

CLAIMS

What is claimed is:

1. A method comprising:
 - 5 receiving, by one or more processing devices, a request to initiate a loan process from a user device, the request indicating a collateral item of a borrower;
generating, by the one or more processing devices, a virtual representation of the collateral item, wherein the virtual representation includes at least one of a description of the collateral item and one or more media contents that respectively depict at least a portion of the
10 collateral item;
generating, by the one or more processing devices, a collateral token corresponding to the collateral item, wherein the collateral token is a digital token that is stored on a distributed ledger that is distributed across a set of node devices; and
instantiating, by the one or more processing devices, a loan process smart contract
15 instance that includes computer-readable instructions that are configured to manage a loan process in accordance with a loan process workflow, wherein the loan process smart contract instance is executed at least in part by the set of node devices that store the distributed ledger, wherein the loan process smart contract instance is configured to:
 instantiate a loan smart contract that includes computer-readable instructions that
20 are configured to receive a loan agreement notification indicating one or more loan term parameters of a loan that was agreed to by a lender and the borrower and to manage repayment of a loan based on the one or more loan term parameters, wherein the collateral token is locked in an escrow account stored on the distributed ledger until the loan smart contract instance determines a change of state of the loan that is relevant to a parameter of the loan that applies
25 to an escrowing of the collateral.
2. The method of claim 1, wherein the computer-readable instructions of the loan process smart contract instance are further configured to: instantiate an authentication smart contract instance that includes computer readable instructions that are configured to manage
30 an authentication task that is performed by an authenticator to authenticate the collateral item and to issue an authentication notification upon confirming that the appraisal task has been completed.
3. The method of claim 2, wherein the loan process smart contract instance instantiates the authentication smart contract instance in accordance with the loan process workflow.

4. The method of claim 3, wherein the loan process workflow is defined in a system-level governance document that is stored on the distributed ledger, wherein the system-level governance defines a condition to initiate the authentication task.
5. The method of claim 2, wherein the loan process smart contract instance instantiates the authentication smart contract instance in response to receiving a request notification indicating that the borrower has requested to initiate the loan process.
6. The method of claim 2, wherein the computer-readable instructions of the loan process smart contract instance are further configured to: receive an authentication report from an authenticator device of the authenticator, wherein the authentication report includes an authentication opinion of the authenticator that indicates an authentication state, including whether the authenticator has deemed the collateral item authentic or not authentic.
7. The method of claim 6, wherein the authentication report further includes supporting documentation provided by the authenticator in support of the authentication opinion.
8. The method of claim 7, wherein the authentication report further includes one or more verifications issued by one or more respective secondary authenticators, wherein each verification indicates that a respective secondary authenticator confirmed the authentication opinion.
9. The method of claim 6, wherein the authentication report is generated from a form template that is defined in accordance with an authentication stage-level governance that defines a set of rules and regulations associated with performance of the authentication task.
10. The method of claim 9, wherein the authentication stage-level governance defines an authentication task workflow, wherein the authentication task workflow includes one or more conditions that must be met to complete the authentication task and trigger a next stage in the loan process workflow to which the loan process adheres.
11. The method of claim 10, wherein the authentication stage-level governance is at least partially defined by an authentication guild to which the authenticator is a guild member.
12. The method of claim 11, wherein the authentication guild includes a plurality of different specialized authentication guilds, wherein each specialized authentication guild specializes in authenticating a respective type of collateral item.

13. The method of claim 12, wherein the plurality of different specialized authentication guilds includes at least a subset of the group comprising: a watch authentication guild that specializes in authenticating watches, a shoe authentication guild that specializes in authenticating shoes, a handbag authentication guild that specializes in authenticating handbags, an art authentication guild that specializes in authenticating works of art, a sports memorabilia authentication guild that specializes in authenticating sports memorabilia, a toy authentication guild that specializes in authenticating collectible toys, a jewelry authentication guild that specializes in authenticating jewelry, a clothing authentication guild that specializes in authenticating designer clothing, an instrument authentication guild that specializes in expertise authenticating musical instruments, a record authentication guild that specializes in authenticating rare or collectible records, a wine authentication guild that specializes in expertise authenticating units of wine, a whiskey authentication guild that specializes in authenticating units of whiskey, and an automobile authentication guild that specializes in authenticating limited edition automobiles.

