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(71) Applicant: **MODWELL HOLDINGS INC.** [US/US]; 6 Pheasant Woods Lane, East Hampton, NY 11937 (US).

(72) Inventors: **REISMAN, Gary**; Modwell Holdings Inc., 6 Pheasant Woods Lane, East Hampton, NY 11937 (US). **REISMAN, Jonathan**; Modwell Holdings Inc., 6 Pheasant Woods Lane, East Hampton, NY 11937 (US). **MICHELSON, Saimon**; Modwell Holdings Inc., 6 Pheasant Woods Lane, East Hampton, NY 11937 (US).

(74) Agent: **ELLEMAN, Steven, J.** et al.; Thompson Hine LLP, 10050 Innovation Drive, Suite 400, Dayton, OH 45342-4934 (US).

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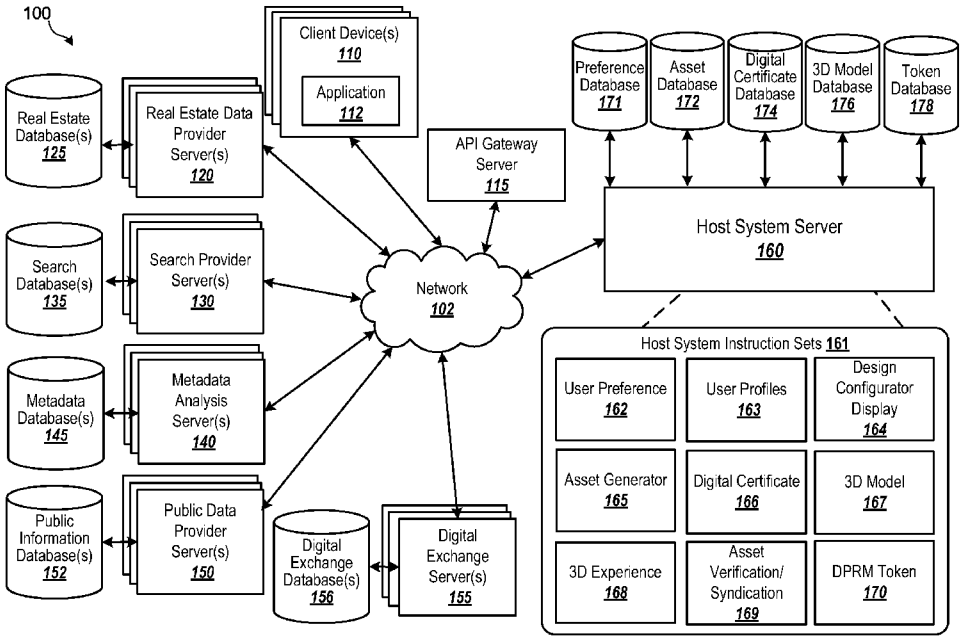

FIG. 1

(57) Abstract: Various implementations disclosed herein include devices, systems, and methods for implementing real estate experience processes. For example, an example process may include, in response to receiving a notification of a creation of a digital certificate associated with a physical address or lot identifier for a real estate asset, automatically generating a digital property rights management (DPRM) token request associated with the digital certificate. The process may further include obtaining the digital certificate from a digital certificate database. The process may further include generating a DPRM token based on an asset verification of the digital certificate, wherein the DPRM token comprises DPRM rules based on meta data associated with digital property rights associated with the digital certificate. The process may further include storing the DPRM token at a DPRM token database, recording the DPRM token on a blockchain associated with a real estate asset network.

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AN IMPROVED REAL ESTATE EXPERIENCE

TECHNICAL FIELD

[0001] The present disclosure generally relates to computers and computer software, and more specifically, to methods, systems, and computer program products for implementing real estate experience processes.

BACKGROUND

[0002] Real estate websites typically provide user interfaces for real estate searches that are dependent on traditional attributes such as the number of bedrooms or bathrooms of the associated building. Existing real estate systems may not be optimized for customized searches based on the user's preferences. For example, existing real estate systems may not adequately facilitate a user (e.g., homebuyers, agents, investors, and the like) in specified searches for physical assets based on his or her design and architectural styles. Moreover, existing real estate systems may not adequately support industry professionals (agents, developers, etc.) in the listings and sales of properties. This is because many properties for sale are outdated or in the midst of development and existing systems fall short in providing an adequate way to illustrate to the potential purchaser/homebuyer what an updated or completed version of the property and/or improvements would look like and fail to provide consumer visualization which can support the full value of the property and/or improvement.

[0003] Additionally, traditional real estate systems typically provide listings of available real estate and are typically stored in a central computer system, generally referred to as a "multiple listing service." These traditional real estate systems do not typically involve design options or integrate with multiple real estate systems or other promotional/media distribution systems. Moreover, these traditional real estate systems do not allow property owners (e.g., homeowners, corporations, etc.) to create and utilize digital rights associated with, or operating as an extension of, their real property asset(s).

SUMMARY

[0004] Generally, systems, methods, devices, and techniques are provided for implementing an improved real estate experience where traditional search is married to design technologies that crossover web 2.0 and web 3.0 capabilities across multiple platforms. The systems, methods, devices, and techniques are implemented with, in one case, one or more of: design preference algorithms, three-dimensional (3D) enhancement capabilities, 3D sales experiences, digital property rights management (DPRM) tokenization techniques, and a general real estate ecosystem of interdependencies that allow for the physical real estate market and a digital real estate market to co-exist, both separately and connected. For example, a 3D sales experience connects to a real estate ecosystem of developers, agents, listings that provide connectivity and connection capabilities that may be beyond the re-design or reconfiguration of a property. Moreover, the system may provide an ingestion and analysis of data and user in-market interactions to be incorporated into calculating design preference scores that may taylor the experience of the user to his or her design preferences.

[0005] In some implementations, the system described herein allows a user (e.g., homebuyers, agents, investors, and the like) to define his or her own design style or preferences (e.g., by completing a style quiz and receiving a style quiz score, and/or may be based on prior preferences, metadata related to images and assets, and/or other data associated with the user), search for properties based on his or her design style or preferences, explore and build proposed designs on top of existing listings for sale, and collaborate with other users, such as real estate agent, to build social mood boards and home profile vaults (e.g., a user profile). The system describe herein also provides industry professionals (e.g., agents, developers, and the like) with design-tech tools to create and overlay 3D reimagined architectural designs on their listings and collaborate in with buyers in ways more consistent with marketplace needs.

[0006] As an extension to these core capabilities, the system also allows property owners (e.g., homeowners, corporations, etc.) to claim, register, build, use, and sell their digital IP as a complement to or an extension of their real property asset(s). In particular, in one case a host system provides an operating system environment that correlates a physical real estate asset(s) and a digital real estate asset(s) in a one-to-one (1:1) relationship. The host system may implement a verification process for ownership of a physical asset (e.g., a home, building, an empty lot, etc.), and for creating an associated or correlating digital certificate (e.g., a digital deed), along with associated digital property rights management capabilities. Additionally, at

least some or all of the digital assets and asset verifications information may be processed and stored by a host system server in tandem with a token smart contract file (e.g., a .DPRM file, also referred to herein as a DRPM token).

