EULOGIAN

WHITEPAPER

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Contents

EULO's Understanding of Blockchain

The concept of blockchain was first proposed in Satoshi Nakamoto's white paper Bitcoin: A Point-to-Point E-Cash System, and it is an integrated application of distributed data storage, point-to-point transmission, consensus mechanism, encryption algorithm and other technologies. Although it is born as a technology, what it has brought is far beyond the scope of technology itself, just as what Internet technology has brought to us.

In EULO's opinion, blockchain is not only a technology and a tool, but also an idea: opening, sharing and decentralized. The core spirit of blockchain coincides with those of the Internet. Unlike the Internet, blockchain extends such ideas further from the transmission of information to the transmission of value, that is, from the Internet of Information to the Internet of Value. The Internet of Information makes the information transmission cost tend to zero, profoundly changing the economic pattern of the community and affecting everyone's life. When the era of zero market transaction cost comes in the future, it is possible for the blockchain-based Internet of Value to bring new changes to the economic pattern and social structure of the whole world.

With the rapid development of society, the progress of science and technology, and the multiplication of pace of life, problems such as unreliable information and insufficient credit resources become worse and worse, the system of trust among governments, enterprises and individuals becomes more and more fragile, and communication and transaction costs increase. In this era of rapid economic development, EULO believes that blockchain technology, with its characteristics of decentralization, tamper resistance, and high transparency, will become another technology to revolutionize human society after PC Internet and Mobile Internet, making it simpler to trust various social relations.

Currently, blockchain technology is still in the primary development stage, and various forms of public blockchains, consensus mechanisms, expansion schemes, and cross-chain strategies have been ceaselessly proposed. EULO devotes itself to solving the problems of current mainstream public blockchains, and proposes a new product, a decentralized blockchain-based world bank (abbreviation: World Bank), to solve the problem of the great fluctuations in the digital currency market, and reduce the entry threshold for traditional investors.

EULO

Analysis on the Public Blockchain Industry

1. Background of the Public Blockchain Industry

The public blockchain is the underlying protocol of the blockchain and the "operating system" of the blockchain world. It provides the basic technical support for the development of various applications and it is the core foundation for the application of future blockchain technology. After the exploration of Public Blockchain 1.0 Bitcoin and Public Blockchain 2.0 Ethereum, Public Blockchain 3.0 is focusing on solving the system scalability, security and regulatory compatibility so as to carry large-scale commercial applications. In addition, Public Blockchain 3.0 still needs to retain the characteristics of blockchain, such as opening and self-governance. Different from the architecture of the Internet, the value of the underlying protocol of blockchain greatly exceeds that of the application layer. The underlying public blockchain will still be the focus of the blockchain industry at present. The competition between various public blockchains in scalability, applicability, consensus philosophy and application ecology will continue for a long time.

1.1 Public Blockchain 1.0 - Bitcoin

Bitcoin is primarily designed as a payment tool, and it can only be used for value delivery. As a result, Satoshi Nakamoto significantly deleted many script instructions, so its security is extremely high. However, Bitcoin's script language is Turing incomplete, it cannot execute loop statements, its expansibility is poor, and
many senior applications cannot be built
on Bitcoin scripts.

1.2 Public Blockchain 2.0 - Ethereum

Ethereum is a public blockchain platform with Turing complete scripts, known as "World Computer". In addition to value delivery, developers can create arbitrary smart contracts on Ethereum. Through smart contracts, Ethereum has expanded the commercial channels of blockchain, such as the issue of tokens for many blockchain projects, the development of smart contracts and the development of decentralized DAPPs. There are more than 1,000 DAPPs based on Ethereum. However, there are some problems in the current Ethereum network, such as insufficient expansibility, poor security, difficult development, and excessive dependence on service charges, so the large-scale commercial applications of blockchain encounter development bottlenecks.

1.3 Public Blockchain 3.0 - Large-scale Commercial Application

Public Blockchain 3.0 is designed for large-scale commercial application and it is linked to real assets and real value, promoting the development of the real economy. The blockchain projects competing with Blockchain 3.0 include EOS and Cardano, etc., but most of such public blockchain projects are at the stage of theoretical demonstration and test, and a few parent blockchain projects are still at the stage of early exploration. Ethereum, a representative of Public Blockchain 2.0 with abundant technology reserve and rich money sources, is continuing its self-iteration and preparing to adopt the technologies of Plasma, Sharding, and Casper etc. to improve its processing performance greatly.

The public blockchain is the infrastructure for all commercial applications of blockchain in the future. Existing technologies involve the consensus mechanism, smart contract, cross-blockchain technology, sidechain technology, compatibility, and expansibility etc. The combination of such technologies directly determines the basic performance of the public blockchain, including the number of nodes necessary for the normal operation of the public blockchain, transaction processing speed, and difficulty in application development etc. The technology development of the underlying platform of blockchain is associated with complex technology structures, difficult development, long development cycles, and great controversy, etc.

Around these underlying public blockchain technologies, a series of ecosystems have formed, including blockchain wallet, blockchain browser, node election, mining machine, mining pool, development component, development module, technology community, and project community etc. The degree of completion of such ecosystems directly determines the efficiency and effect of public blockchain.

Now, the projects with an overall mature ecosystem in the market include ETH and NEO etc., but such projects cannot support high-frequency commercial applications. Therefore, the market has been exploring a public blockchain fit for commercial applications.

The underlying technology platform of the blockchain is still at the stage of continuous innovation and gradual improvement. It is impossible for current technologies to have a great influence on the real world and be commercially applied on a large scale. During the current research and development of the underlying platform of blockchain, such issues as consensus mechanism, centralization, decentralization, transaction processing speed, and security are of the high-test concern and hotly discussed, but currently there is no consensus on how to create an efficient, secure, and decentralized platform in the future.

2. Core Elements of Public Blockchain.

The core resource elements in the Internet world include three aspects, namely storage, transmission, and computing resources. As an extension of Internet technology, its core resource elements are greatly related to the Internet. Moreover, the blockchain as a trust machine carries the mission of value delivery, in addition to the function of information transfer, on the Internet. Therefore, the core resource elements of the blockchain world can be summed up as storage resource, transmission resource, computing resource, and trust resource generated by the consensus mechanism.

