

LEVEL

Decentralized Media Network

"Deconstruction and Reconstruction of Media Power"

July 2018

Version 1.0

LEVEL Team

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Executive Summary

As technology continues to evolve, micro-media has become one of the most important content producers while mega-platforms monopolizing content distribution take advantage of micro-media creators to seek profits only. The media power generated by this system erects higher economic entry barriers that creators must deal with. For media to make advancements that truly benefit the consuming public, this media power must be deconstructed and restructured with the collective power that micro-media creators can wield. To achieve this new structure, editors must take on the role of curating quality content from micro-media creators and deliver them to the audience, and that a completely open, independent content market must be created for editors and creators. Decentralization is key to resolving this challenge. The two most promising technologies to achieve decentralization are blockchain and distributed computing. Since these technologies are still in their early stages of implementation, it is very challenging to create a complete self-governing, self-sustaining, and decentralized network. To realize our vision, we are committed to designing and creating the algorithms and technical infrastructures that enable autonomous governance, motivating mechanisms, completely decentralized infrastructures, and a stable token economy. To this end, we set our goal of issuing 206 million tokens, of which 50% will be sold to finance the cost of building and operating the network. We plan to launch this network within two years after funding, with the first version to be released in the fourth quarter of 2019.

Background : Why did we start this project?

Digital technology led to the invention of computers and the Internet, which in turn has fostered the media to give more power and freedom to ordinary people. Computers provide high-quality tools of production and consumption to the public at an increasingly low cost. As the Internet emerged and evolved, the traditional one-way communication from producers to consumers gave way to an interactive communication channel between producers and consumers on a large scale. We live in a media world in which anyone can create, distribute and consume media content. That we are living in a world of “prosumers” has already become a cliché¹. But the world is changing more dynamically than ever. The newly emerged digital platform is a melting pot-like free market in which the new prosumers (the new producers and consumers) meet. The digital platform has indeed transformed the age of mass media into the age of “micro-media”². As a range of individual creators has emerged as important actors in the media industry and meets consumers of various needs, the spectrum of production and consumption has expanded dramatically. The so-called “Long-Tail”³ economy has emerged, and it seemed the Pareto Principle (a.k.a. the 80/20 rule)⁴ may be giving way to the “Long Tail”.⁵

However, the vector of technology (more power and freedom to people) faces barriers. Digital platforms take an increasing share of the content distribution, and the so-called “attention economy” based on free content provided in the traffic-focused revenue model is dominating the Long-Tail economy⁶. The micro-media with its limited audience is never able to make money while mega-platforms such as Google, Facebook, and Naver are getting bigger by the day and taking the lion’s share of the money. Mega-platforms which monopolize the means of making money and media empires which can meet the needs of such platforms are becoming stronger media powers, all the while creating higher barriers that block micro-media players from the mainstream media. The gains from empowerment and freedom granted by the new technology are mostly distributed to a few media giants while the world remains as an unlevel playing field in which most micro-media creators will not survive.

Now, the vector of the technology awaits the final breakthrough. We have to resolve the last challenge which we have not been able to address with just the tools (computers) and connection (the Internet). That is to enable the public to completely control and own the value of what they produce and share. We confidently believe that using decentralizing technologies including blockchain is the breakthrough we have been looking for to address the challenge. This belief has inspired us to embark on this project.

1 The word “prosumer” was first coined by Alvin Toffler in 1980 in his book <The Third Wave>, but the very idea of the term has been around for more than 40 years.

2 The more common terms that are generally used include “single-person media,” “personal media” and “social media.” In this white paper, however, we use the term “micro-media” as the media based on various communities in the Long Tail rather than producers or distributors to highlight its idea contrary to the idea of “mass.” In other words, the term “micro-media” means a participant media which is not merely a single-person media or personal media and does not focus on the distribution of the content via social networks but is created around small micro-communities.

3 This term was coined by Chris Anderson, the Editor-in-chief of Wired, in 2004(source: [Wired](#)).

4 This principle is a logic of the approach to brick-and-mortar sales focusing on the bestsellers, explaining that the products at the top 20% ranks in sales account for 80% of the total sales. This law was named after an Italian economist Pareto who claimed that 20% of Italian populations owns 80% of the country’s wealth.

5 This term was coined by Erik Brynjolfsson and others and refers to a phenomenon that e-commerce via platforms including Amazon is carried on the new economic system based on the Long Tail while the Pareto Principle is mainly applied to brick-and-mortar sales (source: [Research Gate](#)).

6 In his second book <Free: The Future of a Radical Price>, Chris Anderson who coined the new word “Long-Tail” defined a new age in which the digital economy is not fueled by money. His crucial insight explains that, instead of money, attention or reputation becomes a scarce resource, and companies like Google would newly play a role of the central bank. Anderson, however, saw this new state of affairs as something desirable.

The Bloter Way : Why Us?

Bloter.net started off its operation in 2006 as the “news community of the single-person media.” We believed that we were entering the age that bloters⁷ would become the central figures of the new media, and that our mission was to develop the media for the age. Based on the belief, Bloter.net now provides two platforms: one is a media platform⁸ in which content created by bloters are published in a comprehensive way, and the other is a business platform⁹ in which bloters can make money by utilizing the expanded content business. Our vision has always been to create a new community ecosystem for micro-media, in which bloters can be economically viable while maintaining their independence.

Currently, however, Bloter.net only serves as a small-scale editor that curates and publishes a small subset of content. We need to transform the existing damaged media ecosystem weakened by the media powers described above into a healthy ecosystem. Bloter.net needs to take the next steps toward the vision, and the solution for this challenge is to create an open content market that more editors like Bloter.net can emerge and play an active role. The open content market where editors and creators can connect must be developed in a self-governing, self-sustaining and independent way. In this ecosystem, groups of editors would be the catalyst to make the micro-media ecosystem more prosperous.

Bloter.net must be the media supporting the following idea, and we believe that our mission would be completed through the platform.

Various groups of editors facilitate the open content market that delivers quality content of the micro-media creators to form an editor-driven micro-community and to build a stable independent economy by attracting support from the audience and sponsorships from advertisers based on the micro-community.

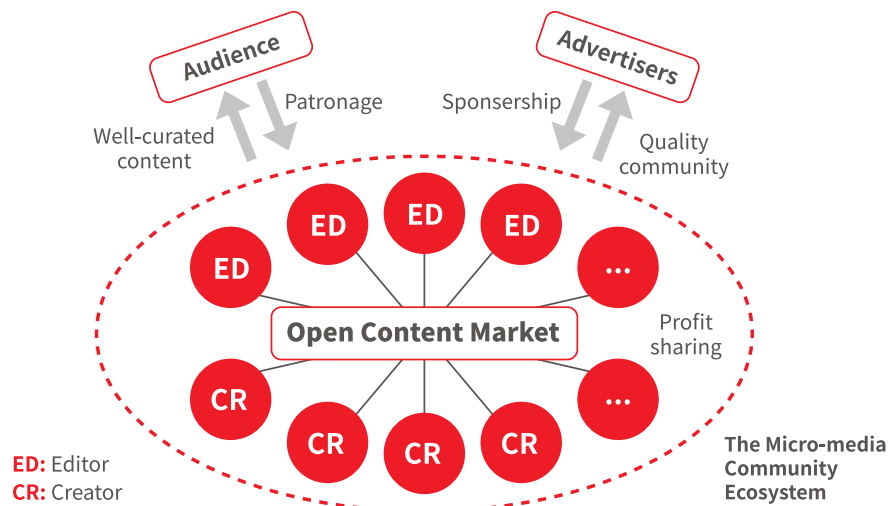


Figure 1. The Idea Map of Bloter.net's Destination

7 The term “bloter” is a compound word of “blogger” and “reporter” and refers to newly emerged independent and professional journalists.

