CLAIMS

1. A computer implemented method for real time, dynamic management of a real estate finance, services, and reporting, comprising:

maintaining, by a processor, on a website controlled by a managing entity and accessible to at least a homeowner and an investor, a display of the terms, parameter values, and upcoming required actions under a housing finance arrangement;

storing, by said processor, in at least one blockchain system containing at least a housing instrument data blockchain;

maintaining, by said processor, on at least one server controlled by ~~a~~the managing entity, a balancing engine embodied in at least one processing unit, at least one receiving unit, and at least one transmitting unit for purposes of implementing adjustments under a balancing mechanism;

receiving, periodically through a receiving unit of the balancing engine, a message from the managing entity or an artificial intelligence entity representing it, initiating a balancing entry onto the housing instrument data blockchain;

transmitting, ~~thorough~~through a transmitting unit of the balancing engine, a query of the blockchain system for data relevant to a balancing calculation;

receiving said data through a receiving unit of the balancing engine;

when in a direct arrangement, determining through a processing unit of the balancing engine an updated balance in at least one residual account based on said data;

writing, through a transmitting unit of the balancing engine, the updated residual account balance along with details of the computation on the housing instrument data blockchain;

modifying, through a processing unit and a transmitting unit of the balancing engine, a website accessible at least to a homeowner and an investor to display the updated residual account balance; and

through a transmitting unit of the balancing engine, alerting at least a homeowner and an investor, who may be offline, of the updated residual account balance through a mobile phone or other receiving device; and

when in an arrangement that is not a direct arrangement,

receiving through one or more third-party devices that are accessible to the balancing engine, over computer interfaces associated with the third party

devices, relevant third-party finance data relevant to the housing finance arrangement;

determining through a processing unit of the balancing engine an updated unscheduled outcome, based on said data and said third-party finance data and associated quantities that use the unscheduled outcome as an input;

writing, through a transmitting unit of the balancing engine, the updated unscheduled outcome and associated quantities along with details of the computation on the housing instrument data blockchain;

modifying, through a processing unit and a transmitting unit of the balancing engine, a website accessible to at least to a homeowner, an investor, and a residual balancing position holder to display the updated unscheduled outcome and associated quantities; and

through a transmitting unit of the balancing engine, alerting at least a homeowner, an investor, and a residual balancing position holder, who may be offline, of the updated unscheduled outcome and associated quantities through a mobile phone or other receiving device.

2. The method of Claim 1, further comprising:

maintaining, on at least one processing server controlled by ~~a~~the managing entity, at least one data engine embodied in at least one processing unit, at least one receiving unit, at least one transmitting unit, and at least one database, said processing server creating, gathering, updating, processing, storing, and communicating at least one time series of at least one data parameter.

3. The method of Claim 1, further comprising:

receiving, on a receiving unit of at least one data engine, third-party data comprising input data for computing at least one data parameter generated by the data engine;

formatting, through a processing unit of the data engine, the ~~added~~third-party data and then modifying, through the same processing unit of the data engine, a database to incorporate the ~~added~~third-party data;

computing, through a processing unit of the data engine, non-third party data that represents at least one non-third party version of the data parameter;

computing, through a processing unit of the data engine, a single operative

value of the data parameter using the third-party and non-third party datavaluations;

writing, through a transmitting unit of the data engine, the updated operative value of the data parameter along with a record of a the calculation including at least a time and date stamp of the calculation, the third-party and non-third party datavalues, and the methodology used to compute the operative value onto a housing instrument data blockchain; and

modifying, through a processing unit and a transmitting unit of the data engine, a website accessible at least to a homeowner and an investor to display the updated operative value of the data parameter and then, through a transmitting unit of the data engine, alerting at least a homeowner and an investor, who may be offline, of the updated operative value through a mobile phone or other receiving device when either party requested updates of the operative value generally or upon certain values of the data parameter being realized.