In the industry, the architecture of blockchain is usually divided into five layers, namely data layer, network layer, consensus layer, contract layer, and application layer. We have broken down the core technology elements into five dimensions: scalability & transmission technology, system security, distributed storage, regulatory compatibility, and consensus mechanism. The core technology elements and core resource elements of the public blockchain are as shown in Fig. 2-1.

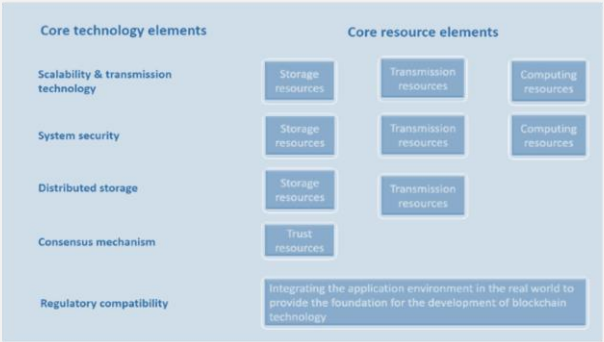


Fig. 2-1 Core Elements of Public Blockchain

3.Strengths and Weaknesses of Consensus Mechanism

The consensus mechanisms adopted by mainstream public blockchains include PoW, PoS, DPoS and PBFT, which are introduced briefly as follows:

Proof of Work (PoW)

It means that the amounts of tokens acquired is determined by the miner's contribution to mining. Generally, the better the computer is, the more opportunities are allocated to the miner. Representative tokens include BTC, LTC and current ETH.

Proof of Stake (PoS)

Similar to the way that money is deposited in a bank, this mode will give you corresponding interest based on your token amount and the time you hold the tokens. Simply, it means that whoever has more tokens (online wallet required) has the right to speak, so PoS proves who has the right to speak based on the percentage of tokens in the online wallet.

Delegated Proof of Stake (DPoS): All persons holding an asset are allowed to vote to elect a certain number of representatives, and the elected representatives generate blocks according to a mechanism. In some ways, DPoS is a bit like a parliamentary system. If representatives fail to perform their duties (for example, cheating), they will be removed and the network will select new nodes to replace them. Representative token: EOS.

Consensus mechanism	Characteristics	
	Strengths	Weaknesses
PoW	1. High degree of engagement and high degree of freedom on a node basis 2. Open node system 3. Fair and just	1. Low degree of decentralization, easily causing 51% attack 2. High energy consumption, causing waste 3. Low security 4. Weak expansibility and poor performance 5. No finality 6. Waste of hardware
PoS	1. High security 2. Low energy consumption 3. High degree of decentralization 4. Open node system	1. Low fainess 2. No finality 3. Low public recognition
DPoS	1. Low energy consumption 2. High performance 3. Finality	Low degree of decentralization and relatively closed node system
PBFT	1. High performance 2. Finality 3. Sound security	1. Sound security 2. Low fault tolerance

Fig. 2-2 Analysis on Characteristics of Mainstream Consensus Mechanisms

Practical Byzantine Fault Tolerance (PBFT): PBFT is a state machine replication algorithm in which services are modeled as state machines that replicate copies at different nodes of the distributed system. The copy of each state machine saves the state of the service and realizes the operation of the service. The set of all copies is represented by an uppercase R, and each copy is represented by an integer from 0 to |R|-1. For ease of description, it is assumed that |R|= 3f+1, where f is the maximum number of copies that are likely to fail. Although there may be more than 3f + 1 copies, additional copies cannot improve reliability except performance degrade. Representative token: NEO.

In addition to the above consensus mechanisms, there are various improved consensus mechanisms, including the lease consensus mechanism LPoS (through this mechanism, token holders

can lend their tokens to miners at any node of the entire network and obtain dividends), the dynamic equity consensus agreement (DSC, several bookkeepers are dynamically selected, and then PBFT is adopted for consensus transaction between all bookkeepers), FBA federal Byzantine consensus and OCE (an enhanced version consensus engine based on DBFT consensus protocol and VRF realizes almost unlimited scalability, only a small amount of computation is needed, and nearly no blockchain networks with fork are produced, and OCE supports pluggable verifiers and online protocol repair / upgrade), etc. The analysis on strengths and weaknesses of mainstream consensus mechanisms are analyzed as shown in Fig. 2-2:

4. Analysis on Pains

4.1 Problems for single PoW and PoS

As for the PoW consensus mechanism: due to professional miners and mining machines, the excessive concentration of computing power makes the community tend to finally centralize, the mine hegemony events are frequent, and the transaction is likely to roll back due to a 51% attack, causing the users to lose their assets. Moreover, the expansibility is relatively weak, the performance is relatively low, and the high energy consumption due to a large number of repeated computing, are some of the reasons for the criticism of PoW.

As for PoS and DPoS, these mechanisms which can reach consensus without consuming too much computing power make up for the defects of PoW mentioned above, but it forms a new centralization trend to obtain block generation depending on the amount of tokens, the realization process is complicated, it is easy to form some forks, and a large number of nodes are needed to ensure the normal operation of the public blockchain network, which will cause network traffic pressure and security vulnerability in intermediate steps.

4.1.1 Long time for block confirmation

It averages approximately 10min to generate one block for Bitcoin, about 6 blocks need to be confirmed, and the time for confirmation is about 60min. However, it needs an average of 15s to generate one block for Ethereum, about 12 blocks need to be confirmed, and the time for confirmation is about 3min. The completion of the block confirmation represents the completion of the current transaction processing and the recording of the entire network. In this way, the TPS of Bitcoin (the number of transactions processed per second) is about 7, and the TPS of Ethereum is about 15.

See Fig. 2-3 for TPS conditions of mainstream blockchain projects.