[0007] In general, one innovative aspect of the subject matter described in this specification may be embodied in methods that include the actions of providing, by one or more processors, a user interface, or data instructions associated with an application programming interface for the user interface, at a client device, the user interface presenting a plurality of options for user selection including a plurality of design assets associated with a design project relating to a real estate asset, a plurality of design asset ingestion options, wherein the design asset ingestion options are associated with creating, hosting, and display options, a real estate tool configured to associate the design project to an associated real estate listing, and a user profile tool configured to associate the design project to a user profile of a user of the client device. The method further includes the actions of receiving, by the one or more processors, user design selection data based on a selection of at least a portion of the plurality of options for user selection. The method further includes receiving, by the one or more processors, at least one of third-party data, tracked user activity data, and other data or metadata that represent the user's preferences. The method further includes generating, by the one or more processors, a design configuration element based on at least one of the user design selection data, the third-party data, the tracked user activity data, and the other data or metadata that represent the user's preferences. The method further includes providing, by the one or more processors, a representation of the design configuration element for display on the client device via the user interface.

[0008] These and other embodiments can each optionally include one or more of the following features.

[0009] In some embodiments of the invention, the plurality of options for user selections further includes a digital IP tool configured to associate the design project to a DPRM token. In some embodiments of the invention, the plurality of options for user selections further includes an export tool configured to export data associated with the design project to an electronic file.

[0010] In some embodiments of the invention, the plurality of options for user selections further includes a customization tool configured to add, remove, or customize the display of user interface design elements associated with the design project.

[0011] In some embodiments of the invention, the method further includes storing, by the one or more processors, the design configuration element. In some embodiments of the

invention, the method further includes providing, by the one or more processors, the design configuration element as an embedded element or data instructions associated for an application programming interface for a third-party website.

[0012] In some embodiments of the invention, the design configuration element comprises a hyperlink to a DPRM token associated with the real estate asset. In some embodiments of the invention, the design configuration element comprises a selectable icon, used for social sharing, syndication, and stored in a user profile.

[0013] In general, one innovative aspect of the subject matter described in this specification may be embodied in methods that include the actions of providing, by one or more processors to a user at a client device via a user interface or via data instructions associated with an application programming interface for the user interface, a visual style quiz that comprises a plurality of selectable images, wherein each of the plurality of selectable images represent one or more predetermined architectural or design styles. The method further includes receiving, by the one or more processors, information relating to one or more user selections of the one or more of the plurality of selectable images. The method further includes receiving, by the one or more processors, at least one of behavioral selection data, third-party data, tracked user activity data, and other data or metadata that represent the user's preferences. The method further includes determining, by the one or more processors, a style preference based on the received information relating to one or more user selections and at least one of the behavioral selection data, the third-party data, the tracked user activity data, and the other data or metadata that represent the user's preferences. The method further includes presenting, by the one or more processors, a representation of the style preference to the user at the user interface.

[0014] These and other embodiments can each optionally include one or more of the following features.

[0015] In some embodiments of the invention, the behavioral selection data is based on receiving information associated with user selections from a behavioral quiz that comprises a questionnaire regarding home style and user preferences relating to the user.

[0016] In some embodiments of the invention, the method further includes the actions of uploading the style preference to a user profile. In some embodiments of the invention, the plurality of selectable images are categories based on a plurality of different location categories within a house. In some embodiments of the invention, the method further includes generating a real estate search for design preferences of the user based on the style preference.

[0017] In some embodiments of the invention, the method further includes providing, via a user interface, three-dimensional design options showing proposed modifications for a selected real estate asset. In some embodiments of the invention, the style preference is presented at the user interface in a graphical format.

[0018] In some embodiments of the invention, the method further includes generating a container file with design elements based on the style preference, and providing the container file to an architectural system. In some embodiments of the invention, the method further includes identifying, in response to a request from the user via the user interface, search results associated with one or more design entities or matching home goods products based on the style preference, and presenting the search results to the user at the user interface.

[0019] In some embodiments of the invention, the style preference is based upon an underlying score in a number of discrete different categories.

[0020] In general, one innovative aspect of the subject matter described in this specification may be embodied in methods that include the actions of receiving, by one or more processors from a client device via a user interface or via data instructions associated with an application programming interface for the user interface, an asset generator request relating to a real estate asset, obtaining, by the one or more processors and based on the asset generator request, due diligence data associated with the real estate asset from at least one public information database, wherein the due diligence data relates to a legal status of the real estate asset, obtaining, by the one or more processors, a style preference associated with the client device or a user of the client device from a user preference database, obtaining, by the one or more processors, information relating to existing conditions of the real estate asset, wherein the information relating to existing conditions relates to physical properties of the real estate asset, and generating, by the one or more processors, a container file associated with the real estate asset based on the due diligence data, the style preference, the existing conditions data, and storing, by the one or more processors, the container file at an asset database.

[0021] These and other embodiments can each optionally include one or more of the following features.

[0022] In some embodiments of the invention, the method further includes generating a new project request ticket based on real estate data associated with the real estate asset and user preference data associated with the user of the client device.

[0023] In some embodiments of the invention, the style preference is determined based on providing, to the user at the client device via the user interface or via the data instructions associated with the application programming interface for the user interface, a visual style quiz that comprises a plurality of selectable images, wherein each of the plurality of selectable images represent one or more predetermined architectural or design styles, receiving, by the one or more processors, information relating to one or more user selections of the one or more of the plurality of selectable images, receiving, by the one or more processors, at least one of behavioral selection data, third-party data, tracked user activity data, and other data or metadata that represent the user's preferences, determining, by the one or more processors, a style preference based on the received information relating to one or more user selections and at least one of the behavioral selection data, the third-party data, the tracked user activity data, and the other data or metadata that represent the user's preferences, and presenting, by the one or more processors, a representation of the style preference to the user at the user interface.

[0024] In general, one innovative aspect of the subject matter described in this specification may be embodied in methods that include the actions of receiving, by one or more processors from a requester at a client device via a user interface or via data instructions associated with an application programming interface for the user interface, a digital certificate request relating to a real estate asset, wherein the digital certificate request comprises a physical address or lot identifier of the real estate asset, determining, by the one or more processors, at least one of the following, based on the digital certificate request and referencing a digital certificate database: i) whether a digital certificate associated with the real estate asset exists and is registered in the digital certificate database, or ii) whether a digital certificate associated with the real estate asset is available for registry, and in response to determining, by the one or more processors, a digital certificate associated with the real estate asset is available for registry: displaying, by the one or more processors, the ownership information associated with the real estate asset via the user interface, request and obtain verification information relating to ownership from the requester via the user interface, determining, by the one or more processors, that the requestor is verified as the owner of the real estate asset based on the provided verification information, generating, by the one or more processors, a digital certificate associated with the requester and the real estate asset based on the determination that requestor is a sufficient owner of the real estate asset, and storing, by the one or more processors, the digital certificate at the digital certificate database.

[0025] These and other embodiments can each optionally include one or more of the following features.

[0026] In some embodiments of the invention, the method further includes attaching, by the one or more processors, the digital certificate to a DPRM token associated with the real estate asset. In some embodiments of the invention, the digital certificate comprises a unique identifiable digital address.

[0027] In some embodiments of the invention, the digital certificate comprises meta data that associates the digital certificate and the real estate asset based on a unique identifier of the digital certificate and the physical address or lot identifier of the real estate asset.

[0028] In some embodiments of the invention, in response to determining a digital certificate associated with the real estate asset exists and is registered in the digital certificate database: providing, by the one or more processors for display on the user interface, a transaction portal configured to enable acquisition of the digital certificate associated with the real estate asset.

[0029] In some embodiments of the invention, in response to determining a digital certificate associated with the real estate asset exists and is not registered in the digital certificate database: providing, by the one or more processors for display on the user interface, a transaction portal configured to provide an option to purchase a first right of refusal associated the digital certificate associated with the real estate asset.

