CLAIMS

What is claimed is:

1. A computer-implemented method, comprising:

invoking, by a computer system, a first smart contract in a blockchain system to register a digital identity for a digital object in the blockchain system, wherein the digital identity for the digital object comprises a digital identifier of the digital object and a digital identity document of the digital object, and the digital identity document of the digital object comprises an identifier of an owner of the digital object and a public key of the owner; and

in response to a request to execute a transaction of the digital object, invoking, by the computer system, a second smart contract in the blockchain system to perform a transaction completion step, wherein performing the transaction completion step comprises:

performing, based on a public key of a transaction party of the transaction of the digital object in the digital identity document of the digital object or a digital identity document of the transaction party of the transaction, a verification of a signature submitted by the transaction party to invoke the second smart contract in the blockchain system to perform the transaction completion step;

in response to determining that the verification succeeds, determining a new owner of the digital object based on a result of the transaction; and

updating the identifier of the owner of the digital object comprised in the digital identity document to reflect the new owner of the digital object.

2. The method according to claim 1, wherein the first smart contract includes different functions from the second smart contract.

3. The method according to claim 1, wherein the first smart contract includes same functions as the second smart contract.

4. The method according to claim 1, wherein the computer system comprises a client device of the transaction party of the transaction, and wherein the transaction party is the owner of the digital object, or the transaction party is a transaction agent that acts on behalf of the owner of the digital object.

5. The method according to claim 4, wherein the verification of the signature submitted by the transaction party to invoke the second smart contract in the blockchain system to perform the transaction completion step is performed based on the public key of the owner of the digital object in the digital identity document of the digital object.

6. The method according to claim 4, further comprising:

notifying, by the client device of the transaction party to the transaction party, a monitored event message corresponding to the request to execute the transaction of the digital object;

determining a transaction counterparty; and

wherein determining the new owner of the digital object based on the result of the transaction comprises determining the new owner of the digital object to be the transaction counterparty.

7. The method according to claim 4, further comprising:

obtaining, by the client device of the transaction party, a monitored event message corresponding to the request to execute the transaction of the digital object;

determining a transaction counterparty; and

wherein the second smart contract in the blockchain system is invoked to perform the transaction completion step based on the determining.

8. The method according to claim 4, further comprising:

determining a transaction counterparty, wherein the transaction counterparty is verified to have a transaction request qualification for the digital object.

9. The method according to claim 8, wherein performing the second smart contract comprises:

performing a second verification, using a public key of the transaction counterparty included in a digital identity document of the transaction counterparty, of a signature submitted by the client device of the transaction counterparty; and

in response to determining that the second verification succeeds, determining that the transaction counterparty has the transaction request qualification for the digital object.

10. The method according to claim 8, further comprising:

invoking, by the client device of the transaction party, the first smart contract in the

blockchain system to set the digital object to a tradable state or a non-tradable state.

11. The method according to claim 10, wherein the transaction counterparty is verified to have a transaction request qualification for the digital object comprises the transaction counterparty is verified to have the transaction request qualification for the digital object in response to determining that the digital object is set to the tradable state.

12. The method according to claim 10, wherein setting the digital object to the tradable state or the non-tradable state comprises:

performing a verification of a signature submitted by the client device of the transaction party to perform an object management step; and

in response to determining that if the verification succeeds, setting the digital object to the tradable state or the non-tradable state.

13. The method according to claim 1, wherein the computer system comprises a client device of a transaction counterparty of the transaction.

14. The method according to claim 13, further comprising:

invoking, by the client device of the transaction counterparty, a third smart contract in the blockchain system to execute the request to execute the transaction of the digital object, wherein the third smart contract triggers an event message corresponding to the request to execute the transaction, wherein the event message is monitored by the client device of the transaction party.

15. The method according to claim 13, wherein the request to execute the transaction of the digital object is selected from one of one or more requests to execute transactions of the digital object invoked by one or more client devices of one or more transaction counterparties.

16. The method according to claim 13, further comprising:

invoking, by the client device of the transaction counterparty, a fourth smart contract in the blockchain system to register a digital identity of the transaction counterparty, wherein the digital identity document of the transaction counterparty comprises a public key of the transaction counterparty.

17. The method according to claim 1, wherein the digital object is issued on a blockchain by invoking a fifth smart contract in the blockchain system.

18. The method according to claim 17, wherein invoking the fifth smart contract in the blockchain system to issue the digital object on the blockchain comprises:

if it is determined that a signature submitted by the computer system for invoking the fifth smart contract in the blockchain system to issue the digital object on the blockchain has passed verification, issuing the digital object on the blockchain.

19. The method according to claim 18, wherein the blockchain system comprises a first blockchain system and a second blockchain system, and the fifth smart contract is deployed on the first blockchain system for issuing the digital object, and the first smart contract is deployed on the second blockchain system for registering the digital identity of the digital object.

20. The method according to claim 1, wherein the digital identity is a decentralized identifier.

21. The method according to claim 1, wherein the digital object is used to anchor a transaction object off the blockchain system.

22. The method according to claim 21, wherein the transaction object comprises a physical object, a digital work, or a property interest.

23. The method according to claim 21, wherein the digital object is a non-fungible token.

24. The method according to claim 1, wherein determining the new owner of the digital object comprises:

selecting a qualified transaction request that meets a predetermined requirement from a plurality of transaction requests; and

determining a transaction counterparty corresponding to the qualified transaction request as the new owner of the digital object.

25. A computer-implemented method, comprising:

invoking a first smart contract in a blockchain system to register a digital identity for a

current owner of a digital object in the blockchain system, wherein the digital identity for the current owner of the digital object comprises a digital identity document of the current owner that records an ownership of the current owner for the digital object, and the digital identity document for the current owner of the digital object comprises an identifier of the current owner of the digital object and a public key of the current owner; and

in response to a request to execute a transaction of the digital object, invoking a second smart contract in the blockchain system to perform a transaction completion step;

determining a new owner of the digital object based on a result of the transaction;

deleting the ownership of the current owner for the digital object from the digital identity document of the current owner; and

invoking a third smart contract in the blockchain system to write an ownership of the new owner for the digital object into a digital identity document of the new owner.