8 As of June 2018, Bloter.net has recorded an average of 2 million monthly page views, and 20 bloters are publishing their posts in the technology and lifestyle areas.

9 Bloter.net offers expanded content businesses such as Bloter Academy (an educational institution), Bloter Conference, and publishing services.

Vision, Mission, and Value : What is our cause?

Given this challenge, the vision, mission and value of our project are defined as follows:

Vision

Deconstruction and Reconstruction of Media Power

“Deconstructing the centralized media power” would be the final challenge to complete the digital transformation in the media industry. The deconstructed media power must be reconstructed as a collective power of the micro-media creators, thereby establishing a new media ecosystem providing a level playing field¹⁰.

Mission

Establishment of a Self-governing, Self-sustaining and Decentralized Media Network

Decentralization is key to resolving the fundamental problems that the media industry is facing today. The rationale is that centralized institutions of any form are vulnerable to external forces like financial and industrial capitals, political authorities, and interest groups which may negatively impact the entire media ecosystem. To prevent this, it is critical to establish a self-governing and self-sustaining media network that is immune to external pressure.

Values to Drive

Accessibility, Independence, Cooperativeness, Censorship-resistance, and Sustainability

- **Accessibility:** The existence of the entry barriers implies that someone has a concentrated power. For this reason, the entry barriers must be minimized so that any members of the network can easily participate in any roles in the network.
- **Independence:** The overall network must be free from meddling by powerbrokers in the industrial and financial capitals, political authorities, or any other interest groups. The media which is free from external influence must also be able to survive the competition.
- **Cooperativeness:** All network participants must generate a collective power through voluntary cooperation to stably operate and develop the network. They reject any notion of protecting only the interests of a select few to the exclusion of the entire group.

¹⁰ This idea is also the origin of the name of our project.

- **Censorship-resistance:** The entire network and individual micro-media Creators must not be blocked or shut off due to any internal or external pressure.
- **Sustainability:** The network must create its own economic value and flow and establish a self-sustaining economy.

We take the vision, mission, and value as the main guidelines of the project.

These must be the fundamental grounds of all our decisions, and any internal or external actions that run counter to these guidelines must be criticized and corrected.

The Definition of Network Participants

One of the most important elements in the micro-media ecosystem is 'Editors' because Editors' delivering a variety of content tailored to the needs of the consumers is vital for the micro-media to survive in this industry.

Mega-platforms' strategy has been to create advertising revenue by providing consumers with free services to gather consumer data and then utilize this information to automatically match content with targeted consumers (a.k.a. "personalized recommendation"); however, such a centralized structure will ultimately experience problems and need to be replaced. To step in for the tyrannical centralized platforms, Editors that selectively curate "quality content" will be responsible for taking a leading role in the media.

It is also important to design dynamics among the group of Editors, 'Creators' consistently providing a high-quality content, and Advertisers and the Audience that are the critical sources of revenue. It is also needed to define the roles of different participants, such as 'Operators' for operating the network, 'Contributors' for supporting Creators' production, sharing and communication of content, and 'Betterers' responsible for making improvements like monitoring votes on important decisions, making assessments of content quality, and dealing with malicious actors and improper content.

The following are classifications and definitions of the roles of the network participants (abbreviations are used below).

Classification	Role	Abbreviation	Content
Prosumer ¹¹	Editor	ED	The Editor publishes quality content by curating content made by Creators and forms the "Edition," a publishing media.
	Creator	CR	The Creator produces content.
	Advertiser	AD	The Advertiser produces advertisement content
	Audience	AU	The Audience follows the Editors/Creators and consumes their content.
Operator	Committee Member	CM	The Committee Member is elected by votes as a member of the Network Steering Committee and makes decisions related to the overall operation of the network.
	Operations Staff	OS	The Operations Staff are the employees or outsourced workforce needed to operate the network
	Storage Provider	SP	The Storage Provider offers storage to distribute databases

¹¹ This is a cliché but still valid term. Prosumers are the core of the ecosystem.

Contributors	Resource Provider	RP	The Resource Provider offers resources (photos, illustrations, etc.) needed for Creators to produce content
	Referrer	RE	The Referrer shares content published by Editors/Creators with external actors.
	Commenter	CO	The Commenter makes comments on published content
Betterers ¹²	Voter	VO	As a holder of tokens, the Voter casts votes for various decisions. ¹³
	Rater	RA	The Rater evaluates the quality of content
	Watcher	WA	The Watcher monitors improper actions of Committee Members, Editors, Creators, and Advertisers while filtering content of plagiarism, fake, obscenity, or fraudulence.

Table 1. Classification of Roles of Network Participants

Roles described above are not mutually exclusive among users and open to all users without any entry barriers, and the users can have overlapped roles. In addition to the roles defined here, there will be many other roles as the network continues to expand and evolve.

12 The Better works to improve network operations with their tokens at stake. For this reason, they are “Betterers” as well as “Betterers.” They will be rewarded if the outcome turns out to be in their favor and suffer a loss if the outcome turns against their belief. That means they can be active participants who can be modestly rewarded for their contributions as well as upholding their cause, even though they take some risk.

13 This is a concept distinct from the voting right of the stockholders. The token holders deposit their tokens and cast a vote, which is the role intended to create a system in which token holders take responsibility for expressing their opinions and are rewarded for their contribution to improving the network by making decisions. Rewards are given to the token holders by redistributing the tokens deposited by Voters based on a predetermined distribution formula.

Product Overview

There are three directions for development of our product: first, open curation by Editors; second, a revenue model based on communities; and third, a cooperative authoring and publishing system.

1. Open Curation by Editors

Anyone should be able to work as EDs. CRs can also become EDs and publish the content themselves. This is what today's bloggers do. However, the difference between EDs and CRs is that EDs can curate other CRs' content and publish them in the EDS' own Edition with a unique brand identity.¹⁴

Of course, the structure in which multiple authors publish in a single media site is nothing new. It is important that, in this way, we form an open content market where any CR-ED combination can be available instead of using the existing method to plan businesses by creating organizations.

Anyone can become an ED and ask for publication of any content produced by CRs. Individual CRs can ask any ED to publish their content. If the two parties can reach an agreement, CRs' content can be published by EDs. EDs will transparently share revenue earned by publishing the content based on the method specified in this paper with the CRs who contribute to the publication.

As a rule, there should be no entry barriers for becoming EDs. However, the ED must deposit a certain number of tokens if he/she wants to generate income from advertising or sponsorship (the deposit will be required only once at the beginning, and EDs with no revenue model do not need to deposit tokens). This deposit is forfeited if the ED is "impeached" for improper actions. While the single ED can exist independently, multiple EDs can collaborate on a shared Edition. In this case, multiple EDs can have a democratic cooperation process.

2. Community-based Revenue Model

The AU creates communities by following a variety of EDs that they prefer or advocate. These sub-communities generated around EDs share common preferences, tastes, causes, philosophies, etc. In other words, a group of the AUs consisting of the sub-communities will try to maintain high standards in their communities while having distinctive characteristics and avoiding any damage to the communities' objectives. Of course, there might be groups pursuing the opposite direction, but those will find themselves hard to survive.

The revenue of the EDs will be generated based on the communities with high standards.

The ADs may want to show their advertisements aligned with the community's distinctive characteristics. The AUs that want the community to continue to exist will support EDs through patronage, subscription, funding, etc.

¹⁴ EDs can be considered as existing publishers and Editions can be considered as the brand of the publication. But the structure that includes Editors and Editions is fully open, which is different from the existing closed structure. This structure is not much different from the structure of Medium, which contains Editors and publication, and the structure of CIVIL, which contains newsmakers and newsrooms.

