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(71) Applicant: **ALIBABA GROUP HOLDING LIMITED** [—/US]; Fourth Floor, One Capital Place, P.o. Box 847, George Town, KY1-1103 (KY).

(72) Inventor: **LIU, Lindong**; Alibaba Group Legal Dept 5/F, Bldg. #3, 969 West Wen Yi Road, Yu Hang District, Hangzhou, Zhejiang, 311121 (CN).

(74) Agent: **SARKAR, Indranil** et al.; P.O. Box 1022, Minneapolis, MN 55440-1022 (US).

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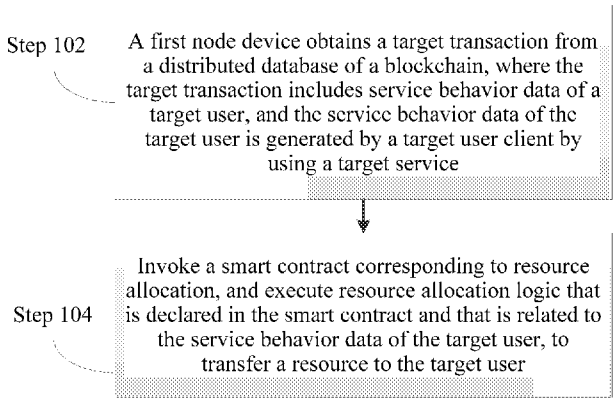

FIG. 1

(57) Abstract: One or more implementations of the present specification provide a blockchain- based resource allocation method and apparatus, applied to a blockchain network that includes a target user client and a first node device. The method includes: obtaining, by the first node device, a target transaction from a distributed database of a blockchain, where the target transaction includes service behavior data of a target user, and the service behavior data of the target user is generated by the target user client by using a target service; and invoking a smart contract corresponding to resource allocation, and executing resource allocation logic that is declared in the smart contract and that is related to the service behavior data of the target user, to transfer a resource to the target user.

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BLOCKCHAIN-BASED RESOURCE ALLOCATION METHOD AND APPARATUS

CROSS-REFERENCE TO RELATED APPLICATION

[0001] This application claims priority to Chinese Patent Application No. 201910248877.5 filed on March 29, 2019, which is hereby incorporated by reference in its entirety.

TECHNICAL FIELD

[0002] The present specification relates to the field of network communications and data processing technologies, and in particular, to a blockchain-based resource allocation method and apparatus.

BACKGROUND

[0003] The blockchain technology is also referred to as a distributed ledger technology, and is an emerging technology in which several computing devices jointly participate in "accounting" and jointly maintain a completed distributed database. Blockchain technology has been widely used in many fields due to its decentralized, open, and transparent features, and each computing device can participate in database recording and quickly perform data synchronization.

SUMMARY

[0004] In view of this, one or more implementations of the present specification provide a blockchain-based resource allocation method, applied to a blockchain network that includes a target user client and a first node device. The method includes: obtaining, by the first node device, a target transaction from a distributed database of a blockchain, where the target transaction includes service behavior data of a target user, and the service behavior data of the target user is generated by the target user client by using a target service; and invoking a smart contract corresponding to resource

allocation, and executing resource allocation logic that is declared in the smart contract and that is related to the service behavior data of the target user, to transfer a resource to the target user.

[0005] In a shown implementation, the resource includes a digital asset on the blockchain or a value corresponding to a resource off the blockchain.

[0006] In another shown implementation, the service behavior data of the target user includes activeness data of the target user about using the target service, or evaluation data generated for the target user about using the target service.

[0007] In another shown implementation, the executing resource allocation logic that is declared in the smart contract and that is related to the service behavior data of the target user, to transfer a resource to the target user includes: determining whether the service behavior data of the target user reaches a predetermined threshold; and in response to determining that the service behavior data of the target user reaches the predetermined threshold, transferring an amount of resources corresponding to the service behavior data to the target user by using the smart contract.

[0008] In another shown implementation, the blockchain is a consortium chain, and the first node device includes a consortium member node device that provides the target service.

