

# IdeaGround Social Media Economics

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## Abstract

Social media has innovated the world, yet it harbors inherent flaws such as inequality, misinformation, and privacy concerns. We introduce a novel economic incentives model called “ideaGround Social Media Economics (SME)” aimed at addressing the issue of inequality in social media. Our decentralized social media application, built upon the ideaGround-SME framework, serves to alleviate the shortcomings of existing social media platforms, positioning itself as the next-generation platform on Web 3.0.

**Keywords:** Social Media, Financial Incentives, Blockchain, Web 3.0, Decentralization, Privacy

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# 1 Introduction

Blockchain technology, as proposed by Nakamoto (2008), introduced the concept of a decentralized, immutable ledger secured by cryptographic principles. The foundational elements of blockchain, including distributed consensus mechanisms and cryptographic hashing, have remained integral to its evolution. Over time, developers and researchers have explored diverse consensus algorithms such as Proof of Work (PoW), Proof of Stake (PoS), and variations thereof, addressing scalability, energy efficiency, and security concerns (Wood, 2014). Furthermore, advancements in cryptography, particularly zero-knowledge proofs developed by Chiesa (2020), have significantly contributed to enhancing the privacy and security features of blockchain systems. Zero-knowledge proofs enable parties to verify the validity of transactions without revealing sensitive information such as transaction amounts or participants' identities. This innovation has paved the way for the implementation of privacy-focused blockchain solutions.

With the continuous evolution of blockchain technology, we have witnessed a turning point: not only is blockchain technology itself rapidly advancing, but various other sectors integrated with it are also entering the Web 3.0 era. This turning point signifies a shift in focus from merely the development of blockchain as a technological tool to its integration with industries such as finance, supply chain, healthcare, and more. Blockchain is no longer seen as an isolated technological innovation but rather as a new paradigm spanning multiple domains, bringing unprecedented opportunities and challenges to various industries. This transition is not only technological but also represents a fundamental shift in mindset and business models, marking the advent of a new digital age where blockchain technology will play a crucial role.

In the decentralized financial (DeFi) sector, blockchain enables secure and transparent transactions, facilitating faster cross-border payments, reducing fraud, and enhancing transparency. Supply chain management stands to benefit greatly from blockchain's ability to provide an immutable record of transactions, thereby enhancing transparency and traceabil-

ity. In healthcare, permissioned blockchain holds promise for securely storing and sharing patient data, thereby improving interoperability and facilitating better patient care. Other sectors, including arts (NFT), real estate, voting systems, GameFi, and intellectual property management, are also exploring blockchain applications. By leveraging blockchain technology, these industries aim to enhance security, transparency, and efficiency in their operations, ultimately delivering greater value to stakeholders and consumers alike.

Unfortunately, the development of blockchain technology in the realm of social media has been relatively sluggish. Currently, the approach to integrating traditional social media onto blockchain networks often involves straightforward transplantation, rather than leveraging the distinctive traits of blockchain technology for innovative purposes. This approach often results in a replication of old-era social media functionalities without harnessing the transformative potential of blockchain. As a result, the true potential of blockchain technology to revolutionize social media through enhanced privacy, data ownership, and transparency remains largely untapped.

To truly innovate in the realm of blockchain-based social media, there is a need for a shift in mindset. Developers and entrepreneurs must explore novel ways to integrate blockchain's features into social media platforms, fostering new models of community governance, content ownership, and value distribution. This could involve experimenting with decentralized content moderation, implementing transparent reward systems for creators and contributors, or exploring new forms of social interactions facilitated by smart contracts and decentralized applications (DApps).

By embracing unique attributes of blockchain, we redefine the next generation of social media platforms on Web 3.0. Our next generation of social media has revolutionized the relationship between users and platforms, empowering individuals with greater control over their data and fostering more inclusive and equitable online communities.

The rest of this paper is organized as follows. In section 2, we provide an overview social media in Web 2.0. In section 3, we describe our ideaGround Social Media Economics. In

section 4, we present the solution of existed problems in social media. In section 5, we demonstrate some applications in ideaGround. Finally, we conclude the paper in section 6

## 2 Social Media in the Web 1.0 and Web 2.0 Eras

Social media has revolutionized the way people communicate and connect. From the Web 1.0 era to the Web 2.0 era, social media has undergone tremendous changes and has become an integral part of people’s daily lives.

In the Web 1.0 era, social media was in its infancy and was known as the “read-only” Web. During this time, content was primarily created by a small number of professionals, such as journalists, bloggers, and website administrators. The majority of users could only passively read and receive information, and user interaction was very limited.

Following the maturation of Web 1.0, several factors propelled it to advance even further. Faster internet speeds and wider availability allowed more people to actively participate in online activities. As internet access became more widespread, people felt empowered to actively contribute to the online world, rather than passively consume content. Sharing personal experiences, opinions, and creativity became highly demanded from users.

With the advancement of internet technology, the Web 2.0 era arrived, and social media also underwent dramatic changes. During this period, social media was known as the “read-write” Web, and users could create and publish their own content and interact with other users.

Several features and improvements of Web 2.0 social media include: Firstly, users became the primary source of content on social media, and they could publish various forms of content, such as text, images, and videos. Secondly, users could interact with each other through comments, likes, shares, and other methods, forming closer social connections. Thirdly, social media platforms recommended relevant content to users based on their interests, improving user experience.

## 2.1 The Double-Edged Sword of Web 2.0 Social Media

Web 2.0 social media platforms have revolutionized the way we communicate and connect with others. However, while these platforms have brought many positive changes, they also have a number of inherent flaws that have become increasingly evident in recent years. They are inequality, privacy, misinformation, echo chamber, manipulation of public opinion, and infringement of intellectual property. In this section, we discuss these defects and the reasons caused them.

### 2.1.1 Inequality in Social Media Community

On Web 2.0 social media platforms, various forms of inequality persist, affecting different groups within the community.

Inequality between content creators and social media platforms: Content creators face exploitation of their revenues by social media platforms. For example, platforms like YouTube deduct a significant portion, up to 45%, of the revenues generated by YouTubers <sup>1</sup>.

Inequality between content creators and readers/supporters: Content creators heavily rely on the support of their audience to gain influence, yet current social media platforms do not respect supporters' efforts, they fail to provide incentives to these supporters. Valuable contributions such as comments, quotes, promotions, and efforts from supporters often go unrewarded, creating an imbalance in the relationship between creators and their audiences (Tang, 2012).

Inequality among co-writers: Collaborative writing is common on social media, but disparities exist in revenue sharing among co-writers. Currently, there is no mechanism in place to ensure fair distribution of earnings among collaborators.

Incentive inequalities and the Matthew effect: Many social media platforms offer incentives based on the popularity of influencers rather than the quality of their content. This bias

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<sup>1</sup><https://www.businessinsider.com/how-much-do-youtubers-make#:~:text=a%20nano%20influencer-,How%20much%20YouTube%20pays%20per%201%2C000%20views,by%20attracting%20a%20lucrative%20audience>

contributes to the Matthew effect, where individuals with initial popularity, followers, and wealth tend to accrue even greater social success, while others struggle to gain recognition.

### **2.1.2 Privacy Concerns**

One of the most significant issues with Web 2.0 social media is the erosion of user privacy. These platforms collect vast amounts of personal data, including browsing habits, social connections, and even biometric information. This data is often used for targeted advertising and marketing, but it also raises serious concerns about privacy and surveillance. Smith (2018) discusses how the growing proliferation and capabilities of mobile devices is creating a deluge of social media which can affect our privacy. Madden (2013) surveys issues such as personal information exposure and privacy settings management of teen social media users, and find teen social media users do not pay enough attention to the third-party access to their data. Sadly, existed blockchain-based social media platforms don't take users' privacy seriously, which is a step backward.