4. The method of Claim 1, further comprising:

maintaining, on at least one processing server controlled by thea managing entity, at least one third-party data engine embodied in at least one processing unit, at least one receiving unit, at least one transmitting unit, and at least one database for the purposes of creating, gathering, updating, processing, storing, and communicating at least one time series of at least one data parameter that emerges from at least one third-party finance arrangement.

5. The method of Claim 1, further comprising:

receiving, on a receiving unit of at least one third-party data engine operating on a processing server controlled by the managing entity, updated data with respect to at least one third-party finance arrangement;

identifying, through a processing unit of the third-party data engine, elements of data to be recorded on a housing instrument data blockchain;

modifying the data to be recorded into a suitable format;

writing, through a transmitting unit of the third-party data engine, data elements along with a record of any associated calculations on a housing instrument data blockchain;

extracting from the housing instrument data blockchain, through a receiving unit of the third-party data engine, data to describe the current status and relevant history

of the third-party finance arrangement;

organizing, through a processing unit of the third-party data engine, said data for website display;

modifying, through a processing unit and a transmitting unit of the third-party data engine, a website accessible at least to a homeowner and an investor to display the updated data for the third-party finance arrangement; and

through a transmitting unit of the third-party data engine, alerting at least a homeowner and an investor, who may be offline, of the updated data through a mobile phone or other receiving device if either party requested such updated data ~~generally~~ or upon certain values of the certain data parameters being realized.

6. The method of Claim 1, further comprising:

maintaining, on a least one processing server controlled by ~~a~~the managing entity, a contract engine embodied in at least one processing unit, at least one receiving unit, and at least one transmitting unit to initiate, implement, enforce, and update the housing finance arrangement between at least one homeowner and an investor.

7. The method of Claim 1, further comprising:

receiving, through a receiving unit of a contract engine operating on a processing server controlled by ~~a~~the managing entity, initial contract data describing a housing finance arrangement;

identifying through a processing unit elements of the initial contract data to be recorded on a housing instrument data blockchain;

organizing and modifying, through a processing unit of the contract engine, the data to be recorded into a suitable format; and

writing through a transmitting unit of the contract engine the necessary data elements on a housing instrument data blockchain.

8. The method of Claim 2~~1~~, further comprising:

receiving, on a website or other input device controlled by ~~a~~the managing entity, a request from the homeowner to alter at least one term in a housing finance arrangement specifying at least one option for a new term; and

transmitting, through a transmitting unit of a server controlled by the managing

entity, the request to a receiving unit of a contract engine operating through a processing unit controlled by the managing entity.

9. The method of Claim 8~~1~~, further comprising:

in a direct arrangement, extracting, from the housing instrument data blockchain through a receiving unit of the contract engine, necessary contract provisions governing the requested change in terms for each option along with other relevant data;

determining, through a processing unit of the contract engine, if the requested change in terms for each option is permitted under the housing finance arrangement contract;

when a change of terms is permitted, determining whether any approvals by parties other than the homeowner are required;

when the change in terms under at least one option is otherwise permissible, seeking, through a transmitting unit of the contract engine, any required approvals for each option by alerting at least one relevant party through at least one receiving device of said party of the need to approve or deny approval of each option that requires approval;

after receiving a response or after a deadline for a response lapses, determining, through a processing unit of the contract engine, whether each option proposed by the homeowner is approved or denied;

modifying, through at transmitting unit of the contract engine, a website accessible to the homeowner to inform the homeowner of whether each option is authorized or denied and, when at least one option is authorized, requesting the homeowner to confirm acceptance of one of the options or to reject all of them;

via a transmitting unit of the data engine alerting at least the homeowner, who may be offline, through a mobile phone or other receiving device of the authorized or denied options and, when at least one option is authorized, requesting the homeowner to confirm one option or reject them all;

when the homeowner confirms an option, writing, through a transmitting unit of the contract engine, a change in terms along with associated data comprising the accepted option, including at least an effective date and time of the change in terms onto the housing instrument data blockchain;

modifying, through a processing unit and a transmitting unit of the contract

engine, a website accessible at least to a homeowner and an investor to confirm that the change is in effect, to display the effective time and date of the change, and to display the new housing finance arrangement terms; and

through a transmitting unit of the contract engine alerting at least a homeowner and an investor, who may be offline, that the change is in effect along with the effective time and date of the change through a mobile phone or other receiving device;.