[0009] Correspondingly, the present specification further provides a blockchain-based resource allocation apparatus, applied to a blockchain network that includes a target user client and a first node device. The apparatus is applied to the first node device and includes: an acquisition unit, configured to obtain a target transaction from a distributed database of a blockchain, where the target transaction includes service behavior data of a target user, and the service behavior data of the target user is generated by the target user client by using a target service; and an execution unit, configured to invoke a smart contract corresponding to resource allocation, and execute resource allocation logic that is declared in the smart contract and that is related to the service behavior data of the target user, to transfer a resource to the target user.

[0010] In a shown implementation, the resource includes a digital asset on the blockchain or a value corresponding to a resource off the blockchain.

[0011] In another shown implementation, the service behavior data of the target user includes activeness data of the target user about using the target service, or evaluation data generated for the target user about using the target service.

[0012] In another shown implementation, the execution unit is further configured to: determine whether the service behavior data of the target user reaches a predetermined threshold; and in response to determining that the service behavior data of the target user reaches the predetermined threshold, transfer an amount of resources corresponding to the service behavior data to the target user by using the smart contract.

[0013] In another shown implementation, the blockchain is a consortium chain, and the first node device includes a consortium member node device that provides the target service.

[0014] The present specification further provides a computer device, including a storage and a processor. The storage stores a computer program that can be run by a processor, and when running the computer program, the processor executes the steps in the previously described blockchain-based resource allocation method.

[0015] The present specification further provides a computer-readable storage medium. The computer-readable storage medium stores a computer program, and when the computer program is run by a processor, the steps in the previously described blockchain-based resource allocation method are executed.

[0016] According to the blockchain-based resource allocation method provided in the present specification, based on the service behavior data of the target user generated by the target user client, the resource is transferred to the target user by using a smart contract deployed on the blockchain. Deployment and an invoke execution result of the smart contract are both verified by node devices consensus in the blockchain, thereby ensuring that the blockchain-based resource allocation method provided in the present specification can be efficiently executed. In addition, the service behavior data of the target user is also recorded in the distributed database of the blockchain. Based on a consensus mechanism and an anti-tamper mechanism of the blockchain, the service behavior data of the target user is difficult to be counterfeited or tampered with, thereby providing a real and effective data foundation for a resource transfer method that is based on the service behavior data of the target user.

BRIEF DESCRIPTION OF DRAWINGS

[0017] FIG. 1 is a flowchart illustrating a blockchain-based resource allocation method, according to an example implementation of the present specification;

[0018] FIG. 2 is a schematic structural diagram illustrating a blockchain-based resource allocation apparatus, according to an example implementation of the present specification; and

[0019] FIG. 3 is a hardware structural diagram illustrating an implementation of running a blockchain-based resource allocation apparatus provided in the present specification.

DESCRIPTION OF IMPLEMENTATIONS

[0020] Example implementations are described in detail here, and examples of the implementations are presented in the accompanying drawings. When the following description relates to the accompanying drawings, unless specified otherwise, same numbers in different accompanying drawings represent same or similar elements. The implementations described in the following example implementations do not represent all implementations consistent with one or more implementations of the present specification. On the contrary, the implementations are only examples of an apparatus and a method that are described in the appended claims in detail and that are consistent with some aspects of the one or more implementations of the present specification.

[0021] It is worthwhile to note that, in other implementations, steps in a corresponding method are not necessarily executed in a sequence shown and described in the present specification. In some other implementations, the method can include more or fewer steps than those described in the present specification. In addition, a single step described in the present specification may be broken down into multiple steps for description in other implementations, and multiple steps described in the present specification may be combined into a single step for description in other implementations.

[0022] The one or more implementations provided in the present specification illustrate a blockchain-based resource allocation method, and the method is applied to a blockchain network that includes a target user client and a first node device.

