fees. Because the more users there are, the more revenue the node earns, the more each node tries to activate the network.

» Application Alliance

Application Alliance is a facility or company that has its own payment method or wants to tokenize and distribute assets. They can receive payment services using all infrastructure in the HUPAYX network without the need to develop or build their own systems. Instead, they have to pay network operating costs and transaction fees to the network's alliance.

» End-user

As the end user of the payment service, it is the principal payment agent. It can be an individual or a group. End users do not pay fees for payments.

» SME Merchants

It is the principal payment agent who receives payment from the end-user. Small and medium-sized merchants will pay a small payment fee.

» Technology Player

Several technology partners form the HUPAYX Network. Work with HUPAYX on development of technologies in various fields, including blockchain core technology, biometric recognition, and network establishment.

	Contents	Qualification	Value	Cost Burden
Consumer	The buyer of product or service	Depends on application	Economic benefits, convenience	External Transfer Fee (Top-Up Fee)
Merchant	It is the principal of payment that supplies service goods to consumers and receives payment from users through payment methods the consumer desires	Service subscription	Sales increase, cost cuts, advertisement	Transaction cost (Subscription Fee)
Application Alliance (Service/Platform Provider)	Companies or government agencies that want to run a payment platform business on the HUPAYX network	Staking, Network Alliance Agreement	Platform Fee	Network usage fee
Network Alliance	The alliance of validator nodes. Those nodes verify transactions in the HUPAYX network	Staking, Elected Network Alliance	Transaction/Usage Fee	Network operating cost
Technology Partner	All HUPAYX network technology development and operation, application technical support	HUPAYX Tech Partnership	Technology Fee	Development Fee



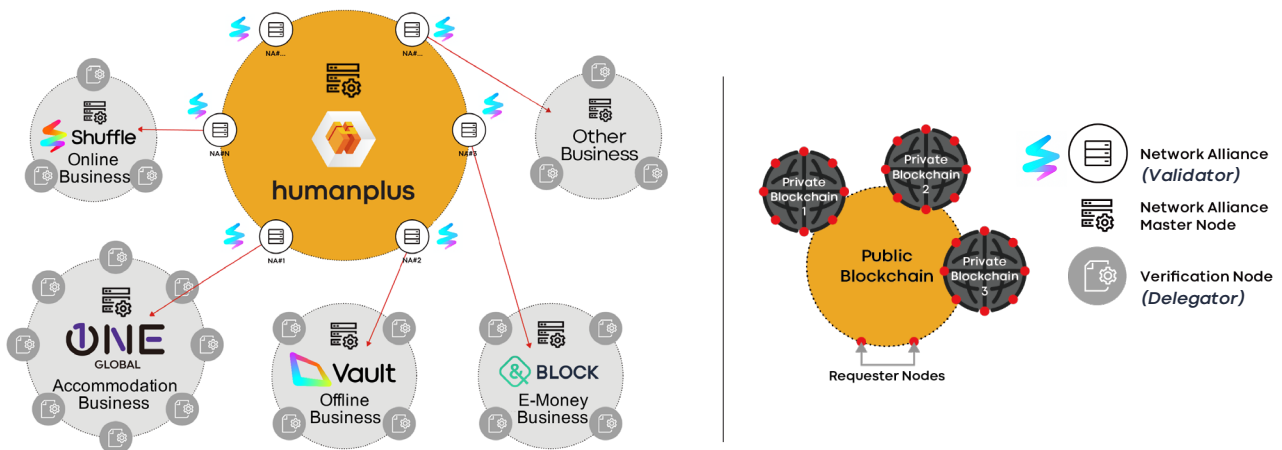
6. Business

6.1. DeFi Platform

Decentralized finance solves the problems of unfair use of capital (Unequal Access), censorship, counterparty risk, and lack of transparency that the centralized financial system currently has. It is a means to create a new wealth with direct financial data authority. HUPAYX network supports the technology, network and ecosystem for decentralized finance and provides decentralized financial services for all network participants.

6.2. Online to Offline (O2O) Service Platform

O2O service platform means a service that promotes consumer participation by integrating offline tangible and intangible services into online consumption channels, and O2O is called as a representative example of the 4th industrial revolution. It is a technology that merges real and digital aspects of advanced technology. In the form of supplying online demand to offline businesses, it has spread rapidly with the adoption of smartphones.



