

# Digital Yuan Patent Strategy:

A Collection of Patent Applications Filed by the People's Bank of China



# INTRODUCTION

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Digital currencies have captured the attention of technologists, regulators and some of the most powerful institutions and influencers around the world, including central banks, particularly the People's Bank of China. The PBoC has been building a central bank-controlled digital currency, dubbed Digital Currency Electronic Payment (DC/EP) for many years and is now internally testing the platform. While detailed technology specifications have not been publicly made available, the PBoC has filed more than 80 patent applications on DC/EP.

The Chamber of Digital Commerce has collected 84 patent applications from the Chinese Patent Office (SIPO) on the DC/EP platform and is sharing the data freely for the community to review and analyze. The patents are classified according to their original categorization as they appear in the Patent Search & Services System. This document contains unofficial, English translations of key patent information and are provided for reference only.

# OVERVIEW OF THE DC/EP PLATFORM

FIRST-TIER DESIGN	
 <b>ISSUANCE OF DC/EPs</b>	
 <b>CIRCULATION OF DC/EPs</b>	Unlimited Usage and Circulation Rules-bound Usage Circulation
 <b>MANAGEMENT OF DC/EPs</b>	Based on Economic State Triggers
	Based on Time Triggers
	Based on Loan Interest Rate Triggers
	Based on Recipient Triggers
 <b>WITHDRAWAL OF DC/EPs</b>	
 <b>INVESTMENT AND FINANCING WITH DC/EPs</b>	
 <b>INTERBANK SETTLEMENT WITH DC/EPs</b>	

**DC/EP = DIGITAL CURRENCY ELECTRONIC PAYMENTS**

SECOND-TIER DESIGN			
 <b>DIGITAL CURRENCY WALLET</b>	Application and activation of digital currency wallets	<i>Through Account Bank Digital Currency System</i> <i>Through Wallet Service Provider</i>	
	Binding and unbinding of digital currency wallets and bank wallet		
	Login and synchronization of digital currency wallets		
	Query operations related to digital currency wallets	<i>Bank Account-based Query operation</i> <i>Digital currency wallet Terminal-based Query operation</i>	
	Wallet-based digital currency payment, deposit and transfer	<i>Payment</i> <i>Deposit</i> <i>Transfer</i>	
	Change of digital currency wallet status	<i>Upgrade</i> <i>Key Replacement</i> <i>Logout</i>	
	 <b>DIGITAL CURRENCY CHIP CARD</b>		
		Cash-DC/ep Exchange	<i>Cash to DC/ep Conversion</i> <i>DC/ep to Cash Conversion</i>
		Payment with DC/eps	<i>Payment between terminal devices</i> <i>Payment with commercial bank digital currency system</i>
	 <b>DC/EP USAGE</b>	Storage of DC/eps in banks	
 <b>BLOCKCHAIN AND DC/EPs</b>		Management of Digital Currency Wallet Addresses	
		Transaction Information Supervision	
	Digital Bill Transaction		

According to patent applications, the DC/EP platform is a two-tiered system. The DC/EP would be distributed through two tiers: (1) between the central bank and commercial banks and (2) between commercial banks and individuals & businesses.

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# Issuance of DC/EPs

**DISCLAIMER:** This is an unofficial translation and provided for reference only.

**NAME:** Method and system for the issuance of digital currency

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**CATEGORY:** Issuance of DC/EPs

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**ASSIGNEE:** People's Bank of China Digital Currency Research Institute

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**INVENTOR(S):** Yao Qian; Di Gang; Li Hong Gang; Pan Li; Xi Xu Liang; Zhao Xin; Li Lian San; Du Yan; Huang Lie Ming; Jiang Guo Qin; Sun Hao; Chen Hai Bo; Qian You Cai; Zhao Xin Yu; Wang Xu Wei; Peng Feng

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**IPC CLASSES:** G06Q20/38;G06Q20/06;G06Q40/02

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**ABSTRACT:** This invention provides a method and system for the issuance of digital currency, in order to upgrade the system for the legal issuance of currency, enhance the safety and efficiency of currency issuance, and lower the cost of currency issuance. In particular, the digital currency issuance method includes: receipt of the digital currency issuance request sent by the applicant; performance of a business check on the digital currency issuance request, and upon the passing of the check, a reserve deposit deduction request is sent to the central accounting system; upon receipt of the notification of the successful deduction from the central accounting system, digital currency is generated; the generated digital currency is sent to the stated applicant.

# Circulation of DC/EPs

**DISCLAIMER:** This is an unofficial translation and provided for reference only.

**NAME:** Method and device for the circulation of digital currency

**CATEGORY:** Circulation of DC/EPs

**ASSIGNEE:** People's Bank of China Digital Currency Research Institute

**INVENTOR(S):** Yao Qian; Di Gang; Li Hong Gang; Pan Li; Xi Xu Liang; Zhao Xin; Li Lian San; Du Yan; Huang Lie Ming; Jiang Guo Qin; Sun Hao; Chen Hai Bo; Qian You Cai; Zhao Xin Yu; Wang Xu Wei; Peng Feng

**IPC CLASSES:** G06Q20/36

**ABSTRACT:** The invention provides a method for the circulation of digital currency, which can meet the requirements of physical currency circulation and improve the processing efficiency of digital currency circulation. The method includes: the payment node will select the digital currency data string from the digital currency safe deposit storage according to the payment amount and pre-defined matching strategy, thereafter grouping and then sending the digital currency data string set originating from the payment to the management node. The digital currency data string contains: the payment amount field and all of the identification fields. The payment node's digital currency safe deposit box will contain one or more digital currency data strings that are identified with the payment node. The management node will register the data strings from the digital currency data string set originating from the payment as inactive, thereafter activating and sending the digital currency data strings according to the payment amount to the payment collection node. The amount in the payment-related digital currency data strings will become the payment amount and the identification will become the payment collection node.

**NAME:** A method and system for processing digital currency

**CATEGORY:** Circulation of DC/EPs

**ASSIGNEE:** People's Bank of China Digital Currency Research Institute

**INVENTOR(S):** Yao Qian; Di Gang; Qian You Cai; Huang Lie Ming; Chen Hai Bo; Zhao Xin Yu; Wang Xu Wei; Zhang Da Wei

**IPC CLASSES:** G06Q40/02;G06F17/30;H04L29/08

**ABSTRACT:** The invention provides a method and system for processing digital currencies, which includes: the receipt of information relating to the processing of digital currency from the digital currency's core system; the storing of the decoded digital currency process into the databases of the various network nodes. This method can categorize the storage of digital currency processing information, while guaranteeing the consistency and reliability of data in a distributed environment, therefore making it convenient for the scaling of digital currency services and large-scale data loading.

**NAME:** Method and system for returning digital currency

**CATEGORY:** Circulation of DC/EPs

**ASSIGNEE:** People's Bank of China Digital Currency Research Institute

**INVENTOR(S):** Yao Qian; Di Gang; Li Hong Gang; Pan Li; Xi Xu Liang; Zhao Xin; Li Lian San; Du Yan; Huang Lie Ming; Jiang Guo Qin; Sun Hao; Chen Hai Bo; Qian You Cai; Zhao Xin Yu; Wang Xu Wei; Peng Feng

**IPC CLASSES:** G06Q40/02

**ABSTRACT:** This invention provides a method and system for the return of digital currency, in order to optimize and upgrade the system pertaining to the issuance of legal currency, improve the security and timeliness of currency return, and reduce the cost of currency return. It entails: a request for the return of digital currency sent by the applicant, wherein the request includes: the digital currency to be returned, the verification of the digital currency return request, and, in the event of verification, a request for an increase in the reserve requirement to the accounting data set system. In the event that the increased deposit reserve sent by the accounting data set system is successfully updated, the digital currency return outcome is sent to the applicant.

**NAME:** A method and system for exchanging deposits with digital currency

**CATEGORY:** Circulation of DC/EPs

**ASSIGNEE:** People's Bank of China Digital Currency Research Institute

**INVENTOR(S):** Yao Qian; Jiang Guo Qin; Peng Feng; Sun Hao

**IPC CLASSES:** G06Q40/02;G06Q20/02;G06Q20/38

**ABSTRACT:** This method provides a method and system for the exchange of digital currency and deposits, acting as a digital currency return supplement where banks do not need to return currency through the digital currency issuing institute and can instead exchange deposits with other banks that are in need of digital currency, thereby promoting the usage of digital currency. The method includes: the participating bank's system sends the report on the usage of digital currency to exchange for deposits to the agency bank's system, and sends the report on the digital currency payment of the agency bank to the digital currency system; the digital currency system proceeds with the preset process in accordance to the report, and sends the successful results of the process to the participating bank and agency bank's system; after the agency bank's system receives the results, the balance of the participating bank's interbank deposit account in the agency bank will be increased to the amount equivalent to the digital currency amount, thereafter the successful exchange results are returned to the participating bank's system.

**NAME:** A method and system for account transactions

**CATEGORY:** Circulation of DC/EPs

**ASSIGNEE:** People's Bank of China Digital Currency Research Institute

**INVENTOR(S):** Yao Qian; Di Gang; Qian You Cai; Huang Lie Ming; Chen Hai Bo; Zhao Xin Yu; Wang Xu Wei; Zhang Da Wei

**IPC CLASSES:** G06Q40/04;G06F9/50

**ABSTRACT:** The invention provides an account transaction method and device, including receiving a transaction request, extracting an asset entity from an account of an amount greater than or equal to the amount requested for the transaction according to the currency value, executing the transaction request for the extracted asset entity in order to generate a new asset entity, and then writing the new asset entity into the current account. The account transaction method and device described in the invention can make account transactions more faster and more flexible.

**NAME:** A method and system for inter-bank settlement using digital currency

**CATEGORY:** Circulation of DC/EPs

**ASSIGNEE:** People's Bank of China Digital Currency Research Institute

**INVENTOR(S):** Yao Qian; Jiang Guo Qin; Peng Feng; Sun Hao

**IPC CLASSES:** G06Q40/02

**ABSTRACT:** This invention provides a method and system for interbank settlement using digital currency, where through direct interbank settlement with digital currency, banks can save on clearing environments, enhance settlement efficiency, enhance the flexibility of bank settlement options, expand the applicability of digital currency, and benefit the wider application of digital currency. The method includes: sending of the report regarding the payment of the digital currency to the payee bank by the payer bank to the digital currency system; the digital currency system will proceed with the pre-set process stated in the report, and then return the information on the successful results from the process to the payer bank system and the payee bank system, where the pre-set process includes the transfer of the digital currency from the payer bank to the payee bank.

**NAME:** A method and system for inter-bank digital currency settlement

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**CATEGORY:** Circulation of DC/EPs

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**ASSIGNEE:** People's Bank of China Digital Currency Research Institute

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**INVENTOR(S):** Yao Qian; Jiang Guo Qin; Peng Feng; Sun Hao

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**IPC CLASSES:** G06Q40/02

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**ABSTRACT:** The invention provides a method and system for interbank settlement using digital currency, where the traditional interbank settlement method is combined with the digital currency settlement method, in order to enhance the flexibility of bank settlement options. The invention method includes: the payer bank system sends the report on the digital currency payment of the payee bank to the digital currency system; the digital currency system will proceed with the pre-set process in accordance to the report, and return the successful results to the payer bank system and the payee bank system, and also send the clearing report to the clearing bank system; upon receipt of the successful results, the balance in the interbank deposit account in the clearing bank belonging to the payee bank is increased by the same amount as the received digital currency amount, in accordance to the clearing report, and thereafter the successful results of the clearing process is sent to the payee bank system and the digital currency system; the digital currency system will send the results to the payer bank system.

