BORA Ecosystem

Blockchain platform ecosystem

to promote content distribution and user activity

BORA Ecosystem Team

(contact@boraecosystem.com)

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Abstract

Internet-based content businesses like video game, social communities and entertainment have grown on an immense scale. But a lack of transparency and disclosure, the ever-present risk of user asset loss, transaction risk, and the high brokerage costs may reduce user motivation and immersion levels. As such, content providers today are required to increase their efforts to secure loyal users. While some content providers may want to implement blockchain technology, many find the application of new technology and entering into a young market to be a heavy burden. Unfortunately, the current state of developmental support and mitigating risks for blockchain-related projects are still lacking.

The BORA Platform ecosystem is a solution designed to resolve these issues. The BORA Platform design consists of an internal blockchain (BORA Chain) and the Ethereum public blockchain linked together. It aims to provide the high transaction throughput and expandability required for commercial content application services. BORA Chain is designed with a modular architecture, and the modular design allows each application on the platform to enjoy independent service environments.

Tokens for internal circulation (BORA Points) within the ecosystem exist within the BORA Chain, and are linked to ERC-20 tokens (BORA Tokens). Through this structure, user assets are protected, and the transfer process to BORA Tokens and execution is ensured. As a result, user assets are no longer in a structure that is dependent on existing content providers, but rather exist with the user and ecosystem. Content providers do not need to separately develop new blockchains, and can participate in the decentralized ecosystem using the web interface and API provided by the BORA Platform.

The BORA Platform ecosystem will also consist of the BORA Point Incentive Program, which aims to benefit all ecosystem participants and is operated based on smart contracts. Blockchain-based promotion campaigns and rewards programs can be applied to radically improve user retention, ultimately resulting in an increased service Lifetime Value (LTV).

The BORA Ecosystem is designed so that all participants can contribute to the ecosystem and receive reasonable rewards, with voluntary and continuous user activity all driven by the token-based economic system and incentive mechanisms. Behavior that is inappropriate for the ecosystem can be self-regulated as it does not benefit anyone in the ecosystem (including the perpetrator), and content providers within the ecosystem can share the goal and motivation to compete in good faith through service quality improvements rather than unfair practices.

The BORA Platform's first goal is to use trial services for fast network and ecosystem verification, leading to commercialization. Video game fits this goal best, considering its factors of popularity and intuitiveness. Thus, the developer that entered a partnership with the BORA team is developing a game for the trial

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service that will be linked with the BORA Chain. The blockchain technology industry is still in its infancy but is continuously advancing and growing. The BORA Platform also has a road map to enhance the platform and BORA Chain while extending the ecosystem range, matching the advances in technology and ecosystem growth. Through a series of processes, we ultimately seek to build and grow an ecosystem that promotes content business circulation and continuous user activity within a decentralized platform environment.

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1. Definition of the Problem

1.1. Problems with the Existing Industry

1.1.1. Credibility - Veracity, Transparency, and Security of Information

There have always been credibility issues between the content information sender and receiver in the existing digital industry. In our view, this is due to the difficulty in confirming the veracity of the information provided, the lack of transparency in the provision of said information, and the fact that the information could be modified or lost at any time.

Even if the content provider provided valid information, it is difficult for the user to verify the information. It is similarly difficult for the provider to prove and impress on the user the integrity of the information. Take for example, the video game industry. It is difficult for game players to accept at face value that the game randomly shuffles the cards for each new game, and deals the cards fairly for each new hand. Players may still refuse to believe the information provided with the randomized loot box that they have a 1% chance of obtaining a rare game item, and refrain from purchasing the product.[1]

Apart from the questionable accuracy of the information from content providers, the transparency in disclosing information is also lacking. Content providers with their own servers and databases could directly control which information is recorded, stored, and shared. As such, it is difficult for users to know which information was recorded, and what level of information was shared. For instance, most mobile games do not provide individual probabilities or expected values for probability-based items sold through in-app purchases as well.[2]

Beyond this, the information in databases can be modified or falsified at any time as a result of a bug, and administrator mistake or by a deliberate action. Sometimes, information can be lost, or even omitted (not recorded). This reversibility of information can cause a negative effect on the service's credibility.

These issues have also caused considerable waste of resources. For instance, in the online poker service[3] we studied: 60% of the customer inquiries were related to 'suspicion of manipulation of game probability

[1] http://www.koreaherald.com/view.php?ud=20180402000884

[2] South Korea and some jurisdictions require disclosure of information related to these probability-based items, but there is a limit to the disclosure method and level. The App Store also made the disclosure of probabilities for loot boxes (probability-based items) mandatory through its new App Store Review Guidelines on Dec. 21st, 2017. But Apple does not technically verify the disclosed probability, and it is still difficult to judge the veracity of the information actually provided.

[3] An online game service that once recorded $32M in monthly sales, which was proven by source code and log data review, had no no manipulation of in-game probabilities.

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and mistrust of game records', and another 25% were that 'game money has been lost or hacked.[4] A separate customer service group with a large number of personnel had to be opened to handle these complaints and inquiries.

1.1.2. User Asset Value - Dependency, Severity, and Loss

Content providers in the areas of video game, online social communities, and entertainment create and/or circulate content with complementing services. Users enjoy and consume the content through a variety of means and often times they involve a great deal of time, effort, and money. Through this process, content providers may profit from the content's popularity and users on the other hand obtain - quite often - emotionally attached, hard-won digital assets. Although, the assets are obtained through value trade-offs, the majority of user assets cannot become the sole property of the user. This is because the digital assets of a user are linked to the content provider's services. The '100M in-game money' accumulated by the user, the 'Platinum status level' built up in the community, and the '100,000-strong army' that was completed with the user's time and money will all disappear once the relevant content services are suspended. They will all disappear, regardless of how much time, effort, or money the user has spent to obtain and accumulate them.[5] It is our view that this type of user asset dependency reduces the participation, immersion, and payment of the users, who are aware of this limited asset ownership. As such, content providers must put more effort and cost into finding high-loyalty users.