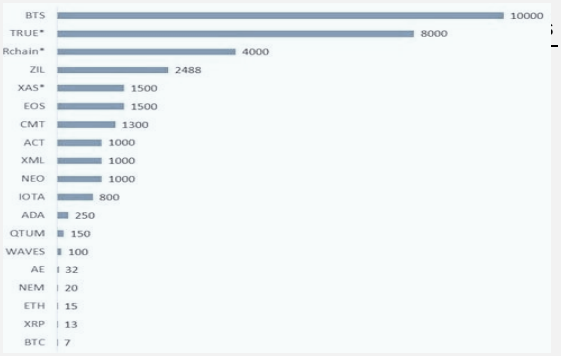


Fig. 2-3 TPS of Mainstream Blockchain Projects

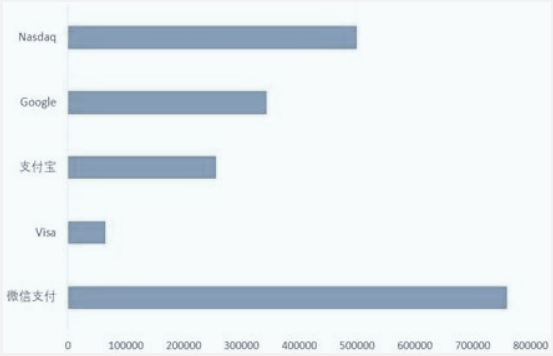


Fig. 2-3 TPS of Mainstream Blockchain Projects

According to the processing speed of traditional commercial applications at present, the transaction processing speed of the existing blockchain platform projects cannot support large-scale commercial applications yet. Although it is ceaselessly explored and developed, the blockchain has a long way to go for real commercial applications. The TPS of the traditional Internet applications is as shown in Fig. 2-4.

4.1.2 Great fluctuation of currency price with the market

Since the appearance of digital currency, people have been criticizing its crazy price fluctuation. The price fluctuation in the near half of the year is over 300% for BTC, over 400% for ETH, and even over 1,500% for some small currencies. Compared with other financial assets and legal currencies, there are three main reasons for the great fluctuation of digital currency prices:

1) Many supervision loopholes

There are many supervision loopholes for digital currencies, which is the main reason for its price instability and fluctuation. Every new scientific product encounters challenges with the application of ethics, both at the technical level and the moral level. At the technical level, it is normally used if any user does not violate the standards and norms at the technical level. At the moral level, if the technology is used for illegal purposes, it is obviously unacceptable to any country and legal organization. Therefore, some scholars and programmers who study blockchains hope to keep the "decentralization" and "anonymity" characteristics of blockchains at the technical level, and to cooperate with the governments and the judicial departments at the moral level to make necessary supervision.

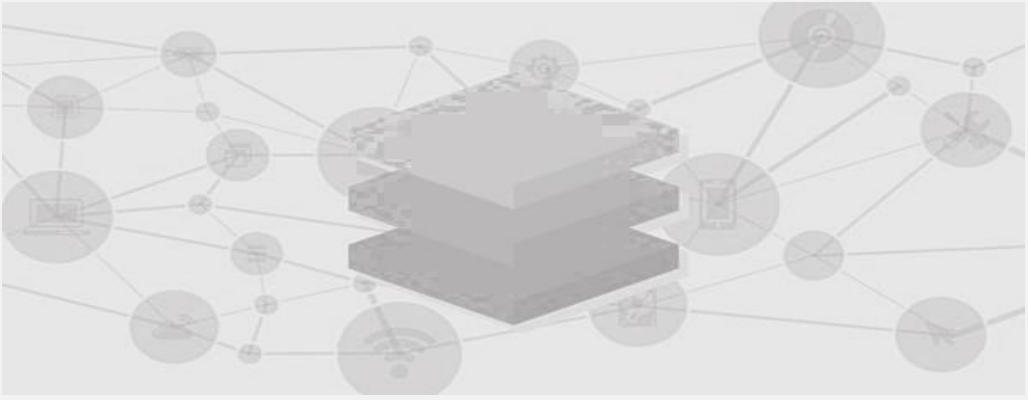
2) The spread of speculating psychology

The digital currencies represented by Bitcoin and Ethereum are not the Ponzi Scheme and Tulip Fever that some people imagine, but digital assets with technical values and financial practice values. However, the ICO, which has almost no threshold, has made various made-up blockchain projects, and such projects are filled with empty shells without substance. In some ICO projects, foreign open source project codes are directly applied and such projects are launched to make money after some parameters are changed. Such projects have attracted a large number of speculators. Some speculators buy ICO tokens and the value of these tokens increase 60 times in a short time, but the principal is only CNY 100,000. Such a rate of return is far beyond the reasonable scope.

3) Immature technology

There are many problems for public blockchains. The pre-set capacity of the block is too small, and the expansion scheme has many flaws. The transfer transaction speed is slow, resulting in a large number of shelved transactions. The normal verification of blockchain can be destroyed by an attack on a specific network port. A large number of centralized mines and exchanges gradually occupy more than half of the network's computing power. Once these platforms are attacked, the entire blockchain network likely faces a life test. Such problems are numerous. Immature technology means that the blockchain network like faces attacks and the market price easily fluctuates.

To sum up, the supervision loopholes tend to increase prices rapidly, because many illegal transactions have been pushing the price trend. Speculation is an important reason for the roller coaster style price fluctuation of digital currencies. Once there is bad news exposed, the price falls or stops immediately, resulting in that the price failing to become stabilized within a reasonable range and the price rises and falls greatly.



4.1.3 No privacy protecting in special scenarios

When Satoshi Nakamoto invented Bitcoin in 2009, he offered a way for participants who trust each other unconditionally to cooperatively maintain standardized and tamper-resistant transactions and electronic information records. The blockchains and public blockchains later refer to this way, where each participant can obtain a complete data backup, and all transaction data is public and transparent. This is a feature of strength for blockchains, but this feature is fatal for many blockchain users. Many times, the users themselves want their account privacy and transaction information to be protected, while account and transaction information is an important asset and trade secret for business organizations and they do not want to publicly share it with their peers.

The Bitcoin solution for privacy protection is to realize anonymity by isolating the relevance between the transaction address and the real identity of the address holder. Therefore, while the addresses of the sender and recipient of each transfer record can be viewed, they cannot be corresponded to specific persons in the real world. However, such protection is very weak, and the relevance between the account and transaction can still be traced by observing and tracking blockchain information through ID and IP information etc.

