

Research on Application Scenario Design of Token Economic Model in Blockchain Ecology

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Abstract—As the Internet develops towards the offline business and industrial Internet, the power of traffic logic is weakening. More interested parties are involved in the process of platform establishment and ecological construction. The economic side of the blockchain, namely Token and Token Economy, provides new tools for the incentives of stakeholders, ecological construction, and governance. This article starts from the scenario hypothesis of the blockchain economic ecology, combined with the actual digital economy scenario as an example, and studies the model of blockchain economic incentives, including the general token economic model and the token economic system design in different digital economic scenarios. This paper summarizes the efficiency and improvement direction of the blockchain economic incentive model, which has certain reference significance for the scenario application of the economic incentive characteristics of the blockchain system.

Keywords-Blockchain economic ecology, Token Economic model, Incentive model

1 INTRODUCTION

The token economy system is a concept that preceded the development of the blockchain. As early as the early 19th century, Alan E. Kazdin, a professor at Yale University in the United Kingdom, used the token economy system in the field of education and therapy. The token economics and its system defined in this article are through the incentive mechanism to build a brand-new production relationship and then cooperate with the high-credibility large-scale collaboration model on the blockchain to realize a large-scale self-organizing ecosystem, To encourage each participant in the ecosystem to form a consensus and co-existing collaborative relationship [1].

The reason why the pass is called the most distinctive application of the blockchain mainly stems from the following aspects. 1) Blockchain is a natural cryptographic infrastructure. Issuing and circulating certificates on the blockchain is safe and credible in the sense of cryptography. 2) Blockchain is an infrastructure for transactions and circulation, and the environment with high liquidity and fast transactions required by tokens is a fundamental capability of the blockchain. 3) The token must have intrinsic value and use-value, and the blockchain can give the token a dynamic use through smart contracts.

The innovation of blockchain technology lies in not only the support on the technical logic layer but also the guarantee on the economic logic layer [2]. From the perspective of economic

rational people, this article assumes that "unorganized" group actions rely on economic incentives as the driving force, and uses game theory to analyze the incentive-compatible design of blockchain technology from an economic perspective, and believes that through incentive-compatible the algorithm rules and related contract arrangements of the company clarify the economic interests of all parties, fully mobilize the enthusiasm of all parties, and make distributed collaborative operations truly possible.

The design of the incentive mechanism in the blockchain system focuses on the design of token economic incentives. The network nodes in the incentive system are motivated to participate in the ecological development of the system and the maintenance of the ecological security and stability of the system. The economic balance of actual value incentives is the basis for reaching consensus [3]. In the technical architecture of the blockchain, the incentive mechanism is at the incentive layer, between the consensus layer and the application layer, and has a strong relationship with the consensus mechanism. The consensus mechanism determines the core content of the incentive mechanism, which is shown in Figure 1.

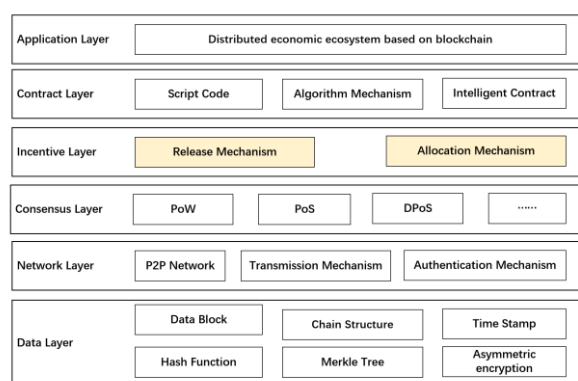


Figure 1 Incentive layer in blockchain technology architecture

The incentive layer in the blockchain architecture includes: issuance mechanism and distribution mechanism, collectively referred to as the incentive mechanism of the blockchain system [4]. In a decentralized blockchain system, the formation of consensus is based on the premise that the network nodes in the system can maximize their interests, or the guarantee of credit, or the increase in value, so that the shared data is verified and distributed. The function of the ledgers essentially establishes the task cooperation between consensus nodes as an equivalent process of task crowdsourcing [5].