In addition, in cases such as the 'one-to-many' relationship structure between the user and the content service provider, assets accumulated in different services cannot be consolidated, and cannot be value-determined using a unified criteria even if they belong to the same user. If an asset's value cannot be determined, then it is not fit for ownership, trade, or transaction. Therefore, the number of users who put their time and resource to acquire these assets can only be a small portion of the whole population of users. For this reason, providers of content such as those in the video game industry incur a large cost to increase the user purchase rate - even though it is for a small fraction of increase - via in-app-purchasing or freemium model.

Also, the asset value of content services may be easily harmed or lost. The value of 100 million in-game money, which the user has accumulated through years of play, may plummet to 1/100 of its original value if there are game money duplication hacks or abuses. The game money value will also plummet if the game business suddenly decides to provide 100 million of in-game money every day, for free, to bring in new

[4] A vast majority of these inquiries stemmed from user misunderstanding. According to the result, the randomization function from game server, that oversees the game logic was running fairly. Most of the game record related complaints and inquiries stemmed from erroneous memories from user experience.

[5] Of course, there are instances of blog service termination where entries are backed up or transferred to another service. However, the user's own entries are most likely only a part of the blog's user accumulated assets.

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users. Situations such as these occasionally occur in video game services.[6]

Thus, it is difficult to determine and maintain the value of user's digital assets as they are dependent on the content providers, difficult to consolidate and liable to loss by outside force. Obviously, it will also be difficult to engage in trade or transaction activities with the assets of this nature. This effect demotivates and reduce participation from the users, causing a vicious cycle for the content providers due to the increased cost of securing loyal users, which increases the operating cost, resulting in lower service quality, and so forth.

1.1.3. Broker Transactions

Digital assets for some content services have trades or transactions taking place through brokers, with their value acknowledged in the process. In mobile RPG games for example, there may be brokered transactions of game money (e.g. gold, gems), which are purchased from users and then sold to others at a lower price than the in-game shop. In highly trade-activated game services, there are specialized brokers who purchase in-game money from users to resell. In our experience, they usually purchase chips at around 80% of the in-game shop price, then resell them at around 90% for a 10 - 15% profit. Sometimes the scale of brokered transactions is larger than the sales occurring within the game service itself.[7]

However, transaction fraud and excessive fees during the broker transaction processes increase the transaction risks and expenses, while decreasing transaction quality. Some malicious broker and traders steal in-game money using hacks and also resell the stolen merchandise at low prices. Item trading specialty sites[8] have emerged to resolve these issues, but there are still fraudulent transactions between buyers and sellers when the transaction process is complex, and the transaction fees can be steep.

1.2. Review on Existing Projects

1.2.1. Performance and Expandability

Internet-based commercial content services such as video game and communities require massive and rapid transaction processing. As such, each project that is preparing for a decentralized application platform is taking its own approach to resolving transaction performance issues. However, there are also some projects

[6] The Stone of Jordan ring was the valued currency in Diablo 2, but became mass circulated through item duplication. Blizzard applied a special event system patch called Uber Diablo as a means of retrieving the rings. The action of selling the Jordan ring triggered special monsters to appear, which had chance to drop highly-valued items, which made users sell Jordan ring to shop.

[7] Reference about account hijacking https://www.cnet.com/news/no-end-in-sight-to-hacking-of-wow-accounts-1/

[8] Representative sites include opskins.com, itembay.com, and itemmania.com.

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that they do not show much concern in these areas. One such project, claiming to be a blockchain casino service, does not mention whether it has sufficient capacity to handle hundreds to thousands of blackjack tables operating simultaneously. A game of blackjack lasts 1 minute 30 seconds at most and a new one is created right after multiple chip transactions occur during the game, and hundreds to tens of thousands of players can simultaneously generate these transactions. As such, a sufficient level of performance to meet such service requirements must be secured.

1.2.2. Burdens of Entering a New Industry

It is rare to see completely ground breaking innovation projects appear in the blockchain landscape. Most projects that appear in the blockchain market currently utilize blockchain technology for incremental improvements, addressing one or two existing shortfalls in the current system. While there are dozens of distinct projects that seek to disrupt the current money transfer and payment systems and have as a result, gained wide recognition and popularity, there are not as many famed projects in other industries beyond the finance sector. In our view, the foremost reason for this is that the blockchain industry is still in its early stages, with yet more time required for the completion of projects that are preparing for the fully decentralized application ecosystems. But even considering this, there are other issues that should be highlighted.

Content providers attempting blockchain-based application services cannot help but feel greatly at risk. Content providers must sufficiently understand the new technology from the initial phase and develop accordingly, but the development tools and environmental support are still insufficient. Content providers also feel a great deal of concern at the prospect of giving up their existing centralized service method and adopting into a new environment. For these businesses, utilizing blockchain technology may mean abandoning an existing market with hundreds of millions of users for the multi-year challenge of entering a small and newly-formed platform ecosystem. The many projects developing blockchain-based platforms must be able to resolve these issues. If not, it may be a long time until the blockchain-based ecosystem fully matures.