10. The method of Claim 81, further comprising:

in an arrangement that is not a direct arrangement, extracting from the housing instrument data blockchain, through a receiving unit of athe third-party data engine, necessary contract provisions governing a requested change in terms along with other relevant data including, at least, data to generate offers to the homeowner with respect to each option, the offers containing changes in terms of the housing finance arrangement other than the terms that are the subject of the request;

computing, through a processing unit of the contract engine, at least one offer for each change in terms option specified by the homeowner;

modifying, through at transmitting unit of the contract engine, a website accessible to the homeowner to inform the homeowner of the offers;

requesting the homeowner to confirm acceptance of one of the offers or to confirm rejection of all of the offers;

through a transmitting unit of the contract engine alerting at least the homeowner, who may be offline, through a mobile phone or other receiving device of the offers and the need to accept one offer or to turn all of the offers down;

creating, through a processing unit of the contract engine, an offer data ensemble including at least the content of the offers and the values of the governing data parameters at the time of the offers, values that govern the offer terms;

writing, through a transmitting unit of the contract engine, the offer data ensemble onto the housing instrument data blockchain;

when the homeowner accepts an offer, extracting, through a receiving unit of the contract engine, the offer data ensemble from the housing instrument data blockchain;

computing, through a processing unit of the contract engine using the offer ensemble data, the adjustments between at least a homeowner, the investor, and a residual balancing position holder required to close out the existing housing finance

arrangement and replace it with a new housing finance arrangement embodying the terms specified in the accepted offer;

transmitting through a transmitting unit of the contract engine, a message informing the relevant parties of required steps to be completed by the relevant parties under the new housing financing arrangement;

receiving, through a receiving unit of the contract engine, verification that the required steps, including any required payments between parties, have been completed;

compiling, through a processing unit of the contract engine, a transition data package including at least the adjustments made to close the existing housing finance arrangement, the terms of the new housing finance arrangement along with the starting residual account positions of the parties, and the date and time the new arrangement goes into effect;

writing, through a transmitting unit of the contract engine, the transition data onto the housing instrument data blockchain to effect a shift to the new housing finance arrangement;

creating, through a processing unit of the contract engine, separate displayable versions of the transition data appropriate for each relevant party;

modifying, through a processing unit and a transmitting unit of the contract engine, a website accessible to the relevant parties to display the transition data in separate versions on separate portions of the website to each separate party, as well as to display in commonly accessible areas of the website the new arrangement; and

through a transmitting unit of the contract engine, alerting each of the relevant parties, who may be offline, of the transition data relevant to that party as well as of the common data describing the new housing finance arrangement.

11. The method of Claim 1, further comprising:

receiving, on a website or other input device controlled by ~~a~~the managing entity, a request from a homeowner to sell a residual account position to at least one investor or to buy a residual account position from at least one investor; and

transmitting, through a transmitting unit of a server controlled by the managing entity, the sell or buy request to a receiving unit of a contract engine operating through a processing unit controlled by the managing entity.

12. The method of Claim 11~~1~~, further comprising:

for a direct arrangement, extracting from the housing instrument data blockchain through a receiving unit of the contract engine, necessary contract provisions governing a requested sale or purchase along with other relevant data including, at least, data required to determine the terms of the sale or purchase;

determining, through a processing unit of the contract engine, if the requested sale or purchase is permitted under the housing finance arrangement contract;

when the requested sale or purchase is permitted under the housing finance arrangement contract determining whether approval by the investors on the other side of the transaction is required;

determining, through a processing unit of the contract engine, applicable terms of the purchase or sale;

when the sale or purchase is otherwise permissible seeking, through a transmitting unit of the contract engine, investor approvals, as required, based on the computed terms by alerting the investors through at least one receiving device of each said investor of the terms and the need to approve or deny approval;