[0023] The blockchain network described in the one or more implementations of the present specification can be specifically a P2P network system that has a distributed data storage structure and that is achieved by all node devices by using a consensus mechanism. Data in a blockchain is distributed in "blocks (block)" that are connected in terms of time, a current block includes a data digest of a previous block, and full data backup of all or some of the nodes is achieved based on a specific consensus mechanism (such as POW, POS, DPOS, or PBFT). A person skilled in the art knows that, because a blockchain network system runs in a corresponding consensus mechanism, data that has been recorded in a database of a blockchain is difficult to be tampered with by any node. For example, for a blockchain that uses a POW consensus, existing data may only be tampered with by using an attack of at least 51% of computing power of the entire network. Therefore, the blockchain system can ensure data security due to an anti-attack and anti-tamper feature that are unmatched by other centralized database systems. Therefore, it can be learned that data recorded in the distributed database of the blockchain cannot be attacked or tampered with, thereby ensuring authenticity and reliability of data information stored in the distributed database of the blockchain.

[0024] Example types of the blockchain network can include a public blockchain network, a private blockchain network, and a consortium blockchain network. The public blockchain network is open to all entities that use a P2P network and participate in a consensus process. The private blockchain network is provided for a specific entity, and the specific entity centrally controls read and write permissions. The consortium blockchain network is provided for a selected entity group (the selected entity group controls a consensus process) and includes an access control layer. The implementations of the present specification can be implemented in any proper type of blockchain network.

[0025] The resource described in the one or more implementations of the present specification can include a digital asset on the blockchain or an asset value corresponding to an asset off the blockchain. For example, the resource can correspond to not only a smart asset such as a token (token) or a digital asset in the blockchain, but also an off-chain asset such as cash, security, coupon, or real estate off the blockchain, and can even include a characteristic value such as a digital asset or points circulated in a user digital community. Implementations are not limited in the present specification.

[0026] The node device described in the one or more implementations of the present specification is a node device that can join the blockchain by following a corresponding

node protocol and running installation of a node protocol program. A person skilled in the art usually refers to a node device with full backup of data in the distributed database of the blockchain as a full node, and refers to a node device with partial backup of the data in the distributed database of the blockchain (for example, with only data in a block header) as a light node.

[0027] In one or more implementations of the present specification, a target user joins the blockchain network by running a client installation program on a terminal. The client installation program can be a node device installation program, and correspondingly, the target user client also serves as a node device in the blockchain. Alternatively, the client installation program can be a blockchain user client program that is connected to the previously described selected entity node device (consortium member node device) in the consortium chain and whose access is controlled, and correspondingly, the target user client has no permission to directly access the distributed database of the blockchain, and therefore usually does not serve as a node device (or a node) in the blockchain.

[0028] Therefore, it can be learned that the blockchain-based resource allocation method provided in the present specification is applicable to any type of blockchain network, such as a public chain, a private chain, or a consortium chain.

[0029] To further provide a background of the implementations of the present specification, an application program can be developed, tested, and deployed in the blockchain network to be executed in the blockchain network. An example application program can include but is not limited to a smart contract. The smart contract can be described as a numeric representation of a real world legal contract with contractual terms that affect all parties. The smart contract is implemented, stored, updated (as required), and executed in the blockchain network. Contract parties (for example, a buyer and a seller) associated with the smart contract are represented as nodes in the blockchain network.

[0030] In some examples, the smart contract can store data, and the data can be used to record information, a fact, an association, a balance, and any other information required for implementing contract execution logic. The smart contract can be described as a computer-executable program composed of functions. Instances (instance) of the smart contract can be created, and the functions can be invoked to execute logic of the smart contract.

[0031] In terms of technology, the smart contract can be implemented based on an object and an object-oriented class. For example, terms and components of the smart contract can be represented as objects processed by an application program that implements the smart contract. The smart contract (or an object in the smart contract) can invoke another smart contract (or an object in the same smart contract) just like an object in object-oriented programming. For example, invocation performed by the object can be invocation of creation, update, deletion, propagation, or communication with an object of another class. Invocation between objects can be implemented by using a function, a method, an application programming interface (API), or other invocation mechanisms. For example, a first object can invoke a function to create a second object.

