

Blockchain + Finance: Technology Reconstructs the Financial World

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Abstract

Blockchain, as a new technology, has become one of the most important trends in the whole society, attracting the attention of all walks of life at home and abroad, with many entrants. Blockchain technology with "trust" as the key word, based on the digital sharing of information, can realize the collaboration and action consistency among multiple subjects. Therefore, blockchain technology is not only a technology that the Internet must rely on in the future, but also the next generation of cooperation mechanism and organizational forms of all industries. It is expected to become a new application mode for various organizations and institutions in the future. Blockchain + finance will reconstruct the financial world. This paper will take the integrated development and application of blockchain in clearing and settlement, cross-border payment, digital bills, supply chain finance, asset securitization, credit investigation, asset custody, identity identification and other fields as an example to show the financial world after the reconstruction of blockchain technology.

Key words: blockchain; finance; technology reconstruction; blockchain technology application

I. Blockchain technology protects transactions in the clearing and settlement links to reduce costs

Clearing and settlement are all specific links in the behavior process of fund transfer in financial institutions. Among them, clearing is the payment link occurring before settlement. The function of this link is mainly to improve the standardization level of settlement and the efficiency of settlement.² The specific concept can be defined as follows: liquidation includes the exchange of payment instruments between the financial institutions of the receipts and payers and the calculation of the claims to be settled between the financial institutions, and the exchange of payment instruments also includes transaction matching, transaction clearing, data collection, etc. Settlement, this process is the process of completing the final transfer of claims, including the collection of pending claims and integrity testing, ensuring the availability of settlement funds, the settlement of bond debts between financial institutions, and the recording and notification of the parties.⁶

In the field of clearing and settlement, different financial institutions have different infrastructure structures and business processes, and they also involve many manual processing links, which will not only increase business costs, but also be prone to errors. The traditional trading mode is that both sides keep accounts, after the transaction, both sides need to spend a lot of manpower and material resources to check. Moreover, the data is completely recorded by the other party, which cannot ensure its authenticity.¹ The data on the blockchain is distributed, and each node can obtain all the transaction information. Once the change is found, the whole network will be notified, avoiding the possibility of tampering. More importantly, under the action of the consensus algorithm, the transaction process and the clearing process can be realized simultaneously. Once the transaction process completes the value transfer, the capital clearing will be completed, which can not only improve the efficiency of capital settlement and clearing, but also greatly reduce the cost. In the process, all

parties to the transaction can get good privacy protection. For example, the Internet bank Wechat, its cooperation mode is joint lending, the settlement and liquidation of funds is particularly important.

Why can blockchain protect transactions and reduce costs in the process of clearing and settlement? Because the data on the blockchain is distributed, each node can obtain all the transaction information.⁴ Once a change is found, it can notify the whole network, so as to prevent tampering. More importantly, under the action of the consensus algorithm, the transaction process and the clearing process are synchronized in real time. The bookkeeping initiated by the last home must be obtained by the data approval of the next home to complete the transaction. Finally, the transaction process completes the transfer of value, which also completes the capital liquidation at the same time, which improves the efficiency of fund settlement and liquidation, and greatly reduces the cost.

As the core of the financial securities industry, clearing and settlement has always been a major obstacle for the financial market. The current settlement process takes a long time, and the account information and settlement instructions often change, which increases the cost of communication and labor intervention, and faces additional operational risks in the transaction settlement process. There are many kinds and various kinds of data used in the settlement work. In the links of data generation, acceptance, distribution and splitting, there are risks of input and output data, which involve many manual processing links, which are prone to operation errors. Therefore, low cost, high efficiency, high security and internationalization have always been the goal of the securities industry settlement system, and all countries are dealing with it by building a large and efficient financial infrastructure.