# Management of DC/EPs

**DISCLAIMER:** This is an unofficial translation and provided for reference only.

**NAME:** Method and system for the customized tracing of digital currency

**CATEGORY:** Management of DC/EPs

**ASSIGNEE:** People's Bank of China Digital Currency Research Institute

**INVENTOR(S):** Yao Qian; Jiang Guo Qin; Peng Feng; Sun Hao

**IPC CLASSES:** G06Q20/40;G06Q20/06

**ABSTRACT:** The invention provides a method and system for customized digital currency tracking, which can solve the problem of the payer tracking the flow of funds across layers and entities, supports the custom tracking of the money flow, and tracks the flow of funds within the scope of the initiator's management, thus protecting the user's privacy. The method includes: receiving a tracking request from the original currency owner; setting a trace on the currency generated during the transaction according to the tracking request and saving the destination currency; returning to the original currency owner a tracking chain reflecting the trading process of the original currency upon receipt of the query request of the original currency owner.

**NAME:** Method and device for the directed usage of digital currency

**CATEGORY:** Management of DC/EPs

**ASSIGNEE:** People's Bank of China Digital Currency Research Institute

**INVENTOR(S):** Yao Qian; Jiang Guo Qin; Peng Feng; Sun Hao

**IPC CLASSES:** G06Q40/02;G06Q40/04

**ABSTRACT:** This invention provides a method and device for the directional use of digital currency, which includes the setting of the usage rules and the activation of the transfer only after its verification according to those rules, thus directing the use of the digital currency. The steps of this method in a digital currency system include: saving predefined usage rules, activating the monitoring of the usage rules after receiving a digital currency and payment command from a payer, and changing the digital currency to a digital currency with usage rules or a digital currency controlled by the usage rules of the user designated by the owner of the payment command before sending it to the payee. Upon receipt of a payment request from the user, which include information on the purpose of payment and the payee, the purpose of the payment is verified against the usage rules, and is then changed to a digital currency that is not subject to the rules before being sent to the payee.

**NAME:** A method and system for emergency transactions

**CATEGORY:** Management of DC/EPs

**ASSIGNEE:** People's Bank of China Digital Currency Research Institute

**INVENTOR(S):** Yao Qian; Di Gang; Qian You Cai; Huang Lie Ming; Chen Hai Bo; Zhao Xin Yu; Wang Xu Wei; Zhang Da Wei

**IPC CLASSES:** G06Q40/04

**ABSTRACT:** The invention discloses a method and device for providing an emergency transaction, involving computer technology. A specific implementation of this method includes: the billing node reads the parameters of the preset emergency intervention system contract, which includes the status attribute of the emergency intervention system contract, the administrator address attribute, or the address list attribute of the intervenor. The node will evaluate if the status attribute is the predefined status attribute. If it is, it will continue to evaluate if the transaction address is the administrator's address or if it is within the address list of the intervenor. If it is not, the transaction is terminated; if it is, the transaction will proceed. The implementation reduces the difficulty of managing distributed accounting nodes and improves the safety and reliability of transactions in the face of emergency situations.

**NAME:** Method and system for the management of loan rate contingent digital currency

**CATEGORY:** Management of DC/EPs

**ASSIGNEE:** People's Bank of China Digital Currency Research Institute

**INVENTOR(S):** Yao Qian

**IPC CLASSES:** G06Q40/02

**ABSTRACT:** The invention discloses a method and system for the management of digital currency triggered by lending rate conditions, and relates to the technical field of digital currency. A specific implementation of this method includes: the issuance of temporarily inactive digital currency to a financial institution; followed by an activation request by said financial institution; and the subsequent activation of the digital currency only when the lending rate corresponding to the request meets a set condition. This invention can allow lending rates to adjust to the benchmark interest rates in a timely and efficient manner.

**NAME:** Method and system for the management of sector contingent digital currency

**CATEGORY:** Management of DC/EPs

**ASSIGNEE:** People's Bank of China Digital Currency Research Institute

**INVENTOR(S):** Yao Qian

**IPC CLASSES:** G06Q40/02

**ABSTRACT:** The invention discloses a method and system for the management of digital currency triggered by main transfer recipient conditions, and relates to the technical field of digital currency. A specific implementation of this method includes: the issuance of temporarily inactive digital currency to a financial institution; followed by an activation request by said financial institution; and the subsequent activation of the digital currency only when the main transfer recipient corresponding to the request meets a set condition. This invention has the potential to set the benchmark for the delivery of digital currency, facilitate structural monetary policy, reduce idle funds, and improve financial services.

**NAME:** Method and system for the management of economic state contingent digital currency

**CATEGORY:** Management of DC/EPs

**ASSIGNEE:** People's Bank of China Digital Currency Research Institute

**INVENTOR(S):** Yao Qian

**IPC CLASSES:** G06Q20/065;G06Q40/025

**ABSTRACT:** The invention discloses a method and system for the management of digital currency triggered by economic conditions, and relates to the technical field of digital currency. A specific implementation of this method includes: the obtainment of information relating to the overall state of the economy upon the buying back of digital currency; followed by the adjustment of the digital currency's return interest rate when the state of the economy fulfills certain set conditions; and subsequently buying back the digital currency according to the newly adjusted return interest rate. This invention has the potential to adjust the return interest rates that financial institutions impose on digital currency issuers according to the counter-cycle to the overall state of economy at the time. This reduces the risk characteristics of financial institutions and the pro-cyclicality of their lending behavior, thus avoiding the "liquidity trap" and realizing the counter-cyclical regulation of the economy.

**NAME:** Method and system for the management of time-contingent digital currency

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**CATEGORY:** Management of DC/EPs

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**ASSIGNEE:** People's Bank of China Digital Currency Research Institute

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**INVENTOR(S):** Yao Qian

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**IPC CLASSES:** G06Q40/04; G06Q40/02

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**ABSTRACT:** The invention discloses a method and system for the management of digital currency triggered by time conditions, and relates to the technical field of digital currency. A specific implementation of this method includes: the issuance of temporarily inactive digital currency to a financial institution; followed by an activation request by said financial institution; and the subsequent activation of the digital currency only when the time information corresponding to the request meets a set condition. This invention has the potential to solve problems relating to the operation of existing monetary policy, where the time of currency activation is not limited to the time of issuance of the currency, but can instead be extended to a certain point of time in the future where the monetary policy's objective has been met. This therefore minimizes idle funds, and reduces the time lag involved in monetary policy transmission.

# Investment and Financing with DC/EPs

**DISCLAIMER:** This is an unofficial translation and provided for reference only.

**NAME:** Method, system and device for financing transactions with digital currency

**CATEGORY:** Investment and Financing with DC/EPs

**ASSIGNEE:** People's Bank of China Digital Currency Research Institute

**INVENTOR(S):** Yao Qian; Jiang Guo Qin; Peng Feng; Sun Hao

**IPC CLASSES:** G06Q40/02;G06Q40/06

**ABSTRACT:** The invention provides a method, system and device for financing transactions based on digital currency, which can avoid deposit funds in depository accounts, prevent funds from being misappropriated or changed in use, make the path of funds transparent and controllable, and enhance the supervision of funds. The method process entails: the funder wallet application device sends the payment request to the funder's bank wallet according to the transaction smart contract, wherein the payment request includes: the amount of digital currency to be paid, the financing bank wallet identification, joint signing of the smart contract application and the application for the authorization of use of the smart contract. The bank wallet of the funder shall, upon receipt of the payment request, send the payment request to the digital currency system; after receiving the payment request in question, void the original digital currency of the funder in accordance with the payment request and regenerate the digital currency with the joint signature. The digital currency is then sent to the funder's bank wallet.

**NAME:** A method, system and device for investment financing transactions with digital currency

**CATEGORY:** Investment and Financing with DC/EPs

**ASSIGNEE:** People's Bank of China Digital Currency Research Institute

**INVENTOR(S):** Yao Qian; Jiang Guo Qin; Peng Feng; Sun Hao

**IPC CLASSES:** G06Q40/04;G06Q40/06

**ABSTRACT:** The invention provides a transaction method, system and device for investment financing based on digital currency, and actualizes a way of payment settlement to provide investment and financing funds using digital currency. The method entails: the use of the device by the investor's wallet to receive a smart contract; the addition of the investment verification, investment amount, investor's digital signature and investor's personal information onto the smart contract by the investor's wallet after verification of the investment amount; the marking of the activation of the smart contract by the investment platform after the verification of the content in the smart contract. The investor's wallet can then use the activated smart contract to pay the funder's bank account in digital currency.

# Interbank Settlement with DC/EPs

**DISCLAIMER:** This is an unofficial translation and provided for reference only.

**NAME:** A method and system for exchanging digital currency with deposits

**CATEGORY:** Interbank Settlement with DC/EPs

**ASSIGNEE:** People's Bank of China Digital Currency Research Institute

**INVENTOR(S):** Yao Qian; Jiang Guo Qin; Peng Feng; Sun Hao

**IPC CLASSES:** G06Q40/02;G06Q20/02;G06Q20/38

**ABSTRACT:** The invention is used for a method and system for exchanging digital currency with deposits, and the bank may exchange interbank deposits with other banks that can claim digital currency without asking for it through a digital currency issuer, thus expanding the scope of application of digital currency and facilitating the application of digital currency. The method of exchanging a deposit for a digital currency in the invention includes: the participating bank system sends a message of exchange of digital currency to the agent bank system, and the agent bank system deducts the amount equivalent to the amount of the exchange amount from the deposit balance of the participating bank in the interbank account of the agent bank, and then generates a payment request message based on the amount deducted in the deposit balance and sends a payment request message to the digital currency system. The digital currency system performs the predefined process in accordance with the payment request message. The successful results of the process are returned to the participating bank system and the agent bank system. After receiving the successful results of the process, the agent bank system sends the information regarding the completed process to the participating bank system.

**NAME:** A method and system for inter-bank settlement using digital currency

**CATEGORY:** Interbank Settlement with DC/EPs

**ASSIGNEE:** People's Bank of China Digital Currency Research Institute

**INVENTOR(S):** Yao Qian; Jiang Guo Qin; Peng Feng; Sun Hao

**IPC CLASSES:** G06Q40/02;G06Q20/06

**ABSTRACT:** The invention provides a method and system for inter-bank digital currency settlement, which integrates the traditional settlement method between banks with the settlement method of digital currency, and improves the flexibility of bank settlement choice. The methods of inter-bank digital currency settlement in the present invention include: initiating the bank system to send the digital currency payment message to the digital currency system, and then sending the clearing message regarding the sending of digital currency to the receiving bank to the clearing bank system; the digital currency payment system proceeds with the preset process according to the message, and then sends the successful results to the initiating bank system and clearing bank system; after receiving the successful results, the clearing bank system increases the balance in the receiving bank's interbank account deposit by the amount equivalent to the digital currency payment amount in accordance to the clearing message, and then returns the successful clearance message to the receiving bank and initiating bank.

DIGITAL YUAN PATENT STRATEGY: A COLLECTION OF PATENT APPLICATIONS FILED BY THE PEOPLE'S BANK OF CHINA

# Digital Currency Wallet

**DISCLAIMER:** This is an unofficial translation and provided for reference only.

**NAME:** A method and system for digital currency wallet payments

**CATEGORY:** Digital Currency Wallet

**ASSIGNEE:** People's Bank of China Digital Currency Research Institute

**INVENTOR(S):** Yao Qian

**IPC CLASSES:** G06Q20/36;G06Q20/38;G06Q20/40;G06Q20/06;G06Q20/10

**ABSTRACT:** The invention provides a method and system for payment using a digital currency wallet, including receiving payment requests for digital currency wallets, obtaining a digital certificate digital signature entered by the user for a digital currency wallet request to generate a digital currency transfer request, and sending the digital currency transfer request to the digital currency issuing bank, and the receipt of the successful result of the payment with the digital signature of the issuing bank. Therefore, the method and system of payment using digital currency wallet can complete payments using digital currency wallets.