The advertising model has always had a risk that the media can be dependent on the influence of industrial capital. Especially in the existing advertising model based on the attention economy, the media has been largely wielded by the interests of Advertisers and has experienced the vicious cycle of producing low-quality content focused only on increasing traffic. Still, it is impossible to create a stable revenue model by completely excluding the advertising model in the media. We try to address this dilemma by discovering an advertising model that can converge with the ED-driven communities with high standards. For example, ADs produce ad-specialized content or resources as a kind of the ED or CR and distribute these in the same process as for other ED and CR. The only difference between ADs and EDs is that their revenues are derived from the opposite sides. The difference is that, while EDs receive tokens from the actors outside, ADs give out tokens to them. This model is intended for ads to be distributed as any other content in our ecosystem without causing any negative responses. It can also reduce the burden caused by configuring and operating a separate advertising platform. It is also possible to consider an ED that performs the role of an ad agent. Such EDs may act as an AD in our ecosystem by obtaining advertisement orders from Advertisers outside.

The revenue generated by ADs and AUs must be distributed in a way that focuses more on the ratings of the AUs rather than the traffic. In addition, it is possible for communities to self-police content of plagiarism, fake, obscenity, or fraud. Such efforts devoted by the communities may contribute to improving the quality of content in the communities and enhance the ability of EDs while also raising the standard of the communities.

3. Cooperative Authoring and Publishing System

In addition to working independently, CRs will provide powerful cooperative tools that will enable multiple CRs to perform cooperative authoring. There may be CRs who publish resources such as photos and illustrations as content instead of including them in content or provide their resources to other CRs to support creating content as the RP. In this way, advertisements can be inserted into content as a resource, which can be granted a content ID under a smart contract and generate transparent reimbursement among ADs, EDs, and CRs in a verifiable way.

The publication information and content of CRs are stored in distributed networks, and CRs can manage all versions of their content that they created and published by using their accounts in the app. For example, even when a CR publishes his/her content through different EDs, the CR can manage all content in his/her own app. An AU can also view all content of a specific CR.

When the content of CRs is delivered to EDs, EDs may perform additional editing work on the content by modifying designs and adding resources or extra phrases to make them aligned with their Edition. The decision to revise the original content of CRs is naturally based on the mutual agreement between EDs and CRs. EDs can also request producing content directly in their own content management system from exceptional CRs.

To transparently manage this system of cooperative authoring that multiple participants take part in, we will employ the distributed version control system (e.g., Git). Individual participants can create content in their own versions, and the versions are combined into the single version in procedures like "pull request," to enable management of the records for versions. Of course, the revenues allocated to completed content will be distributed fairly among partners based on their contributions through a transparent smart contract.

The basic idea of the service based on these features is as follows:

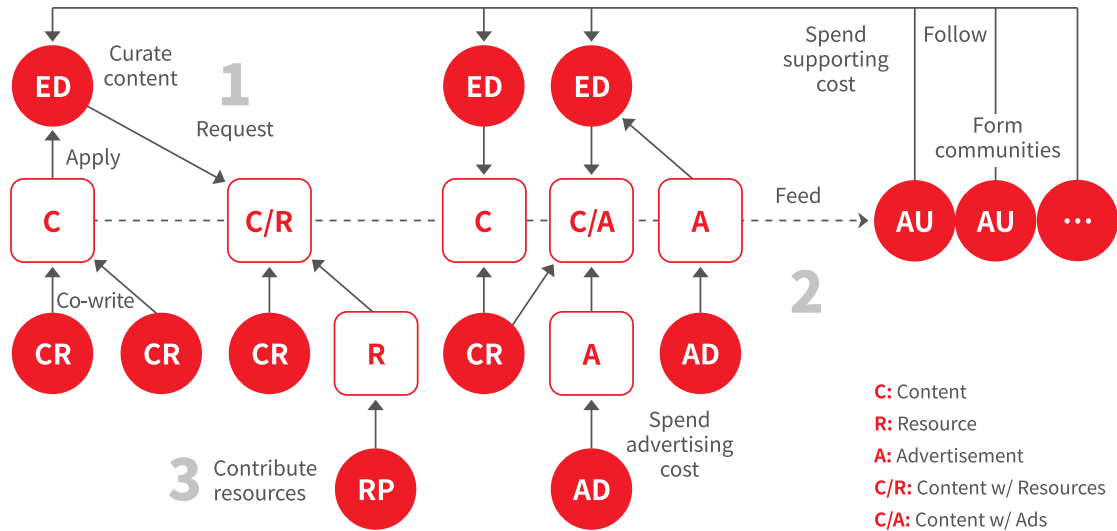


Figure 2. The Basic Concept of Product

1. Content is curated in ways that EDs request CRs to publish content or that CRs apply to EDs for publishing their content.
2. ADs can insert advertisements into the content (C/A) produced by CRs as resources or ask EDs to publish advertisements. ADs pay for advertisements when they are published. AUs form communities by following EDs and then are fed with content curated by EDs. AUs make an expenditure to support EDs through patronage, subscription, or funding.
3. CRs can either author content independently or together with other CRs. They can also use resources (e.g., photos, and illustrations) provided by RPs in their content (C/R).

Challenges

The biggest challenge in the development of the product is to build a decentralized network that is operated reliably. We are faced with many challenges that cannot be overcome by just declaring our purpose. To address these challenges, it is critical to design the right algorithms and develop technical solutions that are feasible in our situations. However, such resolutions are challenging to adopt because the concept of decentralization and the level of the relevant technologies are just in early stages of development, and especially, people do not readily accept the fact that, to realize decentralization, they need to share the centralized roles (or costs). In other words, we now need breakthroughs in our understanding as well as technologies.

Just like any other innovators, we could reach perfection by starting off with an imperfect solution. The only way to achieve perfection is “Just Do It”. What is encouraging is that there are so many developers and businesses across the world that have been continuously improving the quality of solutions through trial and error. Just like these innovators, we will also embark on our moonshot project.

The challenges we have defined are in the following four areas:

**Autonomous
governance**

Designing a collective and fair decision-making process that is open to everyone and gives no concentrated power to anyone

Motivating mechanism

Designing a transparent mechanism of economic and social rewards and punishment, which induces voluntary participation to achieve the common goals

**Completely
decentralized
infrastructure**

Designing a fully distributed computing system in which all participants take responsibility for storing and providing data and can utilize opportunities for businesses including application businesses.

Stable token economy

Designing a token circulation system that creates continuous token demand to maintain the utility of the tokens in the network

We will devote the following efforts to address the challenges in the four areas:

1. Autonomous Governance

The network must have a fair autonomous governance system where the power is distributed equally to all participants. Although we will actively adopt automatic codes such as smart contracts as a way to decentralize, we also need a collective operation body of the participants to minimize the potential problems of these permanent codes. To this end, we design and define the Network Steering Committee (NSC) and the Common Code of Conduct (CCC).

The NSC consists of a certain number of CMs elected by votes of token holders among candidates who deposit a certain number of tokens or more. The CMs make collective decisions (an agenda is approved when the majority of the CMs cast votes, and the majority of them consent for the agenda) about overall

operation policies for the common rules, shared funds, network operation, and process of the community proposals. However, the range of decisions that the CMs may wield their power has not been specified. To prevent CMs of the NSC from wielding excessive power, the CMs serve a fixed term and can be accused of violating common rules and impeached (for impeachment procedures, refer to the accusation algorithm). In the case of impeachment, the deposit of the CM would be forfeited, and the title would be immediately rescinded. The candidate who has made the most token deposits would fill the vacancy, and a by-election would be held as soon as possible following the procedure.