14. The method of claim 13, wherein the authenticator belongs to a specialized authentication guild of the different specialized authentication guilds.

15. The method of claim 14, wherein the authenticator is assigned the authentication task based on the specialized authentication guild to which the authenticator belongs and an item type of the collateral item.

16. The method of claim 9, wherein the authentication stage-level governance defines an authentication smart contract from which the authentication smart contract instance was instantiated.

17. The method of claim 9, wherein the authentication smart contract instance initiates an escrowing of an amount of currency tokens and/or tokenized tokens from an account of the authenticator to the escrow account in response to the authentication report indicating that the authenticator deemed the collateral item to be authentic.

18. The method of claim 17, wherein at least a portion of the escrowed amount is held in escrow until the loan process is complete.

19. The method of claim 6, wherein the authentication smart contract instance outputs the authentication notification to the loan process smart contract instance in response to receiving

the authentication report from the authenticator device, wherein the authentication notification causes the loan process smart contract instance to initiate an appraisal stage of the loan process.

20. The method of claim 6, wherein the authentication smart contract instance is further configured to:

- 5 generate a data block containing the authentication report and a cryptographic hash value that is generated based at least in part on the authentication report; and
write the data block to the distributed ledger.

21. The method of claim 2, wherein a rating of the authenticator is updated based on an
10 outcome associated with the authentication task.

22. The method of claim 1, wherein the computer-readable instructions of the loan process smart contract instance are further configured to instantiate an appraisal smart contract instance that includes computer-readable instructions that are configured to manage an appraisal task that is performed by an appraiser to determine an appraised value of the collateral
15 item and to issue an appraisal notification upon confirming that the appraisal task has been completed.

23. The method of claim 22, wherein the loan process smart contract instance instantiates the appraisal smart contract instance in accordance with the loan process workflow.

24. The method of claim 23, wherein the loan process workflow is defined in a system-level governance document that is stored on the distributed ledger, wherein the system-level
20 governance defines a condition to initiate the appraisal task.

25. The method of claim 22, wherein the loan process smart contract instance instantiates the appraisal smart contract instance in response to receiving an authentication notification indicating that an authenticator has authenticated the collateral item and deemed the collateral
25 item as authentic.

26. The method of claim 22, wherein the computer-readable instructions of the loan process smart contract instance are further configured to: receive an appraisal report from an appraiser device of the appraiser, wherein the appraisal report includes a valuation of the collateral item including at least one of an appraised value of the collateral item and a
30 liquidation value of the collateral item.

27. The method of claim 26, wherein the appraisal report further includes one or more of a physical condition of the item, a new or used condition of the collateral item, a working condition of the collateral item, prices of previous sales of similar items, and a bluebook valuation of similar items.
- 5 28. The method of claim 27, wherein the appraisal report further includes one or more verifications issued by one or more respective secondary appraisers, wherein each verification indicates that a respective secondary appraiser confirmed the appraised value.
29. The method of claim 26, wherein the appraisal report is generated from a form template that is defined in accordance with an appraisal stage-level governance that defines a set of rules and regulations associated with performance of the appraisal task.
- 10 30. The method of claim 29, wherein the appraisal stage-level governance defines an appraisal task workflow, wherein the appraisal task workflow includes one or more conditions that must be met to complete the appraisal task and trigger a next stage in the loan process workflow.
- 15 31. The method of claim 30, wherein the appraisal stage-level governance is at least partially defined by an appraisal guild to which the appraiser is a guild member.
32. The method of claim 31, wherein the appraisal guild includes a plurality of different specialized appraisal guilds, wherein each specialized appraisal guild specializes in appraising a respective type of collateral item.
- 20 33. The method of claim 32, wherein the plurality of different specialized appraisal guilds includes at least a subset of the group comprising: a watch appraisal guild that specializes in appraising watches, a shoe appraisal guild that specializes in appraising shoes, a handbag appraisal guild that specializes in appraising handbags, an art appraisal guild that specializes in appraising works of art, a sports memorabilia appraisal guild that specializes in appraising sports memorabilia, a toy appraisal guild that specializes in appraising collectible toys, a jewelry appraisal guild that specializes in appraising jewelry, a clothing appraisal guild that specializes in appraising designer clothing, an instrument appraisal guild that specializes in expertise appraising musical instruments, a record appraisal guild that specializes in appraising rare or collectible records, a wine appraisal guild that specializes in expertise appraising units
- 25 (e.g., barrels or bottles) of wine, a whiskey appraisal guild that specializes in appraising units
- 30