[0030] In general, one innovative aspect of the subject matter described in this specification may be embodied in methods that include the actions of receiving, by one or more processors from a requester at a client device via a user interface or via data instructions associated with an application programming interface for the user interface, a request to connect data related to a three-dimensional (3D) model via a sanctioned link to a digital token associated with a real estate asset, obtaining, by the one or more processors and based on the 3D model request, asset data associated with the real estate asset from an asset database, wherein the asset data comprises an asset ticket relating to assets associated with the physical address, based on the 3D model request, at least one of: i) generating, by the one or more processors, a 3D model of the real estate asset based on the asset data, or ii) obtaining, by the one or more processors, a 3D model from the requestor at the client device via the user interface, obtaining, by the one or more processors, a digital token associated with the real estate asset based on the generated 3D model or the obtained and verified 3D model from the requestor, generating, by the one or more processors, a sanctioned 3D model link associated with the real estate asset based

on verifying and connecting: i) the generated 3D model or the obtained and verified 3D model, and ii) the digital token associated with the real estate asset, storing, by the one or more processors, the sanctioned 3D model link relating to the verified 3D model and the associated NFT in a 3D model database, and providing, by the one or more processors, a representation of the sanctioned 3D model link at the user interface.

[0031] These and other embodiments can each optionally include one or more of the following features.

[0032] In some embodiments of the invention, the 3D model is generated based on a style preference obtained from the client device from a user preference database.

[0033] In some embodiments of the invention, obtaining the asset data comprises obtaining public information, real estate data, metadata, image data, tracked marketplace action/behavior data, due diligence data, and a style preference associated with the real estate asset. In some embodiments of the invention, the asset ticket is generated based on the obtained public information, real estate data, metadata, the image data, tracked marketplace action/behavior data, the due diligence data, and the style preference.

[0034] In some embodiments of the invention, the method further includes the actions of utilizing, by the one or more processors, a verification process to determine that requestor is a sufficient owner of the digital token related to a digital certificate associated with the real estate asset prior to generating the sanctioned 3D model link to the digital token.

[0035] In some embodiments of the invention, the method further includes the actions of establishing, by the one or more processors, a unique identifier for the 3D model and the related digital token to a DPRM token associated with the real estate asset. In some embodiments of the invention, the digital token is a non-fungible token (NFT).

[0036] In general, one innovative aspect of the subject matter described in this specification may be embodied in methods that include the actions of receiving, by one or more processors and from a requester at a client device via a user interface or via data instructions associated with an application programming interface for the user interface, a verification request for authorization of a pairing between physical property rights and digital property rights associated with a real estate asset, obtaining, by the one or more processors and based on the verification request, real estate data associated with the real estate asset from a real estate database, obtaining, by the one or more processors, a digital certificate associated with the real estate asset from a digital certificate database, and generating, by

the one or more processors, an asset verification certification based upon determining a correlation between the digital certificate, and the real estate asset.

[0037] These and other embodiments can each optionally include one or more of the following features.

[0038] In some embodiments of the invention, the method further includes the actions of associating, by the one or more processors, the asset verification certification with a user profile stored in a user preference database.

[0039] In some embodiments of the invention, the method further includes the actions of obtaining, by the one or more processors, meta data associated with digital property rights from a DPRM token associated with the real estate asset.

[0040] In some embodiments of the invention, determining a correlation between the digital certificate, the 3D model, and the real estate asset is based on the meta data from the DPRM token.

[0041] In some embodiments of the invention, the method further includes the actions of providing a representation of the digital certificate, the 3D model, and the verification with the metadata at the user interface.

[0042] In some embodiments of the invention, the method further includes the actions of obtaining a 3D model associated with the digital certificate for the real estate asset from a 3D model database; and updating the asset verification certification based upon determining a correlation between the digital certificate, the 3D model, and the real estate asset.

[0043] In some embodiments of the invention, the digital certificate is generated based on meta data associating the digital certificate with real estate asset.

[0044] In some embodiments of the invention, the method further includes the actions of providing the digital certificate and the asset verification certification to an external entity.

[0045] In general, one innovative aspect of the subject matter described in this specification may be embodied in methods that include the actions of, in response to receiving a notification of a creation of a digital certificate associated with a physical address or lot identifier for a real estate asset, automatically generating, by one or more processors, a digital property rights management (DPRM) token request associated with the digital certificate; obtaining the digital certificate from a digital certificate database, generating, by the one or more processors, a DPRM token based on an asset verification of the digital

certificate, wherein the DPRM token comprises DPRM rules based on meta data associated with digital property rights associated with the digital certificate, storing, by the one or more processors, the DPRM token at a DPRM token database, and recording, by the one or more processors, the DPRM token on a blockchain associated with a real estate asset network.

[0046] These and other embodiments can each optionally include one or more of the following features.

[0047] In some embodiments of the invention, the method further includes the actions of obtaining, by the one or more processors, a non-fungible verified connection request associated with a 3D model of the real estate asset from a 3D model database, and updating, by the one or more processors, the DPRM token on the blockchain based on the non-fungible verified connection request.

[0048] In some embodiments of the invention, the DPRM token comprises a programable smart contract configured to track digital asset experience steps associated with digital property rights associated with the real estate asset. In some embodiments of the invention, the experience steps comprise at least one of: tracking, by the one or more processors, a transfer history of the digital property rights, monitoring, by the one or more processors, a value of the digital property rights, monitoring, by the one or more processors, revenue generated by the digital property rights, managing, by the one or more processors, royalty rights distributions associated with the digital property rights, adding, by the one or more processors, additional 3D assets to the DPRM token, issuing, by the one or more processors, a first right of refusal associated with the DPRM token, managing, by the one or more processors, third-party interactions associated with the digital property rights, and monitoring, by the one or more processors, interactions associated with a digital address associated with the digital certificate.

[0049] In some embodiments of the invention, the DPRM token includes a digital land construct, a digital structures construct, and a unique digital identifier address. In some embodiments of the invention, the method further includes the actions of providing, by the one or more processors, a representation of the DPRM token at the user interface.

[0050] In some embodiments of the invention, the 3D model is generated based on asset data, real estate data, metadata, image data, tracked marketplace action/behavior data, due diligence data, or a style preference associated with the real estate asset. In some embodiments of the invention, the method further includes the actions of providing, by the one or more processors, the DPRM token to an external entity.

[0051] In accordance with some implementations, a device includes one or more processors, a non-transitory memory, and one or more programs; the one or more programs are stored in the non-transitory memory and configured to be executed by the one or more processors and the one or more programs include instructions for performing or causing performance of any of the methods described herein. In accordance with some implementations, a computing apparatus includes one or more processors, at least one memory device operatively coupled to the one or more processors; and a data communications interface operably associated with the one or more processors, wherein the memory device contains a plurality of program instructions that, when executed by the one or more processors, cause the one or more processors to perform the steps of any of the methods described herein. In accordance with some implementations, a non-transitory computer readable storage medium has stored therein instructions, which, when executed by one or more processors of a device, cause the device to perform or cause performance of any of the methods described herein. In accordance with some implementations, a device includes: one or more processors, a non-transitory memory, and means for performing or causing performance of any of the methods described herein.

BRIEF DESCRIPTION OF THE DRAWINGS

[0052] So that the present disclosure may be understood by those of ordinary skill in the art, a more detailed description may be had by reference to aspects of some illustrative implementations, some of which are shown in the accompanying drawings.

[0053] Figure 1 illustrates an exemplary environment for implementing an orchestration of multiple real estate experience processes, according to embodiments of the invention.