### **2.1.3 Intellectual Property in Social Media**

In today's digital age, user's words, ideas, and creations are their intellectual properties, representing the culmination of their creativities and efforts. However, these valuable assets are increasingly under threat.

One significant concern is Intellectual Property Accessibility. Users' intellectual properties may become inaccessible, even to themselves. Centralized social media platforms have the capability to tamper with or remove users' content, rendering it inaccessible to users. Moreover, in the event of a platform crash, all users' valuable intellectual properties could vanish without a trace, leading a significant loss for entire communities.

Another pressing issue is Intellectual Property Infringement. Plagiarism of intellectual property on social media is rampant. Unfortunately, many social media platforms do not prioritize the detection and punishment of such theft. As a result, creators often find their

work stolen.

These threats to intellectual property underscore the need for greater protection and accountability within social media ecosystems. Without adequate safeguards in place, creators risk losing control over their valuable contributions to the social media community.

#### **2.1.4 Manipulation of Public Opinion**

Social media nowadays is heavily influenced by government messages and censorship, especially in places where authoritarian regimes hold sway. This means that what you see and hear online may be biased or even controlled by the government. This limits people's access to different perspectives information. It's like the government is shaping what you see and think on social media.

#### **2.1.5 Misinformation**

Social media platforms are often plagued by misinformation for several reasons. Firstly, their algorithms tend to prioritize engaging or sensational content over accuracy, which leads to the spread of misinformation. Additionally, the social media community lacks adequate mechanisms to deter dishonest contents.

#### **2.1.6 Echo Chamber**

Social media companies employ algorithms to tailor users' feeds according to their past behavior and preferences. This personalized approach can create echo chambers, where users are predominantly exposed to content that aligns with their existing perspectives. Consequently, users may have limited exposure to diverse viewpoints, further perpetuating polarization and reinforcing existing beliefs.

## 3 ideaGround Social Media Economics

People are forced to endure these inherent flaws of social media. Our vision is to introduce a novel framework for the next generation of social media in Web 3.0 to overcome the existing shortcomings of Web 2.0 social media. Our aim is to create a fair, independent, and meaningful social media platform where users can freely generate, express, and share ideas within the community.

The ideaGround Social Media Economics (ideaGround-SME) framework, outlined in our paper, is a novel and distinctive design. It integrates elements of incentive compatibility from economic game theory, zero-knowledge proof from computer science, stakeholder theory from management, and capital structure from finance. To the best of our knowledge, we are one of the pioneers in introducing the concept of social media economics. The motivation behind ideaGround-SME is to utilize mechanism design to rectify the shortcomings of current social media platforms. In the following sections, we define and elaborate on the components of ideaGround-SME.

### 3.1 ideaKeeper

In ideaGround, every contents created by users is associated with an special account denoted as **ideaKeeper**. The ideaKeeper account controls and manages the inflows and outflows of digital tokens, cryptocurrencies and other digital assets related to this content.

The design of setting a associated ideaKeeper account has several pros. Firstly, the ideaKeeper account offers an transparent and convenient method to manage the revenue incentives of the content. In Web 2.0 social media platform, any revenue incentives are controlled by the platform, content creators have limited information and access of revenue related to the contents. In ideaGround, we platform do not hide or manipulate any information about the revenue incentives created by contents. Secondly, ideaKeeper works as a value distributor for the community of a content. In the realm of Web 2.0 social media, a glaring

gap exists: there's no mechanism for fairly distributing revenue to content supporters based on their contributions. This inequity is a topic we've addressed previously. At ideaGround, we deeply value every unique and impactful contribution to our content. ideaKeeper stands as a guardian, ensuring that the incentives for supporters remain protected. By transparently showcasing the incentives and contributions of all supporters, ideaKeeper prevents any exploitation of the community's collective efforts. Last but not the least, ideaKeeper also prevents the potential plagiarism on social media. In Web 2.0 social media, content creators often lack adequate protection against plagiarism. The ideaKeeper addresses this issue by imposing penalties on confirmed dishonest behaviors. Revenue incentives derived from plagiarized content are redirected and compensated to the original creators, thereby safeguarding their intellectual property rights.

In the following section, we will introduce the ideaKeeper framework. We will also outline the contribution model utilized by ideaKeeper to calculate the contributions from all members within the content community. Subsequently, we will define the revenue incentives model, which is derived from the contribution model.

## **3.2 Funds Flow Framework of ideaKeeper**

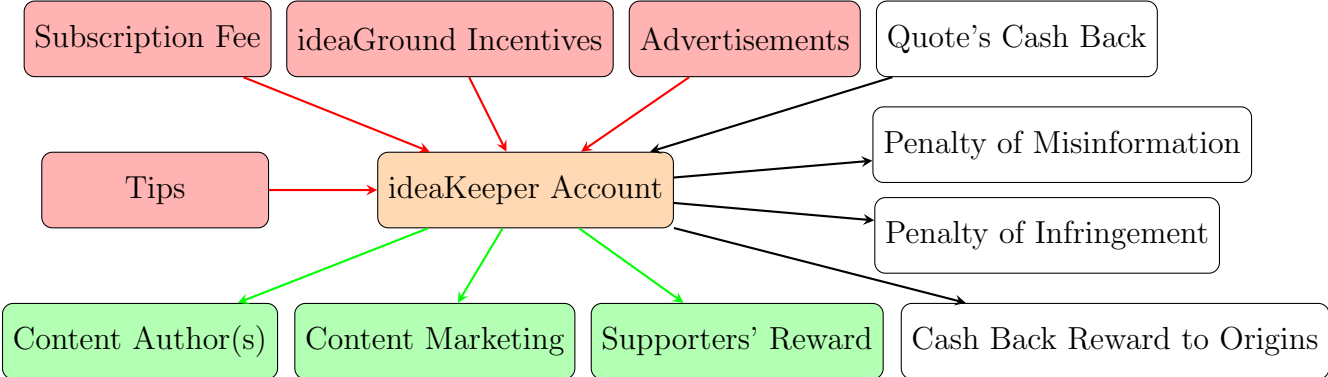
Figure 1 describes the funds flow framework of ideaKeeper account in ideaGround. For any content created by users, a dedicated ideaKeeper account is generated to serve as a collector and distributor of revenue incentives. Revenue can be collected through various channels, including tips and subscription fees from supporters, ideaGround incentives from the platform, and advertising revenue from third parties. Additionally, when other content quotes this particular content, the ideaKeeper associated with the quoted content will receive a cashback reward as a special incentive.

Regarding the distribution of revenue incentives, ideaKeeper ensures that incentives are not solely allocated to the content creator but are also extended to every supporter who contributes effort and value to the content. The revenue incentives flow through two primary

channels: rewards for the content creator and incentives for the supporters. Moreover, a portion of the revenue can be allocated to marketing campaigns, enhancing the visibility and reach of the content.

In addition to managing revenue collection and distribution, ideaKeeper introduces an innovative approach to discourage dishonest behaviors. Should such behaviors be confirmed by the community, ideaKeeper will impose penalties and confiscate the “illegal revenue”, reallocating it as compensation to the honest community members.

Figure 1: Funds Flow of an ideaKeeper.