Recently, the quality and competence of the platform are gradually increasing in each area suitable for lifestyles ranging from interiors, food, vehicles, lodging, offices, and even jobs, and are expanding based on specialized services not only in the size of the market but also in the industrial sector. Brand value becomes more important in this growing O2O platform market.



6. Business

These brand values can be created in a variety of ways, but recently, more and more companies are focusing on customers and conducting customer-oriented branding in line with the trend and atmosphere that seeks the essence of the brand. In other words, customer branding and safety on the platform should be the basis for branding. In O2O service, blockchain technology is a technology that can establish a secure and transparent transaction system, and it is used as a variety of marketing means, such as using low-cost fees and reward-type coins/points that return benefits to customers by introducing payment methods using cryptocurrency. In addition, it is currently evaluated as a technology that can solve problems such as lack of independence and opaque system of suppliers due to the centralized structure, which is a problem of the O2O market. HUPAYX network is a P2P based O2O platform that helps realize true shared economy that can return the existing proprietary platform to users and suppliers and can integrate services that range from customer compensation to marketing and branding.

6.3. Safe, Effective, and Transparent User-Driven Advertising Platform

There are three ways to improve advertising using blockchain. First, it is possible to respond to ad fraud. One of the most common fraudulent advertising sources in the current mobile advertising environment is a bot. Bots, like real people, engage in advertising and measure the advertising traffic, giving advertisers the wrong course. However, considering that the blockchain maintains a transparent transaction record, this technology has great implications for preventing malicious bots from interfering. The second effect is safety and trust. Data security is another important topic in recent years. Blockchain prevents unauthorized transactions from going on. Advertisers view blockchain as a very good opportunity to protect user information more effectively, such as completely denying specific data collection if the end user does not approve.

Finally, it is possible to simplify the purchase and sale of advertisements. Existing digital advertisements involve too many people, such as trackers, media, and publishers. In fact, advertising distribution often increases costs because of the number of third parties participating in the development and distribution of individual ads on a global platform. Digital advertisers can reduce costs by purchasing and executing advertisements directly without going through an intermediate step with blockchain technology. HUPAYX's payment platform ensures transparent participation of the system by all participants in the advertising process, from billing of ads to financial, inventory supply and monitoring. Through the user's Shuffle wallet and the merchant Vault POS, form a conduit for advertising and direct payment of advertising revenue to the user, thereby inducing the user, not the advertiser, to exercise the right to control the demand side platform (DSP). HUPAYX's private chain is a high-performance, low-cost block chain technology that can handle large-scale advertisement traffic processing transparently and safely.



6. Business

6.4. Digital Content Management Platform

By storing digital contents such as music sources, videos, and games on the blockchain network, the content creation and billing / payment system that does not require a separate intermediary agency that charges fees by transparently and clearly managing the point of occurrence of digital contents and related rights. HUPAYX aims to launch a content management platform under a partnership called “Application Alliance” to establish a blockchain-based token economy system that can provide transparent benefits to content creators.

6.5. Mobile Gift Coupons and Local Currency

Blockchain-based mobile gift coupons/vouchers and prepaid e-money (backed by local currency) represent typical electronic payment methods that can be used by HUPAYX's private chain as a payment method that can greatly reduce issuance and settlement costs compared to paper money. In the HUPAYX network, anyone with an application alliance can issue a gift certificate or points at the minimum cost. The issuance of gift coupons is of great help to the cash flow as it has the effect of receiving money coming into the future from the corporate perspective. If issued directly by the supplier, the use of the store may be integrated as well.



7. Token Economy

7.1. HPX Coin

An HPX coin used in the HUPAYX network is a means of value exchange and represents a unit. HPX can also be paid for transaction fees and platform service fees, as well as can be used as a deposit (stake) for the network alliance or application alliance. Therefore, HUPAYX's various applications and services will fuel an increase user adoption, as a result increasing the demand for HPX that subsequently will lead to positive value impact.

» Transaction Fee

Users pay transaction fees (HPXs) and record transactions on the network. Fees are used as compensation for the collateral shares of the validator nodes, network operating expenses, etc. Transaction fees are determined by voting between validator nodes.