Block chain technology based on consensus of mathematical algorithm, through technical endorsement rather than centralized credit institutions to establish credit, is expected to low cost, high efficiency, high security to solve the problem of trust in the securities industry, accelerate the speed of clearing and settlement of securities

transactions, reduce the cost of capital and systemic risk, improve the security and compliance, improve the customer experience.⁵

To this end, central banks, commercial banks and securities institutions in many countries have strengthened the research and investment in blockchain technology.

Blockchain adopts a decentralized technical architecture to improve the system efficiency and security, reduce the transaction costs of clearing and settlement, and reduce manual processes to avoid errors.⁵ System data sent through distributed transmission to each node, transparent operation rules, can effectively solve the securities industry information disclosure, securities issuance and trading, fund custody of information asymmetry, is expected to protect investors at low cost, to strengthen the market reliability and stability, improve the market risk management mechanism has an important role.

Block chain technology in real-time automatically establish trust, realize value transfer, trading assets into "smart contract", complete point-to-point real-time trading, clearing and settlement, will significantly reduce the cost of value transfer, thus greatly improve the efficiency of clearing and settlement process, shorten the clearing and settlement time, and by improving efficiency and transparency to enhance investors' confidence, significantly improve the efficiency of the capital market.

II .Blockchain technology can improve the processing speed and efficiency in cross-border payment

With the development of the economy, there are more and more scenarios requiring cross-border payment, such as overseas shopping, travel abroad and studying abroad. However, cross-border payment will face problems such as high handling fees, cumbersome transaction process and long collection time.⁶ Because these processes make the processing speed and efficiency of cross-border payment become very slow, and the timeliness is not high, such as difficult to apply for accounts, complex fund management of multi-platform stores, slow speed of

withdrawal and other problems. In addition, relying on third-party institutions, the whole cross-border payment needs to pay the corresponding handling fee, which greatly affects the effect of payment.

Before the emergence of blockchain technology, domestic and foreign transactions needed to rely on intermediaries to complete the specific liquidation between transactions. Take the banking industry as an example. In the structure system of a bank as a third-party intermediary, when every business occurs, the information connection between banks and consumers, banks and merchants, and banks and the central bank needs to complete the payment process. The procedure is extremely complicated, and banks need to check accounts and accounts several times to reduce the occurrence of mistakes.³ Clearing procedures vary from country to country, making a remittance take two to three days to arrive, which is very inefficient and takes up a lot of money. Blockchain technology provides technical support for the traditional banking industry to improve its own business model. In the blockchain system, each block carries the information about the last period of the transaction, and can also be stored and shared on the chain, reducing the complex circulation procedures in the traditional transaction process.

The emergence of blockchain technology has solved the problems encountered in the traditional cross-border payment. The blockchain cross-border payment system has realized the efficient operation links such as cross-border remittance arrival in seconds, constant sharing of transaction information, real-time tracking of the transaction process, and real-time write-off of banks. At present, blockchain plays an important role in the bill market, supply chain finance and other fields, and its commercial value in the cross-border payment field is particularly noteworthy.

Cross-border payment is the most profitable business in the banking system, so improving the speed and efficiency of cross-border payment can improve the cost structure of the banking business and improve the profitability. If cross-border payment can achieve 24-hour payment and instant payment, improving the efficiency

will save a lot of fees. For example, China Merchants Bank has upgraded its cross-border remittance products, used fintech innovation and used blockchain direct remittance for rapid payment, and realized fast and convenient cross-border payment through the direct connection between CMB head office and overseas branches / subsidiaries. The message of a direct joint payment can be completed within a few seconds.

In the field of payment, the application of blockchain technology can help reduce the cost of account reconciliation and dispute settlement among financial institutions, and improve the processing speed and efficiency of payment services. This is especially evident in the field of cross-border payments. At present, for cross-border payment and settlement, the intermediate link required for each remittance is not only time-consuming, but also requires a large number of handling fees, and its cost and efficiency have become the bottleneck of cross-border remittance. With the help of the blockchain platform, it can not only bypass transit banks and reduce transfer costs, but also improve the security of cross-border remittance, speed up the settlement and clearing speed, and improve the utilization rate of funds by using the advantages of blockchain security, transparency and low risk.