EULO's Solution

1. Solution

Based on the PoW + PoS algorithm, EULO adopts a double-layer network constructed by master node and super node, uses zero knowledge proof, optimizes the blockchain transport layer protocol (TCP) at the same time, and realizes the fast payment and the transaction in anonymity scenario. In addition, EULO has added the oracle machine design and created decentralized blockchain-based bank to reduce the affection of price fluctuation in the crypto currency market on traditional investors.

1.1 Solving the single problems of the PoW + PoS consensus mechanism

The PoW+PoS algorithm is adopted in EULO's consensus mechanism. PoW is used to generate and distribute EULOs. The total amount of EULOs is constant, at 21 billion, adopting PoW mining, similar to the network mining of Bitcoin. The Bitcoin network has been operating for nearly ten years without obvious problems, and its PoW consensus mechanism and the economic model based on it are more robust than other consensus mechanisms.

The PoS consensus mechanism is used to package EULO transactions, which processes transactions faster. After having been packaged and separated, EULO generation and transactions will also be more secure. If 51% attacks occur due to the concentration of computing power, the generation of the subsequent EULOs can only be affected, and historical transactions cannot be tampered with to assure the security of the account assets of the users.

1.2 Solving the problem of long-time block confirmation

EULO constructs a double-layer network for transaction confirmation, and modifies the underlying network transport protocol to shorten block confirmation time. The double-layer network of ordinary transaction confirmation refers to a network composed of ordinary pos nodes (referred to as ordinary nodes for short) + master nodes (including super nodes), ordinary nodes are responsible for package transaction and broadcasting to the super nodes and other master nodes linked by the master nodes after package. The super nodes are similar to the CDN nodes in the traditional Internet, and they mainly solve the problem of data synchronization without other privileges in consensus. If the customer initiates an instant transfer transaction in Instant-Send mode, the input of the transaction is locked to a corresponding specific transaction, the transaction has agreed to be locked in the master node network, and all conflicting transactions and blocks are always rejected unless they match the corresponding ID of a currently locked transaction. At present, the time locked for an entire-network transaction is about 1s, so fast transactions with Instant-Send allows for the secure receipt within 1s, which we call second receipt.

EULO also modifies the underlying network transport protocol to first make the information transmission confirmation faster in the ordinary network, and secondly make the transmission of the cross-border network break through some restrictions and solve the cross-border payment problem in the complex scenarios of the network environment. It makes it possible to exchange information at a high speed under the master node protocol in ordinary nodes, and this mode has higher requirements for the network environment in which the super nodes are located.

1.3 Solving the affection of digital currency market fluctuation on investors

EULO took part in the decentralized oracle machine design and created a decentralized world bank based on the design. Through the exchange rate locking function of the world bank, The investors can use the exchange function of the World Bank to obtain the equivalent value exchange of the stable-coins BCK and reduce the effect of drastic fluctuations of digital currency market on investors. The risk is lower and more controllable, and the participation threshold of traditional investors is also lowered.

Essentially, The World Bank is a DAPP realized by a smart contract, and it can realize the functions of exchange rate locking and saving etc. in the traditional financial field on the blockchain. It enables the blockchains to better serve the traditional real economy. The main process is divided into: price acquisition; Deposit in a certain quantity of EULOs at current price in the World Bank for forward RMB-FX trading. An automatic return after maturity to the chain bank may acquire a current number of currency corresponding to the original total market price. Moreover, through cooperative intelligence, the oracle machine can derive more DAPP applications applicable for various lottery and game industries.

1.4 Solving the problem of privacy leakage

EULO uses zero knowledge proof to solve the problem of privacy leakage. The “Zero knowledge proof” means that it not only can fully prove the legal owner of certain rights and interests, but it also does not disclose relevant information - that is, the "knowledge" exposed is "zero." The EULO can be transacted anonymously, providing protection for data privacy on EULO. When the data is owned by an individual, the information of the individual can be effectively used and exchanged without exposing privacy. In this respect, the scenarios in which EULO can be used by expansion include: encrypted communication and data isolation etc.

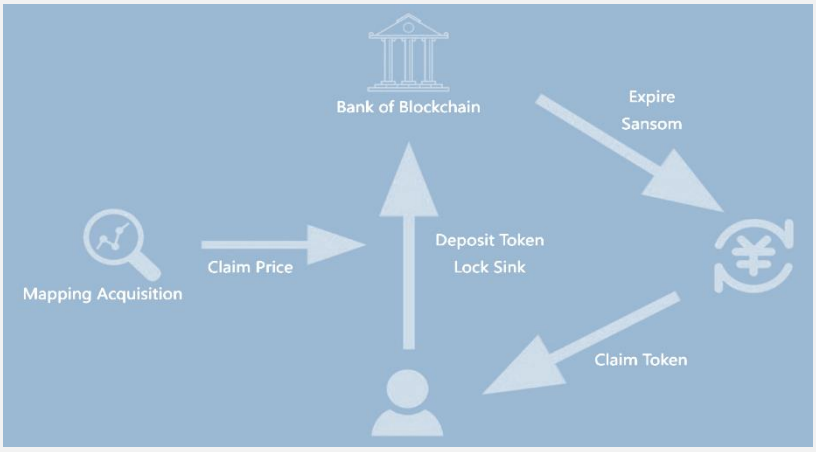


Fig. 3-1 Operation Process of a Blockchain-based Bank

2. A Decentralized Blockchain-based World Bank

Through the smart contract mechanism of EULO, it can issue the stable-coins on the main chain of EULO. The first stable-coins that issued on the EULO is BCK (Knife Coins for short), BCK runs according to the algorithm under the smart contract, the trust mechanism of decentralization addresses the problems regarding excessive issuance, such as the stable-coins in need of centralized endorsement and difficult to regulate.

BCK has equivalent hook with US dollars, the EULO and BCK can automatically exchange under the smart contract. Therefore, the smart contract with exchange function on the main chain of EULO is called Blockchain-based World Bank.

EULO uses the oracles to acquire the off-chain EULO market information and other data as the basis for exchange between blockchain assets. Transfer a certain amount of EULOs to the smart contract address of chain bank, the smart contract will generate the real-time exchange rate under the mechanism of oracles, and automatically exchange the corresponding amount of stable-coins BCK.