7.2. Scale-Out

» Network Scale-out

HUPAYX network can dynamically expand horizontally according to usage, regional, and business characteristics, and expansion of the network means adding independent nodes constituting a distributed environment to the network. In HUPAYX, Shufflator Wallet is a special Validator Wallet, which is granted to Network Alliance members (Validator Nodes)



The minimum number of Validator Nodes should be composed of at least 11 in consideration of safety, and additional expansion is made by voting (2/3 or more) additional nodes that are already participating in the network. To become a candidate, you need to have a minimum HPX deposit requirement (Stake Amount).

Network Alliance Eligibility = Minimum Staked Amount * Risk Weighted

(* Since the Risk Weighted comes from the network alliance node, the initial participant can qualify under more favorable conditions)



7. Token Economy

» Validator Node Qualification Deposit

The stake deposit is the collateral of the validator node for network safety. Stake deposit is locked during the warranty period and cannot be distributed. Therefore, it can help to maintain stable market prices by reducing currency liquidity. HPX's stake deposit is divided into a qualification deposit and a profit deposit.

- Qualification deposit is the minimum deposit to qualify for transaction verification. The qualification deposit is basically set to the average value of the entire node's shares, but the qualification conditions of the new validator nodes can be strictly adjusted according to the network growth scale.
- The profit deposit is a deposit additionally paid by nodes that meet the qualification deposit criteria to obtain more transaction fees.

» Validator Node Penalty

Malicious nodes may be subject to penalties such as disqualification, burn or confiscation of deposits. A malicious node refers to a node that negatively affects the stability, security, operation, management, and maintenance of the network, such as when it does not participate in block generation or manipulates transaction history, collusion or fraudulent voting despite being a validating node.

» Application Scale-out

Selection of application (service) alliance refers to the expansion of services operated on the HUPAYX network. The application is selected by voting of network representative nodes (additional 2/3 or more), during which time it is possible to negotiate deposits (stake) or fees. If the application is operated on the HUPAYX Private network, it must pay the BaaS (Blockchain as a Service) type of usage fee for each network validator node.

7.3. Incentives

The value of the incentive tokens should be linked to the growth of overall network usage. Participants with tokens should act better to grow the network and consequently the value of tokens should rise. HUPAYX would like to operate incentive plans to link usage with token value and allocate revenue fairly.

» Ecosystem Operation Fund

The total supply of HPX is 10 billion units, of which 25 percent is used to fund ecosystem operations. Ecosystem operating funds are used to provide additional compensation to compensate for losses on verification nodes (Shufflator) due to a lack of revenue from initial transaction fees in the network. Compensation will be given to the node that created the block, and the amount of compensation will be flexible depending on the degree of network activation, but the sum of the transaction fee revenue and the reward for the stake deposit will be allocated from 7% ~ 10% per annum.



7. Token Economy

» Stake Deposit Reward

The Validator Node receives transaction fees and ecosystem operating funds as a reward for node operation and stake deposit.

» Participation in Stake Delegation

In addition to the verification node, general HPX holders can participate in staking for network stability, regardless of the amount held. A general HPX holder participating in staking is called a delegator, and the delegator can delegate his or her HPX by selecting one or more network nodes and share the stake deposit reward with the selected node.

7.4. Collateralized Debt Position

HUPAYX provides a Collateralized Debt Position (CDP) for asset liquidity without losing ownership of currency for holders who have deposited profit deposits. The profit deposit is used as a fund for loans, and various operating parameters of the loan service, which are determined by voting between the validator node and its delegators, and interest income is also shared. The collateral must be 150% of the loan amount, and interest must be repaid on a monthly basis, otherwise liquidation is made. Currently, both collateral and loan must be in HPX, but in the future, other cryptocurrencies will be supported and various derivative products will be also released.



