CLAIMS

What is claimed is:

1. A computer-implemented method, comprising:

receiving, at a node device associated with a blockchain, as a received target transaction, a target transaction published by a user, wherein the received target transaction comprises transaction content, and wherein at least a part of the transaction content comprises a content summary associated with target content that is stored in a third-party storage system connected to the blockchain;

querying, by the node device, the third-party storage system for the target content corresponding to the content summary;

identifying, by the node device, as identified target content, the target content corresponding to the content summary in the received target transaction;

recalculating, by the node device, as recalculated content summary, the content summary of the identified target content;

determining, by the node device, that the recalculated content summary matches the content summary in the received target transaction;

in response to determining that the recalculated content summary matches the content summary in the received target transaction, executing, by the node device, the received target transaction based on the transaction content; and

storing, by the node device, the received target transaction in a distributed database associated with the blockchain.

2. The computer-implemented method of claim 1, wherein the blockchain is a member blockchain associated with a consortium blockchain network, wherein the consortium blockchain network comprises a plurality of member blockchains, and wherein each member blockchain in the consortium blockchain network is an additional third-party storage system connected to another member blockchain to implement a cross-chain data reference.

3. The computer-implemented method of claim 2, wherein the third-party storage system comprises a content-addressable-storage (CAS) platform that provides a data storage

service for the plurality of the member blockchains, wherein the CAS platform uses the content summary of the target content as a query index of the target content, and wherein the CAS platform stores a mapping relationship between the query index and the target content.

4. The computer-implemented method of claim 1, wherein executing the received target transaction based on the transaction content comprises automatically executing the received target transaction by invoking a smart contract published in the blockchain.

5. The computer-implemented method of claim 1, wherein the received target transaction published by the user is a standard transaction supported by the blockchain, and wherein executing the received target transaction comprises:

determining, by the node device, that the received target transaction is valid;

in response to determining that the received target transaction is valid, broadcasting, by the node device, the received target transaction in the blockchain;

synchronizing, by the node device, the received target transaction to other node devices in the blockchain to allow the other node devices to check a validity of the received target transaction; and

when a predetermined number of the other node devices determine that the received target transaction is valid, confirming, by the node device, that the received target transaction is valid and completing the received target transaction.

6. The computer-implemented method of claim 1, wherein storing the received target transaction in the distributed database comprises storing a transaction log and a transaction state of the received target transaction in the distributed database.

7. A non-transitory, computer-readable medium storing one or more instructions, that when executed by a computer system of a node device cause the computer system to perform operations comprising:

receiving, as a received target transaction, a target transaction published by a user, wherein the received target transaction comprises transaction content, and wherein at least a part of the transaction content comprises a content summary associated with target content that is

stored in a third-party storage system connected to a blockchain;

querying the third-party storage system for the target content corresponding to the content summary;

identifying, as identified target content, the target content corresponding to the content summary in the received target transaction;

recalculating, as recalculated content summary, the content summary of the identified target content;

determining, that the recalculated content summary matches the content summary in the received target transaction;

in response to determining that the recalculated content summary matches the content summary in the received target transaction the received target transaction based on the transaction content; and

storing the received target transaction in a distributed database associated with the blockchain.

8. The non-transitory, computer-readable medium of claim 7, wherein the blockchain is a member blockchain associated with a consortium blockchain network, wherein the consortium blockchain network comprises a plurality of member blockchains, and wherein each member blockchain in the consortium blockchain network is an additional third-party storage system connected to another member blockchain to implement a cross-chain data reference.

9. The non-transitory, computer-readable medium of claim 8, wherein the third-party storage system comprises a content-addressable-storage (CAS) platform that provides a data storage service for the plurality of the member blockchains, wherein the CAS platform uses the content summary of the target content as a query index of the target content, and wherein the CAS platform stores a mapping relationship between the query index and the target content.

10. The non-transitory, computer-readable medium of claim 7, wherein executing the received target transaction based on the transaction content comprises automatically executing the received target transaction by invoking a smart contract published in the blockchain.

11. The non-transitory, computer-readable medium of claim 7, wherein the received target transaction published by the user is a standard transaction supported by the blockchain, and wherein executing the received target transaction comprises:

determining that the received target transaction is valid;

in response to determining that the received target transaction is valid, broadcasting the received target transaction in the blockchain;

synchronizing the received target transaction to other node devices in the blockchain to allow the other node devices to check a validity of the received target transaction; and

when a predetermined number of the other node devices determine that the received target transaction is valid, confirming that the received target transaction is valid and completing the received target transaction.

12. The non-transitory, computer-readable medium of claim 7, wherein storing the received target transaction in the distributed database comprises storing a transaction log and a transaction state of the received target transaction in the distributed database.

13. A computer-implemented system, comprising:

one or more computers of a node device; and

one or more computer memory devices interoperably coupled with the one or more computers and having tangible, non-transitory, machine-readable media storing one or more instructions that, when executed by the one or more computers, cause the computer-implemented system to perform one or more operations comprising:

receiving, as a received target transaction, a target transaction published by a user, wherein the received target transaction comprises transaction content, and wherein at least a part of the transaction content comprises a content summary associated with target content that is stored in a third-party storage system connected to a blockchain;

querying the third-party storage system for the target content corresponding to the content summary;

identifying, as identified target content, the target content corresponding to the content summary in the received target transaction;

recalculating, as recalculated content summary, the content summary of the identified

target content;

determining that the recalculated content summary matches the content summary in the received target transaction;

in response to determining that the recalculated content summary matches the content summary in the received target transaction, executing the received target transaction based on the transaction content; and

storing the received target transaction in a distributed database associated with the blockchain.

14. The computer-implemented system of claim 13, wherein the blockchain is a member blockchain associated with a consortium blockchain network, wherein the consortium blockchain network comprises a plurality of member blockchains, and wherein each member blockchain in the consortium blockchain network is an additional third-party storage system connected to another member blockchain to implement a cross-chain data reference.

15. The computer-implemented system of claim 14, wherein the third-party storage system comprises a content-addressable-storage (CAS) platform that provides a data storage service for the plurality of the member blockchains, wherein the CAS platform uses the content summary of the target content as a query index of the target content, and wherein the CAS platform stores a mapping relationship between the query index and the target content.

16. The computer-implemented system of claim 13, wherein executing the received target transaction based on the transaction content comprises automatically executing the received target transaction by invoking a smart contract published in the blockchain.

17. The computer-implemented system of claim 13, wherein the received target transaction published by the user is a standard transaction supported by the blockchain, and wherein executing the received target transaction comprises:

determining that the received target transaction is valid;

in response to determining that the received target transaction is valid, broadcasting the received target transaction in the blockchain;

synchronizing the received target transaction to other node devices in the blockchain to allow the other node devices to check a validity of the received target transaction; and

when a predetermined number of the other node devices determine that the received target transaction is valid, confirming that the received target transaction is valid and completing the received target transaction.