The CCC defines the common goals of the whole network and the rules which all network participants must make every effort to follow. The CCC will contain normative rules agreed to by all members of the network. The community can accuse all CMs, EDs, CRs, and ADs of violating the CCC and restrict their activities. Since the determination on one's violation of the normative rules may be subjective, the final decision would be made by a vote of all token holders (refer to the accusation algorithm).

2. Motivating Mechanism

Motivation is a very important element in getting participants to take part voluntarily in achieving shared goals across the network and creating values. Although every member is assumed to share the cause when participating in the network, stronger means are needed to ensure the network's success. For example, the miners who carry out an important mission to gain data integrity of bitcoin and blockchain are rewarded with a large number of bitcoins for their service. Such a financially rewarding method would be embedded in the network for stable operation (refer to a stable token economy for details).

Motivation is often spurred by extrinsic means like financial rewards and benefit to one's reputation but can also be generated from intrinsic reasons like participation in a worthwhile cause and just plain fun. Despite the benefits, coding motivations into the system as a mechanism is challenging. It is difficult to precisely predict whether an incentive would motivate the participants as intended and whether there would be any unexpected effects. For this reason, it is prudent to experiment with several candidate means. The following are some of the mechanisms we are planning to introduce:

First of all, the accusation algorithm selects those that can be included in a whitelist.

To this end, we plan to use an algorithm called the "Token Curated Registries (TCR)."¹⁵ The accusation algorithm can be applied to inappropriate CM, ED, CR or ADs who violate the CCC and may be applicable to improper content such as those related to plagiarism, fake, obscenity, or fraud.

Anyone who has tokens can be a WA who then would raise an accusation. To make an accusation, you must deposit a certain amount of tokens. Deposits are used as a means to limit indiscriminate accusations. All accusations raised by WAs will be put to a yes or no vote by participants and decided when a majority of all token holders vote for or against the accusation within a certain period (refer to the voting algorithm). Objections can be raised regarding the voting results within a predetermined period. Accusers need to deposit a certain number of tokens since the accusation is a part of the role of the WA (at least more than the initial accusation deposit). However, the vote for the raised objection requires at least a two-thirds majority of the total votes of the participants to overturn the initial accusation result. The lowest limit of the number of the participants in both the initial and second votes for deciding yes or no can be set to

¹⁵ TCR, proposed by Mike Godin, a developer of ConsenSys, is currently implemented in projects such as CIVIL and Adchain. (Source: [Medium](#))

prevent a skewed decision made by only a few participants.

When the accusation algorithm is applied to the impeachment of CMs and EDs, the deposit of the WA who demanded the impeachment is refunded after the impeachment is approved. The original deposits of CMs and EDs and the deposits made to oppose the impeachment would be forfeited and distributed to the WA demanding the impeachment and those who voted for the impeachment. When the impeachment is rejected, the deposits of the WA demanding the impeachment and those made by the impugners against the first decision to reject the impeachment are forfeited and transferred to the Common Fund.

A slightly modified TCR may be applicable to CRs and ADs who have made no deposits. WAs can report improper CRs and ADs by making a certain amount of deposits or more. When restrictions against the CRs and ADs are decided, the CRs and ADs can raise objections about the restrictions by making deposits of the same amount initially made by the WAs. If CRs and ADs become subject to restrictions, they are banned from publishing content/advertisements on the applicable Edition. When the restrictions are rejected, the content and advertisements of the CRs and ADs remain in the ED's Edition.

Likewise, the accusation against content can be made when WAs make a certain amount of deposits or more. When the restrictions on the content are decided, objections against such decision can be made by the ED who published the content by making deposits of the same amount or more than made by the WA. If the restrictions are decided finally, the content is removed from the list of the ED's publications. However, when the restrictions are rejected, the content remains on the list of the ED's publications.

Once the restrictions against all the CR, AD, and content are decided, the deposits of the WA are refunded, and the deposits for objections are forfeited and distributed to the WA and those who voted for the accusation. Once the restriction on the content is rejected, the deposits of the WA are transferred to the Common Fund.

The voting algorithm is based on the "quadratic voting (QV)"¹⁶ algorithm. This is intended to address the problems of a "money election" that grants a vote for each token and the "tyranny of the majority" that arises from the one-person, one-vote system. The basic concept of the QV algorithm is that one can purchase a vote with tokens. In this case, the number of votes available for purchase is the square root of the number of the tokens paid.

You can apply the concept to prevent the non-desperate majority from easily attaining outcomes that are against the right of the desperate minority. For example, for issues like the legalization of gay marriage, most Voters can easily cast negative votes based on their vague prejudice, which simply outnumbers the positive votes of the minority desperate for legalization. For this reason, this means to increase votes can be required for the minority to pass the agenda in their favor. To prevent money from influencing election outcomes, the amount of deposits is charged as much as the square of the number of votes. If one wants to cast many votes, he/she should spend much more money.

The tokens gathered in the election would be distributed equally to all who took part in the election. This is beneficial to those who exercised one vote. The reason is that they can share the deposits of people who exercised more than one vote. In contrast, those who exercised more than one vote should spend more tokens. They would justify such expenses that they paid the right amount of tokens to achieve their goal. When such quadratic voting is implemented in practice, however, it is also necessary to make people

¹⁶ With the quadratic voting algorithm applied, voters purchase votes at the squared price of the number of the votes they want to buy. This algorithm was first suggested by Glen Weyl of Chicago University (currently working at Microsoft Research) in 2013 (source: glenweyl.com).

understand that this is far from money elections in which they can buy votes.

The content rating algorithm is a means to motivate people to consume high-quality content by producing objective quality scores of the content. To this end, we will use an algorithm called "SchellingCoin (SC)."¹⁷ This algorithm is a method to assume the expectation of others when their choice is unknown. In other words, people select their choices by assuming the value that others collectively would choose, rather than following their preferences.

RAs assess the quality of content based on the final average ratings that all other RAs may choose. In this algorithm, the median of the evaluation values suggested by participating RAs is adopted as the final result. RAs who have suggested ratings with the smaller deviations from the median get more rewards.¹⁸ As a result, RAs are motivated to make more precise anticipations about the final results of ratings on average and assess content objectively rather than subjectively.

For SchellingCoin to work properly, it is necessary to have a means to provide sufficient data to help RAs predict results or prevent a self-fulfilling prophecy (manipulating results to their anticipation) from happening. We could use a means to allow RAs to predict ratings through betting for a certain initial period and to extract results by calculating the ratings of the ordinary AUs for the rest of the period.

The motivation bigger than any other factors is tokens. Tokens can be used as a great motivating factor in the investment and effectiveness. The details on this will be explained later when we discuss the token economy. Above all, a separate token design to support the reputation of the participants is necessary in addition to the basic tokens. This is because social rewards other than financial incentives can be a significant motivating mechanism.

Different from the usage of the basic tokens, these tokens are used to indicate the reputation of holders within the network. These are divided into two categories. One category shows activity scores which are given according to the contributions in the network (the network activities including voting, accusation, rating, patronage, subscription, funding, sharing, commenting, and the like). The other shows the index of the relationship between AUs who follow EDs and build and maintain their own community and EDs. The former category indicates the reputation in the network while the latter indicates reputation within the ED community.

Just like the basic tokens, reputation scores are recorded as separate tokens on blockchain to maintain integrity. However, these tokens have no impact by being reflected through the codes in the system, like Steem Power of Steemit. And they are not accumulated continuously in a massive volume. Instead, badge tokens are granted to high-performing participants based on the performance of the past year while the

17 This is a method proposed by Vitalik Buterin of Ethereum in 2014. This method adopts the idea of the focal point (so-called Schelling Point) suggested by Thomas Schelling, a Nobel Prize-winning economist (source: [Ethereum blog](#)).

