



# BNS Bay

New Paradigm of the E-commerce

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# BNS Bay White Paper

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# 1. Abstract

## A. Introduction

Twenty (20) years have passed since the 'home shopping' market took place because the media, Internet, transportation, and distribution are advanced. Consumers could advertise the product and could shop in real-time through the TV, We call this T-Commerce. The home shopping market expanded to mobile in line with the growth of the network. The term V-Commerce has emerged, which uses video to spread information of the product and sell the product based on social media such as Instagram and YouTube. BNS Bay project was started in the estimation that a Shopping Platform Gateway, which combines T-commerce and V-commerce, which constitutes home shopping, is needed.

In Home shopping market, both seller and buyer need more convenient system. In other words, the product sales registration process needs to be simplified according to the reliability of the product seller, and more user-friendly UX and product recommendation is needed in consideration of the convenience of the buyer.

Also, the design for efficient distribution is needed from the purchase to delivery. The efficiency needs to be improved by optimizing various fees incurred during the purchasing process (In case of the overseas purchases, it includes remittance fee) and shipping charges required in the distribution process.

Including the quality of the product, Reliability between seller and buyer is significant as well because the Purchasing is the major process. For this reason, our challenge is to build the credibility of the product through continuous evaluation and recording through actual buyers' evaluation, and to build a seller's credibility through actual transaction records.

## B. Backgrounds

### Overview of Home Shopping Sales Volume Scale and Growth Rate

Home Shopping Sales Volume in 2018 \$17.9B  
Increased 7.7% compared to last year

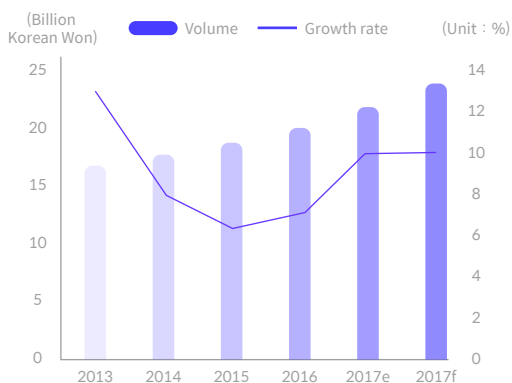


Fig 1. source: Korea On-Line Shopping Association, IBK Securities Co. LTD

### Trend of home shopping market

The home shopping market in the Republic of Korea (hereinafter called 'Korea') has grown steadily, reaching an estimated figure of 17.9 trillion (KRW) as volume handled. The growth rate has declined slightly since 2010, but has recovered since 2016 and has stabilized. With the rapid spread of IPTV, T-Commerce is exploring the way of 'bi-directional shopping' such as purchasing the product using the remote control or mobile devices while watching TV. In addition, respective companies are expanding their sales channels by using websites, mobile applications and offline stores for user experiences.



T-Commerce is out of competition in the same industry and it is growing in competition with other retailers such as the open market. Includes, providing differentiated products to consumers and a strategic approach to customer loyalty, It is increasing its competitiveness with single-brand or own-branded products.

**The influence of Mobile is greater than TV!**

**Increase of T-commerce influence**

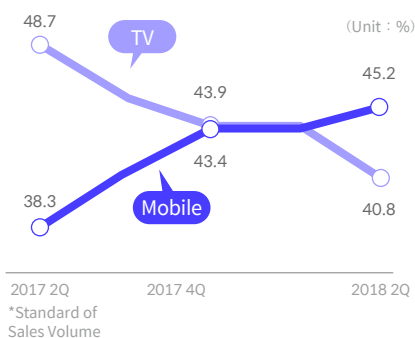


Fig 2. Source: GS Home Shopping

### **Development of V-commerce Business**

Starting from 4Q 2017, the business related to V-Commerce grew sharply as the influence of the Mobile overtakes the influence of TV in the commerce industry. Access through social media, such as Facebook, Instagram, Wechat, KakaoTalk, LINE, and mobile apps like YouTube has increased. Not only that, but the purchasing generated through home shopping videos and advertisements on the web site is increasing significantly. Not only the proliferation of mobile use but also the development of simple payment services, leading to V-commerce's development.

V-Commerce is expected to grow further because of various factors such as the diversification of the platform, the improvement of the quality of shopping services, and the reduction of the cost between trades. Recent movements in the industry that use Influencer and real-time communication with users chasing the consumer trend driving development.

### **Growth of the commerce industry and Expand of the distribution market**

The global commerce industry and its associated distribution markets are exploding. However, it is difficult to say it helps proper consumption and purchase convenience, practically. Because the information on shopping currently offered is irregular. There is a need for a unified approach to unify processes and to reduce costs in the distribution process, from product supply to advertising, promotion, purchase of consumer, product management, delivery, and follow-up management. It needs to design services with a more reasonable structure consisting of the ecosystem.

## **C. Proposal**

In the sight of the growth of various commerce businesses, the home shopping market in Korea is expected to grow from 20 trillion (KRW) to 30 trillion by 2025. In conclusion, it is expected that the structure of related platforms and services will also need to grow.



The current biggest issue facing the T-commerce market is that market share is falling due to the expansion of the mobile market. We sell the product on the broadcasting; Furthermore, we will try to find solutions such as sharing sales products with V-commerce and by expanding the pre-produced video to mobile in conjunction with MCN producers. Due to the characteristics of advertisements that are transmitted to TV, the Broadcasting Act for video may be seen as circumvention for the chronic problem.

Along with the rapid growth of the mobile market, the V-commerce industry output remarkable growth rates. But behind that, V-Commerce also has some problems. There is a fatal problem that is not delivering the product to the buyer after purchasing the product. There is also a problem with the quality of the product, the process of returning, exchanging and refunding since it has a somewhat lower responsibility than T-commerce. Due to the feature of the commerce market, which sells in the short term, V-commerce and the small MCN companies that make up it has a heavy burden on how to sourcing and processing high-quality products in bulk.