**NAME:** Method and system for the binding of digital currency wallets and bank wallets

**CATEGORY:** Digital Currency Wallet

**ASSIGNEE:** People's Bank of China Digital Currency Research Institute

**INVENTOR(S):** Yao Qian

**IPC CLASSES:** G06Q20/36;G06Q20/38;G06Q20/40;G06Q20/06;G06Q20/10

**ABSTRACT:** The invention provides a method and system for binding a digital currency wallet with a bank wallet by means of authorizing bank account access by the digital currency wallet. The implementation entails: the bank account receives a wallet binding request from the user, which includes information relating to the user's verified real name and wallet identification; the account will query the account's bank wallet in accordance to the information relating to the verified real name to receive the information relating to the bank wallet, which includes the bank wallet identification. The account will thereafter begin the binding process in accordance to the account's binding verification information, which includes the digital currency wallet and bank wallet identification tied to the binding verification information.

**NAME:** Method and system for payment through bank account access-authorized digital currency wallets

**CATEGORY:** Digital Currency Wallet

**ASSIGNEE:** People's Bank of China Digital Currency Research Institute

**INVENTOR(S):** Yao Qian

**IPC CLASSES:** G06Q20/36;G06Q20/38;G06Q40/02

**ABSTRACT:** The invention provides a method and system for the payment of digital currency wallets authenticated by bank account access, including receiving payment requests for digital currency wallets, obtaining a digital signature of the bank account CA certificate entered by the user for payment requests, and then authorizing access to the digital currency wallet linked to the bank account number after authentication in order to generate a digital currency transfer request. The digital currency transfer request is sent to the digital currency issuing bank. Thereafter, the successful result of the payment is received with the digital signature of the issuing bank.

**NAME:** Method and system for logging out of digital currency wallets

**CATEGORY:** Digital Currency Wallet

**ASSIGNEE:** People's Bank of China Digital Currency Research Institute

**INVENTOR(S):** Yao Qian

**IPC CLASSES:** G06Q20/36;G06Q40/02

**ABSTRACT:** The invention provides a method and system for the cancellation of digital currency wallets where the bind between the digital currency wallet and the bank account is written off. The method includes: the account uses the user account query system to call the bank account access authentication system to authenticate the user; after authentication, the account accepts the digital currency wallet cancellation request that has been signed by the account, before sending it to the acquiring bank's digital currency system. The acquiring bank's digital currency system verifies the account signature and confirms that the digital currency wallet is able to be cancelled. The signed cancellation request is sent to the issuing bank's digital currency system. The issuing bank's digital currency system verifies the bank account and cancellation wallet's identification signature, registers the cancellation wallet for cancellation, and returns information on the successful cancellation. After the account's digital currency system receives the information, it proceeds to cancel the digital currency wallet.

**NAME:** Method and system for the binding of digital currency wallets

**CATEGORY:** Digital Currency Wallet

**ASSIGNEE:** People's Bank of China Digital Currency Research Institute

**INVENTOR(S):** Yao Qian

**IPC CLASSES:** G06Q20/36;G06Q20/40

**ABSTRACT:** The invention provides a binding method and binding system for digital currency wallets, which can be used to carry out the binding operation of digital currency wallets through the access authorization of the bank wallet. The binding method includes: the acquiring bank's user access system receives the wallet binding request provided by the user, generates the bank wallet query request according to the wallet binding request and then sends it to the acquiring bank's application system, and the acquiring bank's application system sends the bank wallet query request to the acquiring bank's digital currency system. The acquiring bank's digital currency system is queried according to the real name authentication information, and then the bank wallet information is returned to the acquiring bank's application system, and the acquiring bank's application system returns the bank wallet information to the acquiring bank's user access system, and the information is returned to the user. The binding confirmation sent by the user is then sent to the acquiring bank's wallet access authentication system, which performs the binding operation between the digital currency wallet and the bank wallet.

**NAME:** Method and system for unbinding digital currency wallets

**CATEGORY:** Digital Currency Wallet

**ASSIGNEE:** People's Bank of China Digital Currency Research Institute

**INVENTOR(S):** Yao Qian

**IPC CLASSES:** G06Q20/38;G06Q20/40

**ABSTRACT:** The invention discloses a method and system for the unbinding of a digital currency wallet, and pertains to the field of computer technology. In particular, the implementation of the method includes: upon receipt of the user-provided wallet unbinding request, a bank wallet access authorization request is sent to the user; upon receipt of the bank wallet access authorization elements provided by the user, a verification of the user's identity is carried out; under the conditions that the user's identity is verified, the bind between the user's digital currency wallet and bank wallet is removed. Through these steps, a convenient and safe method of unbinding digital currency wallet and bank wallets is achieved.

**NAME:** Method and system for the unbinding of digital currency wallets and bank wallets

**CATEGORY:** Digital Currency Wallet

**ASSIGNEE:** People's Bank of China Digital Currency Research Institute

**INVENTOR(S):** Yao Qian

**IPC CLASSES:** G06Q20/06;G06Q20/36;G06Q20/40

**ABSTRACT:** The invention discloses a method and system for the unbinding of digital currency wallets with bank wallets, and pertains to the field of computer technology. In particular, an implementation method of the invention includes: after receiving the unbinding request submitted by the user, a bank account access authorization request is sent to the user; after receiving the required elements of the bank account access authorization submitted by the user, verification of the user's identity is performed with the required elements of the bank account access authorization; under the conditions that the user's identity is verified, the bind between the stated user's digital currency wallet and bank wallet is cancelled. Through these steps, the functions of the digital currency wallet are effectively expanded with the help of the bank account system, at the same time that the convenient and safe unbinding of the digital currency wallet and bank account is realized.

**NAME:** Method and system for the application of digital currency wallets

**CATEGORY:** Digital Currency Wallet

**ASSIGNEE:** People's Bank of China Digital Currency Research Institute

**INVENTOR(S):** Yao Qian

**IPC CLASSES:** G06Q20/36

**ABSTRACT:** This invention provides a method and system for the application of digital currency wallets, where the user applies for a digital currency wallet through a bank account and specifies the bank account and digital currency wallet's binding relationship during the application process. After the wallet is successfully opened, the bank account and digital currency wallet will proceed with binding so that the user may access the digital currency wallet through his/her bank account. The method includes: the acquiring bank user access system receives information on the user's digital signature and digital currency wallet application, and sends the information to the acquiring bank's digital currency system; the acquiring bank's digital currency system verifies the user's digital signature, and upon verification, creates the digital currency wallet, assigns a digital certificate to it and adds the acquiring bank's digital signature to the digital currency wallet identification and certificate before sending it to the issuing bank's digital currency system; the issuing bank's digital currency system verifies the acquiring bank's digital signature, and upon verification, saves the wallet's identification and certificate.

**NAME:** Method and system for the querying of digital currency wallets

**CATEGORY:** Digital Currency Wallet

**ASSIGNEE:** People's Bank of China Digital Currency Research Institute

**INVENTOR(S):** Yao Qian

**IPC CLASSES:** G06Q20/36;G06Q20/06;G06Q20/38

**ABSTRACT:** This invention discloses a method and system for the querying of digital wallets, and pertains to the field of computer technology. An implementation of this method includes: the acquiring bank's user access system sends the user's digital currency wallet query request to the acquiring bank's access verification system to verify the user's identity; upon the verification of the user's identity, the digital currency wallet query request information is sent to the acquiring bank's operating system; the operating system verifies the digital signature on the request, and upon verification, generates the wallet query information and sends it to the acquiring bank's digital currency system; the acquiring bank's digital currency system proceeds with the query in accordance to the wallet's query information and obtains information on the wallet query results. This method can expand the digital currency wallet's functions by leveraging the foundations of the acquiring bank's architecture without changing the existing acquiring bank's architecture. Users can directly query the digital currency wallet through the new addition of the digital currency wallet independent verification mechanism.

**NAME:** A method and system for the querying of digital currency wallets

**CATEGORY:** Digital Currency Wallet

**ASSIGNEE:** People's Bank of China Digital Currency Research Institute

**INVENTOR(S):** Yao Qian

**IPC CLASSES:** G06Q40/02

**ABSTRACT:** This invention discloses a method and system for the querying of digital currency wallets, and pertains to the field of computer technology. The method includes: the acquiring bank's user access system sends the user's digital currency wallet query request to the acquiring bank's bank account access authorization system; the acquiring bank's bank account access authorization system verifies the user's identity; upon verification, the acquiring bank's user access system sends the request to the acquiring bank's operating system; the acquiring bank's operating system verifies the digital signature, and upon verification, sends the request to the acquiring bank's digital currency system; the acquiring bank's digital currency system processes the query based on the request to retrieve the results of the query. This implementation method can allow the query of digital currency wallets bound to bank accounts through bank account access authorization. It expands the functions of digital currency wallets by leveraging the foundation of bank account mechanisms, without changing the existing bank account mechanisms.

**NAME:** Method and system for logging out of digital currency wallets

**CATEGORY:** Digital Currency Wallet

**ASSIGNEE:** People's Bank of China Digital Currency Research Institute

**INVENTOR(S):** Yao Qian

**IPC CLASSES:** G06Q40/02;G06Q20/40

**ABSTRACT:** The invention provides a method and system for the cancellation of digital currency wallets to cancel a user's digital currency wallet. The method includes: the acquiring bank's user access system uses the acquiring bank's digital currency wallet access authentication system to verify the user's identity, and thereafter sends a cancellation request accompanied by the user's digital signature to the acquiring bank's digital currency system; the acquiring bank's digital currency system verifies the digital signature, and upon verification, confirms that the wallet can be cancelled, thereafter sending the cancellation registration request accompanied with the acquiring bank's signature and wallet's signature to the issuing bank's digital currency system; the issuing bank's digital currency system verifies the signatures and then proceeds to register the cancellation for the digital currency wallet, thereby returning the notification of the successful cancellation to the issuing bank's digital currency wallet system; once the acquiring bank digital currency system receives the notification, it will proceed with cancelling the digital currency wallet.

**NAME:** A method and system of digital currency trading based on financial IC card

**CATEGORY:** Digital Currency Wallet

**ASSIGNEE:** China Banknotes Credit Card Industry Development Co., Ltd. Hangzhou Blockchain Technology Research Institute

**INVENTOR(S):** Zhang Bobo; Zhang Yifeng

**IPC CLASSES:** G06Q40/04;G06Q20/34;G06Q20/38;G06Q20/40

**ABSTRACT:** The invention discloses a method of digital currency transaction based on the financial IC card end, including: the terminal sends a wallet application selection instruction to the IC card end; the terminal receives a request for the sending of transaction data sent by the IC card end; the terminal determines whether it is a digital currency transaction by sending a request; and if so, the terminal sends transaction data to the IC card end; in order to determine the type of transaction and generate validation data, where the transaction data includes the application extension identification and terminal transaction attributes, the terminal receives the verification data sent by the IC card terminal; the terminal dock receives the verification data, and the terminal transaction process after verification is passed. This method can allow the wallet application and support the digital currency and electronic currency transaction, and ensure the efficiency and security of the digital currency transaction process. The invention also discloses the digital currency transaction device and system based on the financial IC card end, which has the above beneficial effect.

**NAME:** A method, terminal and system for logging into digital currency wallets

**CATEGORY:** Digital Currency Wallet

**ASSIGNEE:** People's Bank of China Digital Currency Research Institute

**INVENTOR(S):** Yao Qian

**IPC CLASSES:** G06Q20/40;G06Q20/36

**ABSTRACT:** The invention discloses the login method, terminal and system of a digital currency wallet, which relates to the technical field of computer technology. A specific implementation of this method includes: responding to the user's login request, obtaining and verifying the user's authentication information, thereafter obtaining and verifying the contract relating to the digital currency wallet, and showing the user the functional interface of the digital currency wallet after the verification of the contract. The implementation has the potential to: meet the requirements of digital currency issuers and interface with the digital currency issuer system; remove the reliance on a back-end system; open digital currency wallets based on user identity profiles already in the existing account system, so as to provide an identical experience and a seamless transition to digital currency wallets for users of the existing financial infrastructure. The invention is also applicable to a wide range of scenarios, making it conducive to the wide application of digital currency.