(e.g., barrels or bottles) of whiskey, and an automobile appraisal guild that specializes in appraising limited edition automobiles.

34. The method of claim 33, wherein the appraiser belongs to a specialized appraisal guild of the different specialized appraisal guilds.

5 35. The method of claim 34, wherein the appraiser is assigned the appraisal task based on the specialized appraisal guild to which the appraiser belongs and an item type of the collateral item.

36. The method of claim 35, wherein the appraisal stage-level governance defines an appraisal smart contract from which the appraisal smart contract instance was instantiated.

10 37. The method of claim 36, wherein the appraisal smart contract instance initiates an escrowing of a monetary amount of currency tokens and/or tokenized tokens from an account of the appraiser to the escrow account in response to receiving the appraisal report, wherein the monetary amount of currency tokens and/or tokenized tokens is equal to or less than the appraised value.

15 38. The method of claim 37, wherein at least a portion of the escrowed amount is locked in the escrow account until the loan process is complete.

39. The method of claim 26, wherein the appraisal smart contract instance outputs the appraisal notification to the loan process smart contract in response to receiving the appraisal report from the appraiser device, wherein the appraisal notification causes the loan process
20 smart contract instance to initiate a safekeeping stage of the loan process.

40. The method of claim 26, wherein the appraisal smart contract instance is further configured to:

generate a data block containing the appraisal report and a cryptographic hash value that is generated based at least in part on the appraisal report; and

25 write the data block to the distributed ledger.

41. The method of claim 22, wherein a rating of the appraiser is updated based on an outcome associated with the appraisal task.

42. The method of claim 1, wherein the computer-readable instructions of the loan process smart contract instance are further configured to instantiate a safekeeping smart
30 contract instance that includes computer-readable instructions that are configured to manage an

safekeeping task performed by a safekeeper to securely store the collateral item during at least a portion of the loan process and issue a safekeeping notification upon confirming that the safekeeping task has been completed.

43. The method of claim 42, wherein the loan process smart contract instance instantiates
5 the safekeeping smart contract instance in accordance with the loan process workflow.

44. The method of claim 43, wherein the loan process workflow is defined in a system-level governance document that is stored on the distributed ledger, wherein the system-level governance defines a condition to initiate the safekeeping task.

45. The method of claim 42, wherein the loan process smart contract instance instantiates
10 the safekeeping smart contract instance in response to receiving an appraisal notification indicating that an appraiser has appraised the collateral item.

46. The method of claim 42, wherein the computer-readable instructions of the loan process smart contract instance are further configured to: receive a safekeeping report from a safekeeper device of the safekeeper, wherein the safekeeping report includes a verification that
15 the item is stored in a facility associated with the safekeeper and includes indication of any visible damage observed by the safekeeper when the collateral item was received.

47. The method of claim 46, wherein the safekeeping report further includes supporting documentation provided by the safekeeping as proof of completion of the safekeeping task.

48. The method of claim 47, wherein the safekeeping report further includes photo
20 documentation of the visible damage observed by the safekeeper when the collateral item was received by the safekeeper.

49. The method of claim 46, wherein the safekeeping report is generated from a safekeeping form template that is defined in accordance with a safekeeping stage-level governance that defines a set of rules and regulations associated with performance of the
25 safekeeping task.

