CLAIMS

What is claimed is:

1. A system for utilizing a consolidated order book with a plurality of asset exchanges, comprising:

at least one processor;

at least one memory communicatively coupled to the at least one processor;

at least one network interface communicatively coupled to the at least one processor and configured to receive information regarding a plurality of order books from the plurality of asset exchanges;

wherein the at least one processor is configured to~~-~~:

receive the information regarding the plurality of order books for the plurality of asset exchanges from the at least one network interface;

wherein the at least one processor is configured to update the consolidated order book in real-time based on ~~additional~~ information regarding the plurality of order books for the plurality of asset exchanges and for local orders received from users of the system;

wherein the at least one processor is configured to track any resting orders on the plurality of order books from the plurality of asset exchanges and any local resting orders resulting from the local orders received from the users of the system; and

wherein the at least one processor is configured to, when a new order is received from a user of the system:

determine whether the new order matches any orders in the consolidated order book;

~~———~~when the new order does not match any order in the consolidated order book, placing the new order in at least one of the consolidated order book, a separate local order book, or at least one of the plurality of order books of the plurality of asset exchanges;

when the new order matches an order in the consolidated order book that corresponds to a particular order on a particular order book of a particular asset exchange of the plurality of asset exchanges, ~~communicate a~~consolidate the new order and at least one other order into a custodial order and send the custodial order to the particular asset exchange to attempt to match the new order on the particular asset exchange using custodial assets for the user of the system;

when the custodial order matches the particular order on the particular asset exchange and a transaction of the custodial order and the particular order on the particular asset exchange is executed using the custodial assets for the user of the system, remove the new order from the consolidated order book corresponding to the particular order on the particular asset exchange; and

when the custodial order does not match the particular order on the particular asset exchange or the transaction of the custodial order and the particular order on the particular asset exchange is not executed, placing the new order in at least one of the consolidated order book, the separate local order book, or at least one of the plurality of order books of the plurality of asset exchanges.

2. The system of claim 1, further comprising:

wherein the system uses the separate local order book to store the local orders received from the users of the system that do not match to any order on the consolidated order book by having the at least one processor configured to, when the new order is received from the user of the system:

when the new order does not match any order in the consolidated order book, placing the new order in the separate local order book;

when the custodial order does not match the particular order on the particular asset exchange, placing the new order in the separate local order book.

3. The system of claim 1, further comprising:

wherein the system uses a chosen order book of a chosen asset exchange of the plurality of asset exchanges to store the local orders received from the users of the system that do not match to any order on the consolidated order book by having the at least one processor configured to, when the new order is received from the user of the system:

when the new order does not match any order in the consolidated order book, placing the new order in the chosen order book of the chosen asset exchange by placing the new order at the chosen asset exchange;

when the custodial order does not match the particular order on the particular asset exchange, placing the new order in the chosen order book of the chosen asset exchange by placing the new order at the chosen asset exchange.

4. The system of claim 1, further comprising:

wherein the system uses the consolidated order book to store the local orders received from the users of the system that do not match to any order on the consolidated order book by having the at least one processor configured to, when the new order is received from the user of the system:

when the new order does not match any order in the consolidated order book, placing the new order in the consolidated order book;

when the custodial order does not match the particular order on the particular asset exchange, placing the new order in the consolidated order book.

5. The system of claim 1, wherein the at least one processor is configured to generate the consolidated order book based on the information regarding the plurality of order books for the plurality of asset exchanges and for the local orders received from the users of the system.

6. The system of claim 1, further comprising when the custodial order matches the particular order on the particular asset exchange and the transaction of the custodial order and the particular order on the particular asset ~~exchanges~~exchange is executed using the custodial assets for the user of the system:

the particular order book of the particular asset exchange is updated to reflect the matching of the custodial order; and

the at least one processor is configured to remove the new order from the consolidated order book corresponding to the particular order on the particular asset exchange through an update of the consolidated order book based on the information regarding the plurality of order books for the plurality of asset exchanges, including the particular order book of the particular asset exchange.