2 SCENARIO DESIGN ASSUMPTIONS OF BLOCKCHAIN ECONOMIC ECOLOGY

At present, most mainstream blockchains lack effective economic incentive mechanisms, but this is precisely the core foundation that promotes the efficient and rapid development of blockchain systems [6]. Blockchain integrates economic factors into the incentive layer and provides sufficient motivation for miners to find new blocks. Therefore, how to design an

efficient and practical incentive layer has become a key issue in the design of blockchain systems.

2.1 Incentive compatibility

Compared with the traditional incentive theory, the incentive mechanism in the blockchain distributed economic system is mainly that the new type of organization can make the incentives clearer through the financial incentive system, and can combine the industrial ecology with high-quality talents and external partners to achieve the greatest value To achieve the highest degree of integration of personal interests and collective interests. In the process of token system design, considering the possibility of multiple parties repeating the game multiple times, incentive compatibility is also an aspect that must be paid attention to [7]. This is a design assumption suitable for token system design and community governance.

2.2 Rational man hypothesis

In the design of the token economic system and community governance of the blockchain ecology, another hypothetical constraint is the personal rationality derived from the basic rational person assumption of economics, that is, the participation constraint. In other words, the benefits of others participating in the mechanism are greater than not participating.

3 A GENERAL MODEL OF TOKEN ECONOMY

In the universal digital economy system shown in Figure 2, distributed roles locate the characteristics of collaboration between different subjects. Back to the source of the digital economy, the token economy is designed to provide a framework model for discussion and iteration for new applications of the distributed economy in the future.

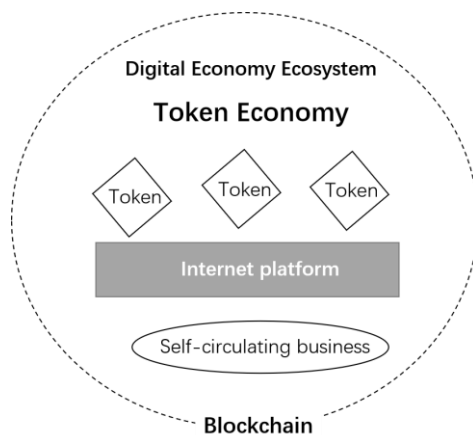


Figure 2 Token economy equals industrial ecosystem

Blockchain applications appear to be a financial-like operation, and "price discovery" is carried out in market transactions, that is, assets are represented as digital assets by tokens so that they can flow and facilitate exchange, and free-market transactions will price them. However, some

problems have also been exposed in the development. In addition to the highly speculative nature and the sharp rise and fall of prices, the main problem is that digital assets represented by tokens are only "idling" in the digital currency world, failing to be associated with ordinary Internet users, and they are unable to empower the real economy [8].

Solving the "idling" phenomenon that may appear in the blockchain economic system is a key issue to be solved by the new application of the token economy, according to Figure 3. The existing token trading is dominated by investors and speculators, and the dominant player in its ecosystem is an external exchange. The new application of the token economy is a return to commercial implementation, using tokens as a connecting medium to integrate token exchange, platform functions, industrial functions, and user communities to form a brand-new industrial ecosystem that uses tokens. At the same time, the community and governance also operate on the blockchain under the unified token incentive logic [9]. The new application will integrate the core business of the Internet platform and the blockchain token economy into a closed-loop, allowing the token to be integrated into the actual business process, rather than "idling".