**NAME:** A method and system for the cancellation of digital currency wallets

**CATEGORY:** Digital Currency Wallet

**ASSIGNEE:** People's Bank of China Digital Currency Research Institute

**INVENTOR(S):** Yao Qian

**IPC CLASSES:** G06Q20/06;G06Q20/10;H04L9/32

**ABSTRACT:** This invention discloses a method and system for the writing off of digital currency wallets, and pertains to the field of computer technology. An application of the method includes: the digital currency wallet terminal will confirm that the amount in the wallet pending cancellation is equal to zero in accordance with the wallet cancellation request submitted by the user, and sends the digitally signed cancellation command to the wallet service provider; the wallet service provider confirms that the signed cancellation command received is indeed legal, before cancelling the pending wallet's certificates and wallet identification; thereafter, the wallet service provider sends the signed cancellation command to the digital currency issuance registration institution; the digital currency issuance institution confirms that the signed cancellation command received is indeed legal, before cancelling the pending wallet's certificates and wallet identification.

**NAME:** Method and system for the querying of accounts related to a digital currency wallet

**CATEGORY:** Digital Currency Wallet

**ASSIGNEE:** People's Bank of China Digital Currency Research Institute

**INVENTOR(S):** Yao Qian

**IPC CLASSES:** H04L9/32;H04L9/08;H04L29/06;G06Q20/36

**ABSTRACT:** The invention discloses a method and system for querying related accounts based on digital currency wallets, and relates to computer technology. A specific implementation of this method includes: the use of a digital currency wallet terminal to receive the user's related account query order, followed by the use of the wallet private key to sign off on the order; the signed order is sent to a wallet service provider and is verified using the appropriate certificates, where upon verification, the query is sent according to the query parameters to obtain the result of the related account query. This method can provide users with the service of querying related accounts through the wallet service providers on the basis of a digital currency wallet terminal.

**NAME:** A method and system for the redemption of digital currency

**CATEGORY:** Digital Currency Wallet

**ASSIGNEE:** People's Bank of China Digital Currency Research Institute

**INVENTOR(S):** Yao Qian

**IPC CLASSES:** G06Q20/36;G06Q20/38

**ABSTRACT:** The invention discloses a method and system for digital currency exchange, which relates to the technical field of computer technology. A specific implementation of this method includes: the use of a digital currency wallet terminal to generate a command for currency withdrawal based on information related to currency withdrawal; the exchange of funds in the bank account related to the particular digital wallet for digital tokens in the amount corresponding to the balance of funds to be transferred; the digital currency issuance registration institution will assign the withdrawal account as the owner of the digital tokens to be transferred, after the verification of the actual amount to be transferred; and the digital currency wallet terminal deposits the list of token strings of the digital currency of the actual transfer amount into the digital currency wallet corresponding to the currency collection user's identity. It can connect with the digital currency issuing registration agency system, and associate with the traditional account system binding, provide local security protection mechanisms, improve wallet operation and digital currency exchange process security, improve wallet security protection ability, provide digital currency real storage and direct transfers.

**NAME:** Method and system for querying of digital currency transfer information

**CATEGORY:** Digital Currency Wallet

**ASSIGNEE:** People's Bank of China Digital Currency Research Institute

**INVENTOR(S):** Yao Qian

**IPC CLASSES:** G06F17/30;G06Q20/06

**ABSTRACT:** This invention discloses a method and system of querying information on a digital currency transaction, and pertains to the field of computer technology. An application of this method includes: the digital currency wallet terminal receives the user's transaction information query command and uses the wallet private keys to attach a digital signature to the transaction information query command before sending it to the wallet service provider; the wallet service provider uses certificates to verify the digital signature before sending the command to the digital currency issuance registration institution; the digital currency issuance registration institution verifies the signed command before proceeding to fulfill the query command according to the conditions set in the query to obtain the transaction information query result. This implementation method can allow the digital currency wallet to query the digital currency issuance registration institution, allowing it to interact with the digital wallet issuance registration institution, and therefore realizes the user's direct query with digital currency transaction information.

**NAME:** A method, terminal and system for synchronizing digital currency wallets

**CATEGORY:** Digital Currency Wallet

**ASSIGNEE:** People's Bank of China Digital Currency Research Institute

**INVENTOR(S):** Yao Qian

**IPC CLASSES:** G06Q20/36;G06Q20/38;G06Q20/40

**ABSTRACT:** The invention discloses a synchronization method, terminal and system of a digital currency wallet, which relates to the technical field of computer technology. A specific implementation of this method includes: obtaining and verifying the user's authentication information; displaying the viewable information in the logged-in digital currency wallet to the user; proceeding to sign the items of information selected by the user before attaining the synchronization instruction; obtaining of information related to the logged-in digital currency wallet and the effective digital currency after the verification of the synchronization instruction. This implementation can fulfill the localization characteristics and advantages of the digital currency wallet while interacting with wallet service providers and digital currency issuers; facilitate the update and migration of the digital wallet terminal and cross-currency terminal as well as other operations, while safeguarding the security and enhancing the flexibility of the digital currency wallet. This is likely to be beneficial to the wider application of digital currency.

**NAME:** A method and device for upgrading of a wallet with the digital currency wallet terminal

**CATEGORY:** Digital Currency Wallet

**ASSIGNEE:** People's Bank of China Digital Currency Research Institute

**INVENTOR(S):** Yao Qian

**IPC CLASSES:** G06F21/51;G06F8/65

**ABSTRACT:** This invention discloses a method and device for the upgrading of wallets through digital currency wallet terminal, and pertains to the field of computer technology. An implementation method includes: under the condition where the digital currency wallet terminal receives an upgrade request from the user, the upgrade request will be sent to the wallet service provider, for which the request will be verified by the wallet service provider; under the conditions that the request is successfully verified, the wallet service provider will return upgrade installation information to the digital currency wallet terminal; upon confirmation of the upgrade installation information by the user, the digital currency wallet terminal will send the upgrade approval command to the wallet service provider and will complete the upgrade through the wallet service provider. This implementation method overcomes the limitation of current technology in allowing a wallet terminal to undergo self-upgrade and also overcomes the technological problems faced for a service system to complete a wallet upgrade, therefore achieving a safe and reliable technological result in proceeding with the upgrade of a wallet.

**NAME:** A method and system for the opening of digital currency wallets

**CATEGORY:** Digital Currency Wallet

**ASSIGNEE:** People's Bank of China Digital Currency Research Institute

**INVENTOR(S):** Yao Qian

**IPC CLASSES:** G06Q20/06;H04L9/08;H04L9/32

**ABSTRACT:** This invention discloses a method and system for the opening of a digital currency wallet, and pertains to the field of computer technology. An implementation method includes: the digital currency wallet terminal generates the private key pair in accordance to the private key pair generation request received, and then sends the public key to the wallet service provider; the wallet service provider sends the public key and the wallet identification generated in accordance to the given public key to the digital currency issuance registration institution; the digital currency issuance registration institution sends the digital certificates generated from the public key and wallet identification to the wallet service provider; the wallet service provider sends the digital certificate, wallet identification and wallet contract code address to the digital currency wallet terminal, thereafter creating the digital currency wallet in accordance to the digital currency wallet terminal's opening request; in addition, a registration request is sent to the digital currency issuance registration institution; the digital currency issuance registration institution proceeds with the registration in accordance with the registration request, wallet identification and wallet certificate.

**NAME:** A method and system for deposits for digital currency wallets

**CATEGORY:** Digital Currency Wallet

**ASSIGNEE:** People's Bank of China Digital Currency Research Institute

**INVENTOR(S):** Yao Qian

**IPC CLASSES:** G06Q20/36;G06Q20/38;G06Q20/10

**ABSTRACT:** This invention discloses a method and system for digital currency exchange, and pertains to the field of computer technology. An implementation of the method includes: the digital currency wallet terminal generates the withdrawal command based on the withdrawal information; in accordance to the withdrawal command, the wallet service provider end exchanges the balance amount in the bank account linked to the digital currency wallet for digital currency in the amount that is pending a transfer; the digital currency issuance registration end confirms the actual transfer amount based on the withdrawal amount and the amount that is pending a transfer, thereafter assigning the owner of the amount that is pending a transfer as the withdrawal account; the digital currency wallet terminal saves the currency string of the actual digital currency transfer amount into the digital currency wallet associated with the withdrawal account wallet identification. Being able to directly interact with the digital currency issuing registration institution system and bind with traditional account systems has provided a local security mechanism, enhanced the safety of the wallet and digital currency exchange processes, increased the wallet's security protection functions, and provided the ability for the storage and direct transfer of digital currency.

**NAME:** Method and system for the changing of digital wallet private keys

**CATEGORY:** Digital Currency Wallet

**ASSIGNEE:** People's Bank of China Digital Currency Research Institute

**INVENTOR(S):** Yao Qian

**IPC CLASSES:** H04L9/32;H04L9/08;H04L29/06;G06Q20/38

**ABSTRACT:** The invention provides a method and system for the replacement of keys for digital currency wallets, including: the process of receiving the replacement key and the exit of the current contract; the generation of a new wallet private key and sending of a newly generated public key and the signed request to change keys; the receipt of a new and not-yet-verified instruction to change the private keys from the wallet service node, and the use of the old wallet private key to sign off on the instruction; the notification of the success of the replacement request from the wallet service node to update the signed wallet contract package and the new wallet key bound by the contract package. Therefore, this implementation can guarantee the security of the digital currency wallet key.

**NAME:** Method, device and system for initiated currency transfer

**CATEGORY:** Digital Currency Wallet

**ASSIGNEE:** People's Bank of China Digital Currency Research Institute

**INVENTOR(S):** Yao Qian

**IPC CLASSES:** G06Q20/10;G06Q20/36;G06Q20/38

**ABSTRACT:** This invention discloses a method, device and system for the initiated transfer of currency, which allows the storage of digital currency and facilitates the digital currency transfer mechanism initiated by a payer between two wallets. The method includes: generation of the currency transfer request based on the payee's payment address information; generation of the currency transfer command based on the currency transfer request; carrying out of the currency transfer process on the recipient's wallet based on the currency transfer command.

**NAME:** A method and device for querying digital currency detailed information

**CATEGORY:** Digital Currency Wallet

**ASSIGNEE:** People's Bank of China Digital Currency Research Institute

**INVENTOR(S):** Yao Qian

**IPC CLASSES:** G06Q20/38;G06Q20/36;G06F21/60;G06F21/62

**ABSTRACT:** The invention discloses a method and device for querying the detailed information of digital currency, which relates to the technical field of computer technology. A specific implementation of the method includes: generating a query request that includes a query command, sending the query request to the security module, signing of the query request by the security module using the wallet private key, and receiving the signed query request. After verifying the validity of the query request using the wallet public key, a detailed list of digital currencies is displayed according to the query instructions. The implementation can guarantee the security of the user when querying the digital currency information.

**NAME:** A method and system for the deduction of funds from digital currency wallets

**CATEGORY:** Digital Currency Wallet

**ASSIGNEE:** People's Bank of China Digital Currency Research Institute

**INVENTOR(S):** Yao Qian

**IPC CLASSES:** G06Q20/36;G06Q20/06;G06Q20/40

**ABSTRACT:** The invention discloses a method and system of deduction based on digital currency, which relates to the technical field of computer technology. A specific implementation of this method includes: the payer's digital currency wallet will authorize the deduction information sent to the recipient digital currency wallet, wherein the deduction request will include the amount to be deducted and the authorization information. The digital currency issuance registration system verifies the deduction request, and after verifying that the deduction request is correct, the deduction request is completed in accordance with the deduction request. This implementation improves the flexibility of digital currency payment, and also improves the security of digital currency transactions.