7. The system of claim 1, wherein the custodial order does not match the particular order on the particular asset exchange even though the new order matched the new order on the consolidated order book because at least one of:

the consolidated order book had not yet been updated to show that the ~~matching~~particular order had already been removed from the particular order book of the particular asset exchange; or

the ~~matching~~particular order was removed from the particular order book of the particular asset exchange after it was matched to the new order in the consolidated order book, but before the custodial order matched to the particular order on the particular asset

exchange and the transaction of the custodial order and the particular order on the particular asset exchange is executed.

8. The system of claim 1, wherein at least one of the plurality of asset exchanges records executed transactions using a distributed ledger during execution of the transaction.

9. The system of claim 8, wherein the distributed ledger is a blockchain.

10. The system of claim 1, wherein at least one of the plurality of asset exchanges is configured to exchange at least one of: at least one cryptocurrency, at least one digital currency, at least one fiat currency, or at least one commodity currency.

11. The system of claim 1, wherein at least one of the plurality of asset exchanges is configured to exchange at least one of: at least one security, at least one bond, at least one commodity, at least one real estate, and at least one personal property, at least one fund, at least one currency fund, at least one exchange traded fund, at least one mutual fund, at least one index fund, at least one bond fund, at least one commodity fund, or at least one real estate fund.

12. The system of claim 1, wherein the custodial assets of the system are stored in an escrow account for a plurality of the users of the system; and

wherein the at least one processor is configured to track individual assets for the plurality of the users.

13. The system of claim 1, wherein the at least one processor is further configured to, when the new order is received from the user of the system:

when the new order partially matches a plurality of orders in the consolidated order book that correspond to a plurality of orders on at least one particular order book of at least one particular asset exchange of the plurality of asset exchanges, which orders if executed would effectively result in a complete match, communicate a plurality of custodial orders to the at least one particular asset exchange to attempt to match a plurality of portions of the new order with a plurality of orders on the at least one particular order book of the at least one particular asset exchange and execute a plurality of transactions of the plurality of custodial orders and the plurality of orders on the at least one particular order book.

14. The system of claim 13, wherein the at least one processor is further configured to, when the plurality of custodial orders are matched with the plurality of orders on the at least one particular order book and the plurality of transactions of the plurality of custodial orders and the plurality of orders on the at least one particular order book are executed, remove the new order from the consolidated order book corresponding to the plurality of orders on the at least one particular order book.

15. The system of claim 13, wherein the at least one processor is further configured to, when only a subset of the plurality of custodial orders are matched and executed, adjust the new order from the consolidated order book based on the subset of the plurality of custodial orders that are matched an executed.

16. The system of claim 1, wherein the at least one processor is further configured to, when the new order is received from the user of the system:

when the new order matches a single order in the consolidated order book as well as partially matching a plurality of orders in the consolidated order book that correspond to a plurality of orders on at least one particular order book of at least one particular asset exchange of the plurality of asset exchanges, which orders if executed would effectively result in a complete match, communicate a plurality of custodial orders to the at least one particular asset exchange to attempt to match a plurality of portions of the new order with a plurality of orders on the at least one particular order book of the at least one particular asset exchange and execute a plurality of transactions of the plurality of custodial orders and the plurality of orders on the at least one particular order book.

~~17. A system for utilizing a consolidated order book with an asset exchange, comprising:~~

~~at least one processor;~~

~~at least one memory communicatively coupled to the at least one processor;~~

~~at least one network interface communicatively coupled to the at least one processor and configured to receive a new order from a user of the system;~~

~~wherein the at least one processor is configured to update an exchange order book based on the new order;~~

wherein the at least one processor is configured to send a notification of changes to the exchange order book to a consolidated order book computing device to update the consolidated order book;

wherein the at least one processor is configured to receive a custodial order from the consolidated order book computing device; and

wherein the at least one processor is configured to, when the custodial order is received from the consolidated order book computing device:

determine whether the custodial order matches any orders in the exchange order book;

when the custodial order matches a particular order in the exchange order book, execute a transaction with the custodial order and the particular order in the exchange order book; and

when the custodial order does not match any order in the exchange order book, send a notification, to the consolidated order book computing device, indicating a failure to match the custodial order with any orders in the exchange order book.