[0032] In view of the previous background, the implementations of the present specification are further described in detail here. More specifically, as described above, the implementations of the present specification relate to transferring a resource to a target user by using a smart contract.

[0033] As shown in FIG. 1, the blockchain-based resource allocation method in the one or more implementations provided in the present specification includes the following steps.

[0034] Step 102: A first node device obtains a target transaction from a distributed database of a blockchain, where the target transaction includes service behavior data of a target user, and the service behavior data of the target user is generated by a target user client.

[0035] The first node device can be any node device that can invoke and run a smart contract corresponding to resource allocation in the blockchain. When the resource allocation method provided in the present specification is applied to a consortium chain, the first node device can include a consortium member node device that provides a target service for the target user client.

[0036] The transaction described in the present specification is data that is created by a node device in the blockchain and that ultimately needs to be published to the distributed database of the blockchain. The transaction in the blockchain includes a transaction in a narrow sense and a transaction in a broad sense. The transaction in a narrow sense is a value transfer published by a user to the blockchain. For example, in a conventional bitcoin blockchain network, a transaction can be a transfer initiated by a user in the blockchain. The transaction in a broad sense is service data that is published

by a user to the blockchain for a service purpose by using a node device. For example, the target transaction described in this implementation includes the service behavior data of the target user generated based on use of the target service provided by the target user for the blockchain network or the target service provided by a node device in the blockchain. For example, an order record of a user reflects activeness data of the target user about using the target service, or evaluation data generated for the target user about using the target service.

[0037] Correspondingly, in this implementation, a transmitter that sends the target transaction to the distributed database of the blockchain is not limited, and the target transaction can be sent by a node device that provides the target service. When the target user client serves as a node device in the blockchain, the target transaction can be sent by the target user client.

[0038] Step 104: Invoke a smart contract corresponding to resource allocation, and execute resource allocation logic that is declared in the smart contract and that is related to the service behavior data of the target user, to transfer a resource to the target user.

[0039] Through consensus and verification performed by node devices in the blockchain, the smart contract corresponding to resource allocation can be deployed on the blockchain. The resource allocation logic related to the service behavior data of the target user in this implementation can include a rule of allocating the resource to the target user based on the service behavior data of the target user. For example, each time the target user completes predetermined service behavior, the target user should obtain a corresponding resource award. Alternatively, a threshold is predetermined for service behavior of the target user, so that each time the target user completes the service behavior with the predetermined threshold, the target user should obtain a corresponding resource award. Alternatively, weights can be separately set for different types of service behavior completed by the target user, and whether the target user completes the service behavior with the predetermined threshold is counted based on a type and an amount of service behavior completed by the target user. Implementations are not limited in the present specification. A person skilled in the art can design, based on a specific service scenario, a resource allocation logic rule that satisfies ecological development of the target service, to allocate a resource that matches a contribution of the target user to the target user that contributes to the ecological development of the target service, to encourage the target user.

[0040] In a shown implementation, the consensus on the smart contract can include a consensus on the resource allocation logic rule declared in the smart contract, so that it can be ensured that the resource allocation logic is verified by multiple parties. In addition, a person skilled in the art should know that an invoke execution result of the smart contract also needs to be verified by the node devices in the blockchain by consensus. Only in this way, the invoke execution result can be recorded in the distributed database of the blockchain. Therefore, the resource allocation method provided in the one or more implementations of the present specification has relatively obvious fairness compared with a solution that a centralized service provider formulates and executes a rule.

[0041] Specifically, in a shown implementation, the executing resource allocation logic that is declared in the smart contract and that is related to the service behavior data of the target user, to transfer a resource to the target user includes: determining whether the service behavior data of the target user reaches a predetermined threshold; and in response to determining that the service behavior data of the target user reaches the predetermined threshold, transferring an amount of resources corresponding to the service behavior data to the target user by using the smart contract.