[0054] Figure 2 illustrates an exemplary environment for implementing a real estate experience process for listing and/or searching physical real properties and generating a digital property rights management (DPRM) token, according to embodiments of the invention.

[0055] Figure 3 illustrates example screenshots of a user interface for real estate experience processes utilizing a user preference module, according to embodiments of the invention.

[0056] Figure 4 illustrates an example environment in which a user preference module of a real estate system may determine a style preference based on user selection data, according to embodiments of the invention.

[0057] Figure 5A illustrates an example process flow diagram of the example environment of Figure 4, according to embodiments of the invention.

[0058] Figure 5B illustrates an example style quiz algorithm, according to embodiments of the invention.

[0059] Figures 6–10 illustrate example screenshots of a user interface for real estate experience processes utilizing a design module, according to embodiments of the invention.

[0060] Figure 11 illustrates an example environment in which a design configurator display module of a real estate system may determine a design configuration based on user design selection data, according to embodiments of the invention.

[0061] Figure 12 illustrates example screenshots of a user interface for real estate experience processes utilizing an asset generator module, according to embodiments of the invention.

[0062] Figure 13 illustrates an example environment in which an asset generator module of a real estate system may generate a container file based on an asset generator request, according to embodiments of the invention.

[0063] Figure 14 illustrates an example screenshot of a user interface for real estate experience processes utilizing a digital certificate module, according to embodiments of the invention.

[0064] Figure 15 illustrates an example environment in which a digital certificate module of a real estate system may verify real property ownership, establishing a one-to-one (1:1) relationship between the real property and generate a digital certificate based on a digital certificate request to be placed on the blockchain that embodies the separate, yet related digital Intellectual property rights of that correlate to that real property address, according to embodiments of the invention.

[0065] Figure 16 illustrates an example process flow diagram of the example environment of Figure 15, according to embodiments of the invention.

[0066] Figure 17A illustrates an example screenshot of a user interface for real estate experience processes utilizing a three-dimensional (3D) model module, according to embodiments of the invention.

[0067] Figure 17B illustrates an example 3D environment of an experience associated with an example 3D showroom, according to embodiments of the invention.

[0068] Figure 18 illustrates an example environment in which a 3D model module of a real estate system may generate, and/or upload and connect, data related to a 3D model to a digital token based on a 3D model link request, according to embodiments of the invention.

[0069] Figures 19A and 19B illustrate example screenshots of user interfaces for real estate experience processes for a listing of a real property for sale (with a 3D asset) and the syndicated certification of the digital property rights of that address, it's land, digital assets and other related metadata associated to those rights utilizing an asset verification and syndication module, according to embodiments of the invention.

[0070] Figure 20 illustrates an example environment in which an asset verification and syndication module of a real estate system may generate an asset verification certification based on an asset verification request, according to embodiments of the invention.

[0071] Figure 21 illustrates an example environment in which a digital property rights management (DPRM) token module of a real estate system may generate a DPRM token and record the DPRM token on a blockchain in response to receiving a notification of a creation of a digital certificate, according to embodiments of the invention.

[0072] Figure 22 illustrates an example process flow diagram of the example environment of Figure 21, according to embodiments of the invention.

[0073] Figures 23A–23F illustrate example screenshots of a user interface for real estate experience processes utilizing a DPRM token module in which DPRM tokens are created and managed, according to embodiments of the invention.

[0074] Figure 24 illustrates an exemplary environment for implementing a real estate experience process for a real estate operating ecosystem and simultaneously servicing both physical real property assets and corresponding digital property real estate assets, according to embodiments of the invention.

[0075] Figure 25 is an example device in accordance with some implementations.

[0076] In accordance with common practice the various features illustrated in the drawings may not be drawn to scale. Accordingly, the dimensions of the various features may be arbitrarily expanded or reduced for clarity. In addition, some of the drawings may not depict all of the components of a given system, method or device. Finally, like reference numerals may be used to denote like features throughout the specification and figures.

DESCRIPTION

[0077] Numerous specific details are provided herein to afford those skilled in the art a thorough understanding of the claimed subject matter. However, the claimed subject matter may be practiced without these details. In other instances, methods, apparatuses, or systems, that would be known by one of ordinary skill, have not been described in detail so as not to obscure claimed subject matter.

[0078] The technology in this patent application is related to systems and methods for implementing an improved real estate experience where traditional search is married to design technologies that crossover web 2.0 and web 3.0 capabilities. The systems, methods, devices, and techniques are implemented with, in one case, one or more of: design preference algorithms, three-dimensional (3D) enhancement capabilities, digital property rights management (DPRM) tokenization techniques, and a general real estate ecosystem of interdependencies that allow for the physical real estate market and a digital real estate market to co-exist, both separately and connected.

[0079] **Figure 1** illustrates an exemplary environment 100 for implementing an orchestration of multiple real estate experience processes by a host (e.g., a digital asset management system), according to embodiments of the invention. The example environment 100 includes one or more client device(s) 110, one or more API gateway server(s) 115, one or more real estate data provider server(s) 120, one or more search provider server(s) 130, one or more metadata analysis server(s) 140, one or more public data provider server(s) 150, one or more digital exchange server(s) 155, and a host system server 160, that communicate over a data communication network 102, e.g., a local area network (LAN), a wide area network (WAN), the Internet, a mobile network, or a combination thereof.

[0080] The one or more client device(s) 110 (e.g., a device used by a requestor/user/client, such as a homebuyer, agent, investor, and the like) may include a desktop, a laptop, a server, or a mobile device, such as a smartphone, tablet computer, and/or other types of mobile devices. The one or more client device(s) 110 includes applications, such as the application 112, for managing a user interface(s) and communications to/from the host system server 160. The one or more client device(s) 110 may include other applications. The one or more client device(s) 110 may be utilized by a user to view and interact with the real estate system (e.g., the host system server 160) and the various real estate modules described herein. The host system server 160 may also be referred to herein as a digital asset management system or server.

[0081] The gateway server 115, also referred to herein as an "API Gateway", manages the processes of creating and publishing web application programming interfaces, enforcing their usage policies, controlling access, collecting an analyzing usage statistics, and reporting on performance. The gateway server 115 may manage these processes between the plurality of entities associated with the one or more servers of Figure 1, and requests received from application 112 from the one or more client devices 110. The management protocols of the gateway server 115 may be based on a redundant load-balancing system by managing multiple clients (e.g., client device(s) 110) so that a request is handled by one of the one or more server(s). For example, there may be multiple system server(s) that are able to service a request, and the redundant load-balancing system of the gateway server(s) 115 is responsible for ensuring that the request is performed by one of the server(s).

[0082] The gateway server(s) 115 may be front end server(s) for managing, collecting, processing, and communicating real estate queries, resource information, management data, metadata, configurations data, public information, etc., that is stored in one or more databases described herein. Further, the gateway server 115 may be front end server(s) for managing, collecting, processing, and communicating results from one or more server(s) to the client devices 110 via application 112. In an exemplary embodiment, the gateway server 115 may be front end server(s) for collecting, processing, and storing real estate information from a plurality of external real estate systems and other systems related to the real estate marketplace (e.g., public information systems, metadata information systems, third-party intermediator systems, etc.) via the one or more real estate data provider server(s) 120 to access real estate data in the real estate database(s) 125, one or more search provider server(s) 130 to access real estate data in the search database(s) 135, one or more metadata analysis server(s) 140 to access metadata in the metadata database(s) 145, one or more public data provider server(s) 150 to access public data in the public information database(s) 145, one or more digital exchange server(s) 155 to access digital exchange data in the digital exchange database(s) 156, and a host system server 160 to access the host system processes and associated information discussed herein (e.g., host system modules 162–170 to access the data associated with database(s) 171–178).