III .Blockchain Technology in terms of digital bills: to avoid information risk events

As a convenient payment, settlement, financing and monetary policy tool, bills meet the needs of short-term funds of enterprises and banks, and take the first role of interest rate liberalization, which are deeply valued by financial institutions and regulators. Since 2009, China has introduced electronic bills, and paper bills and electronic bills are in parallel. At present, China's bill market is active in trading, and the scale is expanding rapidly.⁴

At this stage, the bill market mainly faces several problems: first, the authenticity of the bill is questionable, fake and cloned tickets, secondly, the transfer is not timely, the bill recipient cannot timely transfer funds to the bill holder's account; again, due to

the inspection cost of bills and the supervision of the bank assets requirements, the market has spawned many bill brokers and intermediaries, causing opacity, high leverage mismatch, illegal transactions. With the help of the immovable timestamp of block chain technology and the open characteristics of the whole network, it can effectively prevent the traditional bill market problems such as "one vote to sell more" and "payment endorsement", reduce the operation and operation risks brought by the system centralization; and also use the data transparency characteristics, promote the authenticity of the market transaction price on the capital demand, and control the market risk.

With the help of blockchain, the bill business can build a feasible trading environment and reduce the mutual fragmentation and risk of information. In data, it can effectively guarantee the authenticity and integrity of the data on the chain; in governance, without centralized system or strong credit intermediary, reflect the complete life cycle of the bill, but also realize the authenticity of the bill; and in the risk control point, regulators can participate in monitoring the whole process of data issuance and circulation, realize on the chain audit, improve regulatory efficiency and reduce regulatory cost.

Blockchain digital bills is actually an extension of electronic bills, that is, the introduction of blockchain technology on the basis of electronic bills, to form digital bills. This digital bill is a completely new form of paper, and its technical basis is completely different from the traditional electronic bill. Blockchain bills are safer and more intelligent than traditional electronic bills, and they are also more promising.

As a proof of payment obligations, bills have a natural fit with blockchain technology.⁴

First of all, the bill is a certificate of multiple rights of rights, itself has a high value, anti-counterfeiting and tamper has high requirements. Blockchain just has the technical function of tamper-proof function, so it is of great help and promote the protection and prevention of the value certificate of bills.

Secondly, the transferability of it is inevitable that the bill itself will attract participants. With the escort of blockchain technology, the circulation among many participants can not only reduce the cost, but also meet the needs of different bill distributors.

Third, bills have various financial attributes such as transaction, payment, clearing, credit, etc. Its transaction conditions are complex, need to introduce intermediary services to provide detailed differentiated matching ability; not all intermediaries have the ability and quality of compliance operation. Once forged business contracts, multiple resale, some high risk bills into the financial system, bring potential risks to the financial market, and the participation of block chain technology can make the information of all parties to bill flow symmetrical. The "unconditional automatic implementation" of bills perfectly matches the characteristics of smart contracts.⁵ Digital bills exist on the blockchain in the form of automatically enforced smart contracts, which can reduce transaction risks, while regulators can also realize penetrating supervision of the business and improve the effectiveness of supervision.

IV. Blockchain + supply chain finance: Solve the financing pain points of small and medium-sized enterprises

Block chain as an underlying technology, not only in the "currency" let people shine at the moment, in the field of financial many non-monetization also play a role, especially in supply chain finance, not only can alleviate the financing difficulties of micro, small and medium enterprises, and can improve the operation efficiency of supply chain finance and reduce the error caused by a large number of human participation.⁶

Compared with the traditional supply chain finance, the current supply chain finance has demonstrated its increasing vitality with the help of the more diversified participants and financing channels and the huge improvement of information circulation efficiency. However, many thorny problems still exist, such as information

asymmetry restricting financing, poor credit environment, difficult business security to guarantee, and high financing costs.