18 This algorithm is intended to calculate rewards by allowing the public to objectively assess the objective assessment results, which is to help the public assess the content more acutely and contribute to the improvement of the network. If there is no such rewarding scheme taken in place, the public might tend to assess the content according to their personal interests rather than objective criteria, and even there is a concern that, in this way, the results of the assessment can be skewed. In this sense, the algorithm is quite different from a gambling-like scheme for gaining only financial profits by betting on some random events. If there are still some people who want to take advantage of this algorithm for their personal gains, additional protective measures may be introduced. This algorithm is designed to invigorate the platform in a healthy way by encouraging participants' objective assessment and carrying out the assessment of the content faithfully. In this regard, the algorithm proves itself socially legitimate, and thus cannot be considered as a gambling-like scheme.

reputation scores that have been accumulated are voided. This is a means to eliminate the downsides of "whales" (users with the maximum Steem Power on Steemit) who buy influence with money and continuously exert significant influence while helping participants keep their reputation and motivating them steadily. Although this kind of token provides no financial benefits, it tells us that motivation does not have to exist only in the form of financial benefits. Instead, we plan to design a motivation means that combines causes and fun (a little bit of a gamification element). We are currently working on the design of the token, with updates to be announced soon.

3. Completely Decentralized Infrastructure

To achieve a complete decentralization, physical infrastructures must be distributed as much as possible so that these infrastructures are not concentrated in a few servers. This does not simply mean distributed storage of data but moving completely beyond the traditional server-to-client method.¹⁹ For this reason, the largest portion of investment must be made in the introduction and development of core technologies for decentralization.

Blockchain (or similar distributed ledger technologies; collectively, "blockchain"²⁰) is a technology that enables a CVID (Complete, Verifiable, and Irreversible Distributed) database.²¹ In addition to databases, blockchain can enable smart contracts, the core technology to configure the basic autonomous network including governance and motivating mechanisms. This is a decisive technology that inspired us to start this project.

First, token transaction data are recorded on the blockchain. Other data such as the user identity, content metadata, and content metrics also utilize blockchain by default. It also works as the foundation of codes for smart contracts. To utilize the technology, we would consider developing our own blockchain platform, but for now we are planning to configure a layer-2 blockchain based on stabilized blockchain platforms such as Ethereum.

We also consider introducing scalable solutions, such as Plasma of Ethereum, that can record on databases and stably process smart contracts. For saving costs of development and ensuring future scalability, we are also considering linking with functional blockchain solutions (for example, uPort) for purposes such as checking user identities.

The most important elements in deciding a blockchain platform to use are decentralization and scalability. Even though these two elements are in a trade-off relationship, both are essential elements for a successful launch of the network for this project. The basic plan is as follows: First, we choose a platform which is validated to provide decentralization as the Main Net (layer-1) blockchain and select a Sub Net (layer-2),

¹⁹ The server-client method is easy and relatively simple to implement but is one of the fundamental reasons that triggered the emergence of the mega-platforms by naturally inducing the centralization of services and data.

²⁰ Blockchain refers to just one of the many solutions of the distributed ledger technology. Indeed, many projects utilizing different types of solutions (e.g., DAG) than blockchain have started today. Nonetheless, given the popularity of the term "blockchain" among people due to the high-visibility of bitcoin that first launched services in this field, this paper uses the term blockchain to refer to these technologies. Blockchain, as referred to in this paper, also includes distributed ledger technologies in different forms other than blockchain.

²¹ This is a parody of the condition demanded to resolve nuclear issues of North Korea, "complete, verifiable and irreversible dismantlement."

which runs in association with the Main Net, based on the platform which provides more scalability.

Of course, for the Sub Net, we will make sure to gain as much decentralization as possible as well as seeking scalability. We can also consider a resolution that allows high-specs nodes such as EDs and ADs who want to launch their business on our network to participate in the Sub Net blockchain agreement structure. Since their main purpose is to secure a foundation that they can operate their businesses stably, they will commit to maintaining our healthy ecosystem. We can also complement our platform by having a means to enable the whole community to punish participants who act against the network. Deciding which blockchain platform to use is one of the most important matters to ensure the success of this project, and the decision will be made by sharing our decision-making process with all participants and actively receiving feedbacks.

In addition to the use of blockchain, we will also introduce peer-to-peer distributed storage network solutions for storing content data. While there are cases that the content data is put on to blockchain like Steemit, most blockchain media projects use a centralized way to save content data. By all means, we have to avoid using centralized ways. Putting the data on to blockchain is not a desirable way because we want to ensure scalability.

As the Akasha project used the IPFS²² protocol to enable each node of the network to store data in a distributed manner and to work as a server, we will introduce a similar method to distribute content data. However, we believe that distributed storage of data will fall short of our expectation to maintain the distribution of the content stably and permanently, and as a result, we will have to develop ways to address this problem. For example, the permanence of content stored on IPFS is not guaranteed unless people consume them within a certain period. For this reason, we are reviewing the following resolutions:

To begin with, all network participants must install a node software called "Leveler" on their computer or server. Leveler is largely divided into the following two types:

Leveler App

A node software for individuals that can be installed on personal computing devices such as personal computers or mobile devices

Leveler Host

A node software that can be installed on dedicated servers (or hosting servers) to enable multiple users to access at the same time.

The functionality of the Leveler App and Leveler Host is basically identical. They perform the functions such as media services, CMS, and the market for content and advertisements. A detailed list of functions is as follows:

1. Functions for AU (RE/CO/VO/RA/WA)

- a. Follows EDs and CRs while automatically updating publication feeds (just like the RSS reader).
- b. Visits pages of specific EDs and CRs.

²² [IPFS](#), an open-source distribution protocol that is under development by Protocol Labs, is a project to create a distributed by leveraging peer-to-peer distribution algorithms such as distributed hash tables (DHT), BitTorrent, Git, and self-certifying file systems (SFS).

- c. Gets recommendations of content of the followers and followed ones getting positive responses (the content showing rapid increases in ratings and page views) or content of EDs and CRs promoting the AU's content.
- d. Leverages functions to search content by subject and search words, etc.
- e. Stores content of interest (this function basically works as a server).
- f. Shares favorite content on social media (RE); writes comments on certain content (CO); and evaluates the quality of content (RA).
- g. Performs other functions such as voting (VO), accusation (WA), etc.

2. Functions for CR (RP)

- a. Creates, stores and publishes (disclosed in the network) content (CR/RP).
- b. Works with multiple CRs and RPs while managing versions in a distributed manner.
- c. Asks a specific ED for publishing content and publishes the content on approval by the ED.
- d. Republishes content through a specific ED upon receiving requests of the republication of the disclosed content from the ED.
- e. Authors content upon receiving the request for authoring or co-authoring from an ED or CR under the ED or CR's versioning.
- f. Each CR can create a page that he/she can store all the content published under his/her name.

3. Functions for ED

- a. Follows multiple CRs, RPs, and EDs and collects a variety of content Utilizes multiple search functions. This function is not so different from the functions for AUs.
- b. Approves content that a specific CR requests for publication and publishes the content after revising (the published version is managed separately from the original).
- c. Requests publication of the content disclosed by a specific CR and publishes the content after small revision upon approval by the CR.
- d. Commissions content to a specific CR and publishes them upon receiving the content while managing their own versions.
- e. There is no restriction in the case of free-of-charge publications. EDs sponsored by ADs or AUs, however, need to create a shared fund wallet and make a certain amount of the deposits or more.
- f. Each ED can create a page that he/she can store all the content published under the ED's name.

4. Functions for AD

- a. Creates and stores content of his/her own brand.
- b. Asks a specific ED for publishing the branded content and publishes the content upon approval by the ED (at the same time, a contract is entered into for the sponsorship expense to be paid to the ED).
- c. Content published through the ED are indicated as sponsored content.
- d. ADs can create content in the form of resources such as images and videos.
- e. Once the AD requests insertion of the resource (advertisement) in content created by a specific ED or CR and receives approvals from them, the ED or CR can publish the AD's resource inserted in their own content.