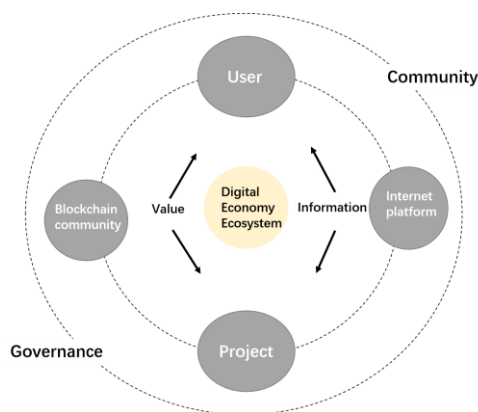


Figure 3 Circulation of a new application of token economy

4 DESIGN OF TOKEN ECONOMIC SYSTEM BASED ON BLOCKCHAIN

The token in the digital economy can be used as a unique value expression of the blockchain system or the unit of measurement of the value subject in the blockchain application scenario. The tokens that can be used in actual scenarios have price, value, and have the characteristics of liquidity and value exchange. The tokens that exist in digital form are the core incentive points in the commercial application scenarios supported by the blockchain. Designing an effective token economic model can better motivate participants in the scenario system to actively "work", and can better help system nodes reach consensus and form an autonomous and self-circulating economic ecosystem.

The design of a complete token economy includes many aspects, among which the main considerations are the setting of the scene, the design of the system token, and the design of the circulation and consumption of the token in the system. Among them, the core content of the pass scenario mainly includes the assets corresponding to the pass; confirming the roles of the

major participants; designing the flowchart of the pass application scenario; confirming the rules of community governance with the past, etc., in the entire blockchain economic ecology. The degree of fiat currency transactions involved in the process varies from scenario to scenario.

4.1 Blockchain Token Economic Model Scenario: Digital Currency Exchange

The currency exchange of digital currency is a typical scenario application combining the Internet and blockchain technology. A variety of digital currencies can be traded on the platform and exchanged with legal currencies, which facilitates the operation of various Token incentive schemes, shown in Figure 4.

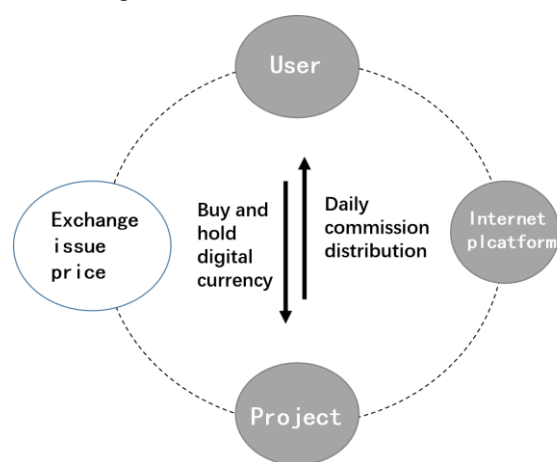


Figure 4 Incentive model of digital currency exchange

4.2 Blockchain Token Economic Model Scenario: Online Community

In the online community, when the blockchain blog platform and the actual legal currency transaction are in a completely independent parallel world, the growth of the digital currency itself and the growth of the corresponding legal currency is independent, parallel, and logically self-consistent. Of course, the designed system token and other currencies in the digital currency trading system can also be exchanged. This part of the value exchange will cause the closely connected digital currency to fluctuate with the market price, which determines the effectiveness of the incentive, and the stability and sustainability of the token economic ecosystem, shown in Figure 5.

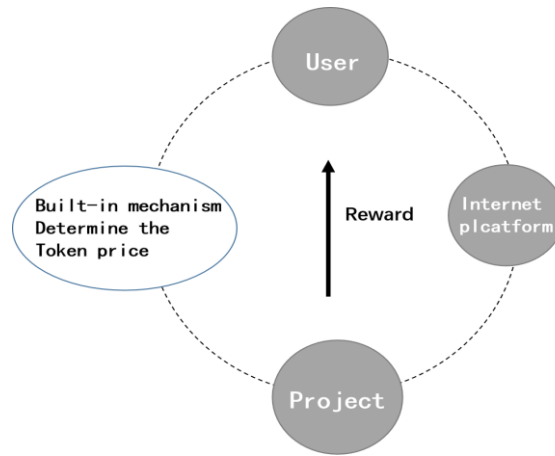


Figure 5 Incentive model of online community

4.3 Blockchain Token Economic Model Scenario: Digital Content

The digital information content industry represented by high digitization uses the token economy for incentive design, combining reward points and platform commodity exchange, inspiring users to actively take part in the Internet and the community, contributing digital products or purchasing digital products, and introducing legal currency as the initial payment can realize the economic relationship between Token and the legal currency in the scene, which can better encourage user behavior in the economic system, shown in Figure 6.