For this reason, Our BNS Bay, aim to build a service that connects suppliers, sellers and distributors, and buyers of the product through a home shopping platform that embraces T-commerce and V-commerce. We clarify this service as following. First, the product is supplied from the supplier and the first quality verification of product is conducted with sellers of T-commerce or/and V-commerce. After then, this service distributes products to each commerce and sells them in a way that makes sense for the platform. According to the purchasing process, purchasing is processed and could track the delivery until the time of the purchase-confirmation. BNS Bay as a gateway fulfills the role of community responsibility and monitoring by building nodes (hereinafter called 'T-NODE' and 'V-NODE', respectively) with each commerce.

And T-NODE and V-NODE conduct reliability evaluation on the quality of products by using the blockchain's ledger technology in order to solve the problem of quality management. The Commerce builds win-win relationship with the customer (hereinafter called 'C-NODE') by making the purchase history and delivery information of the product transparent. In addition to purchasing products, C-NODE will be rewarded for activity in the ecosystem through methods such as review.

In the case of using various commerce, each platform has different membership registration, payment method registration, and overseas payment information. So these make people confused. The uniformity of user information and the simplified signup process (One pass) of BNS Bay system could be the solution of these problems. First of all, BNS Bay aims to simplify the registration process by Synchronization between Kakao Sync and the user database. Second, The payment system is simplified through a partnership agreement with Kakao Pay, a simple payment system. Last, In order to solve the inconvenience of currency exchange and to make payment by cryptocurrency, we plan to research and development using the Klip, Klaytn Wallet.



## 2. Feature

### A. Blockchain and Network

Using Cypress Main-net, we are researching and developing blockchain suitable for service. We concentrate on the development of responsive, robust, and useful BMC (Blockchain Applications) based on legacy technology in order to remove the adoption barrier. Especially, The time for block formation and extension is a (1) second, our service reduce the waiting time and increase the scalability compare to other main-net.

The Blockchain dedicated to BFT (Byzantine Fault Tolerance) consensus algorithm tends to maximize efficiency by having fewer nodes and distributing networks to LANs (Local Area Networks). This blockchain balances performance, network security, and transparency. And transparency is naturally achieved because only authorized nodes participate in consensus. Although node is limited, it has advantages in good performance and stability. Ultimately, it could be said that it provides a balanced and efficient blockchain by combining audit and personal consensus.

The consensus of BNS Bay Blockchain is processed through T-NODE and V-NODE. It is separately operated C-NODE which does not proceed consensus but downloads the block and saves a copy. It is composed of a special concept of the hybrid structure divided according to roles. Based on BFT consensus algorithm, If more than one-third ( $1/3$ ) of consensus nodes are not acting in collusion, the network could confirm the block quickly without breaking. This is one of the good methods to solve the slow speed problem which is currently indicated

by the limitation of blockchain. The C-NODE consisted by the public network and it handles requests for reading. The consensus Nodes, T-NODE and V-NODE handle requests for writing. The basic form of the consensus algorithm is based on PoC (Proof of Contribution) and KIR (Klaytn Improvement Reserve).

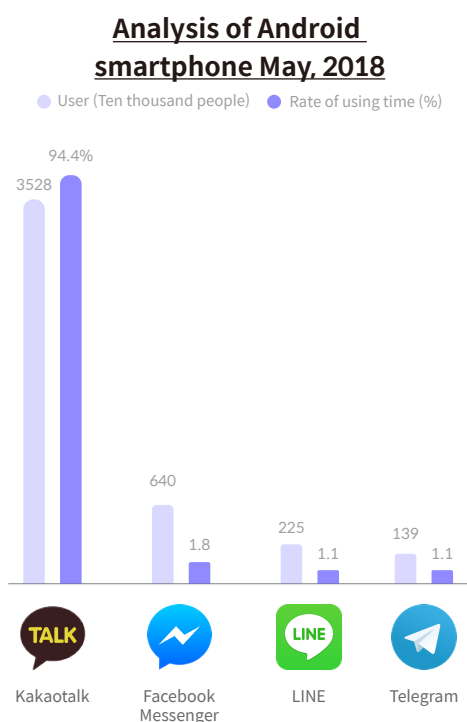


Fig 3. Source : WiseAPP 2018. 5

BNS Bay plans to use KLVM (Klaytn VM), a virtual machine that classifies smart contract execution and external memory operations. The code set for communicating with KLVM must be run on each system. The necessary KLVM at this time will be used in the libraries tailored to the execution environment. EVM(EthereumVM) provided by the Ethereum could be said that a representative execution machine. EVM could control the entire Ethereum using the EVM bytecode. Execution environments that are not limited by smart contracts, such as Web Assembly, could be effectively manipulated using libraries. Smart contracts edited by EVM in KLVM do not require the use of an EVM converter and could be executed easily and could accept various execution environments such as eWASM / WASM.



BNSBay could be paid using a cryptocurrency wallet called Clip which is based on Klaytn. Klip is the digital asset storage in the form of Hot Wallet, it could serve as storage for the NFT (Non-Fungible Token). The market share of messenger service in Korea, which is the first service area, Kakao Talk is absolute, with accounting for 94.4 percent. Considering the fact that search engines, delivery, game portals, shopping, etc. have naturally penetrated in the existing messenger, Klip, a cryptocurrency wallet, could be expected to spread rapidly. With Klip, We will be able to store cryptocurrencies and extend our cryptocurrency payment system for easy payments. After that, it will expand to Samsung Crypto Wallet, AliPay, WeChat Pay, and LINE to serve as a bridgehead for easy payment and cryptocurrency market.