The Leveler App provides access and user interface for all activities that participants including EDs, CRs, ADs, and AUs perform in the network. The Leveler App will work as a server as a network node as well as a service application. In other words, the Leveler App works as a distributed node for storing and distributing content. For example, once content created locally by a CR is published, the CR's local Leveler

App will work as a primary server for the distribution of the content. In addition, if AUs save the content of an ED they follow in their Leveler App, the AU's leveler will immediately perform as a server for the content. However, the Leveler App is unable to perform as a distributed node server when the power of the computer in which the app is installed is off or Internet connection is unavailable. In this case, other resolutions must be prepared.

For this reason, a Leveler Host like the current server model has to be developed. EDs that want to launch businesses will not be afraid of engaging in a full-fledged content distribution through their own server (or cloud service). Such EDs can apply the Leveler Host to their own server. The Leveler Host itself also works as a network node. In this way, the ED's content can be stably distributed through a 24/7 server while the content is stored in a distributed way through other Leveler Apps in the network. In other words, the ED's content will remain in the network even when the ED's server is blocked or shut off for any reason.

Individuals who run personal home servers can participate as a Leveler Host node. In that case, we can consider offering a program that we disclose low-power Raspberry-Pi servers with our leveler software as an open source to enable the individuals to participate in the network.

The development of the leveler software may be challenging because it might require a new project of developing a content management system (CMS) like that of WordPress. Even though the ultimate goal is to build a whole new CMS based on distributed computing, we may consider building the system in stages. For example, we can start off with a hybrid system that allows access to blockchain and the distributed storage through the link with our leveler software by using the existing expansion functions of the CMS such as WordPress. We can then build a specialized independent CMS in our own network environment by considering many existing open-source CMSs.²³

We can also consider providing storage only to secure a more stable distributed storage. EDs will provide capacity for distributed storage in the network, performing a role of distributing content. They can be individual nodes that provide their unused storage capacity, specialized cloud providers, or EDs that have unused storage capacity while running their own servers.

²³ In addition to WordPress, there are many CMS open-sources such as Joomla, Drupal, Ghost, Jekyll, Kirby, Statamic, and the like, supporting various data management methods.

Ultimately, the composition of our network's nodes may appear as follows:

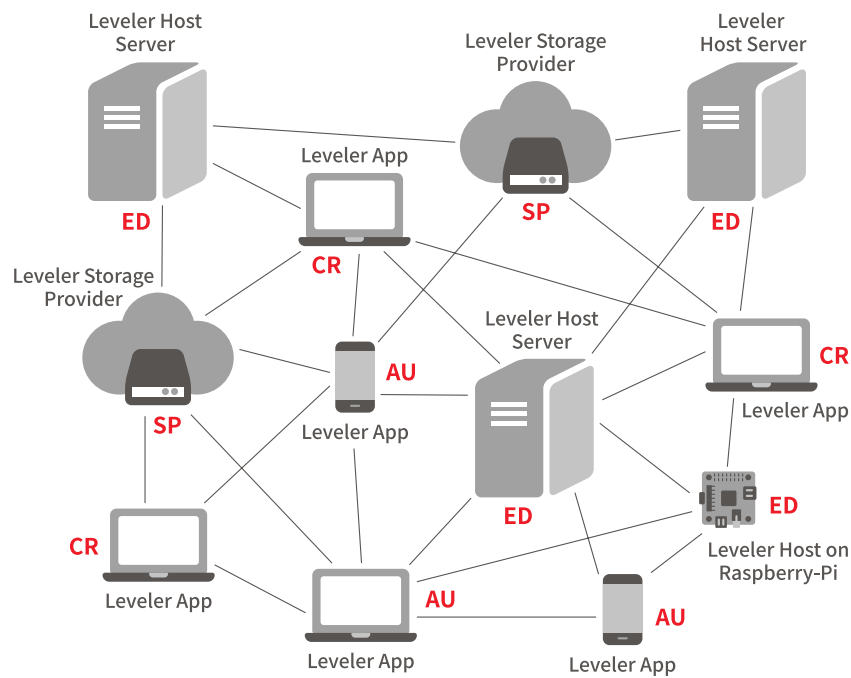


Figure 3. The Concept of Network Node Composition²⁴

Now it is anticipated that the current Internet network shifts to the network consisting of distributed nodes. By expanding our reach of the network, ISPs, network Operators (including mobile networks), mobile device manufacturers, cloud service providers, and the like can all become members of our ecosystem.

Even though it sounds like an unrealizable pie-in-the-sky future of distributed computing, we do not have to start from scratch by developing non-existent technologies. There are already generic technologies we need. We can introduce the protocols to store and share peer-to-peer files in a distributed way, such as IPFS for which many blockchain projects have already embraced or are considering its adoption. We can also consider directly integrating blockchain networks specialized in providing distributed storage such as Filecoin and Storj directly with our ecosystem.

In addition, we will try to be open as much as possible to adopt various service applications extensively. The leveler software mentioned earlier would play the role of the default service app, but there may be other types of service apps as well. For example, a separate service server may be built and operated for app services such as web services and mobile services. Although the NSC can decide to build and operate such servers, the servers are not exclusively under the NSC's ownership. The services are built by the NSC to develop essential functions to enable the initial ecosystem and are not aimed for providing centralized services.

We will rather encourage third-parties to actively develop a variety of services for users which cover various functions for exploration/search, personalized recommendation, specialization by multiple areas,

²⁴ In fact, nodes are not classified into different roles such as ED, CR, AU, or SP. All nodes perform all different roles. Still, there can be participants who play only the role of SPs.

and various devices. In this way, we aim for a fully-open, scalable ecosystem in which content and data assets are shared, and various applications are developed based on the data and provided.

The ecosystem will not be restricted to services using basic content data. Other additional content (or services) such as comments, translation, clipping, discussions, and the like in association with the basic content will be developed and are expected to help the open, scalable ecosystem provide rich content. Then, our goal is to embrace the unlimited range of content in various formats including audios, videos, as well as simple text, and anything that can be represented in bits and bytes in the ecosystem.

This type of the perfectly decentralized infrastructure would consist of the decentralized platform layer, database layer, and media layer.

The decentralized platform layer is a physical network layer consisting of a blockchain platform and distributed storage network. For this layer, we are considering technologies such as Ethereum, IPFS, or Filecoin, as mentioned earlier.

The database layer is a database to be stored in the decentralized platform in a distributed manner. The types of data to be stored in the layer include the token data, user identity, content metadata, statistical data, and content data itself.

Finally, the media layer will become basically a leveler software. The leveler software will work as decentralized platform nodes and access data on the database layer. Additional functions and service apps to be developed by third parties will be added to this layer and expand it.