1.2.3. Economic Systems and Monetization

For a single application or ecosystem to be sustainable, it must have beneficial value to all members, including the users. Many projects are planning for decentralized wallets and payment solutions instead of the existing payment modules and credit cards. However, these new solutions alone cannot provide more significant value to the ecosystem participants (e.g. game developers and users) compared to the Apple App Store or Google Play. If the content provider still needs to pay a platform commission of around 30%, and the user does not perceive any difference other than using a decentralized payment solution underneath

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it, it will be difficult for blockchain-based platform ecosystems to become widely adopted and used. As such, blockchain projects building application platforms must also consider economic systems that can handle these issues.

In addition, projects such as blockchain-based game services (not ecosystem applications) must consider economic feasibility and monetization. For example, if a project generates ERC-20 based tokens and provides a game that run on these tokens, players are burdened with high transaction costs.[9] Specifically, if there are frequent transactions within a fixed commission fee structure, the user's expense burden will grow.

For instance, let's suppose there is an Ethereum (ETH) based dice game.

The two players (A and B) with the same participation fee (0.1 ETH) for each player and per round, and they both have the same win ratio, the player who gets the highest number will win both players' participation fee but Ethereum blockchain will require transaction fees (gas 0.01 ETH) to be paid for each round. It would eventually make both players lose 2 ETH after 200 rounds of playing.[10] This simple example does not include the additional service fees that may be imposed by the dice game provider, which (if included) will increase the burden experienced by the user. While this is an extreme and simplified scenario, there is little chance that the user would continue playing this game, and it would be difficult for such a service to grow and sustain its business. Ultimately, the service provider must be concerned about these economic issues and find a way to resolve them. Otherwise, the probability of projects such as '0 Fee Ethereum Dice Game' providing meaningful value to potential users will be low. But there are projects that do not provide clear information on these subjects, and it seems that significant sums of money have been put into these projects with unclear economic feasibilities, as noted above.

1.3. Conclusion

Blockchain takes the existing centralized system and restructures it to a decentralized system. As this new technology begins to spread, gains wider adoption and improvements are made, the issue raised above will be addressed, and the shortfalls of early projects will overcome the adaptation stage.

Our decentralized blockchain base aims to ensure the security and transparency of transaction activities, creating an application platform network in which it is possible to protect user digital assets and generate innovations. This will allow the resolution of existing issues, while providing solutions that vitalize content service circulation and user participation. We call this platform ecosystem 'BORA'.

[9] Of course, transaction processing performance issues exist within these types of structures, as was noted previously. That is still the case as of now, although it is expected that the performance and expandability of blockchain technology will continue to grow and evolve.

[10] 2 players playing 200 rounds of dice game will take a maximum of 120 min.

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2. Solution 1 - Blockchain Structure

2.1. Summary

We define BORA as 'a blockchain-based platform ecosystem for circulating and stimulating content applications'. Various types of service providers that deal with content, such as video game, social communities and entertainment, can use the BORA Platform to provide their services easily and quickly. The BORA Platform has been designed with a modular architecture that enables independent blockchain execution by the content provider. This ensures undisturbed autonomous execution and prevents noisy-neighbor issue. Users will be given a unified user experience across the various content services of the BORA Ecosystem. Personal identity, account, and assets are will be unified and will be inter-compatible within the platform. Assets and their values accumulated through every content service interaction will be compatible and accepted within the platform. Above all, the BORA Platform has the performance and scalability to reliably process the amount of activities required for these content services.