The process is as shown in Fig. 3-1:

The commission charge of chain bank is 3%, which means transferring EULO of $100 (if the current price of EULO is $1 and the amount is 100) into the chain bank, the market value of

BCK can be obtained: $100× （1-3%） =$97.

The stable-coins BCK exchanged through the chain bank can be transferred to the chain bank in two months to be automatically exchanged for EULO. The whole process is free of commission, that is, the BCK worth $100 can be exchanged for EULO with the same value. If the EULO rises to $2 at this time, the number of EULOs worth $100 is 50; if the EULO Holding the stable-coins BCK can not only avoid significant fluctuations in value, but can get dividends from the chain bank. Each year, the chain bank will directly distribute dividends worth 60% of its EULO income on the basis of the number of locked positions on the BCK registration day.

The income of the chain bank is mainly divided into: 1. the EULO exchanges for the stable-coins BUC on the chain bank, and automatic deducted commission fee for the smart contract is 3%; 2. If the EULO exchanged by the stable-coins BCK which is obtained by the chain bank gets a higher price, the chain bank will earn more EULOs.

Technical Solutions

1. Technical architecture of EULO

In the ternary paradox, EULO architecture focuses on security and decentralization, adopts distributed network architecture, reasonably allocates computing power, and allows all participants in the ecology to take part in the process, quickly acquires cross-chain data services, and ensures that services are not disturbed by the third parties.

2. Functional Modules

An ordinary block chain consists of six layers: data layer, network layer, consensus layer, incentive layer, contract layer, and application layer. The data layer mainly records and stores the information data and integrates them through such technologies as time stamp, chain structure, hash function, Merkle tree, and asymmetric encryption, etc.

The consensus layer encapsulates the consensus algorithm mechanism of the network node. At present, the consensus algorithms mainly include PoW, PoS and DPoS etc.The network layer encapsulates the P2P network, the transmission mechanism, and the verification mechanism. The incentive layer mainly focuses on the integration of economic factors into the blockchain system, which are generally the issue mechanism and distribution mechanism of economic incentives. The contract layer mainly encapsulates various kinds of programmable scripts, algorithm mechanisms and the smart contracts of blockchains. The application layer is the application scenario extension of blockchains.

EULO rearranges and defines the six layers, and we integrate them into three layers (Fig.-4) from top to bottom according to their functions or structures. The top application layer (contract layer and application layer) includes transfer, smart contract, and Dapp. The application layer realizes data transmission interaction with the following core layer through rpc or api. The middle layer is a core one (consensus layer, incentive layer and data layer), including EULO VM, block core, consensus algorithm, and a zero knowledge proof of mixed-currency algorithm of the privacy core. The underlying layer is a support one (data layer and network layer), involving P2P network, data storage, key algorithm, and network optimization.

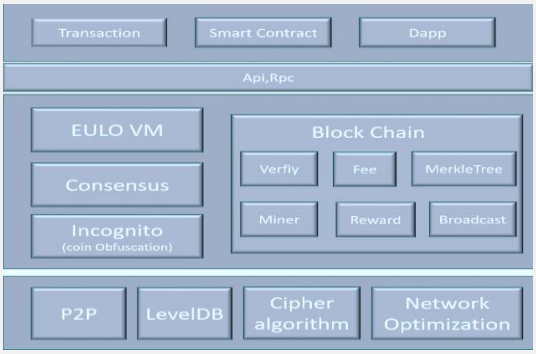


Fig. 4-1 Technical Architecture of EULO

1) Support layer

Support layer: It mainly involves various broadcast messages, node synchronization, network node discovery, network transmission optimization, and various security algorithms in the age of block packing.

2) Core layer

a) EULO VM

EULO is a programmable blockchain. It does not offer the user a series of pre-set operations (for example, common currency-currency transaction), but it allows the user to create complex operations as he wishes. As a result, it can be used as a platform for many types of decentralized blockchain applications, including, but not limited to, crypto currency. Its core is the virtual machine, which can perform encoding of any complex algorithm. Therefore, EULO is "Turing Complete". Developers can use programming languages based on existing programming language to create applications that will operate on EULO.

Like other blockchains, EULO is a point-to-point network protocol. The EULO blockchain database is maintained and updated by a number of nodes connected to the network. Each network node operates an EULO virtual machine and executes the same instructions.

Therefore, it can ensure the consistency of the verification and output results at all nodes and maintain the consistency of the entire blockchain. Moreover, the consistency of decentralization can make EULO extremely fault-tolerant, ensure zero downtime, and keep the data stored in the blockchain forever, unchanged and untampered.

b) Consensus algorithm

The EULO consensus algorithm is designed as a mixed mode of POW+POS. In the early stage, a single POS mode is adopted to realize the fast transaction, and then the POW mining + POS packaging confirmation are realized after six months.

POS accounting adopts POS3.0 model to avoid the currency age attack of traditional POSs. POW adopts the variant CryptoRight algorithm, and the efficiency gap between GPU and CPU is not obvious, which can guarantee both neutralization and low energy consumption.

c) Zero knowledge proof

It means that the prover can make the verifier believe that a statement is correct without providing any useful information for the verifier. For example, the prover proves and makes the verifier believe that the prover knows or owns a message, but any information about the proofed message shall not be disclosed to the verifier in the proof process.

EULO provides users high privacy and anonymous transaction options. Because the transaction volume of a traditional zero knowledge proof is very large, we will adopt a new bulletproof algorithm in the official version, which can reduce the transaction volume from 20K to about 1.5K. Moreover, it is unnecessary to set trustworthy initial settings (needed by zec) to make transactions more anonymous and private.

3) Application layer

a) Transaction

EULO transactions are divided into Coin transfer transaction and Stake equity transfer:

EULO Coin transfer transaction. The account system adopts the UTXO mode, which provides unique transfer modes (fast and anonymous) for transfer. When the fast mode is selected, the transfer will be made with the largest Fee. When the anonymous mode is selected, EULO VM uses a zero knowledge proof algorithm (see the description of the blockchain core for details) for transactions in the anonymous mode. The transfer function definition is as shown in Fig. 4-2.