18. The system of claim 17, further comprising:

wherein the at least one processor configured to, when the custodial order does not match any order in the exchange order book:

receive, from the consolidated order book computing device, the new order that corresponds to the custodial order that did not match any order in the exchange order book; and

place the new order, which corresponds to the custodial order that did not match any order in the exchange order book, into the exchange order book.

19. The system of claim 17, further comprising:

wherein the at least one processor is configured to, when the custodial order matches the particular order in the exchange order book, send a notification of the transaction with the custodial order and the particular order in the exchange order book.

20. The system of claim 17, wherein the at least one processor is configured to, when the custodial order matches the particular order in the exchange order book, record the executed transaction using a distributed ledger during execution of the transaction.

~~21. The system of claim 20, wherein the distributed ledger is a blockchain.~~

~~22. The system of claim 17, wherein the asset exchange is configured to exchange at least one of: at least one cryptocurrency, at least one digital currency, at least one fiat currency, or at least one commodity currency.~~

~~23. The system of claim 17, wherein the asset exchange is configured to exchange at least one of: at least one security, at least one bond, at least one commodity, at least one real estate, and at least one personal property, at least one fund, at least one currency fund, at least one exchange traded fund, at least one mutual fund, at least one index fund, at least one bond fund, at least one commodity fund, or at least one real estate fund.~~

~~24~~17. A method for utilizing a consolidated order book in a system with a plurality of asset exchanges, wherein the method is performed by a consolidated order book computing device, the method comprising:

receiving information regarding a plurality of order books from the plurality of asset exchanges;

updating the consolidated order book in real-time based on ~~additional~~ information regarding the plurality of order books for the plurality of asset exchanges and for local orders received from users of the system;

tracking any resting orders on the plurality of order books from the plurality of asset exchanges and any local resting orders resulting from the local orders received from the users of the system; and

wherein when a new order is received from a user of the system:

determining whether the new order matches any orders in the consolidated order book;

when the new order does not match any order in the consolidated order book, placing the new order in at least one of the consolidated order book, a separate local order book, or at least one of the plurality of order books of the plurality of asset exchanges;

when the new order matches an order in the consolidated order book that corresponds to a particular order on a particular order book of a particular asset exchange of the plurality of asset exchanges, ~~communicating a~~consolidate the new order and at least one other order into a custodial order and send the custodial order to

the particular asset exchange to attempt to match the new order on the particular asset exchange using custodial assets for the user of the system;

when the custodial order matches the particular order on the particular asset exchange and a transaction of the custodial order and the particular order on the particular asset exchange is executed using the custodial assets for the user of the system, removing the new order from the consolidated order book corresponding to the particular order on the particular asset exchange; and

when the custodial order does not match the particular order on the particular asset exchange or the transaction of the custodial order and the particular order on the particular asset exchange is not executed, placing the new order in at least one of the consolidated order book, the separate local order book, or at least one of the plurality of order books of the plurality of asset exchanges.

~~25~~18. The method of claim ~~24~~17, further comprising:

storing, in the separate local order book, the local orders received from the users of the system that do not match to any order on the consolidated order book when the new order is received from a user of the system, wherein the storing comprises:

when the new order does not match any order in the consolidated order book, placing the new order in the separate local order book;

when the custodial order does not match the particular order on the particular asset exchange, placing the new order in the separate local order book.