7.Token Economy

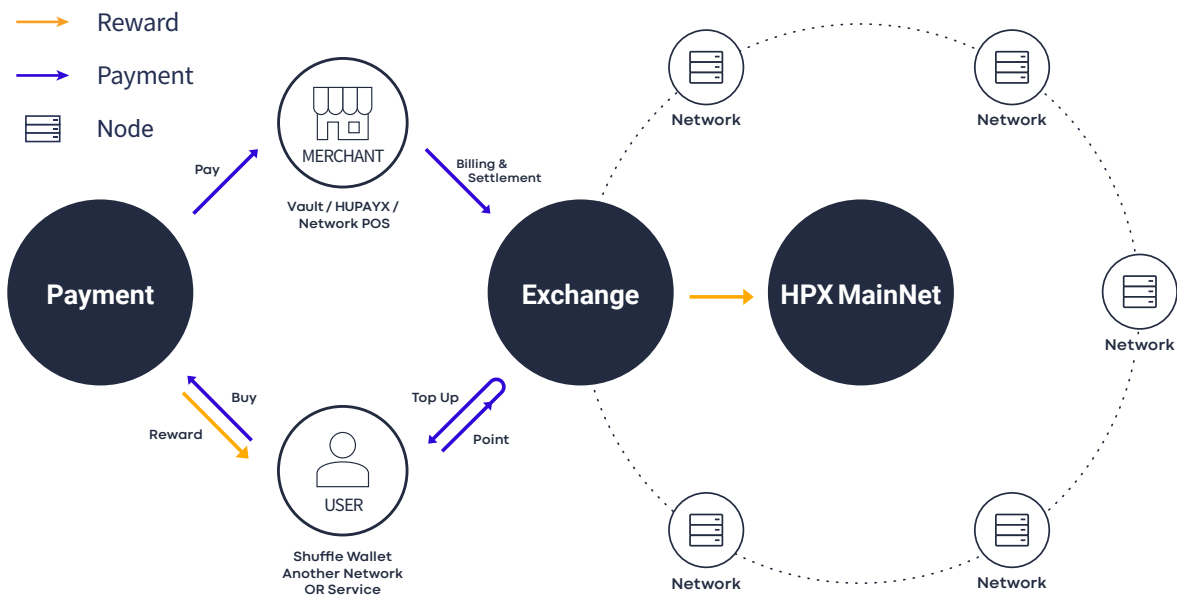
7.5. Governance

HUPAYX Network's validators and delegators amend the rules in plain language, not code, for network operation policies, as well as modifying the system's pre-set limits such as 'block gas limits (transaction avoidance)' Proposals that are automatically changed through upgrades can also be voted on. Rules help stakeholders in theft and bug-related problems, such as The Dao, quickly find new solutions.

For each proposal, voters can vote with the following options:

- Yay
- Nay
- Abstain

» Token Usages





8.Token Allocation

- Coin name: HUPAYX
- Symbol: HPX
- Total issuance: 10,000,000,000
- Platform: HUPAYX MainNet

Div.	Quantity	Ratio
Private 1st Round	1,000,000,000	10%
Private 2nd Round	1,500,000,000	15%
Public	1,000,000,000	10%
Marketing	1,000,000,000	10%
Ecosystem operation	2,500,000,000	25%
Team & Advisor	500,000,000	5%
Company	2,500,000,000	25%
total	10,000,000,000	100%

- Publishing place : ecpay



9. Roadmap

2018	▶ Q1 - Q4	Planning/Initial Development/Launch
2019	▶ Q1 - Q4	Over 20 Strategic Partnerships
	▶ Q2	Two Open Beta Apps (Android/iOS)
	▶ Q3	HUPAYX TestNet Launch
	▶ Q3	420,000 Local Merchant Base
	▶ Q3	Two Global Financial Awards
	▶ Q4	CoinBene Exchange Listing
	▶ Q4	Two Business Consortiums
	2020	▶ Q1
▶ Q2		Official MainNet Launch
▶ Q2		Catholic Payment Launch
▶ Q3		Investment Round
▶ Q3		One Global Service Launch
▶ Q4		HUPAYX Turkey JV
▶ Q4		20/2021 - EU Subsidiary Launch



Disclaimer

Before introducing the HUPAYX project, we recommend that you familiarize yourself with the following:

Please read carefully all the details of the disclaimer in this whitepaper. If you are unsure of your future actions, we recommend you seek advice from legal, financial, tax, and other experts

[Legal Authority]

- HUPAYX does not guarantee any liability from the information in this whitepaper. This whitepaper is intended to introduce the contents of a reasonable business model that has been researched and developed by HUPAYX for a long time

[Notice Obligation]