The layers are represented in the following figure:

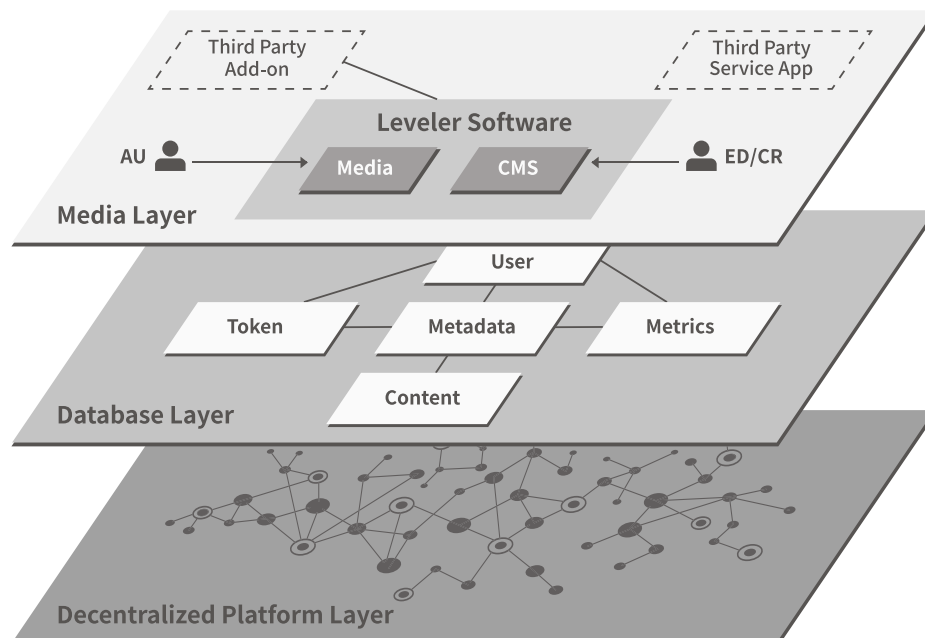


Figure 4. Layers of Decentralized Infrastructure

4. Stable Token Economy

The name of our own token is “Level” (LV). These tokens must be designed to be circulated since a steady stream of demand is generated within the network. We do not want the tokens to be designed as a trick of financial engineering and to become a means of speculation without any contributions to the real economy²⁵. Our tokens are basically utility tokens with no intention in its design to give asset benefits to token purchasers. The value of the tokens may appreciate at a certain level if the network sustains its growth until its maturity. However, note that such appreciation is not guaranteed. In other words, tokens do not guarantee any value or a right to claim for receiving any valuable assets, which implies that tokens will not be any securities including debt instruments, equities, or investment contract securities.

The biggest sources of the demands for tokens would be the expenditure of ADs for advertisements, and patronage, subscription, and crowdfunding²⁶ by AUs. This expectation is based on the assumption that the network runs smoothly. If the network is not built properly, these sources of demand would not work, either. For this reason, it is critical to build the network as we originally intended.

There is also a need for designing diverse token demands in addition to these basic sources. Instead of pushing up the demand for tokens to inflate their price, the focus must be on generating the token demand to facilitate activities needed to activate the basic sources of demand. For example, EDs may spend tokens to promote themselves or attracting high-performing CRs. As mentioned earlier, tokens may be spent on participating in activities like rating, voting, or accusation as defined in the motivating mechanism which was mentioned earlier. We will keep expanding the token demand model in diverse ways in the future.

The revenue that EDs generate will be distributed first to CRs. EDs will allocate to CRs the revenue except for their net profits by calculating it proportionally to the traffic (page views x ratings) multiplied by the ratings of every content that CRs create. To lower the weight of the traffic and raise the weight of the ratings, the cube root values of the traffic and the cubed value of the ratings will be used. In this way, the allocated amount would be small when the rating is low while the number of the page views is high, and the amount would be large when the rating is high while the number of the page views is low. This is a means to proactively reflect the importance of ratings.²⁷Since the net profits of EDs will be disclosed transparently, EDs who allocate an improper amount of net profits would see their reputation suffer in the market. EDs may also propose a minimum guaranteed amount ahead of revenue allocation to secure content of high-performing CRs. In this case, the minimum guarantee can be considered as a means for EDs to be regularly supplied with content from CRs in the long-term.

25 We believe that the speculative economy based on implicit promises or expectations for the future in accordance with the financial engineering logic would lead to financial crises and problems of capitalism caused by the polarization that we see today. This is the very reason we do not design tokens like Steemit in which tokens are generated out of thin air and rewarded to content.

26 Our crowdfunding scheme will thus be run in the form of the reward or donation systems, rather than the investment or lending systems in which people expect a certain level of returns. However, such a scheme is subject to change.

27 In this way, the motivation to manipulate the traffic would be reduced noticeably while people put more importance in the expectedly most objective evaluation scores calculated by the SchellingCoin algorithm, thereby minimizing the possibility of distortion in profit sharing which might occur due to manipulation. Of course, this measure is not perfect, and we plan to introduce additional complementary measures.

The revenue of CRs, which is allocated by EDs includes the minimum guarantee and allocated profits, both of which can be optionally calculated by the following formulas:

$$Pr_{CR} = [Gm_{CR}] + [Sr_{CR}]$$

Pr_{CR} : Revenue of CR

Gm_{CR} : Minimum guarantee of CR (optional)

Sr_{CR} : Revenue allocation of CR (optional)

$$Sr_{CR} = Pr_{ED} \times (1 - Rt) \times R_{SCR} \times \frac{\sum (Tr_{CR} \cdot S_{CCR})}{\sum (Tr_{ED} \cdot S_{CED})}$$

Sr_{CR} : Revenue allocation of CR

Pr_{ED} : Total revenue of ED

Rt : Tax rate

R_{SCR} : Revenue allocation percentage of CR

Pn_{ED} : Net profit of ED

$\sum (Tr_{CR} \cdot S_{CCR})$: Sum of the cubed rating score (S_{CCR}) of CR's every content multiplied by the cube-rooted traffic (Tr_{CR})

$\sum (Tr_{ED} \cdot S_{CED})$: Sum of the S_{CED} of ED's every content multiplied by the Tr_{CR}

Once the CR's revenue is fairly distributed to all Contributors including Referrers (RE), Resource Providers (RP), Commenters (CO), and the like, the tokens would be circulated stably. The final net profit of the CRs can be calculated as follows (the reimbursement is done monthly):

$$Pn_{CR} = Pr_{CR} - \sum P_{CCR} \cdot R_{RE} - \sum P_{CCR} \cdot R_{RP} - \sum P_{CCR} \cdot R_{CO}$$

Pn_{CR} : Net profit of CR

$\sum P_{CCR} \cdot R_{RE}$: Sum of the share allocated to the RE (S_{RE}) out of the revenue of the CR's every content (C_{CR})

$\sum P_{CCR} \cdot R_{RP}$: Sum of the share allocated to the RP (S_{RP}) out of the revenue of the CR's every content (C_{CR})

$\sum P_{CCR} \cdot R_{CO}$: Sum of the share allocated to the CO (S_{CO}) out of the revenue of the CR's every content (C_{CR})

We will impose taxes on the total network revenue and collect them through smart contracts for the Common Fund. This Common Fund will be used to cover the operating expenses of the overall network related to CMs, OS, SPs, etc. The fund will also be used to facilitate attracting a variety of media which has a low sales capacity but is essential in keeping the network ecosystem healthy at our discretion. For example, we can publish public Editions with special themes under the direction of the NSC. We can also hold events that we select high-performing EDs and CRs through competitions, publish Editions with special themes and provide rewards.