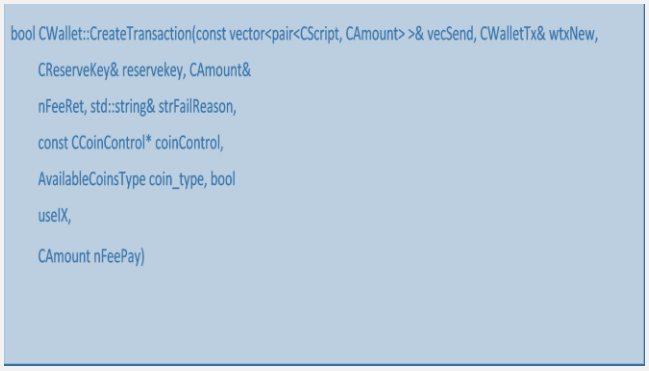


Fig. 4-2 Transfer Function

The transfer function process is as follows:

i. Judge whether the useIX is (true) and the minimum use fee is less than CENT (1000000) = 0.01 Coin, and set the minimum Fee at CENT if the fee is less than this value;

ii. Check whether the transfer amount is positive and calculate the total transfer amount;

iii. Bind the transaction (CmerkeleTx) to the local wallet and set fTimeReceived IsTxTime = true;

iv. Lock local Wallet cs_wallet;

v. Judge the transfer mode and construct CtxOut based on payees, and then calculate the fee by kilobytes. The minimum fee is 10000 duffs KB; and judge whether the transfer amount is less than the minimum service fee;

vi. Select from the local wallet the amount of accumulated combined transfer amount belonging to Coin (CtxOut) and not spent, and judge whether there is a sufficient amount for this transaction;

vii. Judge whether to make the operation like anonymity according to the set transfer items, and set the related operation;

viii. Finally, sign the transfer-out, and this transfer is constructed.

Equity transfer: The equity transfer function process is as follows:

ix. Acquire the balance of local Coin;

x. Acquire the principal returned after this equity transfer; if the principal is less than or equal to the current balance,

xi. This transaction cannot be constructed;

xii. Calculate the coin age (calculation formula:)

xiii. Cash the corresponding equity and construct the corresponding CtxOut;

xiv. Sign the transaction, and this equity transfer is constructed.

b) Decentralized oracle

The master node network of EULO realizes the perfect mapping from real world to blockchain under the premise of decentralization, and solves the problems of a single acquisition node (low public reliability), low real-time performance (too long block generation interval) and unstable acquisition. It is the most perfect solution for the Oracle system.

C) Smart contract and DAPP

➢ **Smart contract**

Smart contract is an indispensable mechanism of the EULO ecosystem. Technically, it is a program with states, driven by events, recognized by many parties, and operating on a trusted and shared blockchain account. It is capable of automatically processing assets of the account according to preset conditions.

In order to meet the demands for various contract scenarios in the real world, EULO smart contract can easily meet the demands for various contract scenarios, such as financial contract product, price difference contract, token system, and crop insurance, multi-signature smart contract, savings wallet, and EULO's unique blockchain-based bank system (see details below).

➢ **DAPP**

Dapp is an application or program operating on the mechanism of the smart contract. Both the Dapp and the smart contract need to operate on EULO VM. Its operation flow is as shown in Fig. 4-3:

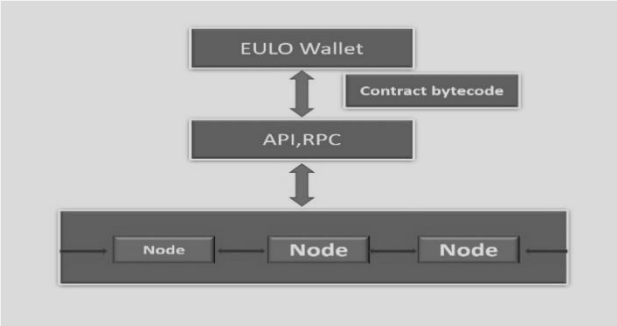


Fig. 4-3 Implementation of Smart Contract

3. Network Structure

3.1 Description of Network Structure

On the basis of decentralization, EULO's overall network adopts the layered protocol architecture by introducing master nodes (1 million coins needed for a master node) and super nodes (10 million coins needed, the voting rights are completely equal to those of master nodes, and the main function is to solve the problem of block synchronization and distribution in the transnational environment). It cooperates with the elastic block size mechanism. Certain protocol optimization is carried for a communication protocol stake mechanism at the underlying layers of the operating systems of master and super nodes (this is the hot spot of the research all over the world at present, which optimizes TCP protocol and concurrent performance).

It perfectly solves the problems of high delay and the high packet loss of transnational communication lines. Through the optimization of network transmission and the advantages of the overall project architecture of EULO, the current laboratory-tested TPS performance exceeds 6,000, and the current tran sfer can guarantee on-time transaction (second-order payment). In the following plan, the EULO network will achieve a million-level TPS performance by distribution.

1) Types of network nodes

- Super node: The super node is mainly responsible for fast confirmation and package of cross-regional and cross-border network transactions, and fast distribution of network traffic and fast block synchronization;
- Master node: The master node is mainly responsible for fast transaction confirmation and network synchronization;
- Common node: The common node is responsible for transaction reception, distribution, package and block synchronization with the super and master nodes.