## B. Consensus and Nodes

Basically, as Klaytn's blockchain is used, we plan to expand business boundaries by starting its first consensus through PoC (Proof of Contribution) + BFT (Byzantine Disability Tolerance). However, as the product trading takes place, Hard forking will be made through PoI (Proof of Importance) to clarify the economic structure and penalties of the Byzantine node. It aims to build a different reward system and governance according to the role in each node.

### **BNS NODE**

Participates as a consensus node, judges the quality of the product, and acts as a monitor for each node. It is in charge of identifying the blocks and forming the network through the BFT Consensus Algorithm.

### **T-NODE**

It consists of the T-Commerce Alliance and participates as part of the consensus node. It helps to identify the blocks and forming the network. It is responsible for executing smart contracts on transactions sent to the contract address In order for each newly created block to be added to the chain. In the process of inspecting the quality of the product, selling and shipping the product, the more the network participates, the more the influence increases in the ecosystem.

### **V-NODE**

It consists of the T-Commerce Alliance. And MCN companies and influencers, etc could participate by contributing to the network. As a member of the consensus node, it is responsible for identifying the blocks and executing smart contracts. The higher the network's devotion by the advertising, promotion, and sales of products, etc, more products could be distributed. Benefits such as simplified verification process and R/S (Revenue Sharing) would increase.

### **Byzantine Node Penalty**

Byzantine node means a node that interferes when Nodes participating in the network made a consensus in an environment where it is difficult to trust each other. Within the blockchain, Byzan-



tine node means a node that generates the wrong block or transaction intentionally, or a node that unintentionally makes a wrong decision due to a network error or a problem of program. Within this blockchain, it means a node that decreases the reliability of the entire network due to problems related to the trust of inspection results on product quality, product shipping and, follow-up management. Each node has to deposit the minimum number of tokens and grant economic penalties in the form of deduction when it is identified as a Byzantine node.

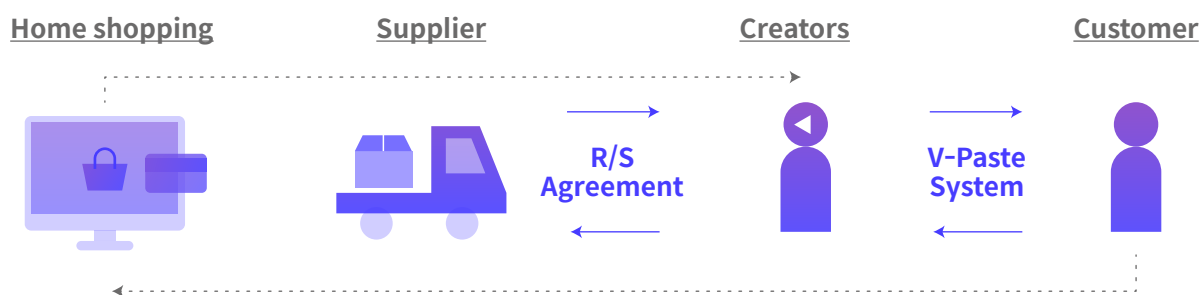
### **C-NODE**

It consists of customers and does not participate in the consensus; however, it helps to maintain the network by downloading newly created blocks and saving a copy of the blockchain. Owning a distributed ledger could handle read requests for blocks. Buyers determine ecosystem participation by evaluating purchases, purchasing frequency and purchase amount, etc. C-NODE is divided into grades; and the rewards (token) by contribution are given to each grade differential.

## **C. Aggregator App & Meta Shopping**

BNS Bay plan to build the CaaS (Connection as a Service) by streamlining five distribution processes: manufacturing products from suppliers, selling products from sellers, buying products from buyers, shipping, and follow-up management for product's quality.

In this process, we provide the Aggregator APP that shows the information of the products on sale at the T-Commerce Alliance (various shopping malls) at once. This APP will be aimed at the best UX based on the experience and convenience of buyers, and will be built as a simple service.



In addition, it will provide Meta Shopping function by analyzing sales information of each commerce. With this process, MCN companies or Video creators who participate as V-NODEs could induce purchasing activities through activities such as product promotion and review. A simple payment system is required for this service to settle smoothly. In the Korean market, the first target of this project, the payment system using Kakao Pay and a simple payment using cryptocurrency are developing. We plan to expand the market by developing cryptocurrency payment solutions in easy payment systems and loading them into each simple payment system.





## 3. Usage

### A. Payment Method (Payment Token)

BNS Bay Token could be used as a Payment Token that could be used directly for shopping. In partnership with the simple payment system, Smart Pay using biometric or payment information stored on mobile devices enables quick and easy payment. It is possible to make a simple payment by pre-authentication method without complicated payment procedures such as membership registration, payment information registration, and authorized certificate. Cryptocurrency Payment is very competitive in that the burden such as card payment commissions and inefficient foreign exchange fees for overseas purchases would be significantly reduced. In addition, if cryptocurrency payment would be used, benefits such as additional discounts on products and rewards with tokens would be provided.

The sales and purchasing data are recorded in the ledger. Because The blockchain technology-based token is used in the payment system. This maintains the quality of the product and enables the seller and buyer to evaluate their reliability. A transparent ledger system is expected to resolve unreasonable elements of the existing system, such as incorrect operation of sales history or quality of sales history, etc.; Also, the data on sales and purchases of products will be used for the artificial intelligence (AI) learning, which would contribute to the building of a healthy ecosystem by improving the recommendation and feedback on products suitable for ecosystem members.

### B. Point and Reward

#### Point

In order to formation of the ecosystem governance, the BNS Bay Blockchain plan to accept PoI. The sales, purchases, reviews, etc. are recorded on the blockchain, and a transaction is generated for recording. This will allow the provision for points by network devotions, as well as the segment of ratings based on points, will be processed. The point information could be inferred from the nonce value of each user's wallet and would keep transparent through the distributed ledger.