[0083] The one or more real estate data provider server(s) 120 manages traditional real estate data, such as a real estate listing platform displayed on and/or accessible via the internet. The real estate data may be stored in one or more real estate database(s) 125 (e.g., a multiple listing service (MLS) database). In exemplary implementations, real estate

data may be obtained by the host system server 160 via the one or more real estate data provider server(s) 120 for implementing the various real estate experience processes discussed herein. Some real estate information may be readily available for access on the internet such that a consumer can access and view all publicly available listing information. The real estate data stored in the real estate database 125 may include publicly shared information or privately shared information (e.g., a seller's contact information) regarding a real estate asset.

[0084] The one or more search provider server(s) 130 manages search queries from a client device and the search query data stored in one or more search database(s) 135. The one or more metadata analysis server(s) 140 manages requests (e.g., image tagging and image analysis requests) from the host system server 160 and stores the results in one or more metadata database(s) 145 according to embodiments described herein. For example, a style preference, as further described herein, may be processed, and/or its results illustrated, based on the image tagging services provided by the one or more metadata analysis server(s) 140. Additionally, in some embodiments, the host system server 160 acquires metadata (e.g., image data, third-party sources, tracked marketplace actions/behaviors, and the like) from the one or more metadata database(s) 145 via the one or more metadata analysis server(s) 140 for one or more of various real estate experience processes discussed herein (e.g., generating a design configuration display, design options for user, generating a 3D model of a physical asset, and the like). Additional metadata services provided by the one or more metadata analysis server(s) 140 may include data related total square footage, number of rooms, acreage, region, typology, third-party sales data analysis request, definitions of the specific type and style of interior fixtures, furniture, analyses/comparisons to total market, consumer profiling data, home goods purchase consumption that correlate with to home style, and the like. Different types of metadata may be used in order to collect many different data points and correlations to general home purchases, purchases of home goods, comparison of size of a home versus similar ones, correlations with consumer profiling databases, and the like.

[0085] The one or more public data provider server(s) 150 manages due diligence data requests for public/regulatory information stored in the one or more public information database(s) 152. Due diligence data relates to a legal status of the real estate asset. In an exemplary implementation, based on an asset generator request, due diligence data associated with a real estate asset may be obtained from at least one public information database 152 via a public system server (e.g., the one or more public data provider server(s) 150). In some implementations, the one or more public data provider server(s) 150 and the

public information database(s) 152 may further include additional third-party data sources, such as artificial intelligence inputs (e.g., consumer profiling data, home goods purchase consumption that correlate with to home style, and/or other data derived from AI applications that might be used for visual recreation, BIM Modeling, and the like), market behavior inputs (e.g., property data, neighborhood data, zoning information, sales history, purchase trends, economic metrics correlations of style of homes to purchases on related items, similar automotive types/purchases, analysis of home purchases over past 30, 60, or 90 days, and the like), financial data inputs, and/or other metadata from images and other ingested assets not obtained from the metadata analysis servers 140.

[0086] The one or more digital exchange server(s) 155 manages digital asset requests for stored digital assets in the digital exchange database(s) 156. For example, the one or more digital exchange server(s) may manage digital marketplaces for crypto collectibles and non-fungible tokens (NFTs), and the like. In some implementations, a digital exchange marketplace may be a blockchain-as-a-service providers handle all of the processes and activities required to maintain the blockchain infrastructure running to address technological concerns. In some implementations, a digital exchange marketplace may be a decentralized, peer-to-peer exchange that enables users to transact with one another directly in a trustless manner.

[0087] The host system server 160 implements an orchestration of multiple real estate experience processes, according to embodiments of the invention. The host system server 160 may be a personal computing device, tablet computer, thin client terminal, smart phone and/or other such computing device. The host system server 160 includes several instruction sets 161 that perform one or more real estate experience protocols according to processes described herein. The host system server 160 is communicatively coupled to one or more databases such as a preference database 170, asset database 172, a digital certificate database 174, a 3D model/experience database 176, and a DPRM token database 178, as further described herein.

[0088] In some implementations, the instruction sets 161 may include a user preference module 162 for determining a style preference based on user selection data. An example user interface, an example environment, and an example process flow diagram in which the user preference module 162 may determine a style preference based on user selection data is further discussed herein with reference to Figures 3–5, respectively.

[0089] In some implementations, the instruction sets 161 may include a user profiles module 163 for managing and storing profile data for a plurality of different users and a

plurality of different assets associated with the users (e.g., brokerages, real estate agents, developers, developments, and the like).

[0090] In some implementations, the instruction sets 161 may include a design configurator display module 164 for determining a design configuration based on user design selection data. Example user interfaces and an example environment in which the design configurator display module 164 may determine a design configuration based on user design selection data is further discussed herein with reference to Figures 6–11.

[0091] In some implementations, the instruction sets 161 may include an asset generator module 165 for generating a container file based on an asset generator request. An example user interface and an example environment in which the asset generator module 165 may generate a container file based on an asset generator request is further discussed herein with reference to Figures 12–13, respectively.

[0092] In some implementations, the instruction sets 161 may include a digital certificate module 166 for generating a digital certificate based on a digital certificate request. An example user interface, an example environment, and an example process flow diagram in which the digital certificate module 166 may generate a digital certificate based on a digital certificate request is further discussed herein with reference to Figures 14–16, respectively.

[0093] In some implementations, the instruction sets 161 may include a 3D model module 167 for generating a 3D model and the related NFT or uploading data related to a 3D model and the related NFT and connecting the data related to the 3D model to a DPRM Token (e.g., digital IP) based on a 3D model request. An example user interface and an example environment in which the 3D model module 167 may generate a 3D model and a related NFT based on a 3D model request is further discussed herein with reference to Figures 17–18, respectively.

[0094] In some implementations, the instruction sets 161 may include a 3D experience module 168 for generating a 3D experience (e.g., a 3D showroom) for displaying and interacting with user profiles (e.g., real estate agents), 3D models, etc. An example 3D experience is further discussed herein with reference to Figure 17B and 18.

[0095] In some implementations, the instruction sets 161 may include an asset verification and syndication module 169 for generating an asset verification certification based on an asset verification request. An example user interface and an example environment in which the asset verification/syndication module 167 may generate an asset

verification certification based on an asset verification request is further discussed herein with reference to Figures 19–20, respectively.

[0096] In some implementations, the instruction sets 161 may include a DPRM token module 170 for generating a DPRM token in response to receiving a notification of a creation of a digital certificate. An example environment and an example process flow diagram in which the DPRM token module 170 may generate a DPRM token in response to receiving a notification of a creation of a digital certificate is further discussed herein with reference to Figures 21 and 22, respectively.

[0097] **Figure 2** illustrates an exemplary environment 200 for implementing a real estate experience process for listing and/or searching physical real properties and generating a separate, yet related, digital property rights management (DPRM) token 220, according to embodiments of the invention. In particular, the exemplary environment 200 illustrates an overview of an example layout of the instruction sets 161 (e.g., modules 162–170) with respect to a physical asset category 210 and a digital property category 215 that are bridged by the asset verification/syndication module 167 as managed by the host system server 160. Exemplary environment 200 illustrates implementing an improved real estate experience where traditional search is married to design technologies that crossover web 2.0 and web 3.0 capabilities. The exemplary environment 200 may include design preference algorithms, 3D enhancement capabilities, DPRM tokenization techniques, and a general real estate ecosystem of interdependencies that allow for the physical real estate market and a digital real estate market to co-exist, both separately and connected.