2) Network optimization

- Current problems
  a) Node network resources are irregular, and at the time of cross-border and cross-region transactions, the rapid confirmation between network nodes and the rapid synchronization of blocks are both major problems.
  b) At present, the blockchain network mainly adopts tcp protocol for data transmission. Tcp is a reliable transmission protocol. In addition to various handshake packets during the establishment of a connection, there are various mechanisms

```
CTxIn vin;
CService addr;
CPubKey pubKeyCollateralAddress;
CPubKey pubKeyMasternode;
CPubKey pubKeyCollateralAddress1;
CPubKey pubKeyMasternode1;
std::vector<unsigned char> sig;
int activeState;
int64_t sigTime; //mnb message time
int cacheInputAge;
int cacheInputAgeBlock;
bool unitTest;
bool allowFreeTx;
int protocolVersion;
int nActiveState;
int64_t nLastDsq; //the dsq count from the last dsq broadcast of this node
int nScanningErrorCount;
int nLastScanningErrorBlockHeight;
CMasternodePing lastPing;

int64_t nLastDsee;  // temporary, do not save. Remove after migration to v12
int64_t nLastDseep; // temporary, do not save. Remove after migration to v12
```

Fig. 4-4 Definitions of Network Node Types

during data transmission to ensure reliable transmission of the network, such as a confirmation mechanism, re-transmission mechanism,
and congestion control mechanism, which consume a large amount of time. When there is a quality problem in the network, the time consumption will be multiplied, and each connection will occupy a certain amount of system resources to maintain all the transmission connections at each node. When the network is unstable, this mechanism is not conducive to fast block synchronization and fast transaction confirmation.

- **Solution**

a) We have introduced super nodes for fast cross-border and cross-region transaction confirmation and block synchronization. The super node will have sufficient network resources, and strong computing capacity to realize the rapid, efficient and stable development of the EULO project, and have better adaptation to various timely transaction scenarios in the real life.

b) The triple mechanism of BBR+KCP+QUIC is adopted to optimize IP protocol stack and ensure fast synchronization of network blocks and the fast confirmation of transactions. BBR+KCP+QUIC network optimization is as shown in Fig. 4-5.

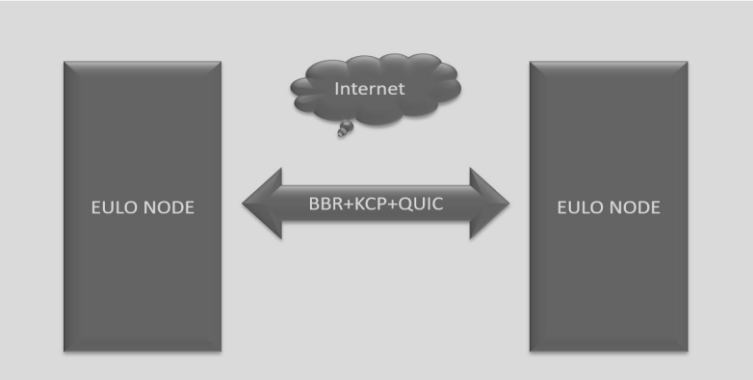


Fig. 4-5 BBR+KCP+QUIC Network Optimization

About the team

1. Core Team Members

Jiang Junyong, Founder & CEO, Master of Beijing University of Aeronautics and Astronautics. A well-known cloud security expert in China. Global Cloud Security Alliance Greater China Coordination Consultant, Cloud Security Alliance Director, China Cloud System Alliance Executive Director, Pudong Software Park Industrial Research Institute, and other experts, with nearly 20 national technology invention patents. Has extensive experience in the development and management of large public cloud projects.

Benjamin Larson, CTO & Co-Founder, Master of Economics and Computer Science. Participate in the construction and implementation of the famous bank inter-bank settlement center project. He has extensive experience in cash processing automation systems and related applications in bank information exchange systems.

Debbie Otegen, CFO, has worked for a prominent investment bank and is responsible for financial credit derivatives development. Has 20 years of experience in financial investment risk control. Good at risk, valuation model construction and practical application.

Milan, Developer, an IT development expert specializing in the architecture and development of Web/mobile applications for related software such as banking and financial transactions.

2. Project Consultants and Investment Institutions

2.1 Project consultants

Brad Smith, Management Consultant, has worked in IT management consulting for more than 10 years. More than 100 IT systems (including elections, railways, insurance banks, etc.) have been evaluated. Has extensive experience in business management.

Anna Gavin, Operations Consultant, 4A Senior Operations Director, specializes in branding and marketing. It also has unique insights and experience in new media and user community building.

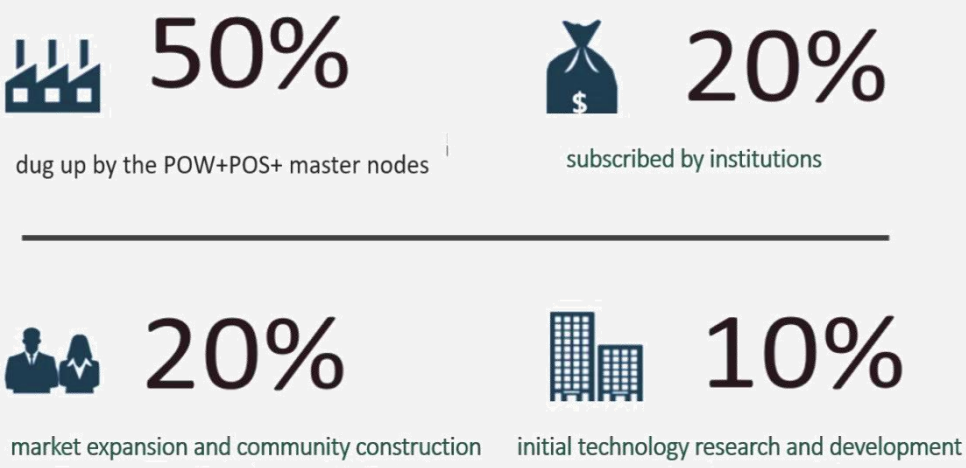
2.2 Investment Institutions

AUEX ASX, LKDE, UKEX.com British Exchange, BITALONG Bitalong, Taiyue Wutong Fund, Qingchuang Investment.

EULO's Economic Model

1. EULO Distribution Mechanism

20% of EULOs are subscribed by institutions, 20% are used for market expansion and community construction, 10% are used for initial technology research and development, and the remaining 50% will be dug up by the POW+POS+ master nodes in the next 30 years.