#### Reward

Each ecosystem member, The node would be rewarded for its devotion to the network and ecosystem. BNS NODE, T-NODE, and V-NODE participating as consensus nodes allocate a part of rewards to the buyer, The C-NODE. Rewards are provided in BNS Tokens. BNS Tokens are electronic money that could be used for immediate purchase of products and withdrawal. This reward system consists of each smart contract and could be upgraded by active purchases or by continuously writing useful reviews. The rank is maintained longer, the more rewards could be given.



### **Existing Home shopping synchronization**

By pre-contracting with the existing home shopping companies, BNS Bay is making efforts to expand the use of tokens. An agreement was made to swap the rewards currently being used by 10 home shopping companies in the Korea T-Commerce Association with BNS Tokens. The Foundation trying to make more partner and swap agreement for users to use tokens in more convenient and high-value currency.

## **C. Grade system**

BNS Bay expects a synergy of free competition and growth, and designs a differential compensation system according to the activities of its members. This grade will help maintain ecosystem governance by staking some stake in the form of tokens as a member of the ecosystem, as well as the participation rate (point estimation) in the network. In conclusion, it is expected that a virtuous cycle of coexistence will take place in proportion to the development of the ecosystem.

### **T-NODE**

As the subject of the product sales, the sales producer reliability judgment and the inspection of the product are processed and as the consensus node, it participates in the consensus of the block. Points will be provided for rewards for sales performance and reliability, delivery, and follow-up of products sold. If the high grade is maintained longer, the power of decision making on the merchandise would be increase. And it results in the greater the impact on the ecosystem.

### **V-NODE**

As a consensus node, it contributes to the network and plays a role in the sale of Products, and is graded based on sales performance and Token's stake. The higher the grade, the more products that could be promoted and the quantity that could be sold. In the R/S contract for the supplier and sales benefit, a high ratio would be allocated and a lot of profits would be given.

### **C-NODE**

Activities such as product purchases and reviews could contribute to the ecosystem. The Grade is based on points earned and minimized stakes based on ecosystem contribution. Rewards received from the consensus node by grade are paid differently, so high rewards could be obtained by purchases.

## **D. Raising Fund for the supplier**

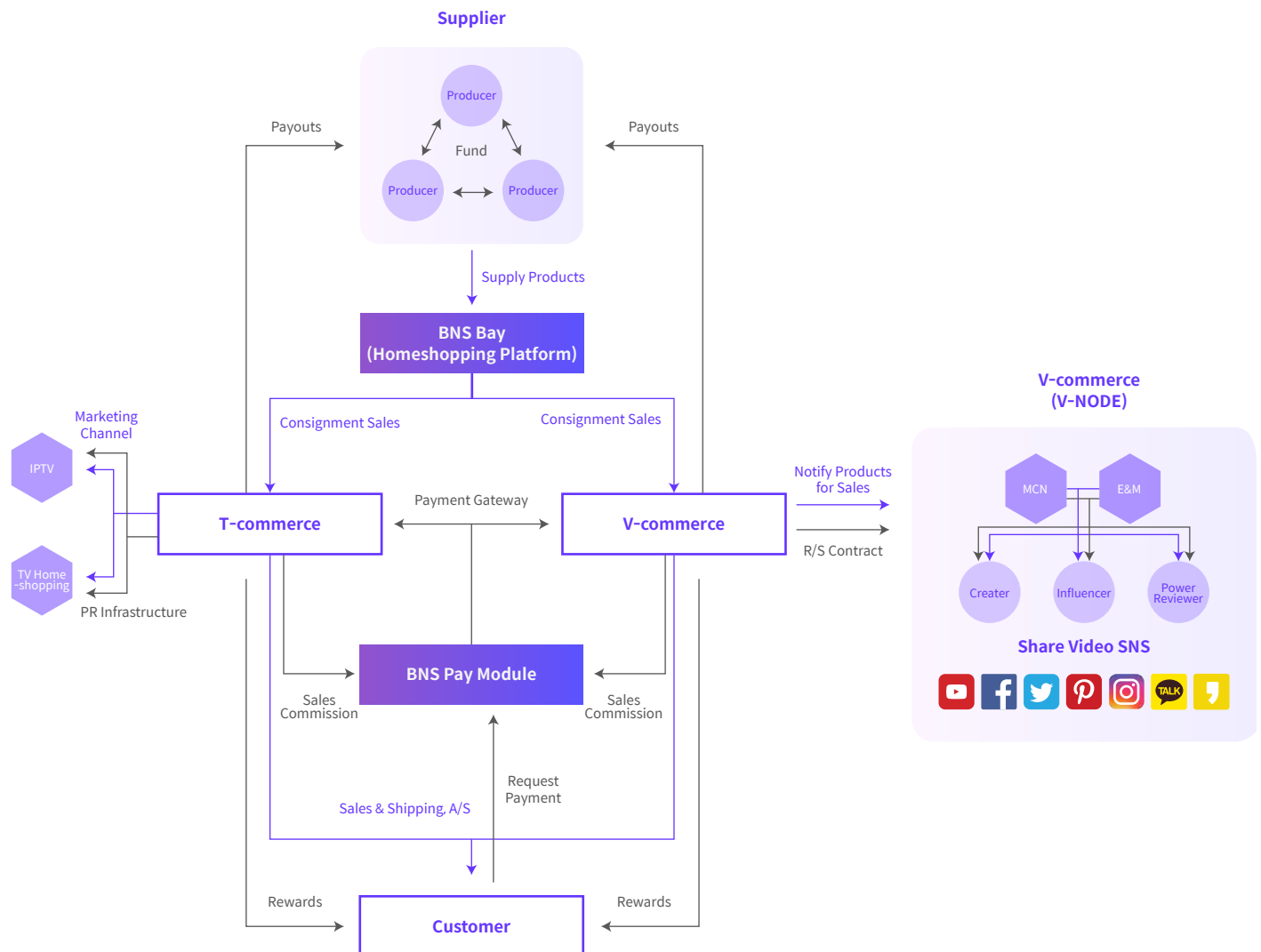
Due to the feature of the home shopping platform, it is normal to sell a large number of products in the short term. Therefore, it is essential to secure stock in each commerce responsible for sales.