[0042] The transferring an amount of resources corresponding to the service behavior data to the target user in this implementation includes transferring, by using the smart contract corresponding to resource allocation, the amount of resources corresponding to the service behavior data of the target user to an address or an account of the target user. As described above, the resource in this implementation can include a digital asset on the blockchain, for example, a digital token (Token) that is circulated on the blockchain and that is set according to a protocol of the blockchain, or can include a value corresponding to a resource off the blockchain, for example, a value corresponding to off-chain cash, housing estate, precious metal, or even virtual resource circulated in a digital community.

[0043] In a shown implementation, when the resource is the digital token (Token) that is circulated on the blockchain and that is set according to the protocol of the blockchain, the transferring a resource to the target user includes transferring an amount of resources corresponding to the service behavior data of the target user to the target user. In addition to recording the target transaction used to invoke the smart contract for transfer in the distributed database of the blockchain, the transferred resource can also

be directly reflected in an increase in a token balance of a blockchain account of the target user, similar to a user account setting of an Ethereum blockchain.

[0044] In another shown implementation, when the resource is the value corresponding to the specified resource off the blockchain, for the blockchain, content used to represent an amount of the specified resource off the blockchain can be set in content of a blockchain account of the user, to generate, on the blockchain by using a method similar to the token transfer method, a transfer of the value corresponding to the specified resource off the blockchain, that is, an increase in a specified resource balance included in the blockchain account of the target user. Alternatively, a resource transfer transaction is sent to the distributed database of the blockchain by using the smart contract, where the resource transfer transaction is transferring a specified resource of a value corresponding to the service behavior data of the target user to the target user, to provide a credential for transfer of the specified resource off the blockchain.

[0045] The smart contract used for resource allocation can generate a resource benefit based on use of a user. For example, by using a pay service or a paid service, a target service provider can obtain a resource benefit. The resource benefit can be directly received in an account of the smart contract corresponding to resource allocation, or can be indirectly transferred to the account of the smart contract corresponding to resource allocation by using a resource transfer method. As described in the one or more implementations, the resource is transferred to the target user by invoking the smart contract, and the smart contract can be invoked at any time based on service use behavior of the target user, which saves time costs and labor costs of offline communication, achieves fairness, improves resource transfer efficiency, and effectively encourages a user to increase an individual resource benefit by improving service activeness or a positive evaluation rate of the user.

[0046] Corresponding to process implementation of the previous blockchain-based resource allocation method, an implementation of the present specification further provides a blockchain-based resource allocation apparatus. The apparatus can be implemented by using software, hardware, or a combination of software and hardware. Software implementation is used as an example. As a logical apparatus, the apparatus is formed by reading a corresponding computer program instruction to a memory for running by a central processing unit (CPU) in a device that the apparatus is located in. In terms of hardware, in addition to a CPU, a memory, and a storage shown in FIG. 3,

the device that the resource allocation apparatus is located in usually further includes other hardware such as a chip for sending/receiving a radio signal, and/or other hardware such as a card configured to implement a network communication function.

[0047] FIG. 2 shows a blockchain-based resource allocation apparatus 20 provided in the present specification, applied to a blockchain network that includes a target user client and a first node device. The apparatus 20 is applied to the first node device and includes: an acquisition unit 202, configured to obtain a target transaction from a distributed database of a blockchain, where the target transaction includes service behavior data of a target user, and the service behavior data of the target user is generated by the target user client by using a target service; and an execution unit 204, configured to invoke a smart contract corresponding to resource allocation, and execute resource allocation logic that is declared in the smart contract and that is related to the service behavior data of the target user, to transfer a resource to the target user.

[0048] In a shown implementation, the resource includes a digital asset on the blockchain or a value corresponding to a resource off the blockchain.

[0049] In another shown implementation, the service behavior data of the target user includes activeness data of the target user about using the target service, or evaluation data generated for the target user about using the target service.

[0050] In another shown implementation, the execution unit 204 is further configured to: determine whether the service behavior data of the target user reaches a predetermined threshold; and in response to determining that the service behavior data of the target user reaches the predetermined threshold, transfer an amount of resources corresponding to the service behavior data to the target user by using the smart contract.

[0051] In another shown implementation, the blockchain is a consortium chain, and the first node device includes a consortium member node device that provides the target service.