### 3.2.1 Contribution Model

In this section, we introduce the contribution model designed to calculate the contribution score attributed to a specific form of support provided to content. Forms of support include tips, subscriptions, comments/replies, thumbs-up, etc. Figure 2 describes the contributions from all supporters to content. The value of each contribution is assessed based on the effort of the support. Later, we will explore the shares model, which is derived from the contribution model. Users have the option to redeem their shares at any time once their contributions are verified. However, should a user choose to redeem their shares, the contribution scores linked to their previous support will be reset to zero.

**Definition 1.** We define the redeem indicator function to measure whether redeem for a

ideaKeeper of content  $k$  is called by a user  $i$  during time  $(t, T)$ ,

$$\mathbb{I}_{unredeem}(i, k, t, T) = \begin{cases} 1, & \text{No reedem during } (t, T), \\ 0, & \text{Otherwise.} \end{cases} \quad (1)$$

Definition 1 serves as a “reset” function aimed at resetting the contribution score to zero in the event that a user opts to redeem her shares obtained from the contribution. This mechanism prevents the risk of double-spending<sup>2</sup>.

**Definition 2.** Assume at time  $t$ , user  $i$  sends tip with amount  $TIP_{i,t,k}$  to an ideaKeeper account of a content  $k$ , then at any time  $T$  with any  $T \geq t$ , the contribution function( $C$ ) of this tip is calculated by

$$C(TIP_{i,t,k}, T, \mathbb{I}_{unredeem}(i, k, t, T)) = \frac{TIP_{i,t,k}}{K_{t-1}} \times \mathbb{I}_{unredeem}(i, k, t, T), \quad (2)$$

where  $K_{t-1}$  was the tips amount kept in ideaKeeper before this tip. The information of  $t, TIP_{i,t,k}, K_{t-1}$ , and  $\mathbb{I}_{unredeem}(i, k, t, T)$  is minted in an ideaGround-Tips-NFT. This NFT is a coupon when redeeming rewards and will be burnt after redeem. Moreover, the owner can transfer or trade this NFT with other users.

Definition 2 describes contribution of a tip by computing the marginal tip as a fraction of the total tips received. The underlying principle behind this definition is that a higher and earlier tip results in a higher contribution.

**Definition 3.** Assume at time  $t$ , user  $i$  subscribes a content with subscription fee  $F_{i,k}$ <sup>3</sup> to an ideaKeeper account of a content  $k$ . The total subscription of the content changes from  $S_{t-1,k}$  to  $S_{t,k}$  where  $S_{t,k} = S_{t-1,k} + 1$ .  $\alpha$  is a constant. The contribution function( $C$ ) of this

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<sup>2</sup><https://en.wikipedia.org/wiki/Double-spending>

<sup>3</sup> $F_{i,k}$  does not include  $t$  for simplicity, because the subscription fee is once-payment.

subscription at time  $T$  with any  $T \geq t$  is calculated by

$$\begin{aligned} C(F_{i,k}, T, \alpha, \mathbb{I}_{unredeem}(i, k, t, T)) &= F_{i,k} \times \log_{\alpha} \left( \frac{S_{t,k} + 1}{S_{t-1,k} + 1} \right) \times \mathbb{I}_{unredeem}(i, k, t, T) \\ &= F_{i,k} \times \log_{\alpha} \left( 1 + \frac{1}{S_{t-1,k} + 1} \right) \times \mathbb{I}_{unredeem}(i, k, t, T). \end{aligned} \quad (3)$$

The information of  $t, F_{i,k}, \alpha, S_{t-1,k}$ , and  $\mathbb{I}_{unredeem}(i, k, t, T)$  is minted in an ideaGround-Subscription-NFT. This NFT is a coupon when redeeming rewards and will be burnt after redeem. Moreover, the owner can transfer or trade this NFT with other users.

Definition 3 takes into account both the subscription fee and timing, with timing being proxied by the existing subscriptions. We apply the logarithm of the inverse of the existing subscription to encourage early subscriptions. The underlying principle behind this definition is that a higher and earlier subscription results in a higher contribution.

**Definition 4.** Assume at time  $t$ , user  $i$  gives the  $R(i, k)$ -th thumbsup to a content  $k$  when the follower number of the user is  $f_{i,t}$ , the contribution function( $C$ ) of this user's thumbsup at time  $T$  with any  $T \geq t$  is calculated by

$$C(f_{i,t}, T, R(i, k), \mathbb{I}_{unredeem}(i, k, t, T)) = \begin{cases} f_{i,t} \times \mathbb{I}_{unredeem}(i, k, t, T), & R \leq 100, \\ 0, & R > 100. \end{cases} \quad (4)$$

The information of  $t, f_{i,t}, R(i, k)$ , and  $\mathbb{I}_{unredeem}(i, k, t, T)$  is minted in an ideaGround-Thumbsup-NFT. This NFT is a coupon when redeeming rewards and will be burnt after redeem. Moreover, the owner can transfer or trade this NFT with other users.

Definition 4 asserts that only the first 100 supporters who provide thumbsup have a contribution, and the contribution is greater if the supporter is an influencer.

**Definition 5.** Assume at time  $t$ , a user  $i$  makes a comment or reply on a content  $k$ , the

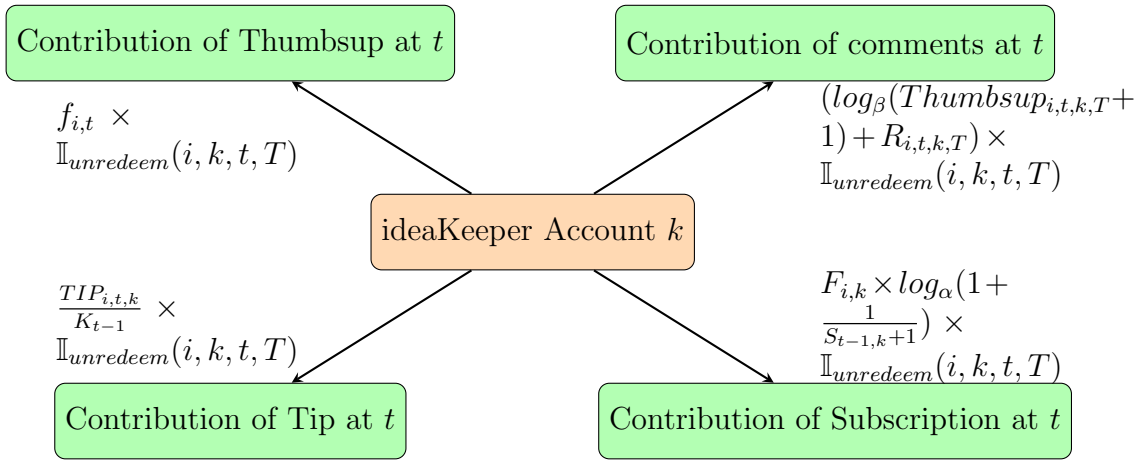
contribution function( $C$ ) of this user's comment at time  $T$  with any  $T \geq t$  is calculated by

$$C(Thumbsup_{i,t,k,T}, R_{i,t,k,T}, T, \beta, \mathbb{I}_{unredeem}(i, k, t, T)) = \begin{cases} (\log_{\beta}(Thumbsup_{i,t,k,T} + 1) + R_{i,t,k,T}) \\ \times \mathbb{I}_{unredeem}(i, k, t, T), & Thumbsup_{i,t,k,T} \geq 0, \\ 0, & Thumbsup_{i,t,k,T} < 0. \end{cases} \quad (5)$$

where  $\beta$  is a constant,  $Thumbsup_{i,t,k,T}$  is the number of thumbsup received by this comment or reply(sent by user  $i$  at time  $t$  for the content  $k$ ), and  $R_{i,t,k,T}$  is the number of reply received. The information of  $t, \beta, \mathbb{I}_{unredeem}(i, k, t, T)$  and the text of the comment is minted in an ideaGround-Comment-NFT.<sup>4</sup> This NFT is a coupon when redeeming rewards and will be burnt after redeem. Moreover, the owner can transfer or trade this NFT with other users.