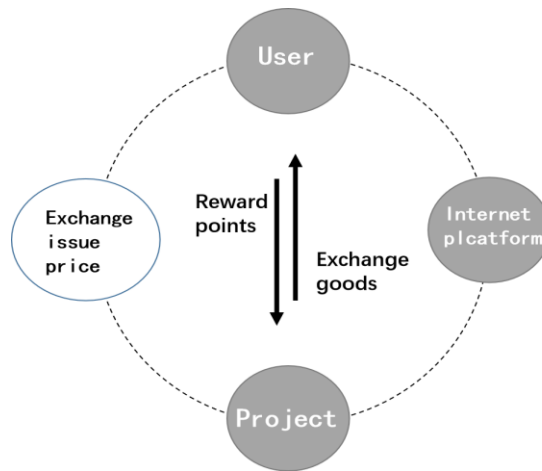


Figure 6 Incentive model for digital content

4.4 Blockchain Token Economic Model Scenario: Sharing Economy

For the design of the incentive model of the sharing economy, two major subjects need to be paid attention to sharing providers-service providers, and users. Assuming that ordinary users can only use the shared services of the legal currency exchange platform and do not take part in

the distribution of platform revenue, the new system Token is used as the system's economic incentive target and can be used to incentivize the system's service providers. In such a blockchain sharing platform, the mode of combining equity tokens with functional tokens can be used to form a token economic model with dual tokens co-operating to achieve the greatest incentive effect, as shown in Figure 7.

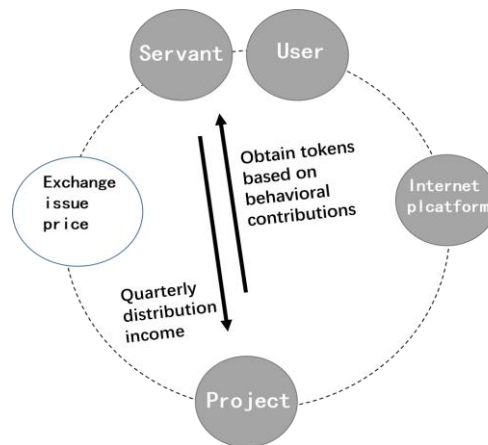


Figure 7 Sharing economy incentive model

5 CONCLUSION AND INSPIRATION

In the blockchain economic system, the core promoter of tokenization is the ecological builder. It plays a decentralized role in the ecology to coordinate and promote the transformation of the Internet platform, the implementation of blockchain technology, the issuance management of tokens, and the industrial ecology. The establishment of the circle. It will be a brand-new legal entity and organizational entity, coordinating all parties to jointly promote three core issues: the implementation of chain and blockchain technology; the establishment, distribution, and management of token; community, user community, and investment community, etc. A community formed by value consensus.

Every step of blockchain technology from theory to technical implementation to application implementation requires actual scenarios as support, that is, how to accurately implement applications and correspond to different scenarios requires well-designed token economic incentives. Use the information interaction and resource sharing between different heterogeneous subjects to realize the value expression and transfer function in the blockchain system. The new applications to be implemented should rely on the token economy of the blockchain as the core, link the existing value Internet effects of the Internet, mobilize various types of community users, autonomous cooperation and coordination, and create economic sharing, incentive compatibility, and information interaction. A win-win industry ecosystem for new applications of blockchain business. Comprehensive use of Internet platforms, online and offline communities, blockchain technology and tokens, and other tools. The new application of token economy will completely bid farewell to the "idling" of tokens and connect user function applications and investor token transactions into a big cycle.

The key content of the blockchain economic ecology scenario is to hypothesize and simulate the effect of actual capital accumulation and capital flow at the incentive layer. Use "Token economy" to describe the benefit distribution of each subject in the blockchain distributed economic system. Maximizing the incentive effect of the blockchain can better stimulate the benign ecological development of the industrial economy.

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