CLAIMS

1. A method for interacting with a distributed ledger core, comprising:

receiving, at a distributed banking ledger in a blockchain-based distributed ledger system, a transaction request for a transaction involving an off-chain account on an off-chain core banking ledger from a client system for a client via an Application Programming Interface (API), wherein a consensus algorithm operating on a plurality of distributed computer nodes in the blockchain-based distributed ledger system updates the distributed banking ledger in which multiple copies of the distributed banking ledger exist across the plurality of distributed computer nodes;

creating, by a smart contract executed on the distributed banking ledger, a pending transaction for the transaction on the distributed banking ledger;

placing, by the smart contract, a pending notation on the pending transaction;

notifying, by the smart contract, the client system of the pending transaction;

sending, by the smart contract, a posting request for the pending transaction to a ledger interoperability service, wherein the ledger interoperability service facilitates interactions between the distributed banking ledger and the off-chain core banking ledger;

generating, by a posting generation service, accounting movement instructions for the transaction;

posting, by a posting execution service, the accounting movement instructions to the off-chain account on the off-chain core banking ledger and providing posting details to the ledger interoperability service;

validating, by the ledger interoperability service, the posting generation service, and/or the posting execution service, the posting details with a data services module;

receiving, by the smart contract, a posting validation complete notification from the posting execution service via the ledger interoperability service;

settling, by the smart contract, the transaction on the distributed banking ledger by writing the transaction as a new block to the distributed banking ledger;

sending, by the smart contract, a posting complete acknowledgement to the posting execution service via the ledger interoperability service;

generating, by the posting execution service, a transaction request complete posting;

executing, by the posting generation service, the transaction request complete posting and returning a transaction complete posting to the distributed banking ledger via the ledger interoperability service; and

sending, by the smart contract, a completion notification to the client system.

2. The method of claim 1, wherein the transaction comprises a deposit, a transfer, or a withdrawal.

3. The method of claim 1, wherein the posting request identifies a plurality of accounts involved in the transaction, a posting/value date, a currency for the transaction, and/or an amount of the transaction.

4. The method of claim 1, wherein the pending transaction indicates restricts the transaction until the transaction request complete posting is received.

5. The method of claim 1, wherein the ledger interoperability service, the posting generation service, and/or the posting execution service validates an existence of an account involved in the transaction and/or a balance of the account.

6. The method of claim 1, wherein the ledger interoperability service, the posting generation service, and/or the posting execution service validates the posting details with a reference data service and/or a structure management service.

7. The method of claim 1, wherein the step of settling the transaction on the distributed banking ledger comprises crediting or increasing a balance of an on-chain account for the client using an off-chain account as a source for a deposit transaction, or debiting or decreasing the balance of the on-chain account for the client using the off-chain account as a target for a withdrawal transaction.

8. The method of claim 1, wherein the step of settling the transaction on the distributed banking ledger comprises moving funds from a first on-chain account to a second on-chain account by debiting or decreasing a balance of the first on-chain account and crediting or increasing the balance of the second on-chain account for a transfer transaction.

9. A distributed ledger core system, comprising:

a blockchain-based distributed ledger system comprising:

a distributed banking ledger; and

a plurality of distributed computer nodes, wherein a consensus algorithm operating on the plurality of distributed computer nodes in the

blockchain-based distributed ledger system updates the distributed banking ledger in which multiple copies of the distributed banking ledger exist across the plurality of distributed computer nodes;

a client system for a client;

an off-chain core banking ledger comprising an off chain account;

a ledger interoperability service that facilitates interactions between the distributed banking ledger and the off-chain core banking ledger;

a posting generation service;

a posting execution service; and

a data services module;

wherein:

the distributed banking ledger is configured to receive a transaction request for a transaction involving the off-chain account on the off-chain core banking ledger from a client via an Application Programming Interface (API) from the client system;

a smart contract executed on the distributed banking ledger is configured to create a pending transaction for the transaction on the distributed banking ledger;

the smart contract executed on the distributed banking ledger is configured to place a pending notation on the pending transaction;

the smart contract is configured to notify the client system of the pending transaction;

the smart contract is configured to send a posting request for the pending transaction to the ledger interoperability service;

the posting generation service is configured to generate accounting movement instructions for the transaction;

the posting execution service is configured to post the accounting movement instructions and providing posting details to the ledger interoperability service;

the ledger interoperability service, the posting generation service, and/or the posting execution service is configured to validate the posting details with a data services module;

the smart contract is configured to receive a posting validation complete notification from the posting execution service via the ledger interoperability service;

the smart contract is configured to settle the transaction on the distributed banking ledger by writing the transaction as a new block to the distributed banking ledger;

the smart contract is configured to send a posting complete acknowledgement to the posting execution service via the ledger interoperability service;

the posting execution service is configured to generate a transaction request complete posting;

the posting generation service is configured to execute the transaction request complete posting and returning a transaction complete posting to the distributed banking ledger via the ledger interoperability service; and

the smart contract is configured to send a completion notification to the client.

10. The distributed ledger core system of claim 9, wherein the transaction comprises a deposit, a transfer, or a withdrawal.

11. The distributed ledger core system of claim 9, wherein the posting request identifies a plurality of accounts involved in the transaction, a posting/value date, a currency for the transaction, and/or an amount of the transaction.

12. The distributed ledger core system of claim 9, wherein the pending transaction indicates restricts the transaction until the transaction request complete posting is received.

13. The distributed ledger core system of claim 9, wherein the ledger interoperability service, the posting generation service, and/or the posting execution service validates an existence of an account involved in the transaction and/or a balance of the account.

14. The distributed ledger core system of claim 9, wherein the ledger interoperability service, the posting generation service, and/or the posting execution service validates the posting details with a reference data service and/or a structure management service.

15. The distributed ledger core system of claim 9, the smart contract is further configured to settle the transaction on the distributed banking ledger by crediting or increasing a balance of an on-chain account for the client using an off-chain account as a source for a deposit transaction, or debiting or decreasing the balance of the on-chain account for the client using the off-chain account as a target for a withdrawal transaction.

16. The distributed ledger core system of claim 9, the smart contract is further configured to settle the transaction on the distributed banking ledger by moving funds from a first on-chain account to a second on-chain account by debiting or decreasing a balance of the first on-chain account and crediting or increasing the balance of the second on-chain account for a transfer transaction.