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In other words, the supplier must be able to produce a lot of products in advance and supply them to the seller. However, for small and medium sized suppliers, there is a financial and time pressure on them. BNS Bay intends to create a product supplier alliance fund through Tokens as it is an essential object in the construction of the ecosystem. a product supplier alliance fund is operated by providing funds for the product in the short term and receiving a portion of the fund's borrowing assets and revenue from the product sales after products are sold. Through this, if a solid alliance of product suppliers is made, the appearance of a single brand or product with unique characteristics of the home shopping market is expected. In addition, it is expected to decrease the burden of heavy interest rate of P2P lending that product suppliers had to take.

## 4. Ecosystem

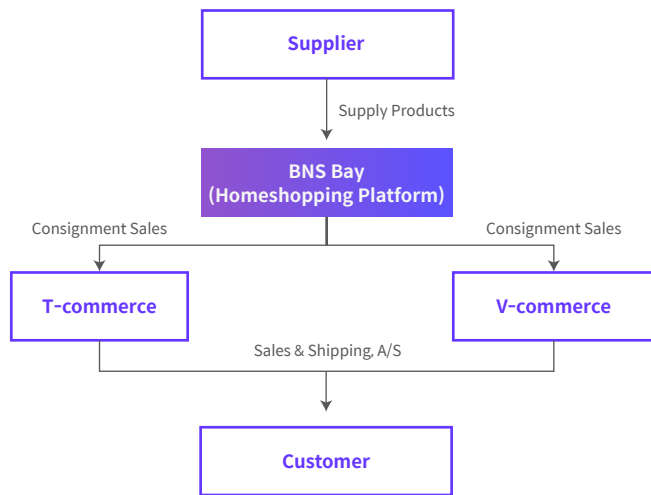


BNSBay has a decentralized service system around a CaaS (connection as a service). Through BNS Pay's Enterprise system, the Products for sale is registered and the products are distributed according to the points of T-NODE and V-NODE. Promotion and advertisement are processed by each node's infrastructure, purchase of C-NODE is induced by media exposure.

In each category, there are revenue distribution model and sharing model, which are organically coexisting, and flows of funds and provision of products are processed. With smart and simple BNS Pay, commerce companies' payment-related inconveniences could be solved.

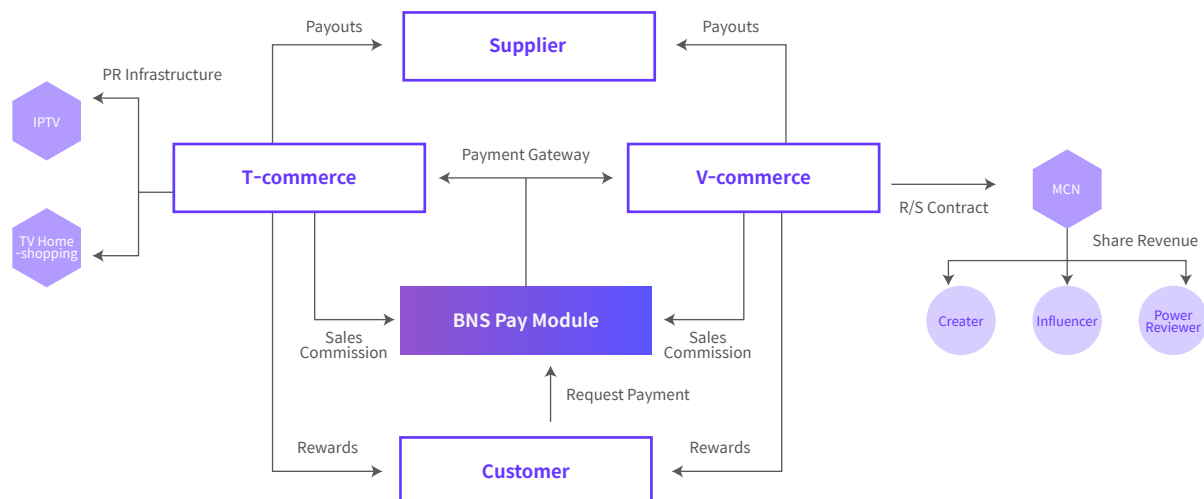


## A. Product Flow Ecosystem



Product suppliers could apply for product sales through BNS Bay. It takes about 10 days to start the actual sales, during which the consensus node will evaluate the quality and sales suitability of the product. The product inspection period will gradually decrease as the ecosystem matures. The reliability in the products and markets would be naturally created, because the responsibility for product defects, which is in the final stage, becomes obvious by using transparently disclosed ledger from the initial stage of the product sales application process. T / V-Commerce then promote the product through its respective infrastructure and fulfill its sales and delivery obligations.