**NAME:** A method for digital currency wallet management based on the SM2 threshold password algorithm

**CATEGORY:** Digital Currency Wallet

**ASSIGNEE:** China Banknotes Credit Card Industry Development Co., Ltd. Hangzhou Blockchain Technology Research Institute

**INVENTOR(S):** Zhang Bobo; Zhang Yifeng

**IPC CLASSES:** H04L9/32;G06Q40/04;G06Q20/40;G06Q20/38;G06Q20/06

**ABSTRACT:** The invention discloses a digital currency wallet management method based on a SM2 threshold password algorithm, and relates to the field of electronic technology. The method includes: when a client receives a digital currency wallet creation instruction, it generates system parameters; the public key is obtained through a generated grid of private keys; among them, each sub-private key is stored corresponding to each business participant, and the sub-private key is calculated according to system parameters; the public key is identity-bound through a smart contract; the user's functional instructions for the digital currency wallet are received; through the cooperation of various business participants and smart contracts, the sub-private keys are used to implement the wallet functions. This method can ensure the security of digital currency transactions and improve transaction efficiency. The invention also discloses a client and a mobile terminal, which have the above beneficial effects.

**NAME:** Method and system for the management of digital currency wallet businesses based on multiple signatures

**CATEGORY:** Digital Currency Wallet

**ASSIGNEE:** China Banknotes Credit Card Industry Development Co., Ltd. Hangzhou Blockchain Technology Research Institute

**INVENTOR(S):** Zhang Bobo; Zhang Yifeng

**IPC CLASSES:** G06Q20/38;G06Q20/10;H04L9/32

**ABSTRACT:** This invention discloses a method and system for the management of multiple signatures in the business of digital currency wallets. The system involves the contract verification service machine and the digital wallet terminal's business process for three different keys; the method includes: the wallet client end initiates the business request through the wallet service provider terminal; the wallet services provider terminal and the wallet client account end or business supervision terminal relating to the type of business request both sign on the business request with their respective private keys, obtaining data on the multiple signature business request; the wallet service provider terminal sends the request to the contract verification service machine; the contract verification service machine verifies the multiple signatures in accordance with the related business contract, and after verifying, it proceeds to manage the contract. This invention allows for strong business retrospection and provides increased security and reliability of digital currency.

**NAME:** A method, device, system, terminal and client-end wallet for digital currency transactions

**CATEGORY:** Digital Currency Wallet

**ASSIGNEE:** China Banknotes Credit Card Industry Development Co., Ltd. Hangzhou Blockchain Technology Research Institute

**INVENTOR(S):** Sun Li; Zhang Yifeng

**IPC CLASSES:** G06Q20/06;G06Q20/38

**ABSTRACT:** This invention discloses a method for the transaction of digital currency, including: the client end wallet receives the digital currency transaction request, and once the transaction currency amount within the transaction request exceeds any one of balance amounts of the system addresses, the wallet issuing financial institution will generate the multiple system address transaction message in accordance to the transaction currency amount and send it to the wallet client end; the client end wallet generates a signature in accordance to each transaction message, and consolidates the multiple system address signatures in accordance to the consolidation calculation method to consolidate the multiple signatures into one signature, thereafter the system only needs to perform a verification of the consolidated signature instead of all the multiple signatures. once the system back-end performs a verification of the consolidated signature, it generates the transaction data. The method reduces the effort required to verify multiple signatures, and due to the improvement in verification processes, it improves the system's overall efficiency. The invention also discloses a device, system and terminal for client-end wallet and digital currency transactions, which will have the same benefits as the implementation described above.

DIGITAL YUAN PATENT STRATEGY: A COLLECTION OF PATENT APPLICATIONS FILED BY THE PEOPLE'S BANK OF CHINA

# Digital Currency Chip Card

**DISCLAIMER:** This is an unofficial translation and provided for reference only.

**NAME:** Method and system for online payment using digital currency chip cards

**CATEGORY:** Digital Currency Chip Card

**ASSIGNEE:** People's Bank of China Printing Science and Technology Research Institute

**INVENTOR(S):** Yao Qian; Li Hui Feng; Wen Xin Xiang; Li Lian San; Wang Dong Bing; Liu Hao; Zhao Xin; Tang Shao Xue; Liu Wen Shu

**IPC CLASSES:** G06Q20/34;G06Q20/16

**ABSTRACT:** This invention provides a method and system for using the digital currency chip card for online transactions, the method includes: the user terminal device sends the payment information to the acceptance terminal device, wherein the payment information includes the digital currency chip card information and the digital currency equivalent to the payment amount; the acceptance terminal sends the payment information to the commercial bank's digital currency system after receiving the information; the commercial bank's digital currency system sends the change-in-owner request to the central bank's digital currency system after receiving the payment information; after receipt of the information, the central bank's digital currency system changes the owner of the digital currency to the commercial account's merchant bank code; the commercial bank's digital currency system changes the commercial bank's account balance. This invention can effectively improve the consumer's payment experience, even outside of a guaranteed safe payment environment.

**NAME:** Method and system for depositing digital currency into a deposit account

**CATEGORY:** Digital Currency Chip Card

**ASSIGNEE:** People's Bank of China Printing Science and Technology Research Institute

**INVENTOR(S):** Yao Qian; Li Hui Feng; Wen Xin Xiang; Li Lian San; Wang Dong Bing; Liu Hao; Zhao Xin; Tang Shao Xue; Liu Wen Shu

**IPC CLASSES:**  
G06Q20/06;G06Q20/10;G06Q20/32;G06Q20/36;G06Q20/38;G06Q40/02

**ABSTRACT:** This invention provides a method and system for the deposit of digital currency into a deposit account to solve the various limitations in the existing technology. The method includes: the terminal device receives the deposit amount and deposit account input by the external process; the terminal device selects the total digital currency amount in the digital currency wallet equivalent to the deposit amount; the terminal device sends the digital currency and deposit account to the merchant bank's digital currency system; the commercial bank's digital currency system sends the digital currency and deposit account to the central bank's digital currency system; the central bank's digital currency system changes the digital currency owner from the user to the commercial bank, and sends the successful results of the transaction to the commercial bank; the commercial bank's digital currency system increases the deposit amount in its bookkeeping in accordance to the results, thereafter sending the results to the terminal device.

**NAME:** Method and system for digital currency payment using visible digital currency chip cards

**CATEGORY:** Digital Currency Chip Card

**ASSIGNEE:** People's Bank of China Printing Science and Technology Research Institute

**INVENTOR(S):** Yao Qian; Li Hui Feng; Wen Xin Xiang; Li Lian San; Wang Dong Bing; Liu Hao; Zhao Xin; Tang Shao Xue; Liu Wen Shu

**IPC CLASSES:** G06Q20/06;G06Q20/34;G06Q20/38;G06Q20/40

**ABSTRACT:** This invention provides a method and system for digital currency payment with a visible digital currency chip card, which is appropriate for offline payments, therefore expanding the scope of payment and solving the problem of payment during offline conditions and avoiding the risk of unlawful transactions. The method includes: the payer's visible digital currency chip card sends the payment request to the payee's terminal device when there is no internet connection with the commercial bank's digital currency system; the payee's terminal device initiates the network connection after receiving the request, and sends the payment request to the commercial bank's digital currency system once the network connection is successful; the commercial bank's digital currency system sends the payment confirmation request to the central bank digital currency system so as to change the digital currency's owner; the central bank's digital currency system proceeds with the preset process in accordance to the request, and then sends the results to the payee's terminal device.

**NAME:** Method and system for digital currency payment using digital currency chip cards

**CATEGORY:** Digital Currency Chip Card

**ASSIGNEE:** People's Bank of China Printing Science and Technology Research Institute

**INVENTOR(S):** Yao Qian; Li Hui Feng; Wen Xin Xiang; Li Lian San; Wang Dong Bing; Liu Hao; Zhao Xin; Tang Shao Xue; Liu Wen Shu

**IPC CLASSES:** G06Q20/06;G06Q20/34

**ABSTRACT:** The invention provides a method and system for the usage of digital currency chip cards for digital currency payment, so as to solve the limitations of the existing technology. The other beneficial results of the invention can be obtained through the implementation method. The method includes: the terminal device receives the payment amount information input by the external process, then sends the payment amount information to the digital currency chip card; the digital currency chip card selects the digital currency payment amount, then sends it to the terminal device; after receiving the digital currency, the terminal device generates the first request and then sends it to the commercial bank's digital currency system; the commercial bank's digital currency system generates a second request after receiving the first request, and sends it to the central bank digital currency system; the central bank digital currency system proceeds with the preset process in accordance with the second request and returns the successful results to the commercial bank's digital currency system; the commercial bank's digital currency system sends the successful transaction results to the terminal device.

**NAME:** Method and system for the exchange of physical cash using digital currency chip cards

**CATEGORY:** Digital Currency Chip Card

**ASSIGNEE:** People's Bank of China Printing Science and Technology Research Institute

**INVENTOR(S):** Yao Qian; Li Hui Feng; Wen Xin Xiang; Li Lian San; Wang Dong Bing; Liu Hao; Zhao Xin; Tang Shao Xue; Liu Wen Shu

**IPC CLASSES:** G07F19/00

**ABSTRACT:** The invention provides a method and system for the exchange of physical currency with a digital currency chip card, the method includes: the acceptance terminal device receives the external exchange information after connecting with the digital currency chip card, and then sends the information to the commercial bank's digital currency system, within which, the exchange information includes the digital currency chip card information and the digital currency equivalent to the exchange amount; the commercial bank's digital currency system sends a change-in-owner request to the central bank digital currency system after receiving the exchange information; the central bank digital currency system changes the owner of the digital currency to the commercial bank; the commercial bank's digital currency system sends the control command to the acceptance terminal device, where the control command is used for the output of cash amount; the acceptance terminal outputs the cash equivalent to the exchange amount in accordance with the control command.

**NAME:** Method and system for digital currency payment using digital currency chip cards

**CATEGORY:** Digital Currency Chip Card

**ASSIGNEE:** People's Bank of China Printing Science and Technology Research Institute

**INVENTOR(S):** Yao Qian; Li Hui Feng; Wen Xin Xiang; Li Lian San; Wang Dong Bing; Liu Hao; Zhao Xin; Tang Shao Xue; Liu Wen Shu

**IPC CLASSES:** G06Q20/34;G06Q20/32;G06Q20/38;G06Q20/40

**ABSTRACT:** This invention provides a method and system for the usage of digital currency chip cards for the payment of digital currency, so as to solve the various limitations of the existing technology. The invention's various other intentions and results and benefits can be obtained through its implementation. The method includes: the mobile terminal device receives the payment amount information input by the external process, then sends the information to the digital currency chip card; the digital currency chip card selects the digital currency amount equivalent to the stated amount in the provided information, and then sends it to the mobile terminal; the mobile terminal receives the digital currency and generates the first request, then sends it to the commercial bank digital currency system; the commercial bank digital currency system receives the first request and generates a second request, then sends it to the central bank digital currency system; the central bank digital currency system proceeds with the preset process in accordance with the request and returns the results to the commercial bank digital currency system.