2.2. Platform Layer Architecture

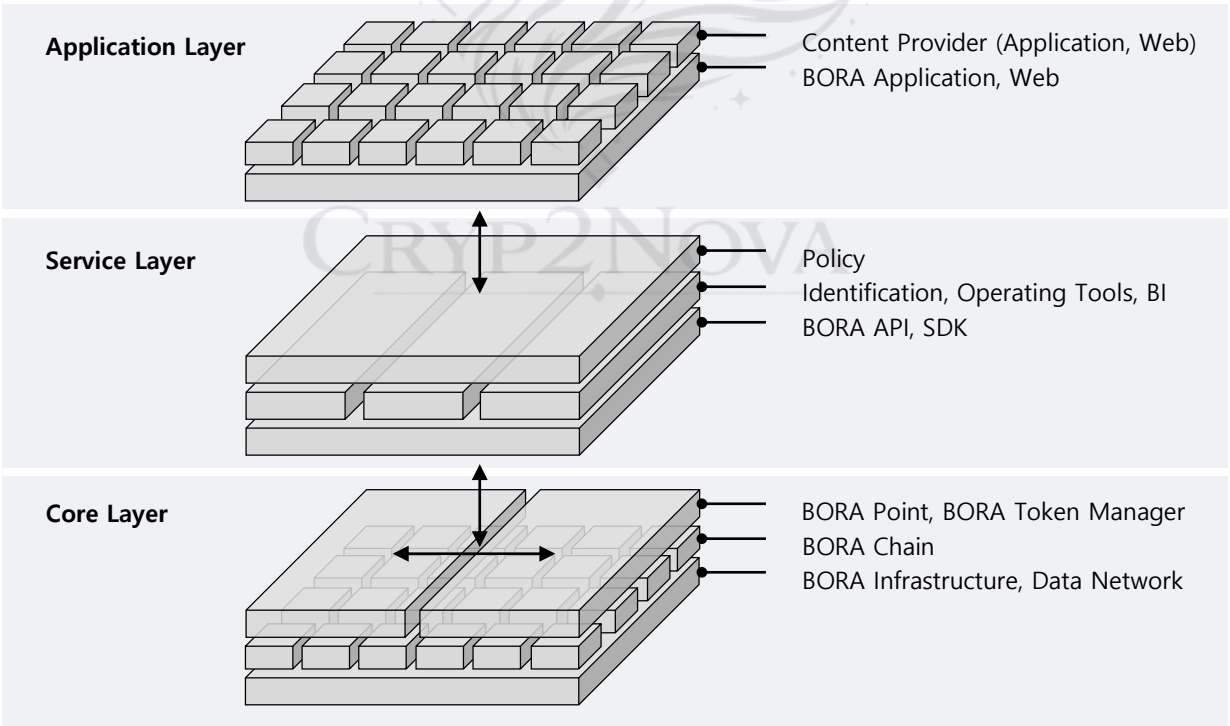


Figure 1. BORA Platform Layer Architecture

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2.2.1. Core Layer

In platform businesses such as video games, social communities and entertainment, it is important to quickly apply/remedy changes and bugs in the system without causing downtime. It is also critical for a platform provider to reliably provide high performance throughput as well as scalability to accommodate large volumes of traffic and their dynamic change. However, public blockchains such as Ethereum currently fall short when it comes to innately accommodating large volume of transactions. This is due to the transaction processing mechanism scalability, and economic feasibility (gas fee) of the Ethereum. Such high volume traffic can create large overhead and can slow down the entire Ethereum network as it was observed in the case of CryptoKitties.[11] Nevertheless, the Ethereum blockchain is highly useful, as it is currently the most widely accepted blockchain protocol and it has a huge community base, allowing for future integration opportunities with Ethereum based dApps and projects.[12]

While we have decided to utilize ERC-20 as the base of our blockchain design, we had to add some innovations of our own to overcome some of the shortfalls of Ethereum (performance, flexibility and scalability). To resolve these issue, we will be introducing the BORA Chain, an independent modular blockchain that will be linked to the Ethereum blockchain. The BORA Chain is designed to ensure speed, scalability, and flexibility while processing mass user traffic and high volume transactions.

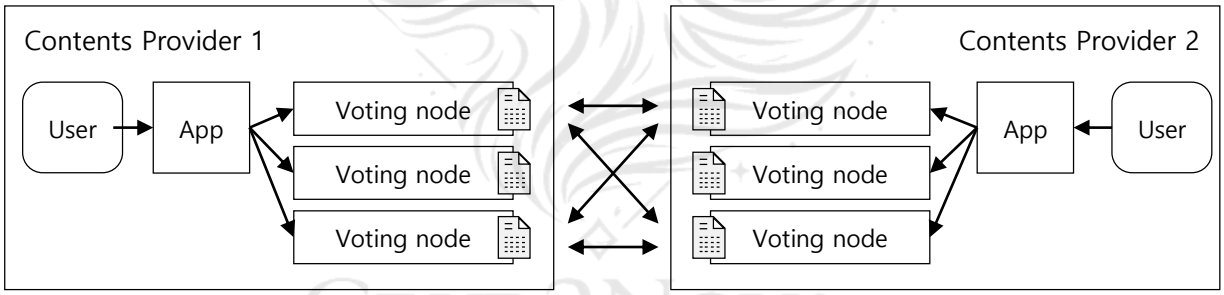


Figure 2. BORA Chain Architecture

As shown above, each content provider in the BORA Ecosystem will be given a private independent blockchain based on permissioned voting algorithm. This design aims to ensure high performance transaction, flexibility, fault-tolerance, and scalability on the content provider's side and prevents noisy-neighbor issue and disruption during transactions.

The BORA Chain handles the sub-chain role, responding to each content provider while fulfilling

[11] The Ethereum main-chain's transaction processing rate was fully saturated for around 3 days starting Dec. 3rd of 2017. This is assumed to be due to the effects of 'CryptoKitties', which was responsible for 15 - 20% of all Ethereum transactions during the aforementioned dates.

[12] For example, projects such as OmiseGO plan to provide White-label Digital Wallets, allowing the usage of decentralized payment and transaction functions without the need to independently develop a wallet solution dealing in various tokens and assets.

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independent functions. Independent sub-chains are assigned and operated by individual content provider (application) units. There are several benefits to this architecture. First, the massive transactions generated by commercial applications in the platform can be handled reliably and rapidly using distributed processing. Second, this architecture ensures a level of service independence that allows remaining application services within the platform to be unaffected, even if there are critical defects in a specific application or other security/service related issues.

BORA Chain has an internal token system called BORA Point that can only be circulated within the platform. Smart contracts are executed for this internal token. The internal token (BORA Point) belongs to the platform, and may be generated in several different ways depending on the platform growth stage and business needs. For example, tokens can be generated and operated as follows: BORA-Play for game circulation and incentives, BORA-Community for community operation financing and incentives, and BORA-Ticket for event generation and management services. Content application providers do not need to generate separate tokens, and can immediately apply the BORA Point that is appropriate for their individual purposes. Users are provided with a unified asset management environment and user experience. Thus, even if individual services cease or disappear, the existing assets may immediately be utilized in other content provider's services.

Internal tokens (BORA Points) within the BORA Chain are mutually exchangeable with ERC-20 tokens (BORA) in the Ethereum blockchain-based on set rules. And BORA Token holders may easily exchange them for BORA Point at any time to use the platform content services. This architecture is linked and executed by the BORA Token Manager.