50. The method of claim 49, wherein the safekeeping stage-level governance defines a safekeeping task workflow, wherein the safekeeping task workflow includes one or more conditions that must be met to complete the safekeeping task and trigger a next stage in the loan process workflow.

51. The method of claim 50, wherein the safekeeping stage-level governance is at least partially defined by a safekeeper guild to which the safekeeper is a guild member.

52. The method of claim 49, wherein the safekeeping stage-level governance defines a safekeeping smart contract from which the safekeeping smart contract instance was
5 instantiated.

53. The method of claim 52, wherein the safekeeping smart contract instance initiates an escrowing of a monetary amount of currency tokens and/or tokenized tokens from an account of the safekeeping to the escrow account in response to receiving the safekeeping report, wherein the monetary amount of currency tokens and/or tokenized tokens is equal to or less
10 than an appraised value determined by an appraiser of the collateral item.

54. The method of claim 53, wherein at least a portion of the escrowed amount is locked in the escrow account until the loan process is complete.

55. The method of claim 46, wherein the safekeeping smart contract instance outputs the safekeeping notification to the loan process smart contract in response to receiving the
15 safekeeping report from the safekeeper device, wherein the safekeeping notification causes the loan process smart contract instance to initiate the generation of the collateral token.

56. The method of claim 46, wherein the safekeeping smart contract instance is further configured to:

generate a data block containing the safekeeping report and a cryptographic hash value
20 that is generated based at least in part on the safekeeping report; and
write the data block to the distributed ledger.

57. The method of claim 42, wherein a rating of the safekeeping is updated based on an outcome associated with the safekeeping task.

58. The method of claim 42, wherein the safekeeper device provides one or more images
25 of the collateral item that are used to generate the virtual representation of the collateral item.

59. The method of claim 42, wherein the safekeeping smart contract instance is configured to execute a redemption workflow after the collateral token is unlocked from the escrow account.

60. The method of claim 59, wherein the redemption workflow results in a redeemer of the collateral token taking possession of the collateral item from the safekeeper.

61. The method of claim 1, wherein the loan smart contract instance is configured to initiate a liquidation process in response to determining that the loan is in a default state.

5 62. The method of claim 61, wherein the collateral token is transferred to a buyer that purchases the collateral token during the liquidation event, such that the buyer redeems the collateral token to take possession of the collateral item from a safekeeper that holds the collateral item for safekeeping.

10 63. The method of claim 1, wherein the loan smart contract instance is configured to initiate a transfer of the collateral token from the escrow account to an account of the borrower upon determining that the loan has been fully repaid.

15 64. The method of claim 63, wherein the collateral token is transferred to the account of the borrower from the escrow account by updating ownership data that defines a current owner of the collateral token such that the ownership data includes an address of the account of the borrower on the distributed ledger.

65. The method of claim 1, wherein the collateral token wraps the virtual representation of the collateral item.

20 66. The method of claim 1, wherein the loan smart contract is configured to determine a loan repayment schedule based on a loan length and a loan amount of the loan as defined in the loan term parameters, and wherein the loan is considered to be in a default stage when a pre-defined amount of payments are not paid in accordance with the payment schedule.

25 67. The method of claim 1, wherein the loan process workflow includes an authentication stage that defines an authentication task that is performed by an authenticator, an appraisal stage that defines an appraisal task that is performed by an appraiser, and a safekeeping stage that defines a safekeeping task that is performed by a safekeeper, wherein the authentication stage, the appraisal stage, and the safekeeping stage are executed before the collateral token is generated.

68. The method of claim 63, wherein the loan instance smart contract instance facilitates assigning rewards to the authenticator, the appraiser, and the safekeeper in response to the loan process completing.

69. The method of claim 1, wherein the collateral item is a tangible item.

- 5 70. The method of claim 1, wherein the change of the state of the loan is at least one of: the loan entering a fully repaid state, the loan entering a default state and the collateral item being successfully liquidated, and a state of repayment upon which collateral is no longer required as defined in the loan agreement.