## B. Currency Flow Ecosystem



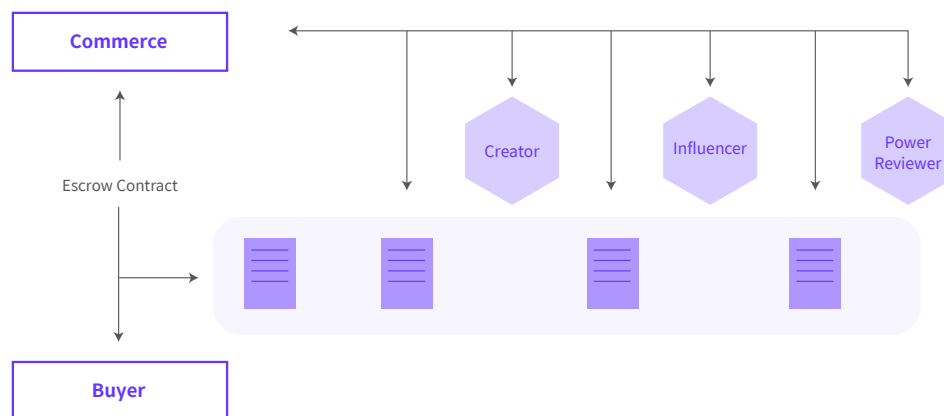
The buyer's request for payment is made by the BNS Pay Module. BNS Pay plan to be linked to various simple payments and the services in Korea will be partnered with Kakao Pay. The BNS Pay Module would provide services for various currencies, including BNS Tokens and various cryptocurrency payments.

Payment requests made through BNS Pay are paid to each commerce company, and the commerce company transfers the payouts to the product suppliers with a quick turnover. In addition, the commerce company pays the fee for the revenue sharing and payment according to the R/S contract to the factor maintaining infrastructure.



Commerce companies participating as consensus nodes could provide buyers with a portion of the revenue generated by maintaining the blockchain network and the revenue from product sales. This will encourage the use of distributed ledgers and increase participation. At the same time, the distribution process would also be disclosed as clear and transparent. We expect it would be more transparent than the existing commerce companies.

## C. Distributed Single ledger

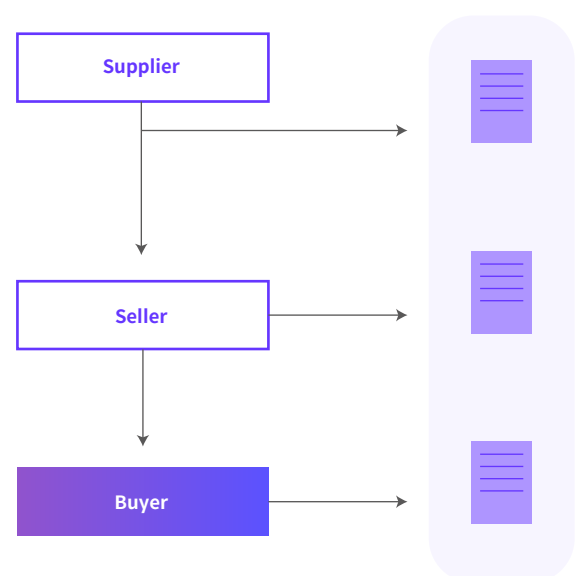


**R/S contract & Smart Contract for Escrow Contract**

Through a Distributed Single ledger, information about R/S contract contents and purchase records could be shared between components to achieve a more reasonable contract system than Escrow. It will develop a fairer ecosystem by reducing mutual reliability inspection and reducing irrational contracts.

Sales/purchase records of users and product reliability become databases. AI learning is based on this database, which allows customized recommendations for sales and purchases. Also, the product reliability, sales quantity, and sales status, which are combined with the seller's analysis and the buyer's review, are stored in an unmanipulable distributed ledger, which could be a reliable index.

The members of the ecosystem can raise funds for their own purposes. First of all, the fund, which will be carried out as an ecosystem subject, aims to share the pressure on production costs by commodity suppliers together. One of the most important factors of fund management is mutual reliability and reliable asset management. This reliability-related issue could be solved by recording information about the ledgers in the unmodifiable blockchain and make this information distributed ledger.