Content providers do not need to store all service information on the BORA Chain. They can select which information is necessary and valuable to store in the blockchain, and can use the content provider's own database and logs for the remaining information, as before. For example, in an MMORPG game, the user login/logout record, movement from field A to B, amount of damage dealt to a monster in battle, are information that is unsuitable to store in the blockchain, and the blockchain cannot generate additional value from this. But major results from in-game activity and the user's in-game major asset changes are details that are meaningful to store in the blockchain. A poker player's game results and asset processing information, or a rare game item's system generation, acquisition, ownership and transaction related information are also good examples. This allows the content provider to be free from the development and maintenance burden of having to convert everything into the blockchain, while at the same time, reducing the expense to the platform ecosystem of managing such massive amounts of data, in turn allowing the user to experience a pleasant and fair service usage environment.

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2.2.2. Service Layer

The service layer provides development tools (API, SDK) to content providers (applications), who want to join the platform ecosystem. Internal tokens (BORA Point) within the BORA Chain may be linked and used, and user transactions may be recorded in the blockchain.

This layer also provides BORA Chain Explorer, which externally reviews and audits the information recorded in the BORA Chain. This provides external transparency for BORA Chain records, allowing anyone to verify them. This layer also provides service tools for platform ecosystem operation and management, such as user authentication and token transfer. The tools and environment for business operations (such as data analysis and monitoring tools) as well as the policies and rules for platform governance are also included in the service layer.

2.2.3. Application Layer

This layer is where the applications of content providers joining the BORA Ecosystem are located, operating while linked to the BORA Platform. The BORA Platform's own application (BORA App) is provided here, allowing users to view and freely access content applications incorporated into the BORA Ecosystem. Digital asset management and ERC-20 token (BORA) exchange functions are also provided by the BORA App.

To form an ecosystem that grows with its many participants, the BORA Platform has plans to support third party content providers in order to generate additional content. Support is available for the creation of additional value by accessing, using, and processing the various data in the BORA Chain, through the tentatively-named "BORA Data Hub".[13]

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3. Solution 2 - Economic System and Incentive Mechanism

3.1. Design Purpose

The contents in solution 1 have been written from a design-centric perspective with the purpose of circulating content applications based on the blockchain platform. In this part, we will deal with the structure of promoting and sustaining content circulation and user activity through the BORA Token mechanism and

[13] Op.gg that uses the API provided by Riot Games to provide player record statistics service for 'League of Legends', and solutions that analyze data based on publicly available poker hand histories (e.g. Poker Tracker, etc.) are some exemplary case studies.

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economic systems.

BORA is an ecosystem that has the form of a multi-sided platform in which both content provider and user participates. Thus, we have designed an economic system and incentive mechanism that benefits all participants, while allowing for free, rational, and sustainable value generating activities.

3.2. Token Mechanism

The BORA Ecosystem has a dualistic structure, with the token 'BORA Token' following Ethereum's ERC-20 standards, and the internal token 'BORA Point' based on the BORA Chain. BORA Tokens may be freely traded between users, whereas BORA Point are tokens for circulation within the platform ecosystem. The internal and external tokens are almost identical in terms of their technical structure, as they are both cryptocurrencies based on blockchain technology, but are different in that BORA Point are managed independently within the BORA Blockchain and may only be circulated within the platform ecosystem. BORA Tokens are initially generated by the Ethereum mainnet, but BORA Points are only generated through usage transfer requests on already generated BORA Tokens.

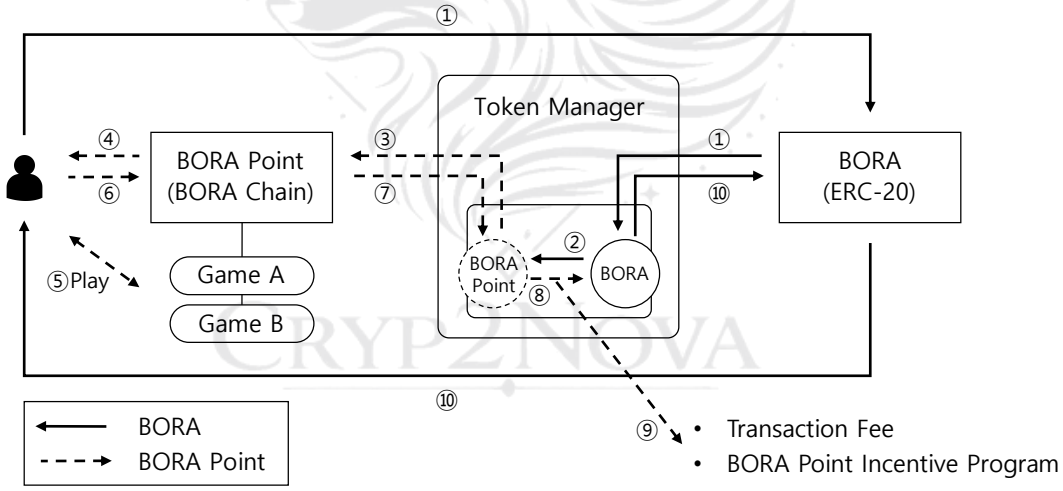


Figure 3. Linkage and Flow of BORA Token and BORA Point

For example, users who wish to play games within the BORA Ecosystem may change their BORA Tokens to BORA Points. When a transfer request is received, the 'BORA Token Manager' generates BORA Points according to the requested amount, and the requested BORA Tokens are retrieved from the user to be stored. Users can play the game using the issued BORA Points. Users may also transfer held BORA Points to BORA Tokens at any time. To accomplish this, the BORA Token Manager retrieves the requested BORA Tokens from the stored balance of BORA Points and provides them to the user. The BORA Points are retrieved

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and disappear.