**NAME:** Method and system for digital currency payment using visible digital currency chip cards

**CATEGORY:** Digital Currency Chip Card

**ASSIGNEE:** People's Bank of China Printing Science and Technology Research Institute

**INVENTOR(S):** Yao Qian; Li Hui Feng; Wen Xin Xiang; Li Lian San; Wang Dong Bing; Liu Hao; Zhao Xin; Tang Shao Xue; Liu Wen Shu

**IPC CLASSES:** G06Q20/36;G06Q20/38

**ABSTRACT:** The invention provides a method and system for the usage of visible digital currency chip cards for digital currency payment, so as to solve the various limitations of the existing technology. The invention's other intentions, results and benefits can be obtained through its implementation. The method includes: the visible digital currency chip card receives the payment amount information input by external processes, and selects the digital currency payment amount and sends it to the mobile terminal; the mobile terminal receives the digital currency and generates the first request, then sends it to the commercial bank digital currency system; the commercial bank digital currency system receives the first request and generates a second request, then sends it to the central bank digital currency system; the central bank digital currency system proceeds with the preset process in accordance with the request and returns the results to the commercial bank digital currency system.

**NAME:** Method and system for depositing digital currency into digital currency chip cards

**CATEGORY:** Digital Currency Chip Card

**ASSIGNEE:** People's Bank of China Printing Science and Technology Research Institute

**INVENTOR(S):** Yao Qian; Li Hui Feng; Wen Xin Xiang; Li Lian San; Wang Dong Bing; Liu Hao; Zhao Xin; Tang Shao Xue; Liu Wen Shu

**IPC CLASSES:** G06Q20/34;G06Q20/36

**ABSTRACT:** The invention provides a method and system for the depositing of digital currency into a digital currency chip card, allowing the exchange between digital currency and physical currency, ensuring the security of the transaction environment, and providing a safe custody of digital currency. The invention includes: the commercial bank digital currency system receives the physical currency amount information and digital currency chip card information from the exchange requester, then confirms the digital currency amount to be exchanged in accordance with the information, and then generates an exchange request accordingly. It then sends the request to the central bank digital currency system; the central bank digital currency system proceeds with the preset process in accordance with the exchange request information and sends the successful results to the commercial bank's digital currency system; the commercial bank's digital currency system inputs the digital currency into the requester's digital currency chip card.

**NAME:** Method for exchange and payment and system for digital currency pertaining to digital currency chip cards

**CATEGORY:** Digital Currency Chip Card

**ASSIGNEE:** People's Bank of China Printing Science and Technology Research Institute

**INVENTOR(S):** Yao Qian; Li Hui Feng; Wen Xin Xiang; Li Lian San; Wang Dong Bing; Liu Hao; Zhao Xin; Tang Shao Xue; Liu Wen Shu

**IPC CLASSES:** G06Q20/34;G06Q20/08;G06Q20/06

**ABSTRACT:** This invention provides a method for the exchange and payment of digital currency with a digital currency chip card and a digital currency system, to solve the limitations in existing technology. The invention's various other intentions and results and benefits can be obtained through its implementation. An exchange method includes: the terminal device receives a spare change exchange request; the terminal device will select the digital currency to be exchanged from the digital currency chip card, and generate the first request to be sent to the commercial bank digital currency system; the commercial bank digital currency system receives the first request and generates a second request, then sends it to the central bank digital currency system; the central bank digital currency system proceeds with the preset process in accordance with the request and returns the results to the commercial bank digital currency system; the commercial bank digital currency system sends the digital currency that has a new change in ownership, and inputs it into the digital currency chip card via the terminal device.

**NAME:** Method and system for payment of digital currency using a visible digital currency chip card

**CATEGORY:** Digital Currency Chip Card

**ASSIGNEE:** People's Bank of China Printing Science and Technology Research Institute

**INVENTOR(S):** Yao Qian; Li Hui Feng; Wen Xin Xiang; Li Lian San; Wang Dong Bing; Liu Hao; Zhao Xin; Tang Shao Xue; Liu Wen Shu

**IPC CLASSES:** G06Q20/34;G06Q20/06;G06Q20/40

**ABSTRACT:** This invention provides a method and system for digital currency payment with a visible digital currency chip card, which is appropriate for offline payment, therefore expanding the scope of payment and solving the problem of payment during offline conditions and avoiding the risk of unlawful transactions; this will expand the user base, and make it convenient for users who have not registered to receive payment in digital currency. The method includes: the payer's visible digital currency chip card sends the payment request to the payee's terminal device without an internet connection with the commercial bank's digital currency system ; the payee's terminal device sends the payer's request and the verification of the payee's user identity to the commercial bank digital currency system once it establishes a network connection with the commercial bank digital currency system; the commercial bank's digital currency system sends the payment confirmation request to the central bank digital currency system so as to change the digital currency's owner; the central bank's digital currency system proceeds with the preset process in accordance with the request, which includes the change in ownership of the digital currency and the saving of the identity verification information.

**NAME:** Method and system for the payment of digital currency between visible digital currency chip cards

**CATEGORY:** Digital Currency Chip Card

**ASSIGNEE:** People's Bank of China Printing Science and Technology Research Institute

**INVENTOR(S):** Yao Qian; Li Hui Feng; Wen Xin Xiang; Li Lian San; Wang Dong Bing; Liu Hao; Zhao Xin; Tang Shao Xue; Liu Wen Shu

**IPC CLASSES:** G06Q20/34;G06Q20/06;G06Q20/38

**ABSTRACT:** The invention provides a method and system for digital currency payments between visible digital currency chip cards, which is appropriate for offline payment, expands the scope of payment, solves the problem of transaction between two parties without internet connection, does not rely on a payment terminal device, and allows convenient payment between cards. The method includes: the payer's visible digital currency chip card sends the payment request to the payee's visible digital currency chip card without an internet connection with the commercial bank's digital currency system; the payee's visible digital currency chip card sends the payer's request to the commercial bank digital currency system once it establishes a network connection with the commercial bank digital currency system; the commercial bank's digital currency system sends the payment confirmation request to the central bank digital currency system so as to change the digital currency's owner; the central bank's digital currency system proceeds with the preset process in accordance with the request, which includes the change in ownership of the digital currency and the saving of the identity verification information.

**NAME:** Method and system for offline payment using digital currency chip cards

**CATEGORY:** Digital Currency Chip Card

**ASSIGNEE:** People's Bank of China Printing Science and Technology Research Institute

**INVENTOR(S):** Yao Qian; Li Hui Feng; Wen Xin Xiang; Li Lian San; Wang Dong Bing; Liu Hao; Zhao Xin; Tang Shao Xue; Liu Wen Shu

**IPC CLASSES:** G06Q20/36;G06Q20/34

**ABSTRACT:** The invention provides a method and system for offline payment using a digital currency chip card, the method includes: the acceptance terminal device receives the transaction amount without an established connection with the commercial bank digital currency system; the user's terminal device uses a near-field wireless connection method to obtain the transaction amount from the acceptance terminal device, and then sends the transaction information to the acceptance terminal device; the acceptance terminal device sends the transaction information to the commercial bank digital currency system once it establishes an internet connection; the commercial bank's digital currency system sends the change-in-owner request to the central bank digital currency system; the central bank digital currency system changes the ownership of the digital currency to that of the acceptance terminal device's commercial account code. This invention can improve the consumer's payment experience.

**NAME:** Method and system for transferring digital currency into digital currency chip cards

**CATEGORY:** Digital Currency Chip Card

**ASSIGNEE:** People's Bank of China Printing Science and Technology Research Institute

**INVENTOR(S):** Yao Qian; Li Hui Feng; Wen Xin Xiang; Li Lian San; Wang Dong Bing; Liu Hao; Zhao Xin; Tang Shao Xue; Liu Wen Shu

**IPC CLASSES:** G06Q40/00;G06Q40/04;G06Q20/06;G06Q20/10;G06Q20/40

**ABSTRACT:** This invention provides a method and system for the transfer of digital currency to a digital currency chip card, which will allow the bank account to exchange physical currency to digital currency, ensuring the security of the transaction environment for the transaction process. The method includes the commercial bank's digital currency system's receipt of the information of the request containing the amount to be exchanged, the bank user's information, and the digital currency chip card's information; the equivalent amount will be deducted from the bank account in accordance to the amount exchange information, and then the digital currency to be exchanged will be confirmed in accordance to the amount exchange information, and then the exchange request information will be generated in accordance to the digital currency and digital currency chip card information, thereafter the request will be sent to the central bank's digital currency system; the central bank's digital current system will proceed with the preset process in accordance to the exchange request and then send the successful results of the process to the commercial bank's digital currency system; the commercial bank's digital currency system will deposit the digital currency into the digital currency chip card of the requester after receiving the notification of the successful results.

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# DC/EP Usage

**DISCLAIMER:** This is an unofficial translation and provided for reference only.

**NAME:** A method and system for digital note transaction regulation based on blockchain-based digital currencies

**CATEGORY:** DC/EP Usage

**ASSIGNEE:** China Banking Credit Card Industry Development Co., Ltd. Beijing Smart Card Technology Research Institute

**INVENTOR(S):** Zhang Yifeng

**IPC CLASSES:** G06Q20/38;G06Q20/40

**ABSTRACT:** The invention discloses a digital currency transaction regulatory system based on blockchain and digital currency, including: an identity management module, which receives the identity information entered by the participant in the digital currency transaction; After verification, the corresponding identity contract management participant account number is generated; the rights management module, which sets the participant's permission information in the identity contract; and the transaction content supervision module, which decodes the plaintext content of all transactions in the blockchain according to the party's privacy protection public key, and allows the supervision of the content of the digital token transaction access mechanism; only approved participants can join and supervise their rights and transaction content, so as to improve the security and reliability of digital currency transaction process. The invention also discloses a method of regulating digital transactions based on blockchain and digital currency, which has the above beneficial effect.

**NAME:** A method and system for digital note transaction based on blockchain-based digital currencies

**CATEGORY:** DC/EP Usage

**ASSIGNEE:** China Banking Credit Card Industry Development Co., Ltd. Beijing Smart Card Technology Research Institute

**INVENTOR(S):** Zhang Yifeng

**IPC CLASSES:** G06Q40/04

**ABSTRACT:** The invention discloses a digital currency transaction method based on blockchain and digital currency, and the method of digital bill transaction includes: the blockchain receives the input of the digital currency transaction application, wherein, the application for digital currency transaction includes the application for registration, the prompt acceptance application, the prompt token application, the endorsement transfer application, the discount application, and the transfer application. The blockchain performs the corresponding operations of digital currency transaction application. This method can allow the transaction of currency on the basis of blockchain, and the currency transaction is carried out in digital currency at the same time. The invention also discloses a digital currency trading system based on blockchain and digital currency, which has the above beneficial effect.

**NAME:** Method and system for online digital currency payments\_

**CATEGORY:** DC/EP Usage

**ASSIGNEE:** People's Bank of China Printing Science and Technology Research Institute

**INVENTOR(S):** Yao Qian; Li Hui Feng; Wen Xin Xiang; Li Lian San; Wang Dong Bing; Liu Hao; Zhao Xin; Tang Shao Xue; Liu Wen Shu

**IPC CLASSES:** G06Q20/36;G06Q20/40

**ABSTRACT:** The invention provides a method and device for the online payment of digital currency which can allow the flexible and convenient transaction of digital currency. The method includes: the first user's terminal device extracts the digital currency amount equivalent to the amount stated in the payment command, so as to generate the first request to be sent to the commercial bank's digital currency system, within which, the first request includes the second user terminal device's identification and said digital currency; the commercial bank's digital currency system generates the second request after receiving the first request, and thereafter sends the request to the central bank's digital currency system; the central bank's digital currency system proceeds with the preset process in accordance with the second request and sends the successful results to the commercial bank's digital currency system, wherein the preset process includes the change-in-owner process of said digital currency; the commercial bank's digital currency system sends the digital currency to the second user's terminal device; in particular, the first request and the second request will proceed with the change-in-owner process of the digital currency.