The circulation of the tokens would lead to a supply of the tokens by ADs or AUs through internal or external circulations via exchanges. The circulation of the tokens in the token economy can be described in the following figure:

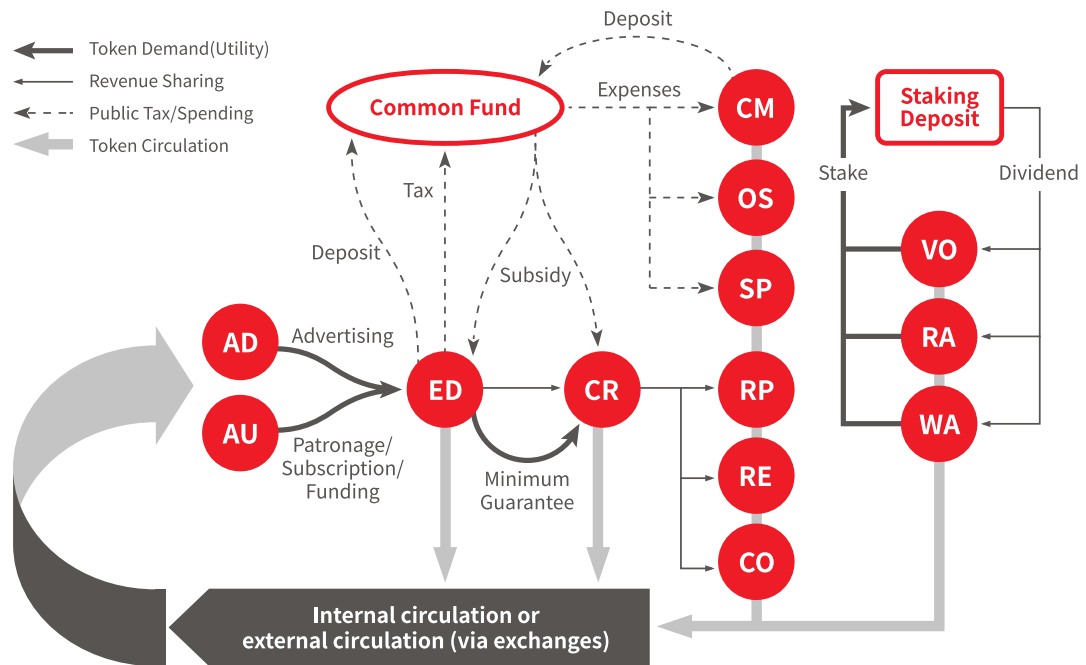


Figure 5. The Concept of Circulation in Token Economy

Plans for issuing tokens

The total number of tokens to be issued in this network is fixed at 206,000,000 LV.

The rationale behind this decision about the supply is based on internal assumptions: The outline of the assumption is that, when about 1 million people consist of a network which has a 90 million-dollar economy, a token has a value of 0.2 dollars. We set the supply based on the assumption.²⁸ This figure is not the ultimate goal but is assumed as the minimum condition to create a critical mass at which the network effect would kick in later.²⁹

Since the quantity of the total token supply is fixed, the value of the token is expected to appreciate if the network grows, and more people start using the network.³⁰ For this reason, deflation might occur until the network reaches its maturity. However, this problem of deflation might not be as serious as in legal tenders. Due to the deflation, the value of goods may seem depreciating, which can cause confusion among people. It is thus possible to link with an already-familiar currency when labeling the value of tokens used in the network. For example, we can think of using the dollar-based labeling system as in Steemit. Instead of designing a totally different token system to this end, however, we may consider using an Oracle system by³¹ which the data of the external currency system are imported into the network to implement the labeling system.

The total supply of tokens would be issued at the time when tokens are generated.

Of these, 50% would be sold in the stages of “private,” “pre,” and “public” with differing bonus rates applied. The sales goal is 13,650,000 USD (approximately 15.4 billion won), with the value of the LV token set to 0.18 USD (about 206 KRW). The funds procured by selling tokens will be used to build and operate the network for the next two years (this timeframe can change in accordance with the progress of the development). Of these, 50% will be used to pay for development costs while the remaining 50% will be used for marketing, alliance, and operations purposes.

Sales Type	Token Allocation (LV)	Percentage	Comment
Private	58,000,000	28%	Initial investors
Pre-sale	30,000,000	15%	Institutional investors
Public	15,000,000	7%	General public
Total	103,000,000	50%	

Table 2. Token Sale Allocation

28 The outcome of the projection cannot be guaranteed, and the projection is based on arbitrary assumptions without any objective grounds. Therefore, we have decided not to disclose the specific figures since these are not meaningful by themselves and may be misinterpreted as expected returns of investment.

29 The network effects and critical mass are simply patterns based on hindsight, which are not quantified in numbers or by formulas, which do not guarantee anything in the future. These are just used for purposes to set internal goals.

30 These are just our expectations, and no one guarantees such an outcome.

31 The Oracle system is a process to verify the precision of the data when external data must be used in accordance with the terms of the smart contract. For example, when the value of LV tokens is measured against familiar currencies such as the US dollar or Korean won, precise exchange rates must be brought in from the outside. Data verifiers may be needed so that the network can properly dispense with rewards and administer punishments.

Of the remaining 50% that are not sold among the total supply, 20% would be allocated to teams and advisors, 10% to marketing and bounty programs, and 20% to the Common Fund.

The tokens to be allocated to teams and advisors are intended as incentives for initial development workforces, and the regular and serial period for safe deposit of tokens will be aligned to the two years of the expected initial development period). In this way, the value of the incentive tokens the teams and advisors would receive when they successfully build an ideal network within the two years could be maximized. This will be the mechanism that motivates them sufficiently to achieve a successful build of the network.

Tokens to be used for marketing and bounty programs are intended to encourage participation of EDs/CRs/AUs in the initial period and invigorate the initial token economy. Tokens to be deposited in the Common Fund would be used in accordance with the usage plans of the Common Fund (refer to the section related to the Common Fund).

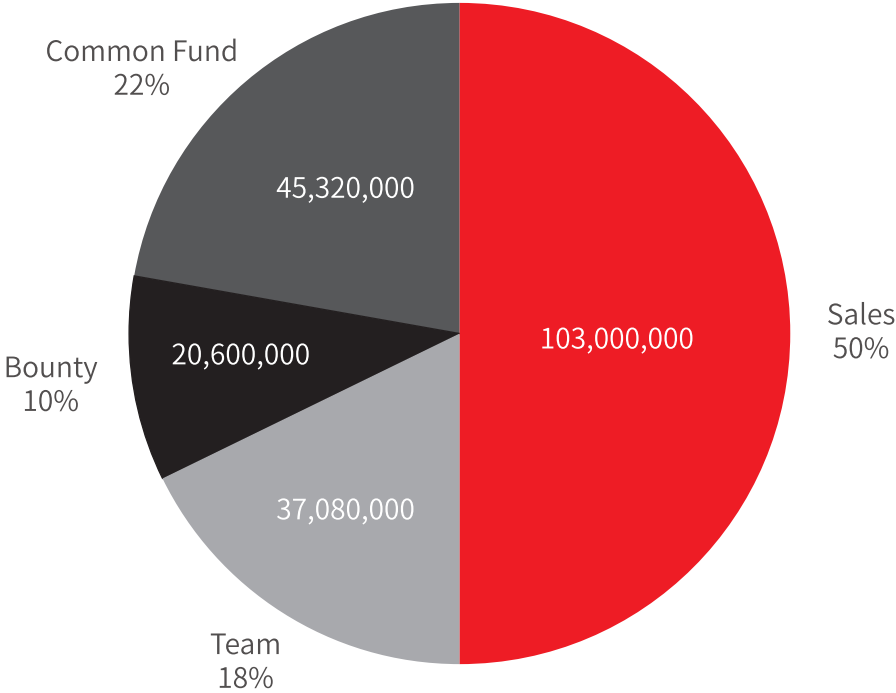


Figure 6. Allocation Plan for Issued Token

Schedule

The token sale is scheduled to be from September to November in 2018. The private sale, pre-sale, and public sale are scheduled in September, October, and November 2018, respectively.

The token generation starts at the same time as the public sale.

If we achieve the target amount within the scheduled time, the completion schedule may be brought forward. In contrast, the sale period may be extended if we are unable to reach the target amount in time.

The details on the development schedule are not determined yet but will be updated soon.

In our outline of the schedule, we plan to launch the first version by the fourth quarter of 2019, with the upgrade version launch scheduled in the fourth quarter of 2020.

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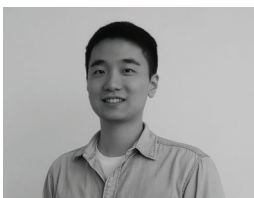
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