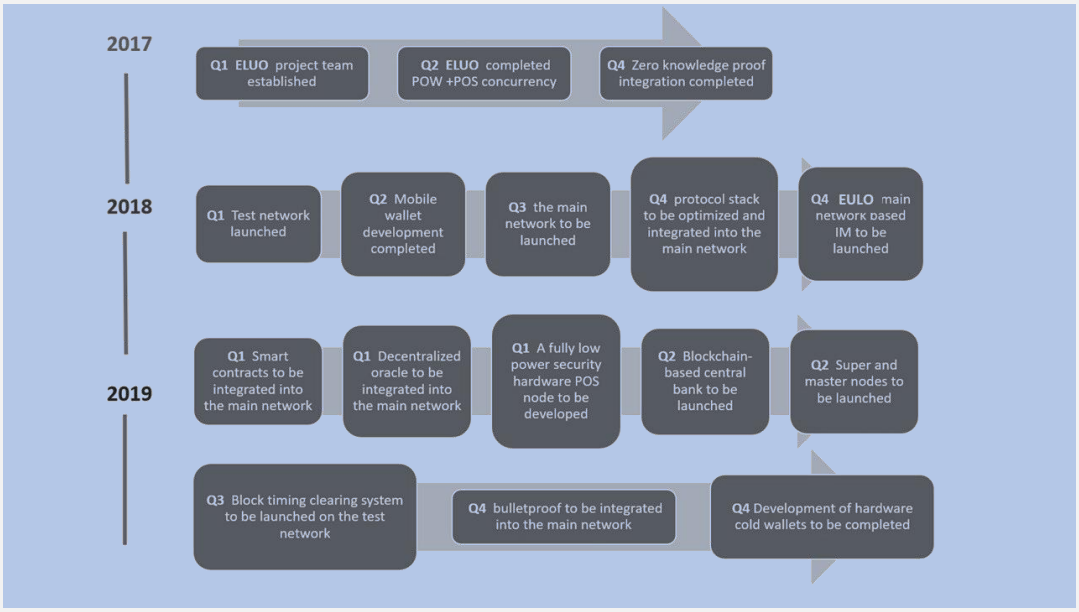


2. EULO Application Scenarios

Cross-border inter-bank settlement time costs and economic costs are both high, and sometimes it will take one week or even longer. Especially in some regions and countries with a low penetration rate for the banking system, a practical high-performance public blockchain is urgently needed to realize the clearing of blockchain-based transactions. At present, some public blockchains that are very well known are either slow in transaction confirmation or high in transaction fees. Moreover, they provide inadequate protection for the security and privacy of both parties to the settlement, so that no public blockchain has realized a large-scale application in business scenarios.

these characteristics, EULOs are mainly oriented in the field of cross-border transaction payment, especially in some regions and countries with a low penetration rate for their banking systems. The penetration of EULOs can greatly meet people's demand for second-level transaction payment in business scenarios, improve people's transaction payment experience, and increase the circulation efficiency of transnational economic settlements and clearing

Development Path



Community Governance

1. EULO Community Governance Architecture

Governance is a process in which people reach a consensus on subjective issues that cannot be captured entirely by a software algorithm. The intuitive understanding is that it is a process in which people exercise their rights and express their will by voting, etc., to solve the problems that cannot be entirely solved by consensus algorithm and software.

First, a few block producers are empowered to perform a series of executions. This execution centralization is for high efficiency. However, the centralization must be fully supervised to ensure its righteousness and democracy. The governing right comes from, and ultimately belongs to, the owner of the token. That is to say, the block generator operates while the owner of the token can effectively influence the generator by the closed-loop process in which the owner gives operation feedback.

As the EULO's master nodes undertake the functions of instant pay, private pay, and voting for the proposal project, the more and more wildly distributed the master nodes are, the more stable the network is.

2. How to Prevent Master Nodes from Being Attacked

How are the ten working master nodes selected? The ten master nodes are selected through the hash algorithm from the top 10% of the sorted master nodes, the first 100 blocks and 10% of the master nodes are hashed, and finally the ten closest master nodes hashed are selected. Further, we know that each master node and the first 100 blocks are random and changing, which is equivalent to a computing power tool. The cost of doing illegal activities is so high that an attack is effectively prevented.

As the most important part of the infrastructure, the master node network is also designed with a perfect community incentive mechanism. The establishment of a master node requires the mortgage of 1,000,000 EULOs, which can obtain 45% of the net mining revenue. From the perspective of security and efficiency, the master node will be a good point to carry the application.

3. Distributed Voting Mechanism Promoting Community Construction

The proposal is very important for the construction of the community, and EULO has set up a distributed voting mechanism for this purpose.
Each node has the right to offer proposals, and a proposal needs to consume five EULOs. It is determined by the users of the master nodes by voting whether the proposal is passed. Each master node has one vote, and the voting right can be exercised in budget proposals or important decisions influencing EULO. Any proposal must be approved by at least 10% of the master network nodes. A series of "superblocks" will be created by the end of the month, and the EULOs will be paid to the approved proposal to fund promotion projects or R &D projects that are helpful to the development of the EULO community.
Currently, most of the blockchain projects are operated by one team, and it isn't greatly different from the traditional states focusing on the community founders, administrators, or star users. It is only when everyone participates and proposes the ecological community around one blockchain project, that the decentralized network can be developed better and better.

Risk Description

1. Policy Risks

At present, the regulatory policies for blockchain projects and swap financing in China are not clear, and it is possible for participants to suffer a loss due to policy reasons. For market risks, if the overall value of the virtual goods market is overvalued, the potential for risk suffered by investors will increase.

2. Regulatory Risks

Digital asset transactions, including EULOs, are highly uncertain. Due to the lack of strong regulation in the field of the digital currency, digital currencies are at the risk of skyrocketing and falling. It can be difficult for unskilled individual investors to withstand the asset impact and the psychological pressure caused by market instability.

3. Competition Risks

As there are many blockchain projects and the competition is fierce, there is strong pressure of market competition and project operation. It is certainly risky for EULO to win many users among many projects, become a mainstream platform product, and be widely recognized in the future.

4. Technical Project Risks

With the accelerated development of cryptography or the development of technology such as the quantum computer, it is possible for the EULO open platform to be cracked, resulting in EULO loss. Vulnerabilities are ceaselessly fixed during project updates, but it cannot be guaranteed that vulnerabilities won't be exploited.

5. Unknown Risks at Present

In addition to the risks mentioned above, there are still some risks that the team has not anticipated. The participants will continue to cooperate as a team to fully understand each member and the project and participate rationally before making their own decisions.

Disclaimer

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