At this time, the maturity of blockchain technology provides solutions for solutions to various pain points of supply chain finance. The technical characteristics of blockchain can be said to perfectly fit the scene of supply chain finance. The mode of "blockchain + supply chain finance" also provides a more reliable guarantee for the good operation of supply chain finance and the safety and efficiency of assets.

In recent years, supply chain finance, as an important way of combining industry and finance, has become an important strategic way to promote financial service entities. From the central to local governments, encouraging and supporting the development of supply chain finance has become a new policy hotspot. As one of the most innovative cutting-edge technologies in recent years, blockchain breaks the previous phenomenon of data island and other technical characteristics, establishes the trust mechanism of data island, realizes the cross-level credit transmission of core enterprises, and gradually becomes a "sharp weapon" to boost the development of supply chain finance.

There are many participants in supply chain finance, including raw material suppliers, manufacturers, agents, sellers, logistics providers, consumers, banks and third financing parties. Supply chain finance provides solutions to the concept and technical bottlenecks of sme financing, which is no longer elusive for credit. Supply chain finance provides a new channel to enter into and stabilize high-end customers. Through a package of solutions for the members of the supply chain system, the core enterprises are "bound" to the banks that provide services. At the same time, it effectively reduces the customer acquisition cost and risk of banks.

Traditional supply chain finance closely surrounds core enterprises, and has extremely high requirements for core enterprises. For example, core enterprises are required to have more upstream and downstream enterprises, and they have strong corresponding risk control ability. If the core enterprise has risks, it is extremely

destructive and affects all enterprises in the whole supply chain; if the core enterprise ethics problems, the core enterprise is prone to "self-finance" through the platform. At the same time, there are many participants in the traditional supply chain finance, and the financing costs are relatively high. There are many participation links, long chain, high degree of correlation, and transaction scenes are difficult to identify.¹

Block chain as a new type of technology combination, integrated the P2P network, consensus algorithm, asymmetric encryption, smart contracts and other new technologies, with distributed peer, chain data block, forgery and tamper-proof, traceability, transparent credibility and high reliability, its technical features in the supply chain financial scene has unique advantages.

Supply chain involves information flow, capital flow, logistics and business flow, and is naturally a multi-agent, multi-collaboration business model. In this case, to trade financing, first will encounter many authenticity problems, such as warehouse receipt multiple financing, the authenticity of paper warehouse receipt need multiple review, and cost a lot of manpower; second, involved, difficult connectivity problems, such as each main supply chain management system SCM, enterprise resource management system ERP, and even the financial system manufacturer, system version, difficult docking. Even if it is connected, it will be difficult to share information due to the inconsistent data format and data dictionary.⁴

Blockchain registers the goods transfer on the ledger as a transaction. No one can have the ownership of the ledger, nor can they manipulate the data for personal gain. Plus, transactions are already encrypted and unchangeable, so the ledger is almost impossible to be damaged. At the same time, through the blockchain, the supply chain finance business can greatly reduce human intervention and digitize the procedures of paper operations. All participants (including suppliers, purchasers, banks) can use a decentralized ledger, share documents and pay within a scheduled time, which not only greatly improves the efficiency, but also reduces the possible errors caused by manual transactions.

Supply chain finance based on blockchain chains each relevant party into a large platform through blockchain technology, and realizes the horizontal sharing of data through highly redundant data confirmation data storage, and then realizes the trust transmission of core enterprises. Based on the constraints of property law, electronic contract law and electronic signature law, with the credit limit of core enterprises, the financing efficiency of small and medium-sized enterprises should be improved, the financing cost of small and micro enterprises should be reduced, and the realization of inclusive finance should be accelerated.

V. Blockchain "helps" asset securitization: realizes asset credit enhancement

Asset securitization, refers to the underlying assets in the future cash flow for reimbursement support, through structured design for credit enhancement, on this basis issued Asset-backed Securities (ABS) called "ABS" process, is supported by a specific asset portfolio or specific cash flow, issued a form of financing.