**NAME:** Payment method and payment system for digital currencies

**CATEGORY:** DC/EP Usage

**ASSIGNEE:** People's Bank of China Printing Science and Technology Research Institute

**INVENTOR(S):** Yao Qian; Li Hui Feng; Wen Xin Xiang; Li Lian San; Wang Dong Bing; Liu Hao; Zhao Xin; Tang Shao Xue; Liu Wen Shu

**IPC CLASSES:**  
G06Q20/06;G06Q20/10;G06Q20/32;G06Q20/36;G06Q20/38;G06Q40/02

**ABSTRACT:** The invention provides a payment method and system for the payment of digital currency, so as to solve the various limitations of the existing technology. The invention method includes: the payer terminal device receives the payment amount, payer identification and withdrawal identification number input by the external process; the payer terminal device selects the total digital currency amount equivalent to the payment amount from the digital currency wallet; the payer terminal device sends the digital currency and withdrawal identification number through a near-field communication method to the payer's terminal device; the payer's terminal device sends the digital currency and withdrawal identification number to the commercial bank's digital currency system through the internet; the commercial bank's digital currency system sends the digital currency and withdrawal identification number to the central bank digital currency system via the internet; the central bank's digital currency system changes the owner information of the digital currency from the payer to the payee while noting the withdrawal identification number.

**NAME:** Method and system for the exchange of physical cash with digital currency

**CATEGORY:** DC/EP Usage

**ASSIGNEE:** People's Bank of China Printing Science and Technology Research Institute

**INVENTOR(S):** Yao Qian; Li Hui Feng; Wen Xin Xiang; Li Lian San; Wang Dong Bing; Liu Hao; Zhao Xin; Tang Shao Xue; Liu Wen Shu

**IPC CLASSES:** G06Q20/34;G06Q20/36;G06Q20/38;G07F19/00

**ABSTRACT:** The invention provides a method and system for the exchange of digital currency for physical currency, so as to solve the various limitations of the existing technology. The invention method includes: the user's terminal device selects the equivalent digital currency from the digital currency wallet in accordance with the exchange amount input by the external process; the user's terminal device sends the digital currency to the central bank's digital currency system through the commercial bank's digital currency system; the central bank's digital currency system generates a one-time withdrawal code and sends it to the user terminal device to show it to the user, and changes the digital currency owner information to the central bank; the commercial bank's digital currency system sends the user-provided one-time withdrawal code to the central bank digital currency system; the central bank digital currency system verifies the codes and then increases the commercial bank's account balance and returns the information to the commercial bank's digital currency system; the commercial bank digital currency system issues the withdrawal command in accordance with the information.

**NAME:** Digital currency system

**CATEGORY:** DC/EP Usage

**ASSIGNEE:** People's Bank of China Printing Science and Technology Research Institute

**INVENTOR(S):** Yao Qian; Li Hui Feng; Wen Xin Xiang; Li Lian San; Wang Dong Bing; Liu Hao; Zhao Xin; Tang Shao Xue; Liu Wen Shu

**IPC CLASSES:** G06Q20/34;G06Q20/06;G06Q20/40

**ABSTRACT:** The invention provides a digital currency system which includes the central bank digital currency system, the commercial bank digital currency system and the verification system, within which, the central bank digital currency system is used for the generation and issuance of digital currency and the registration of digital currency ownership; the commercial bank's digital currency system is used for banking functions with digital currency; the verification system is used to provide verification for the interaction between the terminal devices for the described central bank digital currency system and digital currency user, and to provide verification for the interaction between the terminal devices for the described central bank digital currency system and commercial bank digital currency system. The implementation cases of the invention allows for a convenient and safe digital currency system, and can allow digital currencies to be used in multiple usage scenarios, which in turn benefits the promotion of digital currency usage.

**NAME:** Method and system for providing digital currency

**CATEGORY:** DC/EP Usage

**ASSIGNEE:** People's Bank of China Printing Science and Technology Research Institute

**INVENTOR(S):** Yao Qian; Li Hui Feng; Wen Xin Xiang; Li Lian San; Wang Dong Bing; Liu Hao; Zhao Xin; Tang Shao Xue; Liu Wen Shu

**IPC CLASSES:**

G06Q20/06;G06Q20/10;G06Q20/36;G06Q20/38;G06Q20/40;G06Q40/02

**ABSTRACT:** The invention provides a method and system for digital currency through the usage of a user's terminal device to withdraw digital currency, which allows for the flexible obtainment of digital currency. The method includes: the user terminal sends the first request to the commercial bank's digital currency system; the commercial bank's digital currency system withdraws the digital currency from the account in accordance with the amount stated in the request, and sends the second request to the central bank digital currency system; the central bank digital currency system proceeds with the preset process in accordance with the second request, and sends the successful results to the commercial bank digital currency system, wherein the preset process includes the change in owner of the digital currency; the commercial bank digital currency system receives the successful results and sends the withdrawn digital currency to the user terminal.

**NAME:** Method and system for using cash to exchange for digital currency

**CATEGORY:** DC/EP Usage

**ASSIGNEE:** People's Bank of China Printing Science and Technology Research Institute

**INVENTOR(S):** Yao Qian; Li Hui Feng; Wen Xin Xiang; Li Lian San; Wang Dong Bing; Liu Hao; Zhao Xin; Tang Shao Xue; Liu Wen Shu

**IPC CLASSES:**

G06Q20/06;G06Q20/10;G06Q20/32;G06Q20/36;G06Q20/38;G06Q40/02

**ABSTRACT:** The invention provides a method and system for exchanging physical cash for digital currency, which can allow for flexible and convenient obtainment of digital currency and fulfills the requirements for various levels of parties involved in the obtainment of digital currency. The method includes: the commercial bank's internet system sends the first request to the commercial bank's digital currency system, wherein the request includes the user's terminal identity; the commercial bank's digital currency system withdraws the digital currency from the commercial bank's account according to the amount stated in the request, and sends the second request to the central bank digital currency terminal; the central bank digital currency terminal receives the second request, and proceeds with the preset process in accordance with the request and sends the successful results to the commercial bank's digital currency system, wherein the preset process includes the changes in ownership of the digital currency; the commercial bank's digital currency system sends the withdrawn digital currency to the user terminal.

**NAME:** Method and system for bank storage of digital currency

**CATEGORY:** DC/EP Usage

**ASSIGNEE:** People's Bank of China Printing Science and Technology Research Institute

**INVENTOR(S):** Yao Qian; Li Hui Feng; Wen Xin Xiang; Li Lian San; Wang Dong Bing; Liu Hao; Zhao Xin; Tang Shao Xue; Liu Wen Shu

**IPC CLASSES:** G07F19/00

**ABSTRACT:** The invention provides a method and system for the usage of digital currency chip cards for bank deposits. The method includes: after the acceptance terminal device connects to the digital currency chip card, it receives the deposit information input by external processes, and sends the information to the commercial bank's digital currency system, wherein the deposit information includes the deposit account information, the digital currency chip card information and the digital currency equivalent to the deposit amount; after the commercial bank digital currency system receives the deposit information, it will send a change-in-owner request to the central bank digital currency system; the central bank digital currency system will then change the owner to that of the commercial bank, and change the deposit account amount. A faster and more convenient digital currency outcome can be achieved through this method.

**NAME:** Method for exchange and payment of digital currency and system for digital currency

**CATEGORY:** DC/EP Usage

**ASSIGNEE:** People's Bank of China Printing Science and Technology Research Institute

**INVENTOR(S):** Yao Qian; Li Hui Feng; Wen Xin Xiang; Li Lian San; Wang Dong Bing; Liu Hao; Zhao Xin; Tang Shao Xue; Liu Wen Shu

**IPC CLASSES:** G06Q20/36

**ABSTRACT:** The invention provides a method for the exchange and payment of digital currency and a system for digital currency, which can improve the digital currency user's experience and allow for a flexible and convenient method for online payments. The method includes: the terminal device receives a spare change exchange request; the terminal device will select the digital currency to be exchanged from the digital currency chip card, and generate the first request to be sent to the commercial bank digital currency system; the commercial bank digital currency system receives the first request and generates a second request, then sends it to the central bank digital currency system; the central bank digital currency system proceeds with the preset process in accordance to the request and returns the results to the commercial bank digital currency system; the commercial bank digital currency system sends the digital currency to the user terminal. In addition, the invention also provides a method for the payment of digital currency after the exchange process stated above.

**NAME:** Method and system for payment of digital currencies

**CATEGORY:** DC/EP Usage

**ASSIGNEE:** People's Bank of China Printing Science and Technology Research Institute

**INVENTOR(S):** Yao Qian; Li Hui Feng; Wen Xin Xiang; Li Lian San; Wang Dong Bing; Liu Hao; Zhao Xin; Tang Shao Xue; Liu Wen Shu

**IPC CLASSES:** G06Q20/06;G06Q20/32;G06Q20/34;G06Q20/36;G06Q20/38

**ABSTRACT:** This invention provides a method and system for the payment of digital currency to solve the various limitations in existing technology. The method includes: the payee terminal devices receive the payment amount and payee identification from external processes; the payee terminal device selects the total digital currency amount equivalent to the payment amount from the digital currency wallet; the payee terminal device sends the digital currency to the payee terminal device matching the payee identification through near-field communication; the payee terminal device sends the digital currency to the commercial bank digital currency system through the internet; the commercial bank digital currency system sends the digital currency to the central bank digital currency system through the internet; the central bank digital currency system changes the ownership of the digital currency from the payer to the payee.

**NAME:** A method and system for exchanging digital currency

**CATEGORY:** DC/EP Usage

**ASSIGNEE:** People's Bank of China Digital Currency Research Institute

**INVENTOR(S):** Yao Qian

**IPC CLASSES:** G06Q40/02

**ABSTRACT:** The invention discloses a method and system for exchanging digital currency, which relates to the technical field of digital currency. A specific implementation of this method includes: authentication of the user's identity based on the user's authentication request; receiving information on the redemption of digital currency requests if the authentication is successful; deducting the amount from the designated bank account based on the digital currency redemption request information, followed by the generation of the transfer feedback information; generation of the digital currency transfer request based on the transfer feedback information and the redemption request information. This implementation provides a case study for the technology pertaining to the acquiring bank's digital currency system application of an exchange of digital currency by the public, thereafter achieving the technical effect where a member of the public can exchange digital currency anytime.

**NAME:** Method and system for digital currency payment

**CATEGORY:** DC/EP Usage

**ASSIGNEE:** People's Bank of China Digital Currency Research Institute

**INVENTOR(S):** Yao Qian; Jiang Guo Qin; Peng Feng; Sun Hao

**IPC CLASSES:** G06Q20/06;G06Q20/08;G06Q20/40;G06Q40/04

**ABSTRACT:** This invention discloses a method and system for digital currency payments, where automatic payments are enabled through the digital currency system's verification requirements, therefore solving the problem of seller and third party credit risk and avoiding the problem of a third party money deposit; simultaneously, through the flexible custom payments contract, it also fulfills the requirements of various transaction situations. The digital currency payment method includes: the notification of the payee after the receipt of the payment processing request pertaining to the digital currency sent by the payer, thereafter proceeding with the business process in accordance to the payer and payee's payment contract, for which the payment process request includes the payee's identification and the payment contract's matching information; obtainment of the payment verification information generated when the payer and/or the payee and/or the third party undergoes the business process in accordance to the payment contract; proceeding with checking the payment verification information in accordance to the payment contract; once the payment verification information check goes through, the payment process is carried out.