Definition 5 defines the contribution of a comment/reply to a content. It evaluates the quality of the comment/reply by taking into account both the number of thumbsup received and the subsequent replies it generates. The underlying principle is that high-quality comments/replies should be rewarded with a higher contribution score.

Figure 2: **Contribution Model of an ideaKeeper at Time  $T$ .**



**Remark 1.** *Except for the contribution model of comments/replies, other contributions are determined immediately at time  $t$  when the support effort is recorded.*

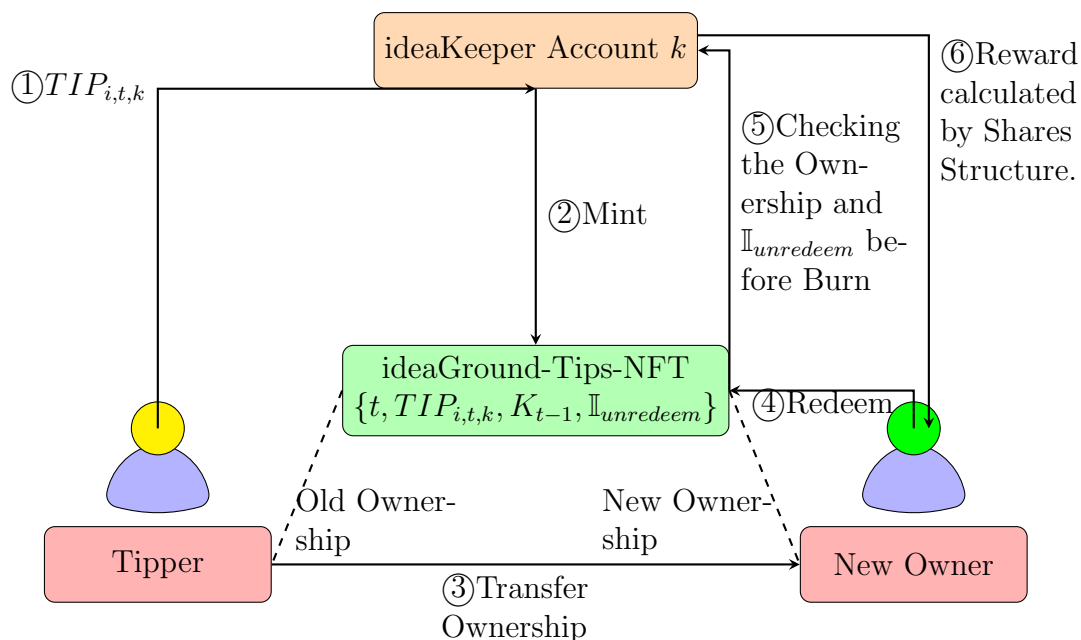
<sup>4</sup>The data of  $Thumbsup_{i,t,k,T}$  and  $R_{i,t,k,T}$  are frequently updated, so they are not suitable to saved in the NFT. But it is easy to query at any time when needed.

Remark 1 demonstrates that the contribution model is primarily influenced by past information rather than future information. This characteristic reduces the need for frequent restructuring of contribution scores.

### 3.2.2 The Life Cycle of NFTs of Contribution

In this section, we will summarize the life cycle of an NFT of contribution. The life cycle of the NFT includes minting, trading, redeem and burning. We display an example of life cycle of ideaGround-Tips-NFT as in Figure 3.

Figure 3: Life Cycle of an ideaGround-Tips-NFT



Now we describe the workflows of the life cycle of an ideaGround-Tips-NFT in details.

① Assuming at time  $t$ , the tipper send  $TIP_{i,t,k}$  to a ideaKeeper Account related to content  $k$ . ② The conrtribution of this tip is calculated by equation (2) and the information is saved in an ideaGround-Tips-NFT which is minted at the same time. And the ownership of this NFT belongs to the tipper. ③ The tipper decide to trade this NFT on marketplace, she transfers ownership to the new owner.<sup>5</sup> ④ The new owner decide to redeem the rewards of

<sup>5</sup>The tipper can also redeem it directly if she has the ownership.

the support. ⑤ After checking the validity and ownership of the NFT, it will be burnt. ⑥ Reward is sent from ideaKeeper Account to the new owner who called redeem function. The reward is calculated by equation (7) in next section.

### 3.2.3 Shares Structure Model

In the previous section, we introduced the contribution model for supporters and the life cycle of the NFT of contribution. In this section, we define the shares model based on the contribution model. The concept of shares is analogous to shares of stock in the equity market, representing ownership of a fraction of the published content. In Definition 6, we describe the overall shares structure of an ideaKeeper account, where the sum of total shares equals 100%. Definitions 7 through 10 further delineate the shares structure within each subgroup.

**Definition 6.** The shares structure<sup>6</sup> of an ideaKeeper account associated with a content  $k$  is distributed to each parties who have contribution to the content, specifically,

$$\begin{aligned} Total\ Shares_k = & Share_{creator(s)} + Share_{tippers} + Share_{comments/replies} \\ & + Share_{thumbsups} + Share_{subscribers} + Share_{original\ creator(s)}. \end{aligned} \quad (6)$$

Then supporters in each subgroups will further be assigned shares based on their past contribution. We define the shares structure of each support in following contents<sup>7</sup>.

**Definition 7.** The shares function( $ShareTipper$ ) of a user  $i$  who is a tip supporter in a content  $k$  at time  $T$  is calculated by accumulating contribution of all tips sent to the ideaKeeper of this content<sup>8</sup>, divided by the total contribution of tips from all users  $I$ ,

$$ShareTipper(i, k, T) = Share_{tippers} \times \frac{\sum_{t \leq T} C(TIPS_{i,t,k}, T, \mathbb{I}_{unredeem})}{\sum_{i \in I} \sum_{t \leq T} C(TIPS_{i,t,k}, T, \mathbb{I}_{unredeem})}. \quad (7)$$

<sup>6</sup>Different ideaKeepers may have different share structures, but the sum is always equal to 100%.

<sup>7</sup>For simplicity, we will denote  $\mathbb{I}_{unredeem}(i, k, t, T)$  as  $\mathbb{I}_{unredeem}$

<sup>8</sup>Note: some past contributions may be zero due to redeemed before  $T$ , and it does not affect the result.

**Definition 8.** At time  $T$ , the shares function( $ShareComment$ ) of a user  $i$  who made comments or replies to a content  $k$  is calculated by accumulating contribution of all comments and replies sent before, divided by the total contribution of comments and replies from all users  $I$ ,

$$ShareComment(i, k, T) = Share_{comments/replies} \times \frac{\sum_{t \leq T} C(Thumbsup_{i,t,k,T}, R_{i,t,k,T}, T, \beta, \mathbb{I}_{unredeem})}{\sum_{i \in I} \sum_{t \leq T} C(Thumbsup_{i,t,k,T}, R_{i,t,k,T}, T, \beta, \mathbb{I}_{unredeem})}. \quad (8)$$

**Definition 9.** At time  $T$ , the shares function( $ShareSubscriber$ ) of a user  $i$  who made subscription at  $t$  to a ideaKeeper account associated with content  $k$  is calculated by,

$$ShareSubscriber(i, k, T) = Share_{subscribers} \times \frac{C(F_{i,k}, T, \alpha, \mathbb{I}_{unredeem})}{\sum_{i \in I} C(F_{i,k}, T, \alpha, \mathbb{I}_{unredeem})}. \quad (9)$$

**Definition 10.** At time  $T$ , the shares function( $ShareThumbsup$ ) of a thumbsup at time  $t$  from user  $i$  to a content  $k$  is calculated by<sup>9</sup>,

$$ShareThumbsup(i, k, T) = Share_{thumbsups} \times \frac{C(f_{i,t(i,k)}, k, T, R(i, k), \mathbb{I}_{unredeem})}{\sum_{i \in I} C(f_{i,t(i,k)}, k, T, R(i, k), \mathbb{I}_{unredeem})} \quad (10)$$

Generally, the underlying principle of Definitions 7 through 10 remains the same: the share of a user represents the fraction of her contribution to the total contribution in the community. The mechanism designed here is consistent with the the fundamental in economic theory “the more labor, the more reward”. According to this concept, individuals or supporters that contribute more effort or resources to a social media content are typically rewarded proportionally.