[0098] In an exemplary embodiment, the exemplary environment 200 also allows property owners (e.g., homeowners, corporations, etc.) to claim, register, build, use, and sell their digital intellectual property (IP) as a DPRM token 220 as a complement to or an extension of their real property asset(s). In particular, in one case a host system provides an operating system environment that correlates physical real estate asset(s) (e.g., via the instruction sets of the modules of the physical asset category 210) and a digital real estate asset(s) (e.g., via the instruction sets of the modules of the digital property category 220) in a one-to-one (1:1) relationship. The host system via host system server 160 may implement a verification process for ownership of a physical asset (e.g., a home, building, an empty lot, etc.), and for creating an associated or correlating digital certificate (e.g., a virtual deed, also referred to herein as a digital certificate), along with associated digital property rights management capabilities (e.g., generating a unique, one-of-a-kind digital address as a unique identifier of the digital property). Additionally, at least some or all of the digital assets and asset

verifications information may be processed and stored by a host system server 160 (e.g., via blockchain) in tandem with a token smart contract file (e.g., a .DPRM file, also referred to herein as a DRPM token 220).

[0099] In some embodiments, the DPRM token 220 is a smart contract published to the blockchain that embodies at least some, if not all, of the digital property rights bestowed to its owner. Additionally, in some embodiments, the DPRM token 220 tracks, monitors, and enforces those rights. Additionally, in some embodiments, the DPRM token 220 may be a tradable asset that may be exchanged from one owner to another, and the DPRM token may be configured to maintain a ledger of any or all activity related to the digital property associated with the DPRM token 220 and/or the associated real estate asset related to the DPRM token 220 (e.g., digital land rights, digital asset rights on that land, and the like). In some embodiments, the DPRM token 220 may be the source of truth for all digital assets, revenues, royalties, etc., related to the digital IP. In some embodiments, the DPRM token 220 may be the access required to manage build and deploy the digital property (e.g., a user may be able to place his or her land up for sale or into any metaverse). In some embodiments, the DPRM token 220 may be the foundation from which other 3rd party apps and integrations may be built on top of. In some embodiments, the DPRM token 220 may be non-fungible (e.g., an NFT), represented with a unique address which there may only ever be one of attributed and linked to the physical asset in which it was certified.

[0100] In an exemplary embodiment, the DPRM token 220 may include digital certificate data 221, 3D model data 222, distributed ledger data 223, right of refusal data 224, and additional meta data 228 associated with the digital IP that may be included within a smart contract, for example. The DPRM token 220, and the associated data attached therein, may be used for tracking the transfer history of the digital property/assets, monitoring the value of the IP and the revenues associated, managing royalty rights distributions associated with the digital IP, adding of 3D assets onto of the DPRM token 220, issuing of a first right of refusal onto the DPRM token 220, allowing of third-party interactions with the digital IP (e.g., via an app store), application programming interface (API) interactions associated with a web 3.0 address, and the like.

[0101] In some implementations, some rules and benefits may be included with the DPRM token 220. For example, a first mover advantage rights may be included with the DPRM token 220 that may allow the first owner to mint a digital certificate related to the physical property and issued with a royalty tied the value exchange and revenues related to the digital IP regardless of if the owner sells his or her physical asset. Additionally, physical

property owner transfer rights may be included with the DPRM token 220 that may allow asset owner(s) to get a royalty for owning the asset tied to the value, exchange, and revenues once the owner proves that they are the new owners. In other words, individuals who purchase the real property asset with already established digital property rights may receive a royalty tied to the digital IP (e.g., the physical house includes a royalty associated with the digital rights of the property). Importantly, should the owner of the certificate and related wish to, the token with all of its rights may be traded separately from the real property and utilized and monetized as a separate entity from the real property.

[0102] **Figure 3** illustrates example screenshots 310, 340 of a user interface for real estate experience processes utilizing a user preference module (e.g., user preference module 162), according to embodiments of the invention. The example screenshot 310 illustrates a user interface for presenting a user (e.g., a consumer such as a current or potential homeowner) with a library of predefined set of images (e.g., selectable images 312, 318, etc., as shown in region 304) of varying rooms and exteriors of sample houses/building (e.g., modern, contemporary, etc.). In some implementations, the selectable images may be selected and tagged by the host system server, or the selectable images may be obtained from the metadata analysis servers 140. In use, a user may select an image by selecting an interactive element associated with the selectable image. For example, the user has selected selectable image 312 as indicated by the interactive element 314 (e.g., a solid heart icon), and the user has not selected selectable image 316 as indicated by the interactive element 316. In some implementations, each image to be selected by the user may hold a non-visible mathematical design score indicating the level of design style intensity. This selection and scoring system may create and weighted score. The example screenshot 310 illustrates presenting the user with six different selectable images to choose from as an initial set of images for region 310 as an example, but the system for determining a style preference may include several different sets of images for the user to select to better determine a more accurate style profile for the particular user.

[0103] The example screenshot 340 illustrates a user interface for processing the received inputs/selections in combination with a behavior quiz that presents the style quiz participant with additional lifestyle, home use questions that may be answered on a numerical scale (e.g., 0-10). The weighted responses to image selection process and behavior quiz responses may be used to determine a multi-dimensional style preference for the user. For example, as illustrated in Figure 3, screenshot 340 illustrates results of a style quiz in the UI region 350, such as an example image 352, and a spider graph 354 that represents the users score. Additionally, the results of a style quiz in the region 350 include

an indication 356 of the user's interior design style (e.g., "contemporary"), and an indication 358 of the user's architectural design style (e.g., "traditional"). Additionally, a selectable icon 360 allows a user to share the quiz results with a friend.

[0104] **Figure 4** illustrates an example environment 400 in which a user preference module 162 of a real estate system (e.g., host system server 160) performs a preference analysis and determines a style preference 410 based on user selection data 402, curated search data 136, metadata 146, real estate data 126, etc., according to embodiments of the invention. For example, a style preference (e.g., style preference 410) may be an analytical score that is determined based on user-provided information, metadata (e.g., search history, embedded data associated with images, prior preference data, and the like), and/or other sources of information described herein.

[0105] As illustrated in example environment 400, the user preference module 162 is communicatively coupled (e.g., via the host system server 160 over the network 102) with one or more search database(s) 135 to access curated search data 136, one or more metadata database(s) 145 to access metadata 146, one or more real estate database(s) 125 to access real estate data 126, and a preference database 171 to access user preference data 171A and/or store the generated style 410 as preference data 171A. The databases communicatively coupled to the user preference module 162 as illustrated in example environment 400 are illustrated for example processes to determine a style preference 410 and are not meant to be limiting. For example, the user preference module 162 may be communicatively coupled, via the host system server 160, to any/all of the databases, servers, computers, etc., as illustrated herein with reference to example environment 100 of Figure 1.

[0106] Operations of an example process of the example environment 400 may be implemented, for example, by a system that includes one or more data processing apparatus, such as host system server 160 of Figure 1 utilizing a user preference module 162 of the instruction sets 161. The example process of the example environment 400 may also be implemented by instructions stored on computer storage medium, where execution of the instructions by a system that includes a data processing apparatus cause the data processing apparatus to perform the operations of the example process of the example environment 400.

[0107] An example process flow to determine a style preference based on user selection data for example environment 400 may include providing, to a user at a client device via a user interface or via data instructions associated with an application

programming interface (API) for the user interface, a visual style quiz (e.g., a style quiz UI such as screenshot 310) that includes a plurality of selectable images, wherein each of the plurality of selectable images represent one or more predetermined architectural or design styles.