[0052] For a specific implementation process of a function of each unit in the apparatus 20, references can be made to an implementation process of a corresponding step in the previous method. For related parts, references can be made to partial descriptions in the method implementation. Details are omitted here.

[0053] The previously described apparatus implementation is merely an example. The units described as separate parts may or may not be physically separate, and parts displayed as units may or may not be physical modules, that is, may be located in one position, or may be distributed on a plurality of network modules. Some or all of the

units or modules can be selected based on actual demands to achieve the objectives of the solutions of the present specification. A person of ordinary skill in the art can understand and implement the implementations of the present application without creative efforts.

[0054] The apparatus, units, or modules described in the previous implementations can be specifically implemented by a computer chip or an entity, or can be implemented by a product with a certain function. A typical implementation device is a computer, and the computer can be specifically a personal computer, a laptop computer, a cellular phone, a camera phone, a smartphone, a personal digital assistant, a media player, a navigation device, an email sending/receiving device, a game console, a tablet computer, a wearable device, or any combination of these devices.

[0055] Corresponding to the previous blockchain transaction method implementation, an implementation of the present specification further provides a computer device. The computer device includes a storage and a processor. The storage stores a computer program that can be run by the processor, and when running the stored computer program, the processor executes the steps in the blockchain-based resource allocation method that are executed by the node device in the blockchain in the implementations of the present specification. For detailed descriptions of the steps in the blockchain-based resource allocation method that are executed by the node device in the blockchain, references can be made to the previous content. Details are omitted.

[0056] Corresponding to the previous blockchain-based resource allocation method implementation, an implementation of the present specification further provides a computer-readable storage medium. The computer-readable storage medium stores a computer program, and when the computer program is run by a processor, the steps in the blockchain-based resource allocation method that are executed by the node device in the blockchain in the implementations of the present specification are executed. For detailed descriptions of the steps in the blockchain-based resource allocation method that are executed by the node device in the blockchain, references can be made to the previous content. Details are omitted.

[0057] The previous descriptions are merely example implementations of the present specification, but are not intended to limit the present specification. Any modification, equivalent replacement, improvement, etc. made without departing from the spirit and principle of the present specification shall fall within the protection scope of the present specification.

[0058] In a typical configuration, a computing device includes one or more processors (CPUs), an input/output interface, a network interface, and a memory.

[0059] The memory may include a non-persistent memory, a random access memory (RAM), a nonvolatile memory, and/or another form in a computer-readable medium, for example, a read-only memory (ROM) or a flash memory (flash RAM). The memory is an example of the computer-readable medium.

[0060] The computer-readable medium includes persistent, non-persistent, movable, and unmovable media that can store information by using any method or technology. The information can be a computer-readable instruction, a data structure, a program module, or other data.

[0061] Examples of a computer storage medium include but are not limited to a phase-change random access memory (PRAM), a static random access memory (SRAM), a dynamic random access memory (DRAM), another type of random access memory (RAM), a read-only memory (ROM), an electrically erasable programmable read-only memory (EEPROM), a flash memory or another memory technology, a compact disc read-only memory (CD-ROM), a digital versatile disc (DVD) or another optical storage, a cassette magnetic tape, a magnetic tape/magnetic disk storage or another magnetic storage device, or any other non-transmission media. The computer storage medium can be configured to store information accessible to the computing device. Based on the definition in the present specification, the computer-readable medium does not include computer-readable transitory media (transitory media) such as a modulated data signal and carrier.

[0062] It is worthwhile to further note that, the terms "comprise", "include", or their any other variants are intended to cover a non-exclusive inclusion, so that a process, method, product, or device that includes a series of elements not only includes those elements but also includes other elements that are not expressly listed, or further includes elements inherent to such process, method, product, or device. Without more constraints, an element preceded by "includes a ..." does not preclude the existence of additional identical elements in the process, method, product, or device that includes the element.