To further clarify the phrase 'retrieve and disappear,' BORA Points can be seen as loan coupons that are only circulated within the platform, and which the value of BORA Tokens is provided as collateral. The user's request to transfer BORA Points back to BORA Tokens is akin to the retrieval of a loan coupon, and the return of BORA Tokens takes place according to the value retrieved. Theoretically, the amount of BORA Point that can be generated through smart contracts will be the total supply of BORA Tokens issued in the market multiplied by the exchange rate to BORA Point. This structure means that the issuance and circulation of BORA Points managed in the BORA Chain are fully controlled by BORA Tokens (the ERC-20 tokens). In other words, not only will the BORA Chain have a technical characteristic guaranteeing execution and record keeping based on blockchain technology, there also cannot be any discretionary engagement by individuals or specific organizations in the issuance and circulation mechanism. As such, these specific encrypted tokens for platform circulation are, strictly speaking, different from existing in-game currencies and content service points that may be additionally issued, removed, or modified policy-wise at the sole discretion of the operating business.

3.3. Incentive for Ecosystem Vitalization and Growth

3.3.1. Design Purpose

As written above, the design goals for the token mechanism and economic system are to generate ecosystem value and sustain growth. This is only possible if reasonable motivations and expected values are provided to basically all platform ecosystem participants (all users, content providers, and platforms). To accomplish this, we operate the 'BORA Point Incentive Program,' and adhere to the following design principles.

(A) We can call a platform ecosystem successful if it is possible for participants to generate value, and if such activities are sustained.
(B) 'Value' here can be determined by participant scale and participant activity scale.
(C) As the number of participants increases and the activity of participants increases, the volume of BORA Points increases also.
(D) The volume increase of BORA Points means that the BORA Ecosystem will eventually grow.
(E) Thus, we place a high value in the usage and circulatory activities for BORA Play, and will create an incentive system in order to promote and sustain such activities.
(F) The incentive system is not operated at the discretion of the platform, and its execution is guaranteed based on the BORA Chain according to pre-defined rules.

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3.3.2. Incentive Program Purpose and Expected Effect

As user and activity levels increase, the ecosystem's value becomes greater and more BORA Points can be circulated. Some portion of the distributed BORA Points will be saved to the BORA Point Incentive Program, to be re-utilized as a resource for platform ecosystem vitalization. Saved assets will be distributed among the participants in ecosystem value generation (users, businesses, platform operators) according to the BORA Platform characteristics. Distribution execution and results are carried out according to the blockchain and smart contracts, with consistency, transparency, and credibility. These distributed values are beneficial to everyone.

First, the user will receive incentive rewards based on the rational criteria of ecosystem contribution from one's activities (e.g. game play, content purchase). These rewards may be exchanged at any time for BORA Tokens. This is an attractive and rational reward to the user, continuously stimulating user activity.

Content providers can utilize BORA Point incentives originated from the BORA Point Incentive Program, as a variety for additional service resources. This program may be used as a business operation asset to increase system reliability, or exchanged for BORA Tokens. This kind of financial benefit mechanism can be a clear motivating factor for content providers to continue providing or increasing their ecosystem contributions. The service provider also uses the shared platform circulation token (BORA Points), instilling solidarity and a sense of responsibility. BORA Points also allows for value generation through normal activities, reducing the motivation for improper behavior within the ecosystem. Ultimately, BORA Points progressively leads towards better content service quality, and allows for the promotion of good faith competition among businesses.

The BORA Platform can also be used to secure a reward pool for ecosystem operations. Thus, it is possible to secure a healthy and sustainable source working as a reward pool for ecosystem operations, even if dependencies on other profit mechanisms (e.g. market commission, revenue sharing) are lowered. This allows for the removal of the excessive profit structure from the platform design, which can directly or indirectly increase the willingness of external content providers to participate in the BORA Ecosystem.

3.3.3. Incentive Program Operation Method

The BORA Point Incentive Program's execution is fundamentally guaranteed by smart contracts in the BORA Chain. It manages: the asset savings, distribution target and rule setting, execution of asset distribution, and the balancing of BORA Points within the Program that exist as a result of savings and distribution.

The reward pool for the Incentive Program can largely be classified into two parts. First, to execute BORA Ecosystem operations, some of the distributed BORA Tokens are converted into BORA Points and saved in the BORA Point Incentive Program. This amount becomes the seed for the first incentive program. Second,

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part of revenue generated from the platform operation will be credited to incentive program and used as continuous resource.

Incentives can be distributed to everyone who participated and was active in the ecosystem during a set period of time to encourage greater participation. The aforementioned BORA Points saved in the BORA Point Incentive Program are used as reward. The method of payment target assessment, payment cycle, payment scale, and other issues will be made public when operational stability has been secured through future testing and other activities. These will all be executed through smart contracts. To aid your understanding, here is a simple example: as an incentive, 10% of the BORA Point Incentive Program's balance can be paid every week to all address accounts that generated BORA Point transactions according to the stake of each individual transaction. Payment can be made to each address directly, or may incorporate some entertainment factors such as mini-games. Or, operations can utilize a combination of the two.

3.4. BORA Point's Flexible Extension Architecture

The BORA Platform ecosystem can accommodate various types of content providers such as video games, social communities and entertainment. As each of these have different service architectures, monetization models and user environment characteristics, it may make it inappropriate for BORA Point to be operated as the sole economics system. For example, in the case of mobile games, it can use the application's own in-app purchase to entice players to make purchases, but blog services will find it difficult to charge fees to writers; instead it may be more appropriate to provide a writing-friendly environment and tools for free. These differences make their economic mechanisms different as well. It is the same when providing services like 'CryptoKitties' or issuing / circulating limited edition celebrity digital avatars.