[0108] The example process flow of example environment 400 may further include receiving, by the one or more processors, information relating to one or more user selections of the one or more of the plurality of selectable images. For example, the user may select one or more images from the visual style quiz (e.g., a style quiz UI such as screenshot 310) that includes a plurality of selectable images, wherein each of the plurality of selectable images represent one or more predetermined architectural or design styles.

[0109] The example process flow of example environment 400 may further include receiving, by the one or more processors, at least one of behavioral selection data, third-party data, tracked user activity data, and other data or metadata that represent the user's preferences. For example, as illustrated in Figure 5A behavioral data 520 may include a plurality of subsets of scoring data such as user selection data 522, metadata 523, third-party data 524, or other data 525 that may be analyzed by behavioral assessment scoring instructions 526 to determine a behavioral assessment weighted score 528. For example, the behavioral data 520 may include different data sources that pertain to measured actions of an individual, such as time spent looking at visuals, elements a user clicks on, data that may have been tracked to viewing and/or selecting, sources of media consumed, interactions with listings in the market, and the like.

[0110] The example process flow of example environment 400 may further include receiving the behavioral selection data. For example, the example environment 400 may include providing, via a user interface, a behavioral quiz (e.g., a style quiz UI such as screenshot 340) that includes a questionnaire regarding home style and user preferences relating to the user (e.g., a behavioral and home needs assessment, multiple questions with a 0–10 score, please add sample questions/ratings for the quiz). The example process flow of example environment 400 may further include receiving information relating to one or more user selections of one or more of the plurality of selectable images (e.g., user hearts his or her own selections). The example process flow of example environment 400 may further include calculating a questionnaire score based upon the user-provided information in response to the questionnaire.

[0111] The example process flow of example environment 400 may further include determining a style preference based on the received information relating to one or more

user selections and the questionnaire score. For example, the weighted results of the visual and behavior quiz exercises create distinct categories of user styles which are then associated linked back with the individual and their tagged profile creating their customized style preference 410. Figure 5B, further discussed herein, provides an example illustration of the style quiz with both visual and behavior scoring systems. In an exemplary embodiment, the style preference is multi-dimensional in nature because it is based on the weighted results of the visual and behavior quiz exercises that create a multitude of distinct categories of user styles.

[0112] The example process flow of example environment 400 may further include presenting a representation of the style preference (e.g., style quiz results) to the user at the user interface. In some implementations, the style preference may be presented at the user interface in a graphical format. For example, the style preference in example screenshot 340 is presented as a spider chart 354. The example process flow of example environment 400 may further include uploading the style preference to a user profile. For example, the style preference may be associated with the user that took the style quiz and stored in the user preference database 170.

[0113] In some implementations, the plurality of selectable images are categories based on a plurality of different location categories within a house. For example, the images may include different sets of categories such as kitchen, bathroom, living room, exterior, garage, etc.

[0114] The example process flow of example environment 400 may further include generating a real estate search for design preferences of the user based on the style preference. For example, the search may include either traditional search or visual explore search.

[0115] The example process flow of example environment 400 may further include providing, via a user interface, three-dimensional design options showing proposed modifications for a selected real estate asset. For example, the style preference 410 may be utilized by design processes described herein to curate designs placed on top of land for sale (e.g., building a house from an empty lot), 3D assets available for purchase (e.g., modifying a current house), and the like.

[0116] **Figure 5A** illustrates an example process flow diagram 500A of the example environment of Figure 4, and **Figure 5B** illustrates an example style quiz algorithm visualization 500B, according to embodiments of the invention. Operations of the process diagram 500A may be implemented, for example, by a system that includes one or more

data processing apparatus, such as host system server 160 of Figure 1 utilizing a user preference module 162 of the instruction sets 161. The process diagram 500 may also be implemented by instructions stored on computer storage medium, where execution of the instructions by a system that includes a data processing apparatus cause the data processing apparatus to perform the operations of the process diagram 500.

[0117] In an exemplary embodiment, process flow diagram 500A illustrates an example embodiment for determining an analytical style score 535 based on a multidimensional weight scoring metric between visual selection data 510 (e.g., image tagging) and behavioral data 520 (e.g., scored survey questions behavior, metadata, third-party data, etc.), and determining a style preference 410 based on the analytical style score 535, and one/or additional preference data 590 associated with the user (e.g., real estate data 126, curated search data 136, metadata 146, preference data 171A, etc.). The visual selection data 510 includes a plurality of subsets of data (e.g., visual selection data 512a–visual selection data 512n) based on the different categories of images presented to user. For example, visual selection data 512a may include a user's selection data (e.g., hearting different images) for different exterior styles, visual selection data 512b may include kitchen styles, visual selection data 512c may include bathroom styles, and so forth. For example, the visuals scoring apparatus (e.g., user preference module 162) provides each user with visuals of a category (e.g., kitchen with consumers selecting a limited set of those provided as their "dream kitchen"). Each visual may contain a multidimensional numeric score (e.g., 0–100) reflective of the relative style preference (e.g., contemporary, modern, traditional). Scores of multiple images across multiple categories may yield a style preference score (e.g., interior/exterior weighted score 516) as determined by the interior/exterior scoring instructions 514. An example of the visual selection data 510 is illustrated at section 540 of the style quiz algorithm visualization 500B of Figure 5B.

[0118] The behavioral data 520 may include a plurality of subsets of scoring data such as user selection data 522, metadata 523, third-party data 524, or other data 525 that may be analyzed by behavioral assessment scoring instructions 526 to determine a behavioral assessment weighted score 528. For example, the behavioral data 520 may include different data sources that pertain to measured actions of an individual, such as time spent looking at visuals, elements a user clicks on, data that may have been tracked to viewing and/or selecting, sources of media consumed, interactions with listings in the market, and the like. The user selection data 522 may include results of one or more behavioral quizzes based on the different categories of quizzes/surveys presented to a user based on different behavioral assessments (e.g., a scored survey is a questionnaire in which you assign points

or scores to answer options). For example, user selection data 522 may include a survey scoring for different exterior styles, kitchen styles, bathroom styles, and so forth. For example, a quiz scoring apparatus (e.g., user preference module 162) may provide users with surveys and the user's may be asked to weight the importance of a variety of style, home, and lifestyle preferences, which may correlate with home style types. Scores of multiple survey scores across multiple categories may yield a behavioral style preference score (e.g., behavioral assessment weighted score 528) as determined by the behavioral assessment scoring instructions 526. An example of the behavioral data 520 is illustrated at section 550 of the style quiz algorithm visualization 500B of Figure 5B.

[0119] In an exemplary embodiment, the two processes for the interior/exterior scoring instructions 514 and the behavioral assessment scoring instructions 526 may be utilized together to create a deep understanding of their home style preferences. In particular, the interior/exterior weighted score 516 and the behavioral assessment weighted score 528 may be combined and manifested to the user as his or her analytical style score 535 as determined by the multidimensional weighted scoring instructions 530, and then presented as a style preference 410 based on any additional preference data 590 (if any). An example of the multidimensional weighted scoring for the multidimensional weighted scoring instructions 530 is illustrated at section 560 of the style quiz algorithm visualization 500B of Figure 5B.

[0120] **Figure 6** illustrates an example screenshot 600 of a user interface for real estate experience processes utilizing a design module, according to embodiments of the invention. In particular, screenshot 600 represents a bundled user interface of multiple design widgets 610 and 620. The design widgets 610, 620 display selections from a design shop (e.g., as illustrated in Figures 8 and 9) and/or uploaded content that a user may choose to include. These design widgets 610, 620 may be viewed and shared on multiple client devices such as a desktop display shown in design widget 610, and a mobile device shown in design widget 620.