after receiving a response or after a deadline for a response lapses, determining, through a processing unit of the contract engine, whether the sale or purchase on the computed terms is authorized or denied;

modifying, through at transmitting unit of the contract engine, a website accessible to the homeowner to inform the homeowner of authorization or denial;

for authorization, requesting the homeowner to confirm acceptance or rejection on the basis of the computed terms;

through a transmitting unit of the contract engine, alerting the homeowner, who may be offline, through a mobile phone or other receiving device of the authorization or denial;

for authorization, requesting the homeowner to confirm acceptance or rejection of the transaction on the basis of the computed terms;

when the homeowner confirms the transaction, transmitting, through a transmitting unit of the contract engine, a message informing the relevant party or parties of required steps to be completed by the relevant party or parties under the transaction;

receiving, through a receiving unit of the contract engine, verification that the required steps, including any required payments between the parties, have been

completed;

compiling, through a processing unit of the contract engine, a transaction data package including at least the confirmation of the transaction, the terms of the transaction, the date and time the transaction was effective, and the new residual account positions of the parties as of that date and time;

writing, through a transmitting unit of the contract engine, after formatting through a processing unit of the contract engine, the transaction data onto the housing instrument data blockchain;

modifying, through a processing unit and a transmitting unit of the contract engine, a website accessible at least to a homeowner and an investor to display the relevant portions of the transaction data; and

through a transmitting unit of the contract engine alerting at least a homeowner and an investor, who may be offline, of the relevant portions of the transaction data through a mobile phone or other receiving device.

13. The method of Claim 11~~1~~, further comprising:

in an arrangement that is not a direct arrangement, extracting from the housing instrument data blockchain, through a receiving unit of ~~the~~a third-party data engine, necessary contract provisions governing a requested sale or purchase along with other relevant data including, at least, data sufficient to generate offers to the homeowner with respect to the proposed sale or purchase, each offer containing changes in the terms of the housing finance arrangement accompanying the proposed sale or purchase;

computing, through a processing unit of the contract engine, at least one offer with respect to the sale or purchase proposed by the homeowner;

determining, through a processing unit of the contract engine, if the requested sale or purchase is permitted under the housing finance arrangement contract;

when the requested sale or purchase is permitted under the housing finance arrangement contract determining whether approval by the investors on the other side of the transaction is required;

determining, through a processing unit of the contract engine, the applicable terms of the purchase or sale and the terms of each offer;

when the sale or purchase is otherwise permissible, seeking, through a transmitting unit, investor approvals with respect to each offer, as required, based on

the computed terms by alerting the investors through at least one receiving device of each said investor of the offers, and the need to approve or deny approval each offer;

after receiving a response or after the deadline for a response lapses, determining, through a processing unit of the contract engine, whether each offer is authorized or denied;

modifying, through a transmitting unit of the contract engine, a website accessible to the homeowner to inform the homeowner of authorization or denial of each offer;

for authorization of at least one offer, requesting the homeowner to confirm acceptance of one offer along with the sale or purchase terms or to reject them all;

through a transmitting unit of the contract engine, alerting the homeowner, who may be offline, through a mobile phone or other receiving device of the authorization or denial of each offer;

for authorization of at least one offer, requesting the homeowner to confirm acceptance of one offer along with the sale or purchase terms or to reject them all;

creating, through a processing unit of the contract engine, an offer data ensemble including at least the content of the offers, the sale or purchase terms, and the values of the governing data parameters at the time of the offers, values that govern the offer terms;

writing, through a transmitting unit of the contract engine, the offer data ensemble onto the housing instrument data blockchain;

when the homeowner accepts an offer along with the sale or purchase terms, extracting, through a receiving unit of the contract engine, the offer data ensemble from the housing instrument data blockchain;

computing, through a processing unit of the contract engine using the offer ensemble data, adjustments between at least a homeowner, an investor, and a residual balancing position holder required to close out the existing housing finance arrangement and replace it with a new housing finance arrangement embodying the terms specified in the accepted offer;