~~26~~19. The method of claim ~~24~~17, further comprising:

storing, in a chosen order book of a chosen asset exchange of the plurality of asset exchanges, the local orders received from the users of the system that do not match to any order on the consolidated order book when the new order is received from the user of the system, wherein the storing comprises:

when the new order does not match any order in the consolidated order book, placing the new order in the chosen order book of the chosen asset exchange by placing the new order at the chosen asset exchange;

when the custodial order does not match the particular order on the particular asset exchange, placing the new order in the chosen order book of the chosen asset exchange by placing the new order at the chosen asset exchange.

~~27~~20. The method of claim ~~24~~17, further comprising:

storing, in the consolidated order book, the local orders received from the users of the system that do not match to any order on the consolidated order book when the new order is received from the user of the system, wherein the storing comprises:

when the new order does not match any order in the consolidated order book, placing the new order in the consolidated order book;

when the custodial order does not match the particular order on the particular asset exchange, placing the new order in the consolidated order book.

~~28. A method for utilizing a consolidated order book in a system with an asset exchange, wherein the method is performed by an exchange computing device, the method comprising:~~

~~receiving a new order from a user of the system;~~

~~updating an exchange order book based on the new order;~~

~~sending a notification of changes to the exchange order book to a consolidated order book computing device to update the consolidated order book;~~

~~receiving a custodial order from the consolidated order book computing device; and~~

~~wherein, when the custodial order is received from the consolidated order book computing device:~~

~~determining whether the custodial order matches any orders in the exchange order book;~~

~~when the custodial order matches a particular order in the exchange order book, executing a transaction with the custodial order and the particular order in the exchange order book; and~~

~~when the custodial order does not match any order in the exchange order book, sending a notification, to the consolidated order book computing device, indicating a failure to match the custodial order with any orders in the exchange order book.~~

~~29. The method of claim 28, further comprising:~~

~~when the custodial order does not match any order in the exchange order book:~~

~~receiving, from the consolidated order book computing device, the new order that corresponds to the custodial order that did not match any order in the exchange order book; and~~

~~placing the new order, which corresponds to the custodial order that did not match any order in the exchange order book, into the exchange order book.~~

~~30. The method of claim 28, further comprising:~~

~~when the custodial order matches the particular order in the exchange order book, sending a notification of the transaction with the custodial order and the particular order in the exchange order book.~~

~~31. The method of claim 28, further comprising:~~

~~when the custodial order matches the particular order in the exchange order book, recording the executed transaction using a distributed ledger during execution of the transaction.~~

~~32. The method of claim 31, wherein the distributed ledger is a blockchain.~~

21. A system for utilizing a consolidated order book with a plurality of asset exchanges, comprising:

at least one processor;

at least one memory communicatively coupled to the at least one processor;

at least one network interface communicatively coupled to the at least one processor and configured to receive information regarding a plurality of order books from the plurality of asset exchanges;

wherein the at least one processor is configured to:

receive the information regarding the plurality of order books for the plurality of asset exchanges from the at least one network interface;

update the consolidated order book in real-time based on information regarding the plurality of order books for the plurality of asset exchanges and for local orders received from users;

track any resting orders on the plurality of order books from the plurality of asset exchanges and any local resting orders resulting from the local orders received from the users; and

receive a new order for a first quantity of at least one blockchain-implemented asset from a user;

determine whether the new order matches an order in the consolidated order book that corresponds to a particular order on a particular order book of a particular asset exchange of the plurality of asset exchanges;

when the new order does not match any order in the consolidated order book, placing the new order in at least one of the consolidated order book, a separate local order book, or at least one of the plurality of order books of the plurality of asset exchanges;

in response to determining that the new order matches the order in the consolidated order book that corresponds to the particular order on the particular order book, consolidate the new order and at least one other order into a custodial order for a second quantity of the at least one blockchain-implemented asset;

send the custodial order to the particular asset exchange to attempt to match the new order on the particular asset exchange using custodial assets for the user;

receive a failure notification for the custodial order from the particular asset exchange; and

in response to receiving the failure notification, place the order in at least one of the consolidated order book, a separate local order book, or at least one of the plurality of order books of the plurality of asset exchanges.