[0063] A person skilled in the art should understand that the implementations of the present specification can be provided as a method, a system, or a computer program product. Therefore, the implementations of the present specification can use a form of hardware only implementations, software only implementations, or implementations

with a combination of software and hardware. Moreover, the implementations of the present specification can use a form of a computer program product that is implemented on one or more computer-usable storage media (including but not limited to a disk memory, a CD-ROM, an optical memory, etc.) that include computer-usable program code.

CLAIMS

What is claimed is:

1. A blockchain-based resource allocation method, applied to a blockchain network that comprises a target user client and a first node device, wherein the method comprises:

obtaining, by the first node device, a target transaction from a distributed database of a blockchain, wherein the target transaction comprises service behavior data of a target user, and the service behavior data of the target user is generated by the target user client by using a target service; and

invoking a smart contract corresponding to resource allocation, and executing resource allocation logic that is declared in the smart contract and that is related to the service behavior data of the target user, to transfer a resource to the target user.

2. The method according to claim 1, wherein the resource comprises a digital asset on the blockchain or a value corresponding to a resource off the blockchain.

3. The method according to claim 1 or 2, wherein the service behavior data of the target user comprises activeness data of the target user about using the target service, or evaluation data generated for the target user about using the target service.

4. The method according to claim 1 or 2, wherein the executing resource allocation logic that is declared in the smart contract and that is related to the service behavior data of the target user, to transfer a resource to the target user comprises:

determining whether the service behavior data of the target user reaches a predetermined threshold; and

in response to determining that the service behavior data of the target user reaches the predetermined threshold, transferring an amount of resources corresponding to the service behavior data to the target user by using the smart contract.

5. The method according to claim 3, wherein the blockchain is a consortium chain, and the first node device comprises a consortium member node device that provides the target service.

6. A blockchain-based resource allocation apparatus, applied to a blockchain network that comprises a target user client and a first node device, wherein the apparatus is applied to the first node device and comprises:

an acquisition unit, configured to obtain a target transaction from a distributed database of a blockchain, wherein the target transaction comprises service behavior data

of a target user, and the service behavior data of the target user is generated by the target user client by using a target service; and

an execution unit, configured to invoke a smart contract corresponding to resource allocation, and execute resource allocation logic that is declared in the smart contract and that is related to the service behavior data of the target user, to transfer a resource to the target user.

7. The apparatus according to claim 6, wherein the resource comprises a digital asset on the blockchain or a value corresponding to a resource off the blockchain.

8. The apparatus according to claim 6 or 7, wherein the service behavior data of the target user comprises activeness data of the target user about using the target service, or evaluation data generated for the target user about using the target service.

9. The apparatus according to claim 6 or 7, wherein the execution unit is further configured to:

determine whether the service behavior data of the target user reaches a predetermined threshold; and

in response to determining that the service behavior data of the target user reaches the predetermined threshold, transfer an amount of resources corresponding to the service behavior data to the target user by using the smart contract.

10. The apparatus according to claim 8, wherein the blockchain is a consortium chain, and the first node device comprises a consortium member node device that provides the target service.

11. A computer device, comprising a storage and a processor, wherein the storage stores a computer program that can be run by the processor, and when running the computer program, the processor executes the method according to any one of claims 1 to 5.

12. A computer-readable storage medium, wherein the computer-readable storage medium stores a computer program, and when the computer program is run by a processor, the method according to any one of claims 1 to 5 is executed.