transmitting, through a transmitting unit of the contract engine, a message informing the relevant parties of required steps;

receiving, through a receiving unit of the contract engine, verification that the required steps, including any required payments between parties, have been completed;

compiling, through a processing unit of the contract engine, a transition data package including at least the adjustments made to close the existing housing finance arrangement, the terms of the sale or purchase, the terms of the new housing finance arrangement along with the starting residual account positions of the parties, and the date and time the new arrangement went into effect;

writing, through a transmitting unit of the contract engine, the transition data onto the housing instrument data blockchain,

effecting a shift to the new housing finance arrangement;

creating, through a processing unit of the contract engine, separate displayable versions of the transition data appropriate for each relevant party;

modifying, through a processing unit and a transmitting unit of the contract engine, a website accessible to the relevant parties to display the transition data in separate versions on separate portions of the website to each separate party, as well as to display in commonly accessible areas of the website the new arrangement; and

through a transmitting unit of the contract engine, alerting each of the relevant parties, who may be offline, of the transition data relevant to that party as well as the common data describing the new housing finance arrangement.

14. The method of Claim 1, wherein said blockchain system comprises:

contractual information specifying at least one housing finance arrangement between at least one homeowner and at least one investor financing a particular home;

a time series of economic parameters relevant to dynamic management of at least one housing finance arrangement;

a record of current and past ownership of the financing debt or equity;

a record of transactions including at least payments by the homeowner to investors;

a record of any adjustments to or changes in the housing finance arrangement;

specification of at least one balancing mechanism for tracking at least the homeowner's and investor's net contributions, considering the housing finance arrangement between them as a joint venture and to adjust at least one residual account to reflect the net contributions of the parties;

a record of data and calculations of ~~a~~the balancing engine operating continuously based on one or more balancing mechanisms along with resulting adjustments of at least one residual account;

an access protocol defining various levels of access to data in the blockchain system, as well as levels of permission to write new data onto the blockchain system; and

data describing homes that are the subject of the housing finance arrangements.

15. A method for real time, dynamic management of real estate finance, services, and reporting, comprising:

maintaining a website accessible to a homeowner and an investor that displays terms, parameters, and upcoming actions under a housing finance arrangement;

storing a housing instrument in a blockchain;

implementing adjustments under a balancing mechanism;

receiving, periodically, a message from ~~a~~the managing entity initiating a balancing entry onto the housing instrument;

transmitting a query to the blockchain for data relevant to a balancing calculation;

receiving said data from one or more third-party devices;

determining an updated balance based on said data received;

writing an updated account balance along with details of the computation on the housing instrument in the blockchain;

modifying a website accessible to the homeowner and investor to display the updated account balance; and

alerting the homeowner and investor of the updated account balance through a mobile device.

16. A system for facilitating transaction data, comprising

a computing device of a homeowner, having a user interface, for facilitating a transaction data as a first party to the transaction;

a computing device of an investor, having a user interface, for facilitating the transaction data as a second party to the transaction;

a managing entity device having a computer interface, the managing entity managing:

at least one balancing engine device for implementing adjustments under a balancing mechanism based on the transaction data;

at least one data engine device for creating, gathering, updating, processing, storing, and communicating at least one time series based on the transaction data; and

at least one contract engine device for initiating, implementing, enforcing, and updating a housing finance arrangement between at least a homeowner and an investor based on the transaction data;

a plurality of third party devices having associated computer interfaces providing relevant third party finance data based on the transaction data;

a central trading engine database for allowing the computing device of the homeowner or the computing device of the investor to transmit a buy offer message based on the transaction;

a distributed blockchain system for securely storing confidential data that used in facilitating the transaction data; and

an application layer that receives, processes, and transmits data between the computing device of the homeowner, the computing device of an investor, the central trading engine database, the plurality of third party devices, the distributed blockchain system, and the managing entity device;

in response to the transaction, said application layer modifying a website accessible to the homeowner and investor; and

said application layer alerting the homeowner and investor of the transaction through a mobile device.