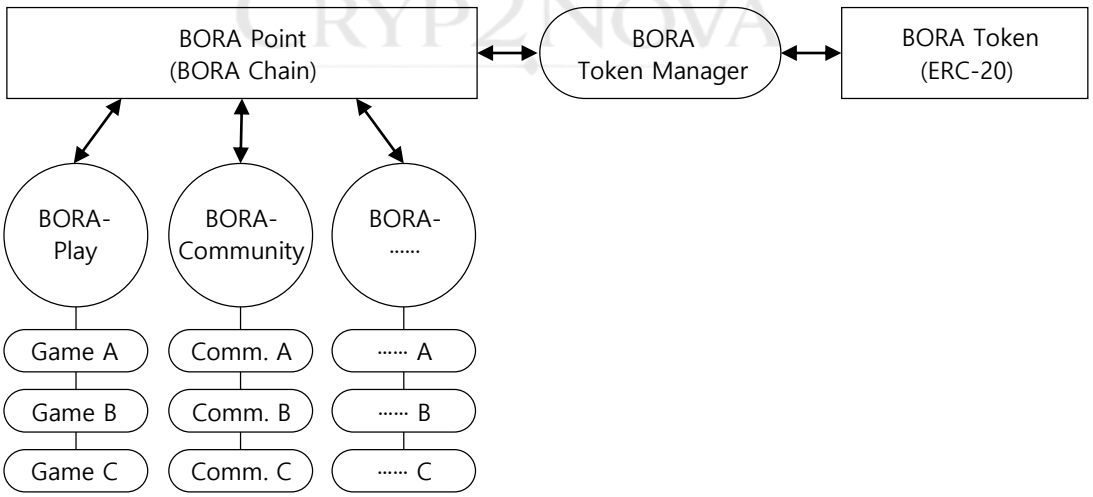


Figure 4. BORA Point's Flexible Extension Architecture

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BORA Points have a flexible and expandable architecture that allow them to cope with diverse service environments. BORA Point is the generic term for the token circulated within the platform ecosystem by the BORA Chain, and there may be several different types of BORA Points depending on the platform operation needs. BORA-Play will first be launched to cope with the needs of regular game play. Subsequently, new types of BORA Points may be launched (e.g. BORA-Ticket, BORA-Community, etc.) depending on the situation.

3.5. Monetization

The BORA Platform can apply a monetization model for ecosystem maintenance and growth. Various models utilized in existing industries will be referenced, but appropriate methods will be decided on a rational level that fits the architecture and direction of the BORA Ecosystem.

1) Fees for changing BORA Points to BORA Tokens:
   Within the BORA Ecosystem, BORA Points may be exchanged for BORA Tokens at any time, at the discretion of the holder. From the user's perspective, this means a change from activity value to external market value; and from a bio-ecosystem's perspective, this means internal activity energy exiting the ecosystem. To perform this change, the requester must pay a fixed fee, and the collected fees will be used for platform network operations and for supplying the ecosystem's internal energy. Fees will also contribute to the prevention of the abuse and network spam caused by meaningless transactions.

2) Transaction fees for some large-scale content providers using the BORA Chain:
   BORA Platform is an ecosystem shared by multiple participants. Thus, if a content provider requiring massive transactions (extreme example would be Facebook) participates, the services ecosystem transaction processing share will increase, which could have negative effects on the services of other providers. As such, it will be provided for free at a base level, but fees may be claimed from participants requiring transactions that exceed a certain level. Participants with such transaction fee charges should be limited to a fraction of content services.

4. BORA Platform Ecosystem Usage Cases

The BORA Platform ecosystem will be verified through trial services, and the ecosystem participation scale will be extended with a focus on games. Thereafter, it will expand to a genre-related business ecosystem

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that includes game communities, game advertisements and marketing agencies. It will also expand to non-video game genres with similar business structures. Token economic systems and incentive mechanisms that are internal to the ecosystem will be added to cope with this expansion. The following are some examples of content businesses that can be developed using the BORA Platform ecosystem.

4.1. Games

4.1.1. P2P Play

Competitive games like 'Clash Royale' creates value for play through confrontation and competition between players. But boredom and loss of motivation to play is an issue, as PvP play gets repetitive. To give an example of PvP in the RPG genre, players with good results in a certain mode obtain in-game goods (e.g. gems) through weekly placement rewards or other similar methods. In the long run though, you need to have sufficient statistics increases (e.g. good equipment for higher fighting strength) to obtain good results, and the types or amount of goods rewarded will not be sufficient motivators to a player that already has high stats.

The BORA Platform will provide development tools (BORA Toolkit for P2P) that can be applied to P2P play. Games that apply this toolkit can apply BORA Points for entry fees to PvP play modes, win rewards, and rank rewards for their service. Game players will have a certain goal and motivation to play and obtain BORA Point rewards from the platform. Game providers can maintain their game services oriented for high-immersion players, increasing the game's LTV.

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4.1.2. Prize Pool Event

BORA Platform's event development tool (BORA Toolkit for Prize) can be used to provide prize pool-type play modes and promotion events in various games. For example, in an action adventure game such as Temple Run, event promotions can be held using BORA Points as a reward to promote user play and entice users to return. A provider offering Texas Hold'em poker can hold a poker tournament event with BORA Points as the reward for players using free game chips. Tournament participation requirements such as requisite levels and entry fee conditions can be set to increase utilization and free chip usage. Game businesses will be able to organize BORA Points events in their free play channels, achieving effects similar to the purchase conversion of non-paying users. This is because free channel players can obtain BORA-Play through events, which creates the motivation for them to transfer to the BORA Points dedicated play channel.

