CLAIMS

What is claimed is:

1. A decentralized transaction system comprising a plurality of computing nodes configured to implement a platform for enabling autonomous agent-based trading using a decentralized order book model, wherein each computing node is communicably coupled to a distributed ledger arrangement, a plurality of user devices, and an agent database comprising a plurality of autonomous agents, and wherein at least one computing node is configured to:

receive, from a first user device amongst the user devices, a first request for placing a first trade on the platform, wherein upon placement of the first trade, a first smart contract executing on the distributed ledger arrangement is configured to lock funds for the first trade;

receive, from a second user device amongst the user devices, a second request for placing a second trade on the platform, wherein upon placement of the second trade, a second smart contract executing on the distributed ledger arrangement is configured to lock a trade subject for the second trade;

send, to the agent database, a first notification regarding placement of the first trade on the platform, for a first autonomous agent associated with a first user of the first user device;

send, to the agent database, a second notification regarding placement of the second trade on the platform, for a second autonomous agent associated with a second user of the second user device, the second user is a second party in the decentralized transaction;

create a communication interface for enabling peer to peer communication between the first autonomous agent and the second autonomous agent via the platform, wherein

the first autonomous agent is configured to send a first set of trade parameters and a first digital signature of the first autonomous agent to the second autonomous agent in the agent database,

facilitate via a processing interface agent-based trade match via the platform, wherein

the second autonomous agent is configured to perform a trade match, and to send the first digital signature along with the first set of trade parameters and a second set of trade parameters to the second smart contract, wherein the second set of trade parameters is related to the second user device;

employ the processing interface for enabling order book-based trade verification via the platform, wherein

the second smart contract is configured to send the first digital signature along with the first set of trade parameters and the second set of trade parameters to the first smart contract for verification,

the first smart contract is configured to verify the first digital signature and the first set of trade parameters and the second set of trade parameters, and upon successful verification, the first smart contract is configured to transfer the funds for the first trade from the first smart contract to the second smart contract,

the second smart contract is then configured to complete the decentralized trading by executing the transfer of the locked funds

to the second user and executing the transfer of the locked trade subject to the first user.

2. The decentralized transaction system of claim 1, wherein the first set of trade parameters comprises at least one of: a timeframe needed for completion of the first trade, a cost associated with the first trade, a quantity associated with the first trade, a quality associated with the first trade, a customised instruction associated with the first trade, an asset type, a preference of the autonomous agents, or delivery terms.

3. The decentralized transaction system of claim 1, wherein the second set of trade parameters comprises at least one of: a timeframe needed for completion of the second trade, a cost associated with the second trade, a quantity associated with the second trade, a quality associated with the second trade, a customised instruction associated with the second trade, an asset type, a preference of the autonomous agents, or delivery terms.

4. The decentralized transaction system of claim 1, wherein the trade subject is selected from at least one of: a commodity, a digital currency.

5. The decentralized transaction system of claim 1, wherein the second autonomous agent is configured to use a distributed public key infrastructure (PKI) to verify the first digital signature and the first set of trade parameters.

6. The decentralized transaction system of claim 1, wherein the first smart contract is configured to use a distributed public key infrastructure (PKI) to verify the first digital signature and the first set of trade parameters.

7. The decentralized transaction system of claim 1, wherein when the transfer of the locked funds is executed for the first trade from the first smart contract to the second smart contract, an ownership of the locked

funds is transferred from the first user to the second user and, wherein when the transfer of the locked trade subject is executed for the second trade from the second smart contract to the first smart contract, an ownership of the locked trade subject is transferred from the second user to the first user.

8. The decentralized transaction system of claim 1, wherein the at least one computing node is configured to:

upon receiving the first request for placing the first trade on the platform, check whether an autonomous agent that is configured to serve the first request exists in the agent database;

when the autonomous agent that is configured to serve the first request exists in the agent database, use said autonomous agent as the first autonomous agent;

when the autonomous agent that is configured to serve the first request does not exist in the agent database, create a new autonomous agent and use the new autonomous agent as the first autonomous agent.

9. The decentralized transaction system of claim 1, wherein the distributed ledger arrangement further comprises a smart contract map configured to associate a given smart contract with a given autonomous agent and to record the given smart contract as being associated with the given autonomous agent.

10. The decentralized transaction system of claim 1, wherein the distributed ledger arrangement further comprises an autonomous agent map configured to associate a given autonomous agent with a corresponding functionality and record the given autonomous agent as being associated with the corresponding functionality.

11. The decentralized transaction system of claim 1, wherein a given request is received from at least one of: a software application executing on a given user device, a software application executing on a computing device that is communicably coupled to the given user device, a cloud-based software application, a digital twin of the given user a digital representation of the given user, an artificial intelligence model (AI-model) based on a Large Language Model (LLM).

12. The decentralized transaction system of claim 1, wherein when a given autonomous agent fails to fulfil a given request, the at least one computing node is further configured to select another autonomous agent from the agent database and use the other autonomous agent as a given autonomous agent.

13. A decentralized transaction method of operating a decentralized transaction system that comprises a plurality of computing nodes configured to implement a platform for enabling autonomous agent-based trading using a decentralized order book model, wherein each computing node is communicably coupled to a distributed ledger arrangement, a plurality of user devices, and an agent database comprising a plurality of autonomous agents, the method comprising

receiving, from a first user device amongst the user devices, a first request for placing a first trade on the platform, wherein upon placement of the first trade, a first smart contract executing on the distributed ledger arrangement is configured to lock funds for the first trade;

receiving, from a second user device amongst the user devices, a second request for placing a second trade on the platform, wherein upon placement of the second trade, a second smart contract executing on the

distributed ledger arrangement is configured to lock a trade subject for the second trade;

sending, to the agent database, a first notification regarding placement of the first trade on the platform, for a first autonomous agent associated with a first user of the first user device;

sending, to the agent database, a second notification regarding placement of the second trade on the platform, for a second autonomous agent associated with a second user of the second user device, the second user is a second party in the decentralized transaction;

creating a communication interface for enabling peer to peer communication between the first autonomous agent and the second autonomous agent via the platform, wherein

the first autonomous agent is configured to send a first set of trade parameters and a first digital signature of the first autonomous agent to the second autonomous agent in the agent database,

facilitating via a processing interface agent-based trade match via the platform, wherein

the second autonomous agent is configured to perform a trade match, and to send the first digital signature along with the first set of trade parameters and a second set of trade parameters to the second smart contract, wherein the second set of trade parameters is related to the second user device;

employing the processing interface for enabling order book-based trade verification via the platform, wherein

the second smart contract is configured to send the first digital signature along with the first set of trade parameters and the second set of trade parameters to the first smart contract for verification,

the first smart contract is configured to verify the first digital signature and the first set of trade parameters and the second set of trade parameters, and upon successful verification, the first smart contract is configured to transfer the funds for the first trade from the first smart contract to the second smart contract,

the second smart contract is then configured to complete the decentralized trading by executing the transfer of the locked funds to the second user and executing the transfer of the trade subject to the first user.

14. The decentralized transaction method of claim 13, wherein the method comprises:

checking whether an autonomous agent that is configured to serve the first request exists in the agent database, upon receiving the first request for placing the first trade on the platform;

using said autonomous agent as the first autonomous agent when the autonomous agent that is configured to serve the first request exists in the agent database;

creating a new autonomous agent and use the new autonomous agent as the first autonomous agent when the autonomous agent that is configured to serve the first request does not exist in the agent database.