As an important tool to fill the gap of the bond market linking the real economy and financial activities, asset securitization is of great significance to improve the efficiency of asset allocation. Imperfect credit investigation system and lack of fine risk management; the lack of standardized asset appraisal and failure to reflect the real asset status have gradually exposed the risk of asset securitization. Blockchain, as a distributed account book, as well as the advantages of blockchain decentralization, reliability, immutability and distrust, can effectively solve the problems such as many links, complex processes and poor underlying asset transparency in asset securitization.

Relying on the characteristics of blockchain decentralization, openness and sharing, the blockchain securities trading system can not only improve the efficiency of the registration, issuance, trading and settlement of securities products, but also effectively ensure information security and personal privacy. For example, through big data risk control and blacklist screening, Baidu Financial has found some "problem" assets that cannot be found by using conventional risk control means.

Through blockchain technology, it has strengthened the ability of screening, rating and pricing of assets, thus realizing the transparency and accountability of the underlying asset quality.³

In terms of asset securitization, due to business differences and diversity of underlying assets, high management process is standardized, not easy to realize batch supervision, very large scale in actual business, and unsystematic change trajectory is difficult to be traced. Due to its credible mechanism and intelligent contract automatic execution characteristics, blockchain technology can greatly improve the underlying asset volume supervision mechanism in ABS field and realize multi-level asset traceability and penetrating supervision. Through the application of block chain technology, ABS participants as the node on the chain, form a common business rules, through the intelligent contract automation, all execution process form transparent check data on the chain, at the same time participants cannot unilaterally tamper with, there is no violation, partial space, so can effectively enlarge regulatory scale.

At present, most asset securitization comes from enterprises, and issuers and asset managers are enterprises. Obviously, blockchain is the best choice. The best commitment is to the outside.

In addition, an important link of asset securitization is credit enhancement, which is divided into internal and external credit enhancement, including structured priority and inferior grade, excess mortgage and remaining account; while external credit enhancement mainly includes third-party guarantee and original equity owner guarantee. Due to the lack of advanced technology support, the information obtained is very limited, resulting in the traditional rating method mainly rely on licensees. This leads to many problems, such as weak pricing power of assets, not transparent information, and high systemic risk. With the blockchain technology, the assets, issuers, rating agencies and trading centers will be linked to the same chain. Under the

condition of information and data matching, the whole business chain will change greatly.

First, the consensus mechanism can replace individual endorsement, improving safety. Credit granting is replaced by "nodes" on the chain, the credibility is greatly improved, and the ability to resist risks has been improved accordingly. Secondly, the letter self-symmetry degree is improved, and the transparency is higher. Objectively, the problem of "gray operation" is also greatly avoided, which improves the transparency and credibility of the whole business ecological business flow. Third, the consensus improvement, the overall efficiency is higher. The business system based on blockchain infrastructure will unify the original complex and diverse rules, and the original unified rules will shrink, greatly reducing the complexity of process and the difficulty of project batch implementation, improving the overall efficiency and facilitating the development of business standardization; the unified rules make automatic execution on the chain possible, further reducing human intervention and reducing operational risk. Thanks to this, the system business volume will also be greatly improved, the industry will gradually form the integration of resource advantages, more benign development.

With the advent of the digital economy era, the emergence of the new model of blockchain + asset securitization is not so much a new impact brought by scientific and technological innovation and financial reform for market transactions, as a new path of the best choice in the new era and a new direction brought to the market. This is a journey to the future for blockchain, and the start of a milestone for ABS.

VI . Blockchain + credit investigation: Provide new ideas to solve the problem of credit investigation

With the development of society, people's demand for credit investigation is becoming more and more urgent. Compared with other developed countries, China's credit investigation industry started late, but the government attaches great importance to it. The annual cost and energy invested in credit investigation has been high, and it

has been actively exploring the protection of citizens' privacy and credit rating.