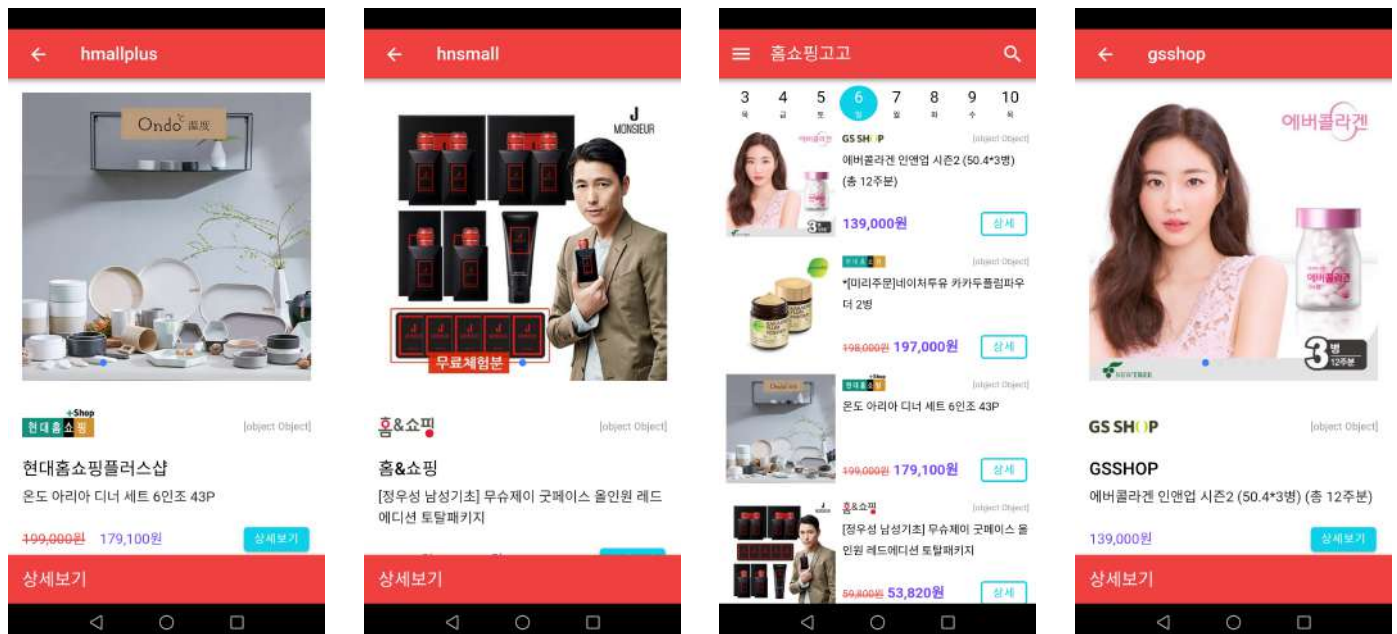
**Information Distributed Ledger**



## 5. BNS Application

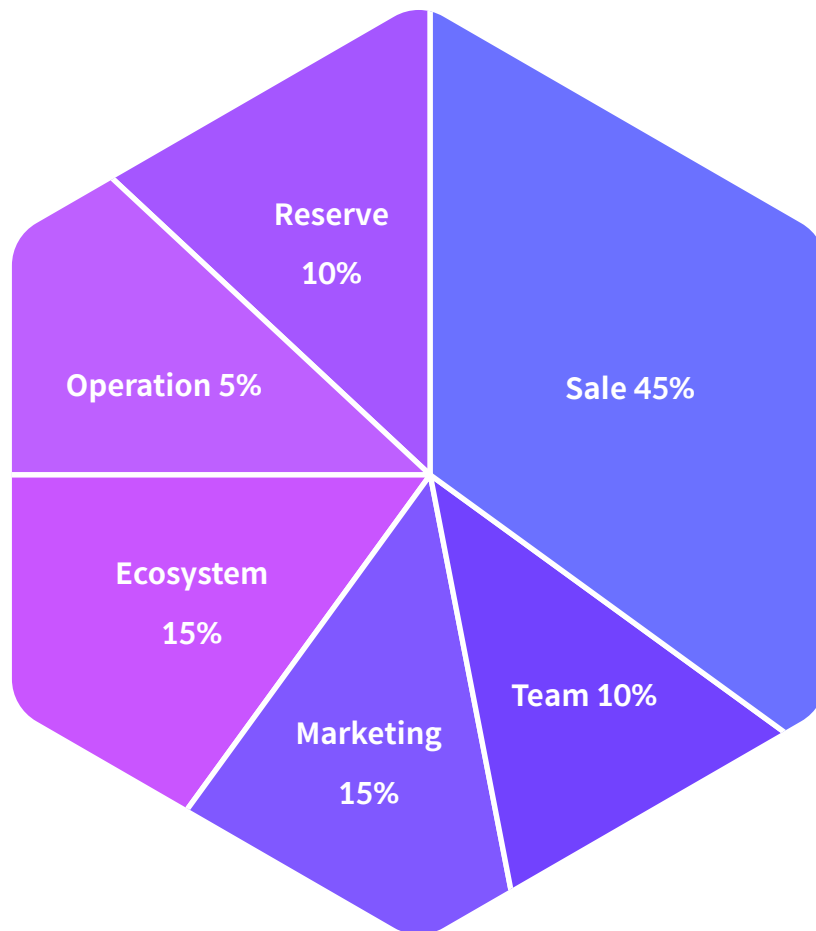
### A. Dashboard

Managing the data such as product information, product tracking, seller information, etc. in blockchain  
(Emphasis on professionalism by exposure such as hash value and block number)



## 6. Token Economy

### A. Token Allocation



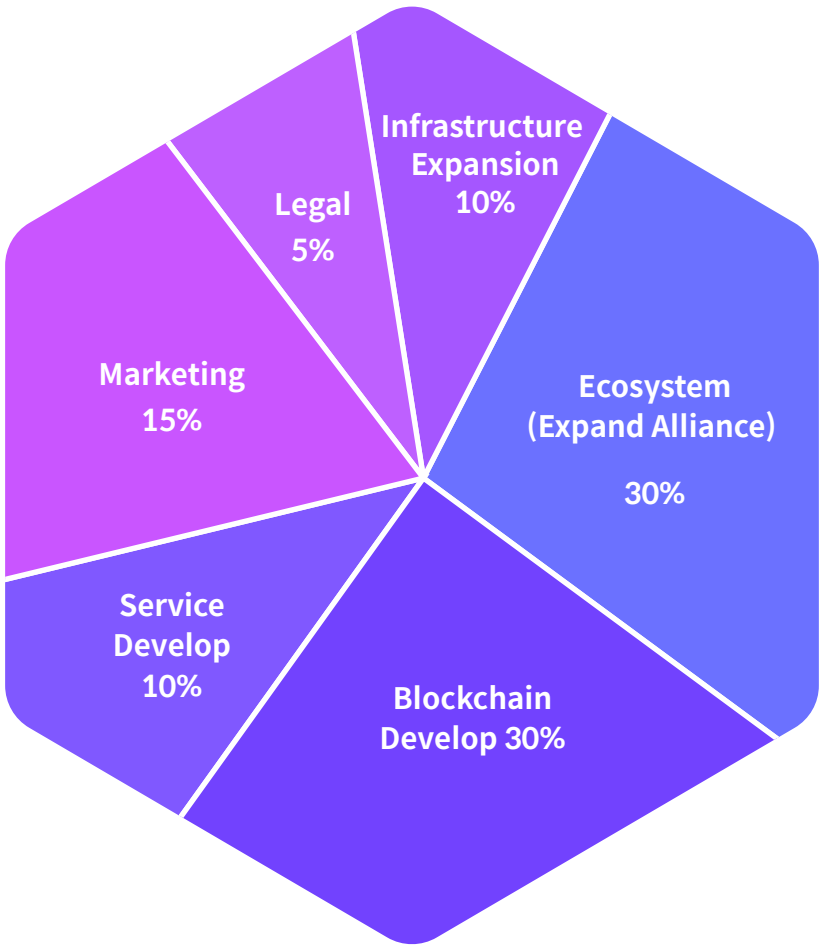
Total amount of issuing token	1,000,000,000 BNS (10 billion)
Per Value	1 BNS = approximately 0.03 USD = approximately 35KRW
Token Name	BNS Bay
Token Symbol	BNS
Standard	ERC-20
Decimal	18
Hard Cap	450,000,000 BNS
Soft Cap	300,000,000 BNS