**NAME:** A method and system for the indirect payment of digital currency

**CATEGORY:** DC/EP Usage

**ASSIGNEE:** People's Bank of China Digital Currency Research Institute

**INVENTOR(S):** Yao Qian; Jiang Guo Qin; Peng Feng; Sun Hao

**IPC CLASSES:** G06Q20/06;G06Q20/10;G06Q20/38;G06Q20/40

**ABSTRACT:** This invention discloses a method and system for the indirect payment of digital currency. The method includes: receipt of the payment request sent by the payee account end, in which the described payment request includes the digital currency to be used in the payment, the payment amount, and the middleman payee client end's information; in accordance to the described payment request, the stated digital currency payment amount will be paid to the stated middleman payee client end; a part or all of the stated payment amount will be transferred to the final payee client end in accordance to the pre-selected contract. According to the invention's case study, it can benefit and decrease the risk pertaining to trust and the process involved in the transfer between payer and the final payee across one or more collectors.

**NAME:** A method and system for the exchange of digital currency for deposits

**CATEGORY:** DC/EP Usage

**ASSIGNEE:** People's Bank of China Digital Currency Research Institute

**INVENTOR(S):** Yao Qian

**IPC CLASSES:** G06Q20/06;G06Q20/38;G06Q20/40

**ABSTRACT:** This invention discloses a method and system to exchange digital currency for deposits, and pertains to the field of computer technology. An application of the method includes: verification of the user's identity in accordance to the user's bank account information; receipt of the digital currency exchange deposit request provided by the user to generate a digital currency transfer request towards the issuing bank's digital currency system; the digital currency exchange deposit request carries information on the exchange amount, while the digital currency transfer request carries all of the digital currency information pertaining to the user; obtainment of the transfer confirmation information returned by the issuing bank's digital currency system; the information on the transfer confirmation includes information pertaining to the generation of destination currency from the original currency; transfer of the destination currency to the acquiring bank's digital currency bank inventory, thereafter increasing the exchange amount of the stated user's verified bank account. This implementation method can realize the safe, controllable and traceable exchange of digital currency to deposit, thereafter allowing the digital currency to be widely used in the national economy.

**NAME:** Method and system for the registration of digital currency for payment transaction

**CATEGORY:** DC/EP Usage

**ASSIGNEE:** People's Bank of China Digital Currency Research Institute

**INVENTOR(S):** Yao Qian; Di Gang; Li Hong Gang; Pan Li; Xi Xu Liang; Zhao Xin; Li Lian San; Du Yan; Huang Lie Ming; Jiang Guo Qin; Sun Hao; Chen Hai Bo; Qian You Cai; Zhao Xin Yu; Wang Xu Wei; Peng Feng

**IPC CLASSES:** G06Q20/36

**ABSTRACT:** The invention provides a method and system for digital currency transaction payment registration in order to optimize and upgrade the payment registration system for legal currency transactions, enhance the safety and efficiency of digital currency transactions and reduce the cost of digital currency transactions. In particular, the digital currency transaction payment registration method includes: receipt of the digital currency transaction payment registration request; deletion of the old digital currency registration status and registration of the new digital currency in accordance to the stated transaction payment registration request; returning the response on the successful registration to requester of the digital currency transaction payment registration.

**NAME:** A method and system for the exchange of digital currency for deposits

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**CATEGORY:** DC/EP Usage

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**ASSIGNEE:** People's Bank of China Digital Currency Research Institute

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**INVENTOR(S):** Yao Qian

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**IPC CLASSES:** G06Q20/36;G06Q40/02

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**ABSTRACT:** This invention discloses a method and system for the usage of digital currency to exchange for deposits. The implementation of the method includes: the acquiring bank's user access system sends the exchange deposit request to the acquiring bank's operating system after receiving the user's digital currency exchange deposit request; once the acquiring bank's operating system verifies the user's digital signature, the digital currency exchange deposit request is sent to the acquiring bank's digital currency system; the acquiring bank's digital currency system changes the digital currency exchange deposit request to a digital currency transfer request, and sends it to the issuing bank's digital currency system; the issuing bank's digital currency system sends the information on the successful transfer with the issuing bank's digital signature to the acquiring bank's digital currency system; the acquiring bank's digital currency system sends the information to the acquiring bank's operating system; in accordance to the information, the acquiring bank's operating system sends the exchange credit request to the acquiring bank's core system; the acquiring bank's core system credits the user's bank account balance in accordance to the exchange credit request.

# Blockchain and DC/EPs

**DISCLAIMER:** This is an unofficial translation and provided for reference only.

**NAME:** A method, device and system for the regulation of digital currency transaction information based on blockchain

**CATEGORY:** Blockchain and DC/EPs

**ASSIGNEE:** China Banking Credit Card Industry Development Co., Ltd. Beijing Smart Card Technology Research Institute

**INVENTOR(S):** Zhang Yifeng

**IPC CLASSES:** G06Q20/38;G06Q20/36;H04L9/30

**ABSTRACT:** The invention discloses a regulatory method for digital currency transaction information based on blockchain, which has the initial public key of the supervising user, the initial public key of each participating user and the digital currency transaction information of each participating user, and the first participant's user information and encrypted data; the initial public key of the first participating user is obtained from the blockchain, and according to the initialization of the first participating user and the initialization private key of the supervising user, generates the first shared private key of the first participating user using the shared key algorithm, and decrypts the encrypted data by using the first shared private key. Through the use of the first participant's shared private key decryption and encryption data, the plaintext data of the transaction information of the supervising user and the first participant user can be obtained; this can allow the blockchain-based transaction information to be protected against unrelated third-party access. The present invention also discloses a blockchain-based digital currency transaction information regulatory device and system, which also has the above beneficial effect.

**NAME:** A method, system and terminal for digital currency based on blockchain

**CATEGORY:** Blockchain and DC/EPs

**ASSIGNEE:** China Banking Credit Card Industry Development Co., Ltd. Beijing Smart Card Technology Research Institute

**INVENTOR(S):** Zhang Yifeng

**IPC CLASSES:** H04L9/08;H04L9/30;H04L9/32;G06Q20/06

**ABSTRACT:** The invention discloses the method, system and terminal for the use of blockchain-based digital currency, including: the digital currency client sends a request to the blockchain for a digital certificate, receives the corresponding customer information after the identity and request verification is passed, and sends the digital certificate request to the security chip through a trusted execution environment according to the customer information, according to the trusted execution environment. The security chip generates key pairs and digital currency wallet address according to customer information, outputs the digital currency wallet address to the digital currency client through a trusted execution environment, and the digital currency client sends the digital currency wallet address to the blockchain, enabling the blockchain to obtain the digital certificate from the authentication center according to the digital currency wallet address. After receiving the digital certificate sent by the blockchain, the digital currency client sends the digital certificate installation request to the security chip through the trusted execution environment, and the security chip installs the digital certificate through the security chip and the trusted execution environment to improve the security of the blockchain digital currency wallet.

**NAME:** Method and system for the management of nodes

**CATEGORY:** Blockchain and DC/EPs

**ASSIGNEE:** People's Bank of China Digital Currency Research Institute

**INVENTOR(S):** Yao Qian; Di Gang; Qian You Cai; Huang Lie Ming; Chen Hai Bo; Zhao Xin Yu; Wang Xu Wei; Zhang Da Wei

**IPC CLASSES:** H04L12/24;H04L29/08

**ABSTRACT:** The present invention provides a method and system for managing nodes, which can realize the dynamic management of nodes in the blockchain network in the form of a smart contract, ensure the consistency of data of each node, and improve the security and scalability of the system. The method includes: storage of smart contracts in a blockchain, wherein the smart contract reaches consensus in the blockchain network and determines at least one administrative right and at least one node processing instruction that can be used under any administrative permission; the use of any node to process instructions relating to the definition of the nodes in the blockchain network, or to obtain information on the nodes in the blockchain network.

**NAME:** A method and device for the transaction of digital currency

**CATEGORY:** Blockchain and DC/EPs

**ASSIGNEE:** People's Bank of China Digital Currency Research Institute

**INVENTOR(S):** Yao Qian; Di Gang; Qian You Cai; Huang Lie Ming; Chen Hai Bo; Zhao Xin Yu; Wang Xu Wei; Zhang Da Wei

**IPC CLASSES:** G06Q20/10;G06Q20/16;G06Q20/38

**ABSTRACT:** The invention discloses a transaction method and device based on digital currency, which relates to the technical field of computer technology. A specific implementation of this method includes: during the process of receiving transactions through distributed ledger technology, the collection and payment terminals will encrypt the text involved in the transaction, thereafter generating the corresponding verification message for verification and decryption of the encrypted text. The implementation method will solve the technical problem where funds are difficult to keep encrypted in a distributed ledger network, and achieves the technical effect of ensuring the ease of transaction while protecting the privacy of transactions.

**NAME:** Method and device for the usage of digital currency and transactions

**CATEGORY:** Blockchain and DC/EPs

**ASSIGNEE:** People's Bank of China Digital Currency Research Institute

**INVENTOR(S):** Yao Qian; Di Gang; Qian You Cai; Huang Lie Ming; Chen Hai Bo; Zhao Xin Yu; Zhang Da Wei

**IPC CLASSES:** G06Q20/36;G06Q20/38;G06Q20/40

**ABSTRACT:** This invention discloses a method and device for the usage of digital currencies for transaction, and pertains to the field of computer technology. An implementation of this method includes: during the distributed ledger technology-based payment transaction process, the payment end proceeds with the encryption of the plaintext of the amount involved in the transaction to retrieve the encrypted amount, thereafter generating the corresponding verification information to be used to verify the encrypted amount or decrypt it. This implementation method solves the problem regarding the difficulty of encryption on a distributed ledger, therefore protecting the privacy of transactions while allowing cooperative sharing on the network.

**NAME:** A method and device for the management of blockchain-based digital currency wallet addresses

**CATEGORY:** Blockchain and DC/EPs

**ASSIGNEE:** China Banknotes Credit Card Industry Development Co., Ltd. Hangzhou Blockchain Technology Research Institute

**INVENTOR(S):** Zhang Bobo; Zhang Yifeng

**IPC CLASSES:** G06Q40/04;G06Q20/40;G06Q20/38

**ABSTRACT:** This application discloses a method and device for the management of blockchain-based digital currency wallet addresses, including: the obtainment of the transaction requests initiated by the transaction parties' wallet addresses; verification of the request through a smart contract; if the verification passes, the wallet addresses are updated, and the updated addresses are saved in the smart contract. After the verification of the requests through the smart contract, the application will update the addresses while saving them into the smart contract, which will allow the transaction parties to use the new wallet addresses to initiate another round of transactions; due to the updating of the original wallet addresses, the bind between the original wallet addresses and the transacting parties' real identity information are forcibly cut off, which will prevent the tracing of the original addresses from the outside, and prevent the checking of the transaction party's real identity through the original wallet addresses, thereby effectively protecting the user's privacy.

**NAME:** A method, system and device for the secure usage of blockchain-based digital currencies

**CATEGORY:** Blockchain and DC/EPs

**ASSIGNEE:** China Banknotes Credit Card Industry Development Co., Ltd. Hangzhou Blockchain Technology Research Institute

**INVENTOR(S):** Yao Qian; Xu Zhong; Zhang Yifeng

**IPC CLASSES:** H04L9/08;H04L9/30;H04L9/32;G06Q20/06

**ABSTRACT:** This invention discloses a method, system and terminal for the usage of blockchain for the security of digital currency, the method includes: the digital currency client terminal sends the digital certificate registration request to the blockchain, and receives the client information returned by the blockchain after verification of the identity and request; in accordance to the client information, the digital certificate registration is sent to the security chip through a trusted processing environment; the security chip generates a private key pair and digital currency wallet address in accordance to the client information, and outputs the digital currency wallet address from the digital currency client through the trusted processing environment; the digital currency client end sends the digital currency wallet address to the blockchain, causing the blockchain to obtain the digital certificate from the verification center in accordance to the digital currency wallet address; the digital currency client end receives the digital certificate sent by the blockchain, and sends the digital certificate installation request to the security chip through the trusted processing environment which causes the security chip to install the digital certificate; through the security chip, the trusted processing environment can improve the security of the blockchain-based digital currency.