However, there are many problems in the collection of credit investigation data:

First of all, the data of credit investigation is different from that of other industries. The users are data labels, which involve the vital interests of enterprises and individuals, so they cannot be shared and exchanged through the data trading platform, resulting in extremely limited channels for formal market collection of credit data. Therefore, the competition for data sources is particularly fierce, which directly makes the traditional credit investigation agencies spend a lot of costs on data collection, resulting in the shrinkage of the proportion of funds used for data analysis and credit investigation product research and development. Credit investigation agencies cannot pay too much attention to the quality of credit investigation products, which then affects the level and credibility of credit investigation agencies.¹

Secondly, the lack of sharing and cooperation between credit investigation agencies results in information islands and user information asymmetry. The fundamental reason is that the right of data ownership in China has not yet been established, and there are concerns about privacy protection. Institutions with data often have no enthusiasm to exchange and share data with credit investigation agencies.

Third, personal information protection is still in a state of completion without disclosure. In order to achieve privacy protection and data security in the era of big data, higher requirements will be put forward for the credit investigation industry. The traditional technical architecture of credit investigation system pays little attention to users, and does not guarantee users' data sovereignty from the bottom of the technology, so it is difficult to meet the new requirements of data privacy protection.

Why can the blockchain technology bring new ideas to solve the credit investigation problems to the credit investigation industry?

First, the blockchain is used as a network generation node to store and share users' letters and conditions in the credit investigation agencies, so as to realize the

common sharing and joint construction and sharing of information resources. It can confirm the number of user data, generate its own credit assets, take users as the aggregation point, connect various enterprises and public departments, and then carry out user data authorization, and can solve the problem of data island.

Second, block chain make credit evaluation, pricing, trading and contract execution of the whole process of automatic operation and management, hard on credit agencies at low cost to expand data acquisition channels, and eliminate redundant data, scale to solve the problem of data effectiveness, can also remove unnecessary intermediary link, improve the operation efficiency of the industry.⁵

Third, blockchain can realize the safe operation of the system and play a role in protecting data privacy. Each complete node is involved in the maintenance of the system and will not be affected by a problem with a component in the system. As long as no more than 51% of the nodes have problems or encounter malicious attacks, the system can continue to operate steadily. In addition, not all data have to run on the "chain", and not all data is open and transparent. In addition to the parties involved in the data sharing transaction, no third parties can obtain the data.

Credit investigation market is a huge blue ocean market. The traditional credit investigation market is facing the obstacle of "information island", which has been unable to solve the problem: how to share data and fully explore the value of data. Blockchain technology provides a new idea for solving this problem.

Improve the credibility of credit investigation, so that the whole network of credit investigation information can not be tampered with;

Reduce credit investigation costs, and provide multi-dimensional and accurate big data;

Break the data island, the data subject exchanges the blockchain through some transaction mechanism.

In addition, in order to realize this efficient credit investigation model, it is also necessary to solve a series of problems such as business scenarios, risk management, industry standards, security compliance and other problems.

VII. Blockchain + asset custody: improve efficiency and reduction process

Asset custody business is the business in which the asset custodian is entrusted by investors to keep the relevant property, and provides corresponding financial services such as investment liquidation, accounting, asset valuation, investment supervision, information disclosure and account checking according to the characteristics of asset operation.

The main steps of asset custody business are the signing of custody contract, account opening, valuation accounting, capital liquidation, investment supervision, information disclosure, account reconciliation, etc.³ The process is relatively complicated and mostly depends on labor. In addition, the hosting business also has the characteristics of large participants, large amount of a single transaction, and more communication and verification between the parties, and each party has its own information system. The traditional transactions are mainly tested by telephone, fax, mail and other ways. Using block chain sharing books, smart contract, privacy protection, consensus mechanism and so on four mechanisms based on technology, can realize information real-time sharing, can avoid repeated credit verification process, realize the supervision of managed assets supervision, so as to improve the security and efficiency of hosting business, is conducive to the streamlined process.