Lock up	
Team	2 percent a year, for 5 years (Sequential release)
Marketing	5 percent a year, for 3 years
Reserve & Operation	For 3 years





B. Use of Funds

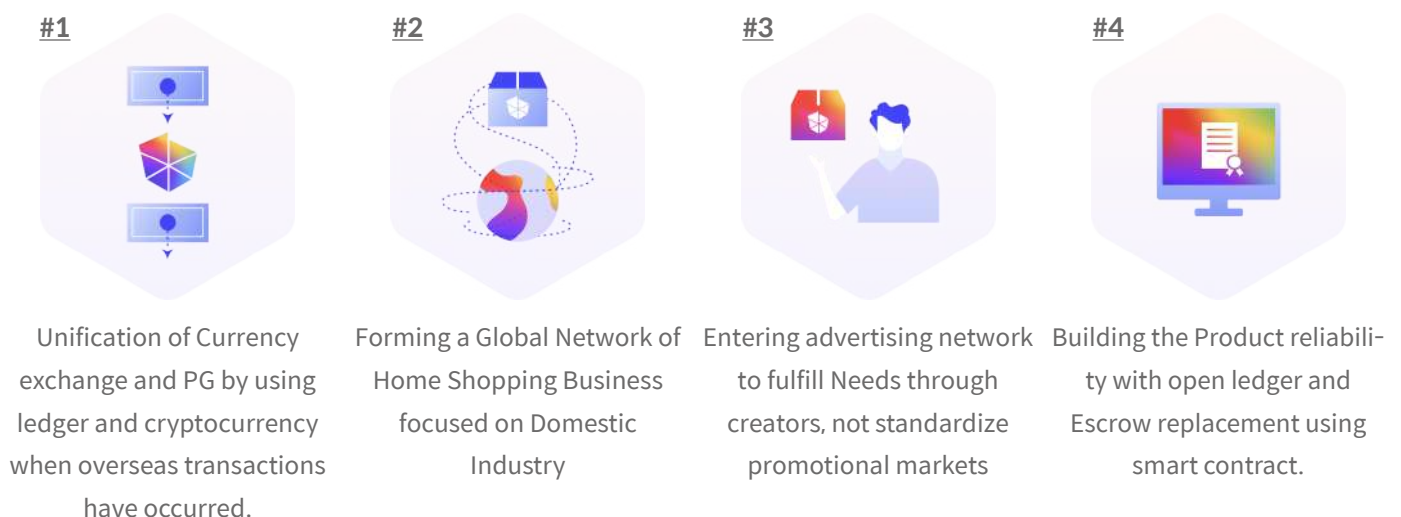


## 7. Roadmap

### A. Roadmap



### B. Vision & Goal



## 8. Partners

### A. Our Alliance



GS SHOP

현대홈쇼핑

홈&쇼핑

NS홈쇼핑

롯데홈쇼핑



CJ O SHOPPING<sup>+</sup>

GS MY SHOP

현대홈쇼핑<sup>+Shop</sup>

K SHOPPING

TV플러스 SHOPPING

LOTTE one TV

NS Shop<sup>+</sup>

쇼핑엔 T

SK 스토아

S1 신세계쇼핑

W shopping



KMCNA 한국멀티채널네트워크협회

KHPSA 한국홈쇼핑상품공급자협회

### B. Partners

kakao

kakao commerce

Kakao Sync



GLANCE TV



## 9. Team

### A. Team member

**Jay Seo, CEO**

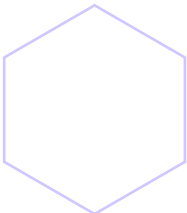
- Ministry of SMEs and Startups/Financial Market Expert Member
- (Incorporated association) Korea Home shopping Product Suppliers Association (KHPSA) Standing director / Standing Vice Chairman
- SM Alliance Representative / Co-Founder
- Sportsseoul, Outside Director
- Now&Nextpty Ltd. Representative director (Australia branch)
- Phile International, Representative

**Bill Cho, COO**

- OBS, Technology Director
- SBS, Technology development Dep. Deputy General Manger
- KBS, Technology head office, Transmitting Technology office

**Dave Jeon, CMO**

- Hyundai Group /Hyundai Department store
- Hyundai Home shopping, Team leader
- (Incorporated association) Korea Homeshopping Product Suppliers Association (KHPSA) Business Dep. Senior manager

**Jeff Jee, CTO**

- Glosfer cryptocurrency New business Dep. Senior manager
- NHN KCP, BD
- First data Korea, Planning Dep. Manager
- SK Telecom

**Eric Park, CMO**

- Lejel Homeshopping Korea, Director
- Clics Korea, Sales and Marketing Dep. Director
- White Network, General Manager
- Hongcheon Wellbeing, Team leader
- CJ O Shopping, Manager

**John Lee, CMO**

- Home&shopping, Management Planning Dep. General Manager
- Home&shopping, Marketing Dep. Team leader
- GS Homeshopping, Channel strategy and planning for abroad Dep. Team leader
- LG Innotek Management Support Team