### 3.3 Penalty Framework of ideaKeeper

One significant contribution of ideaGround-SME is its penalty framework. In the idea-

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<sup>9</sup> $R$  is the rank defined in previous definition.

Ground community, any user has the authority to challenge dishonest behaviors. Specifically, after a creator posts content, any user can challenge it if they suspect misinformation or infringement.

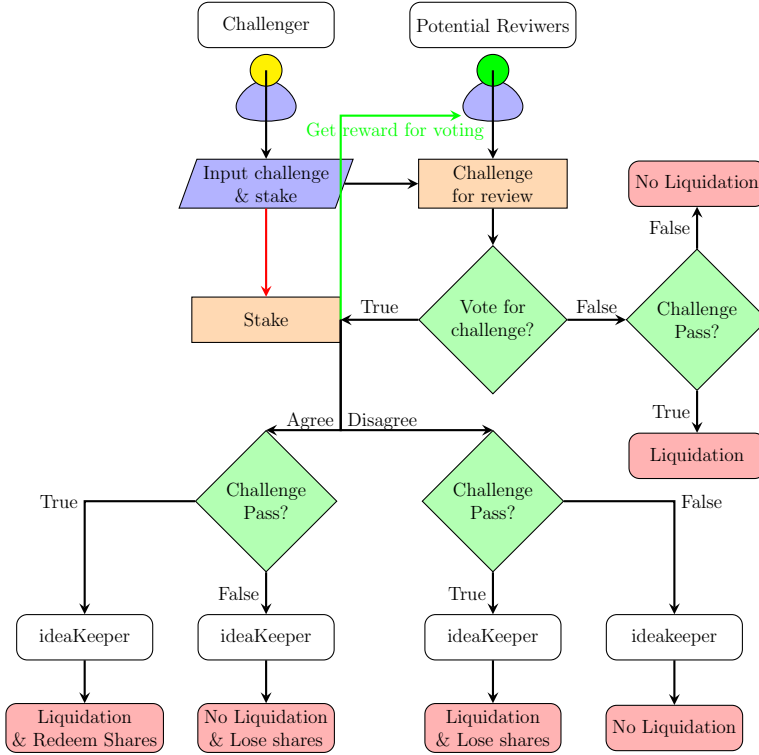
The framework is described in Figure 4. We explain the process step by step: If a user (referred to as the “**challenger**”) believes that a piece of content involves dishonest behavior, they can initiate a challenge within the community. The challenge submission must include evidence of misinformation (such as original content links, public news reports, etc.) and the stake associated with the challenge. The stake serves two purposes: it incentivizes voting and ensures the integrity of the challenge. The evidence will be randomly distributed to ideaGround users who have previously read the content. They can then review the evidence and vote on the challenge. After collecting the first 100 votes, if over 80% of the votes agree with the challenge, the community verifies the challenge. The revenue in the ideaKeeper will be liquidated immediately. All participants’ shares will be automatically redeemed, except for those belonging to the content creator and voters who are not aligned with the final voting result. And those shares will be compensated to the challenger and original creator (if the content is plagiarized). If less than 80% of the votes agree with the challenge, the challenge fails, and only the voters who are not aligned with the final voting result lose their shares as a penalty.

The ideaGround-SME penalty framework employs a combination of constraints and incentives to motivate challengers and reviewers to uphold integrity and safeguard the community’s interest.

## 4 IdeaGround: Our Solution

In the preceding sections, we explain the shortcomings of Web 2.0 social media and outline our mechanism design of ideaGround-SME. In this section, we elucidate how we, at ideaGround, address these shortcomings through the application of our mechanism.

Figure 4: **Penalty model of an ideaKeeper.**



## 4.1 IdeaGround-SME promotes equality

At ideaGround, we firmly believe in equality. Unlike many other platforms, we do not take any commission from content creators. Instead, we empower them to fully benefit from their creations.

Moreover, we recognize the invaluable role played by supporters in the success of content creators. Therefore, we have implemented a revenue-sharing system that ensures supporters are fairly rewarded for their contributions. This means that when you engage with and support your favorite content creators on ideaGround, you’re not just helping them thrive—you’re also benefiting from the success you helped achieve.

In essence, ideaGround is a platform where fairness and equality reign supreme. We are committed to building a community where everyone—creators and supporters can thrive together, empowered by a truly equitable social media ecosystem.

## **4.2 Intellectual Property Protection**

“Your words are your intellectual property.” Your valuable posts, comments, quotes, and research are securely stored within the blockchain system, either publicly or privately depending on your preference, to establish ownership of intellectual property.

This digital backup of intellectual property ensures that no one else has the authority to alter, suppress, or delete your content. The ideaGround values and upholds the freedom of speech, safeguarding the integrity of your expressions.

Data stored on the blockchain is resilient and resistant to tampering. Your intellectual properties remain intact within the blockchain ecosystem, regardless of external circumstances.

The ideaGround-SME framework serves as a robust solution to address issues of intellectual property infringement. It provides indisputable proof of your ownership of intellectual property, and we fully respect and support any efforts taken to safeguard your original creations.

## **4.3 Privacy Protection**

IdeaGround operates on blockchain technology, ensuring privacy protection as a core principle. Your data is only displayed publicly if you explicitly permit it. Through the implementation of Zero-Knowledge Proof technology, any private data is protected by cryptography. This means that your private messages with friends, personal research, and confidential diary entries are securely and immutably safeguarded by the blockchain. Neither ideaGround nor any unauthorized party can compromise your privacy or access your confidential information.

## **4.4 Anti-manipulation**

The commerce conducted on ideaGround operates with utmost transparency and is

closely monitored by the community. Under-the-table transactions between ideaGround and any external entity are strictly prohibited and impossible to execute. We're committed to keeping ideaGround a place where everyone can trust what they see and hear, without any manipulation of public opinion. And when it comes to speaking your mind, no government can interfere in our community discussions. We're dedicated to creating an open and fair platform where everyone feels free to express themselves.

## 4.5 Information Diversification

At ideaGround, we believe in expanding your information horizons. Unlike other platforms, we don't restrict the content you can access. Instead, we rely on feedback from people like you to provide the best content recommendations. Our goal is to break the echo chamber by promoting diverse perspectives and ideas. With ideaGround, you see the world as it is, not just what algorithms want you to see. Join us and broaden your worldview in ideaGround.