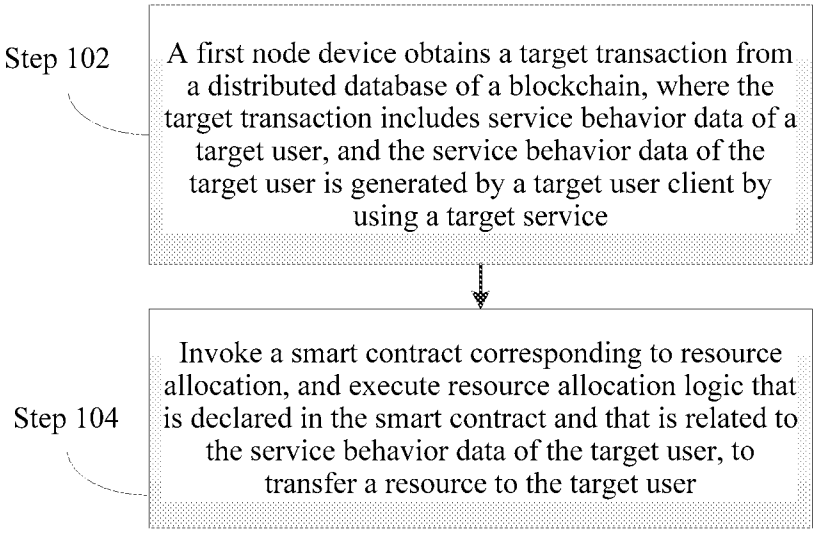
Step 102
A first node device obtains a target transaction from a distributed database of a blockchain, where the target transaction includes service behavior data of a target user, and the service behavior data of the target user is generated by a target user client by using a target service
Step 104
Invoke a smart contract corresponding to resource allocation, and execute resource allocation logic that is declared in the smart contract and that is related to the service behavior data of the target user, to transfer a resource to the target user

FIG. 1

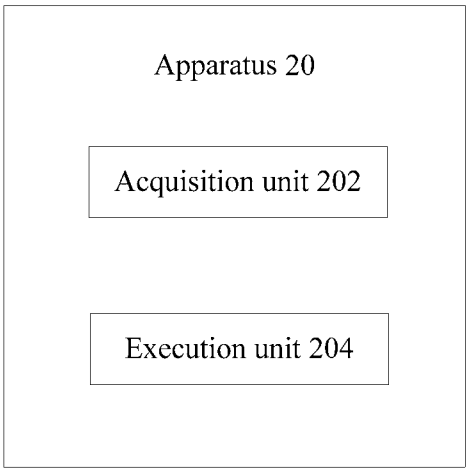
Apparatus 20
Acquisition unit 202
Execution unit 204

FIG. 2

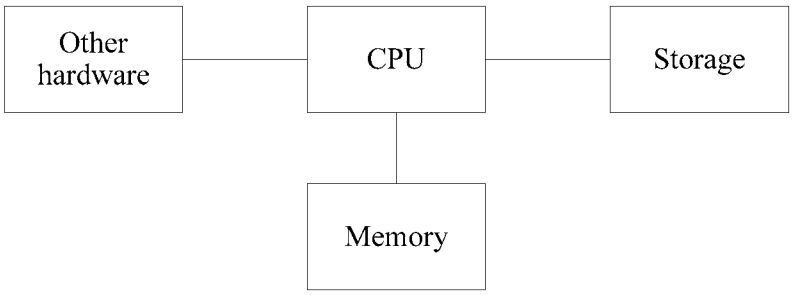

FIG. 3

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2020/016024

A. CLASSIFICATION OF SUBJECT MATTER
INV. G06F9/50
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
G06F G06Q

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2019/058709 A1 (KEMPF JAMES [US] ET AL) 21 February 2019 (2019-02-21) abstract paragraphs [0006] - [0016] paragraphs [0039] - [0049] paragraphs [0088] - [0105]	1-12
A	WO 2018/165472 A1 (IP OVERSIGHT CORP [US]; YOUB CHRISTOPHER [CA]; YOUB BRUCE [DO]) 13 September 2018 (2018-09-13) abstract claims 1-9	1-12
A	US 2018/218176 A1 (VOORHEES ERIK [US] ET AL) 2 August 2018 (2018-08-02) abstract; claim 1	1-12

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents :

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"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
28 April 2020	08/05/2020

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Renault, Sophie

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/US2020/016024

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2019058709 A1	21-02-2019	US 2019058709 A1	21-02-2019
		WO 2019034989 A1	21-02-2019
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		CA 3055829 A1	13-09-2018
		EP 3593305 A1	15-01-2020
		US 2019080392 A1	14-03-2019
		WO 2018165472 A1	13-09-2018
US 2018218176 A1	02-08-2018	US 2018218176 A1	02-08-2018
		WO 2018140913 A1	02-08-2018