- The project-related coins in this whitepaper do not correspond to financial investment products such as securities, and issuance does not correspond to the offer or solicitation of financial investment products.
- In this whitepaper, you can set the quantity of soft cap in the process of project-related IEO and return and discontinue all purchases if the issuance of cryptocurrency does not reach soft cap.
- This whitepaper is intended to provide necessary information to those who wish to participate in the project and is not an investment recommendation.
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- Certain statements in this whitepaper contain forward-looking statements about the future, future events, and prospects of the project.
- These statements are not based on historical facts and are identified by words and phrases similar to the words: forecast, estimation, belief, expectation, projection, etc. In addition to this whitepaper, these forward-looking statements may also be included in other public materials, such as presentations, interviews, videos, etc. The forward-looking statements contained in this whitepaper include, but are not limited to, future results, performance, and achievements of this project.
- Forward-looking statements also involve a variety of risks and uncertainties.
- As of the date of this whitepaper, this project, the HUPAYX Platform, is not complete or in full operation.
- The tokens issued in this project in the future have been described on the premise that the HUPAYX platform will be completed and fully operational, but this should not be interpreted as a guarantee or commitment to the completion and full operation of the platform.
- Before deciding to purchase and participate in tokens issued by this project, we recommend that you read the following carefully and fully analyze and understand the relevant factors and risks.
- Risk of storage-related buyer negligence, including limited access to tokens issued by this project due to the loss of identification information, and loss of essential personal keys related to the digital wallet.
- Risk of fluctuations in value in this project and after token issuance due to the global market, and the economic situation.
- Risks related to changes in the regulatory environment of the country in which the business is operated, such as changes in the political, social, or economic environment, changes in the stock or cryptocurrency market environment, and risks associated with changes in the ability to compete with the project in these circumstances.
- In certain jurisdictions, existing / new regulations regarding blockchain technology may be applied against tokens issued by this project.
- Tokens issued in this project are risks related to the public's limited interest in creating and developing distributed applications, and lack of interest by companies, individuals and other organizations in the platform or services.
- The risk of making significant changes to the token issued by this project or to the platform's key features and specifications before launching or implementing the HUPAYX ecosystem.
- Although we intend that the functionality of the tokens issued by this project will match the contents of this white paper, these changes can be applied nonetheless.
- Tokens issued by this project are competitive risks to other platforms that could potentially affect the platform adversely. (e.g. no commercial success due to a competitive project or a gloomy outlook)
- The occurrence of catastrophic events, such as force majeure and natural disasters, and other uncontrollable factors may affect the business operation of the project.
- Events such as mining attacks, attacks by hackers or other individuals may cause theft and loss of token sale proceeds, theft and loss of tokens, and the impairment of ecosystem development capabilities.
- Tokens and other cryptocurrency issues in this project are new and unproven technologies and are constantly evolving.
- The complete functionality of the token issued by this project is not yet complete and there is no guarantee of completion. As technology evolves, the advances in encryption technology and methods, changes in consensus algorithms, etc. may pose risks to the use of token ecosystems and tokens issued by this project.
- Tax and accounting methods of tokens issued in this project are uncertain and may vary from jurisdiction to jurisdiction.

>>>X Disclaimer

- The purchase of tokens issued by this project may adversely affect tax processing, and we recommend that you find out the independent tax advice.
- In addition to the risks listed above, there are other risks issues by the project that affiliates can't predict.
- Risks of unexpected combinations and variations can also be introduced.
- If the above risks and uncertainties are developed in real life, the project's business, financial status, operational results, prospects, etc. can be substantially and negatively affected.
 - Project Related Policy Changes (Laws, Bylaws, Regulations)
 - Technical Limitation Related to the Implementation of the Project
 - Change to the Project's Operational Policies
 - The Scope of the New Project
 - Unavoidable Schedule Changes and Disruptions

[Compliance Base]

- This whitepaper is based on the laws, policies and by laws at the time of writing. The following items in the project's contents may change according to the regulations of the relevant country.
 - Certification and procedures for the transfer and exchange of digital currency between different countries
 - Subscription condition for use of the exchange (Real name account, OTP, KYC)
 - Information exchanges between banks that manage escrow accounts, and incoming and outgoing deposits (Insurance, Name, Financial Policy)
 - Information exchange between us and our affiliates (Customer Information, Quote Information, Transaction Information)
 - Payment terminal specifications and certification (Radio Certification, Liability Insurance)
 - Tax return for the sale of goods and services (Year-end Settlement, Income Report, VAT Return)
 - Whether personal information is kept and disclosed (Location Information, Access Rights)

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