## 5 Applications

The ideaGround-SME is the backbone of our social media platform, offering significant potential to users who utilize it. Our goal is to construct a sandbox platform that provides users with a high degree of creativity to interact with one another. In this section, we propose some potential applications which can be achieved on ideaGround. In Figure 5, we plot a social media networks among different parties, including moderator, co-authors, content patron, content marketer, and content aggregator.<sup>10</sup>

As a moderator, she can initiate a discussion on ideaGround, outlining specific guidelines for replies and comments to maintain respectful and constructive dialogue within the forum. The penalty framework helps moderator manage the discussion. Another serious problem is

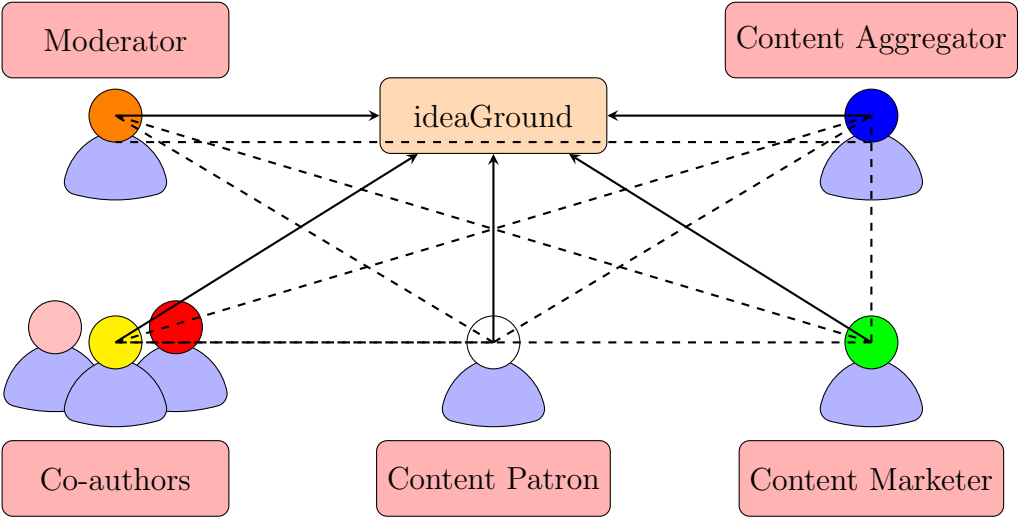
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<sup>10</sup>There are definitely much more parties which can be achieved in the ideaGround.

that Witynski (2022) reports that volunteer moderators and other users giving tech companies a “free ride” by providing their time, data and energy. Unpaid social media moderators perform labor worth at least \$3.4 million a year on Reddit alone, which is unacceptable. Fortunately, the ideaGround-SME framework compensate moderators’ efforts. The interests of ideaGround are always consistent with users’ interests.

As co-authors of a paper or book, ideaGround provides a platform to protect their copyrights through the penalty framework. However, it’s worth noting that many journals charge readers or their institutions to access the paper without compensating the original authors, which is unfair. On ideaGround, readers can subscribe to papers and books directly from authors without the participation of third parties. Co-authors can share the profits from their fantastic work under the ideaGround-SME framework.

Figure 5: **Applications of ideaGround**



Content patrons and marketers are users with the skills to promote valuable content on ideaGround. However, valuable content cannot fully realize its potential without the marketing and sponsorship of readers. ideaGround ensures that marketing and sponsorship efforts are appropriately rewarded.

The ideaGround also welcomes individuals or institutions with strong information aggregation abilities. Users proficient in recommendation algorithms for sports content can

curate and share aggregated news and contents with other users, thereby benefiting readers and original authors.

In summary, users on ideaGround have the freedom to play various roles as they want, engaging with other users, contributing to the community, and deriving benefits from it. The ideaGround’s SME and penalty framework can align everyone’s interests within the same scope.

## 6 Conclusion

In this paper, we introduce a novel economic incentives model, ideaGround-SME, aimed at addressing the fundamental challenges in current social media. Our decentralized social media application, built upon the ideaGround-SME framework and integrated with blockchain zero-knowledge proof mechanisms, serves to alleviate the shortcomings of existing social media platforms, positioning itself as the next-generation platform on Web 3.0.

At ideaGround, our vision is to revolutionize the landscape of social media, creating a platform where individuals are empowered to freely express themselves, engage in meaningful dialogue, and cultivate genuine connections without fear of censorship or manipulation. We envision a community where diversity of thought is celebrated, ideas are valued based on their merit rather than their popularity, and users have full control over their personal data and privacy. Through innovation, transparency, and democratic principles, ideaGround seeks to redefine the future of social media in the Web 3.0 era.