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4.1.3. Specialty Items

In some games, there are instances where special types of items, or items that have value due to their extreme rarity, are made available. The BORA Platform will provide development tools (BORA Toolkit for Items) for these services. These tools can be utilized for services selling items like 'CryptoKitties', or applied in a mobile baseball game to develop and circulate a legendary baseball team deck as a special item. When linked to the toolkit provided by the BORA Platform, the item's data such as issuance, total circulation numbers, transactions, and item attribute information are recorded and stored in the BORA Chain. Service providers will be able to use the toolkit to provide various types of special items. Users can receive guarantees of the item's ownership and value, and they can trade items in a low risk and low cost environment. Information such as total number issued and ownership status are transparently revealed, preventing the potential devaluation of items by additional issuance at the service provider's sole discretion.

4.1.4. Item Transaction

Game services (such as MMORPGs) that have transaction systems such as item auction houses will be able to utilize the development tools (BORA Toolkit for Trade) provided by the BORA Platform to promote item transactions and increase player usage of the game. In a conventional game service architecture, transactions occur by trading game items and in-game currencies (e.g. gold, gems). As such, players who wanted to make a profit through item transactions, had to use external item transaction sites that were based on cash payment. To carry out transactions, users had to go through tedious processes that left them open to fraud and item theft, and had to pay a fee to both the transaction site and the game. On the other hand, for direct transactions in an in-game transaction system using BORA-Play, BORA Chain and smart contracts provide transaction ease and security to the user while reducing the fee expenses. In addition, game services can obtain an amount of BORA Points as a fixed transaction fee, allowing them to generate profit through direct transaction operations, rather than the indirect monetization method, by collecting in-game currencies as the fee.

4.2. User Reward Program

Various reward programs are used by different content businesses to increase customer retention and LTV. Unlike e-commerce, it is difficult for the producers of content such as games, communities, and videos to provide cash-based reward programs, making them mostly dependent on online items, item discount benefits or other limited reward types that can only be circulated internally. Content providers will be able to use the development tools (BORA Toolkit for Rewards) provided by the BORA Platform to operate loyalty programs that can be linked to actual benefits for users. BORA Points can be rewarded to new users achieving a certain level, building their affinity to the service, and VIP level based programs can also be

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operated.

4.3. Game Community and Related Business

Many game players share game information, discuss strategies, evaluate games, and even make suggestions to the development team by being active in communities. Generated player's information and sharing activities outside of the game not only contribute greatly to the game service, but also generate business value independent of the game itself. Communities where many players gather, are by themselves optimal locations for activities such as sharing game news and advertisements, recruit testers, gamer targeted pre-orders and Focus Group Interview (FGI), as well as marketing surveys. Thus, it may be beneficial to reward the activities of game community information generators and curation contributors through a separate economic system, which is where BORA-Enjoy (tentative name), an internal token within the BORA Chain that differs from the game play related BORA-Play, can come in. Advertisers who wish to advertise games within this community space and marketing agencies who wish to receive pre-orders before a game launch can purchase BORA-Enjoy to support their advertisement and marketing campaigns. This BORA-Enjoy in turn can be used for rewards and incentives to vitalize the community ecosystem. We plan to design dedicated internal tokens with economic systems and provide development tools (BORA Toolkit for Enjoy) to help accommodate this game external community ecosystem within the BORA Platform ecosystem.

4.4. Pre-paid gift card

In countries with low credit card coverage, prepaid gift cards are widely used for digital content. Digital content providers, such as games, sell prepaid cards that include game money and items in cooperation with local mobile phone carriers, or sell game payment products directly in connection with offline stores such as convenience stores. These business types are particularly active in Southeast Asian countries, contributing to the digital content business growth and user expansion in the region. BORA Ecosystem can develop 'BORA Sponsorship Program' and provide 'BORA Gift Card' through partnership with overseas regional mobile phone carriers. In this case, users can utilize their carrier plan product and at the same time, using BORA Points to enjoy games and services within BORA Ecosystem or other service benefits we provide.

4.5. Extension to Non-Video game Industries

When game communities and related businesses are incorporated into the BORA Platform ecosystem, expansion to non-video-game areas (e.g. various topic-based communities and related businesses) becomes possible. Communities, advertisement, marketing surveys and other basic mechanisms are similar to the

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usage cases within the game industry. As such, we plan to allow non-game-related businesses to use the above-mentioned token economic systems and development tools when joining the BORA Ecosystem.

5. Conclusion

The BORA Chain aims to reduce the burden on content providers as a result of having to privately develop and maintain a new blockchain and cryptocurrency network. It aims to provide a service environment with high transaction performance and expandability, while ensuring the independence of individual content services. Content providers will be able to use the web interface and API to quickly and easily link to BORA Chain, and operate the BORA Chain efficiently using the operation tools. They can also use the BORA Token architecture based economic system to create new value.

Users will be able to enjoy a better service environment in which reliable information is transparently disclosed. The user's digital assets (BORA Points) no longer depend on the content provider, and is owned and valued by the BORA Chain and the ecosystem platform. The incentive mechanism within the BORA Ecosystem will promote activity for all ecosystem participants (user, provider, platform), contributing to the growth of the ecosystem. Ultimately, the BORA Ecosystem aims to resolve existing issues face by [internet based content services] and provide new opportunities and greater value to all participants.

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