For example, PSBC adopts the super ledger architecture to successfully apply the blockchain technology to the actual production environment, realizing the real-time sharing of information among multiple parties, eliminating the process of repeated credit verification, and shortening the original business links by 60%~80%. In addition, blockchain has the attributes of imtamable and encryption authentication. Transactions can quickly share the necessary information and protect the security of account information. The low cost solves the trust problem in financial activities and

brings unprecedented trust and efficient exchange of credit for multi-party transactions.⁶

Blockchain technology optimization of asset custody is mainly manifested in:

- I. Realize the automation of the whole process, encapsulating the business instruction judgment and execution rules into the smart contracts, and use the intelligent contract execution and provide risk tips;
2. Improve the efficiency of the process. The real-time sharing of the information between the asset client, the manager, the trustee and the agent in the asset changes, transaction details and other information, and avoid the process of repeated verification and right confirmation;
3. Ensure the security of the performance and the authenticity of the transaction, and ensure the formality of the participant information, the limited visibility of the ledger information and the verifiability by setting up the key of the transaction;
- Iv. Ensure that the information cannot be tampered with, and put the compliance verification requirements of the investment plan on the blockchain to ensure that every transaction is completed on the basis of forming a consensus.

In the future, the financial regulation gradually stricter, high and new technology application is increasingly common, financial innovation under the rising situation, hosting line can use block chain technology to help investors grasp the market hot spots and screening preferred investment products, better realize investment management and risk control, innovation hosting business value-added services, form a new business growth point.

VIII. Blockchain technology enables identity identification: digital management of identity

In terms of user identity identification, the user data between different financial institutions cannot achieve efficient interaction. Repeated authentication needs to pay high costs, and it is also easy to leak the user identity by some intermediaries. The

traditional approach takes a long time to understand customers, coupled with the lack of automated consumer authentication technology leading to work efficiently.⁴

In the traditional financial system, the user identity information and transaction records of different institutions cannot be tracked consistently and efficiently, and the work of the regulatory agencies cannot be implemented. Account authentication requires user privacy and account security, with extremely high levels of standardization and encryption; daily billions of users and more accounts verification require higher levels of automation.

The unique digital identity built based on the blockchain platform can avoid the problem of recording many platform accounts and passwords, and can also enhance the commonality of data, so that the digital identity can realize a variety of functional services in different scenarios. At the same time, blockchain digital identity can also protect the identity and data security of users, provide cross-network secure communication and data transmission, prevent them from being damaged or tampered with and return the data management right to individuals, which is no longer centrally controlled by institutions or individuals, reducing the risk of private data leakage.

The traceability, immutable and distributed characteristics of blockchain technology help digital identity move from centralized to decentralized, namely DID (Decentralized Identity, which translates as "decentralized digital identity" or "distributed digital identity"). While protecting privacy, DID allows users to decide who to view and use identity data, and may be converted into valuable data assets in the future.

In today's world, there is no bank account, no social welfare, no right to formal education, let alone participation in political life. Blockchain itself is a distributed database, and there is no single-node failure problem, and it is unchangeable, and the user's identity information will not be arbitrarily tampered with. Without having to carry any identity-proof documents, the blockchain can be authenticated, without any tangible loss and theft.⁵

Each person has full control over their identity, and they can use a key or serial number (very similar to an ID number or a social security number) to limit access to their identity. Users can decide how much information they want to share with the person and how much data they want to keep secret.

Through the use of blockchain technology, to create a simple and convenient blockchain identity identification and authentication system, in more intelligent to complete the identity authentication work in daily life, while reducing the time and cost of consumption. For the contemporary society, this is a contribution of blockchain technology, and also an effective means of digital management of user identity information in the financial field in the future.

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