## References

# 7 Tables of Blue Paper

Figure 6: Business Model

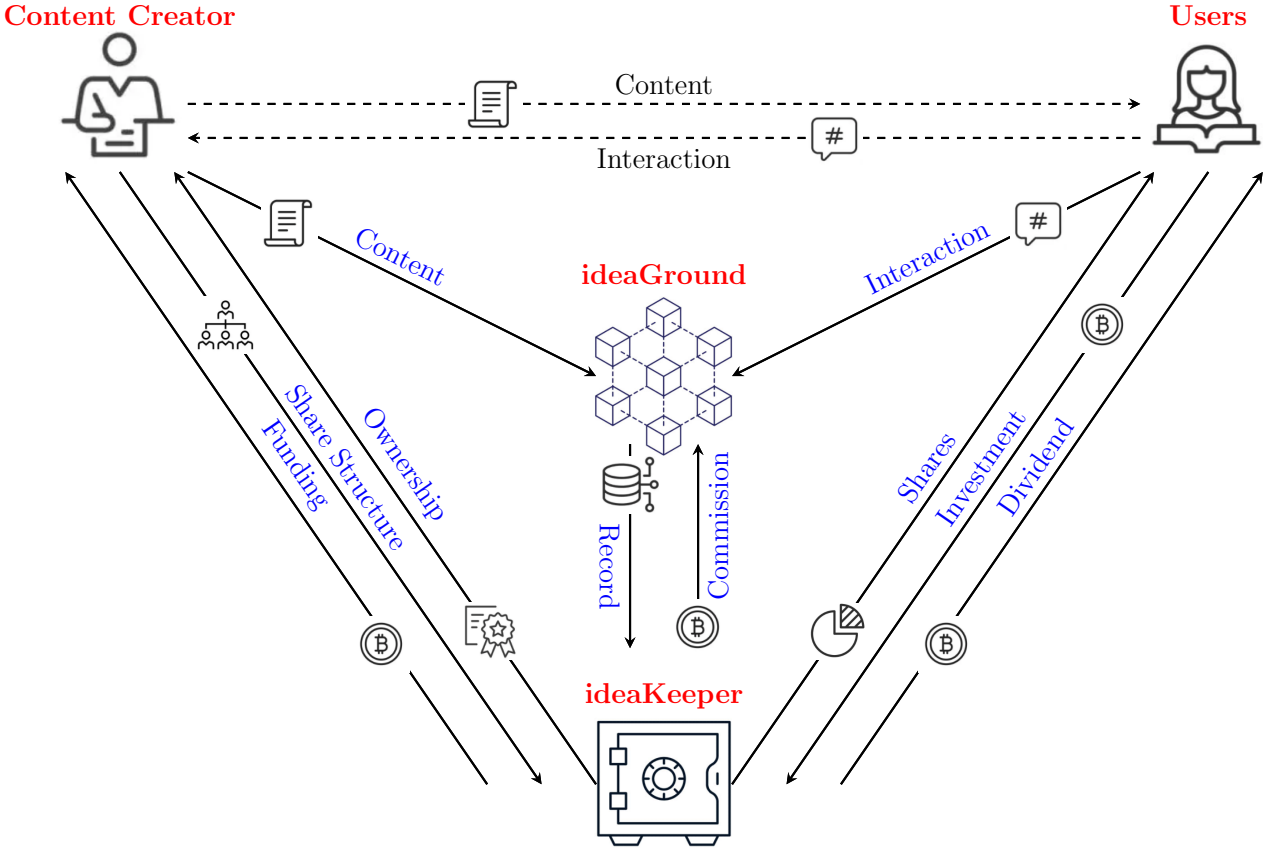


Figure 7: Social Media Economics Framework

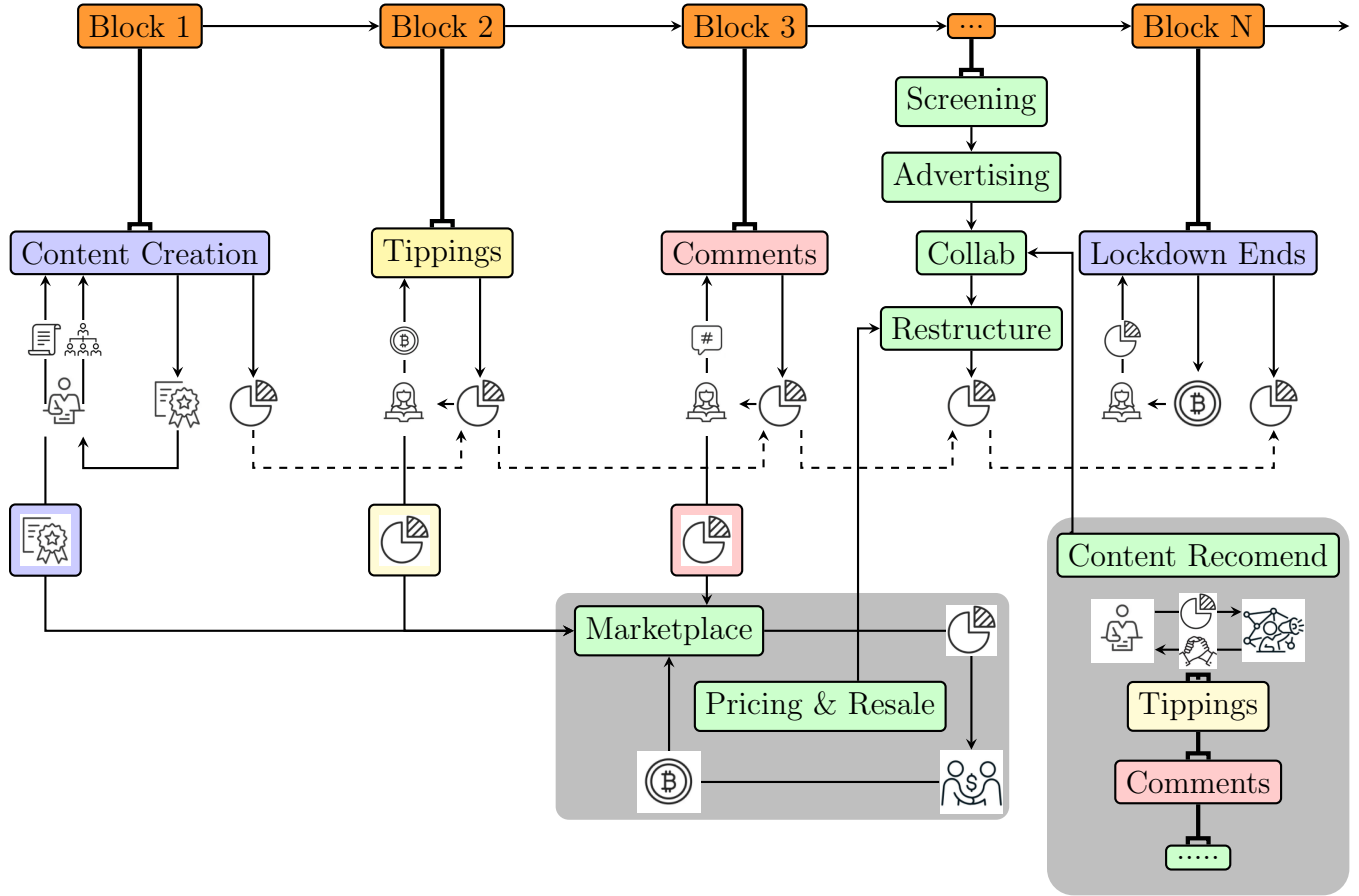


Figure 8: Content Cash Flow

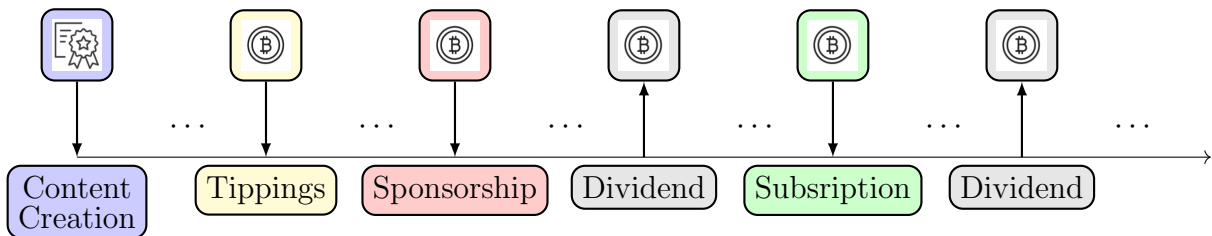


Figure 9: Friends Module

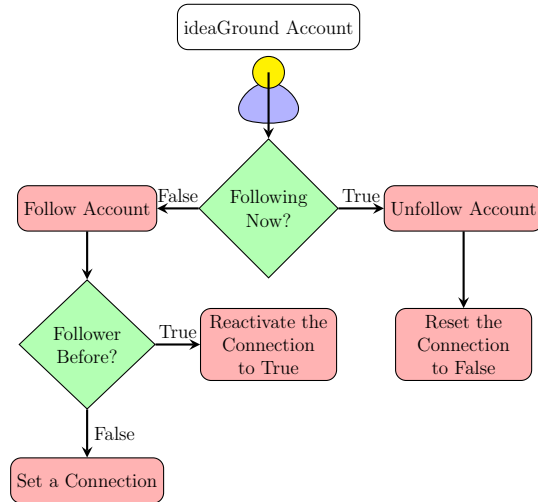


Figure 10: Profile Module

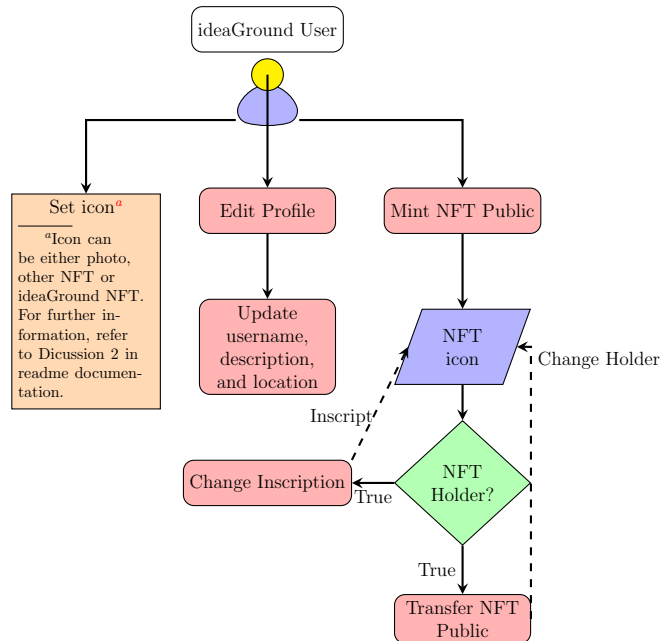


Figure 11: Public Post, Quote & Reply Module

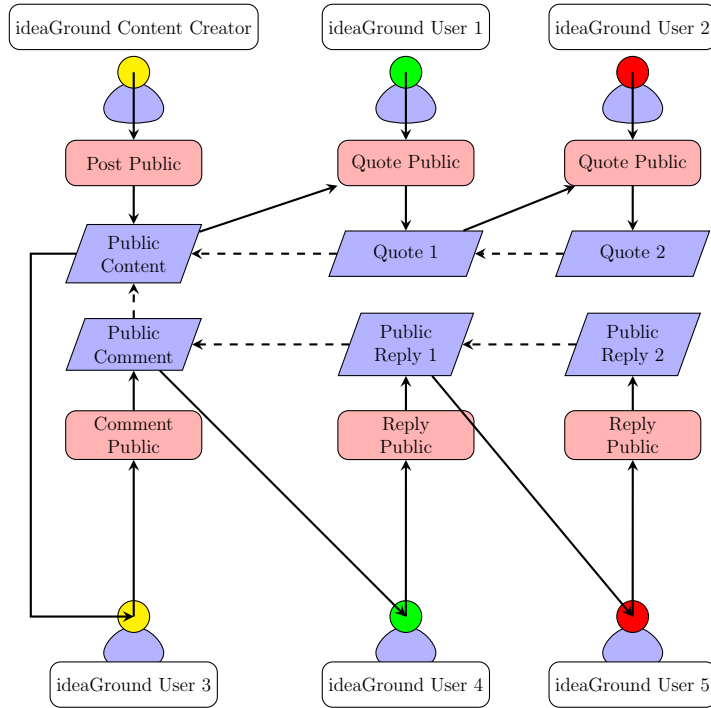


Figure 12: Private Post Subscription Module

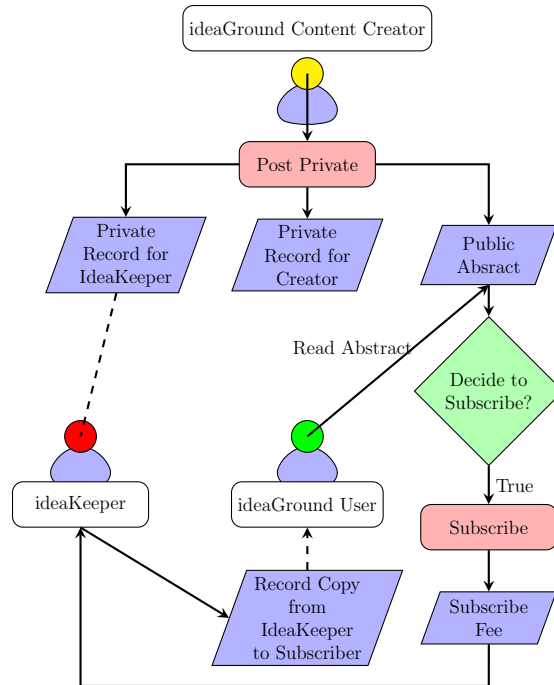


Figure 13: Private Post Reply Module

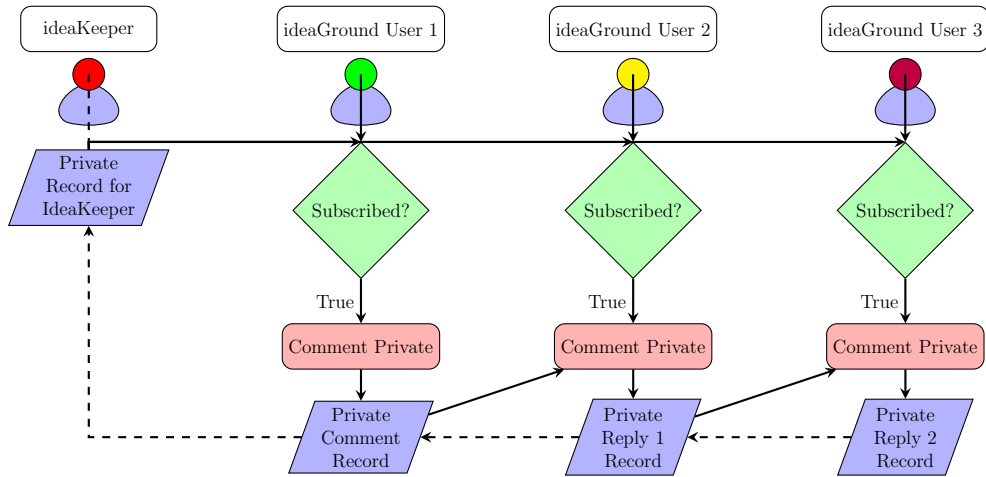


Figure 14: Redeem Module

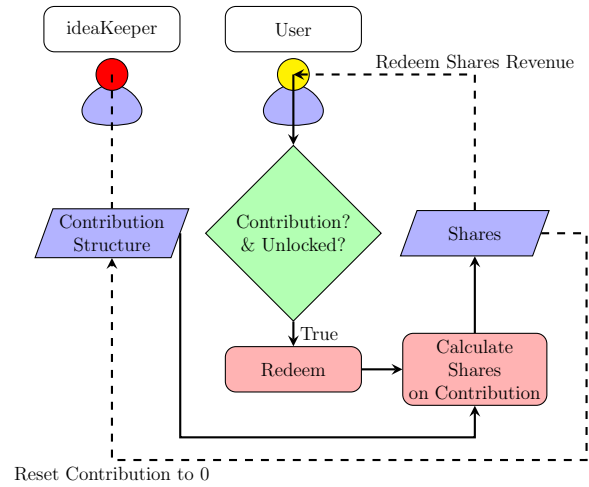


Figure 15: Private Message Module

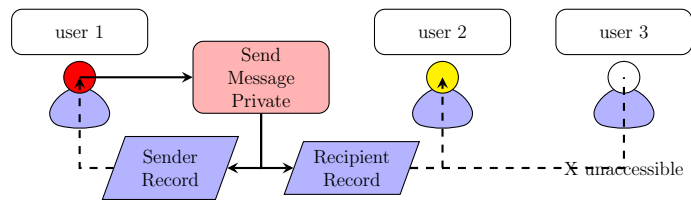
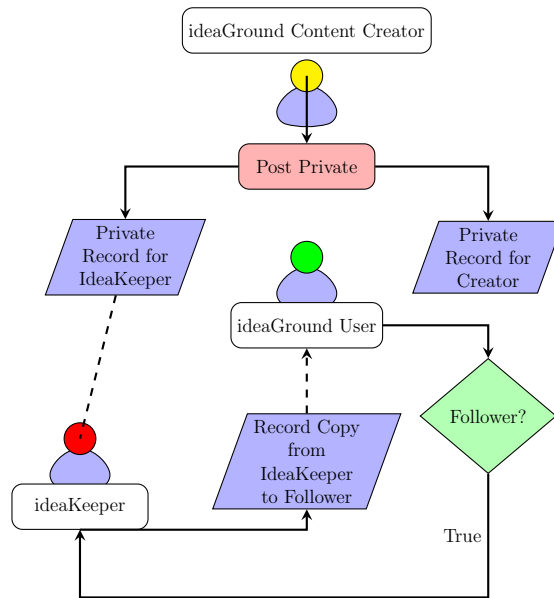


Figure 16: **Follower-Only Post Module**



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