[0121] **Figure 7** illustrates an example screenshot 700 of a user interface for real estate experience processes utilizing a design module, according to embodiments of the invention. In particular, screenshot 700 represents a design widget 720 with its bundled components (e.g., video, 3D model, 360° tour, renderings, etc.) connected to a publisher (e.g., other user(s)) and data sources) for the listing 710.

[0122] **Figure 8** illustrates an example screenshot of a user interface for real estate experience processes utilizing a design module, according to embodiments of the invention.

In particular, screenshot 810 illustrates options for a "Design Shop" user interface. For example, screenshot 810 provides the user interface location in which users may select the configurators 820, 830 (e.g., listings, home vault (user profile), digital IP) that a user intends to build. User interface selectable element 840 provides opportunity to upload documentation and elements outside of the platform to the widget. When selectable element 840 is selected, design shop window 850 is displayed to the user that provides the backend mechanism in which users may input details associated with the widget and, if desired, request specific connections to data sources (e.g., a listing).

[0123] **Figure 9** illustrates an example screenshot 900 of a user interface for real estate experience processes utilizing a design module, according to embodiments of the invention. In particular, screenshot 900 illustrates the assets which users may select to build their custom configurator. In the initiating portion 910 of the design shop, a user may enter a look up address at element 912 and request a professional video consultation at element 914. At area 920, a user may upload his or her already drafted designs (e.g., from an architect). Element 930 illustrates an example 3D model of a home, and allows a user to have the system for automatically creating a 3D model (e.g., commission a model). Additionally, screenshot 900 includes options for a user to specify interior sections of the home to design a 3D model. For example, selecting element 940 for a living design, selecting element 950 for a bathroom design, and selecting element 960 for a kitchen design.

[0124] **Figure 10** illustrates an example screenshot 1000 of a user interface for real estate experience processes utilizing a design module, according to embodiments of the invention. In particular, screenshot 1000 illustrates how design widgets in the area 1010 may be pulled from a library and used to compliment listings which may be viewed while searching for real property on the real estate system described herein. Each design widget in the area 1010 compliment a particular listing as an enhancement to a listing with traditional data (e.g., attached to listings, home vaults, user profile land searches, etc.) as well as being potentially syndicated and shared across social media platforms. Area 1020 illustrates a location map for the address associated with the listing.

[0125] **Figure 11** illustrates an example environment 1100 in which a design configurator display module 164 of a real estate system (e.g., host system server 160) may determine a design configuration 1110 based on user design selection data 1102, according to embodiments of the invention. As illustrated in example environment 1100, the design configurator display module 164 is communicatively coupled (e.g., via the host system server 160 over the network 102) one or more metadata database(s) 145 to access

metadata 146, one or more real estate database(s) 125 to access real estate data 126, and a preference database 170 to access user preference data 171A. The databases communicatively coupled to the design configurator display module 164 as illustrated in example environment 1100 are illustrated for example processes to determine a design configuration 1110 and are not meant to be limiting. For example, the design configurator display module 164 may be communicatively coupled, via the host system server 160, to any/all of the databases, servers, computers, etc., as illustrated herein with reference to example environment 100 of Figure 1.

[0126] Operations of an example process of the example environment 1100 may be implemented, for example, by a system that includes one or more data processing apparatus, such as host system server 160 of Figure 1 utilizing a design configurator display module 164 of the instruction sets 161. The example process of the example environment 1100 may also be implemented by instructions stored on computer storage medium, where execution of the instructions by a system that includes a data processing apparatus cause the data processing apparatus to perform the operations of the example process of the example environment 1100.

[0127] In an exemplary embodiment, the design configurator display module 164 focuses on a customized design control interface as illustrated in Figures 6–10. To build a design story, a user may access a design shop and choose the elements that a user would want to display, and the system may ingest the request, process, upload, and bundle the results for the consumer and hosted on the system server (e.g., host system server 160 of Figure 1). In some implementations, the final design display configuration may be placed in a user's profile for use and distribution with all of the functionalities as described herein. If a user has his or her own documentation to upload (e.g., an architecturally designed 3D model), the user may bypass the request elements section. The design widget user interface framework is optimized for both web and mobile display.

[0128] An example process flow to determine a design configuration based on user design selection data for example environment 1100 may include providing a user interface (e.g., a design configurator display user interface) at a client device or via data instructions associated with an application programming interface (API) for the user interface, where the user interface presenting a plurality of options for user selection. The plurality of options for user selection may include a plurality of design assets associated with a design project relating to a real estate asset. In some implementations, the plurality of design assets may

be attached to or independent of a data source (e.g., an MLS listing, a user profile / home vault, a DPRM token, etc.).

[0129] The plurality of options for user selection may further include a plurality of design asset ingestion options associated with creating, hosting, and display options. For example, the creating, hosting, and display options may be utilized for distribution for the design project (e.g., 3D model, video, 360° tour, floorplans, etc. as shown in design widget 610). In some implementations, design options, metadata, image data, tracked marketplace actions/behaviors, and the like, may be pulled from a third-party database. In some implementations, design options may be based on a style preference (e.g., style preference 410) associated with the user of the client device.

[0130] The plurality of options for user selection may further include a real estate tool configured to associate the design project to an associated real estate listing. For example, the design configuration user interface may be configured to provide the user with an ability to associate a design widget to an MLS listing, and/or connect a design widget to a data source.

[0131] The plurality of options for user selection may further include a user profile tool configured to associate the design project to a user profile of a user of the client device. For example, a user profile tool may be configured to provide the user with an ability to associate the design widget to a user's home vault and connect a design widget to the user profile.

[0132] The example process flow of example environment 1100 may further include receiving user design selection data based on a selection of at least a portion of the plurality of options for user selections. For example, user design selections may be utilized in the design shop.

[0133] The example process flow of example environment 1100 may further include generating a design configuration element (design configuration 1110, such as a design widget) based on the user design selection data that represents the user's preferences

[0134] The example process flow of example environment 1100 may further include providing a representation of the design configuration element (e.g., a design widget) for display on the client device via the user interface.

[0135] In some implementations, the plurality of options for user selections further includes a digital IP tool configured to associate the design project to a DPRM token. (e.g., the ability to associate design elements to digital IP. Connect design widget to a DPRM token)

[0136] In some implementations, the plurality of options for user selections further includes an export tool configured to export data associated with the design project to an electronic file. For example, the ability to export all library assets to a white labeled PDF or zip file as well as controls for sharing either a single asset or the entire bundle on social media platforms.

[0137] In some implementations, the plurality of options for user selections further includes a customization tool configured to add, remove, or customize the display of user interface design elements associated with the design project. For example, the ability for hiding individual components, white labeling the display as well as overlay relevant third-party data, assets, or plugins.

[0138] In some implementations, the example process flow of example environment 1100 may further include storing the design configuration element. For example, the generated design widget (e.g., design widgets in area 1010) may be stored in the asset database 172. The example process flow of example environment 1100 may further include providing the design configuration element as an embedded element for a third-party website. For example, design widgets may be embeddable onto third-party sites that the user chooses.

[0139] In some implementations, the design configuration element (e.g., a design widget) includes a hyperlink to a DPRM token associated with the real estate asset. For example, design widgets can display reference to a created digital IP, such as an NFT. In some implementations, the design configuration element (e.g., a design widget) includes a selectable icon, used for social sharing, syndication, and stored in a user profile.

[0140] **Figure 12** illustrates example screenshots 1210, 1250 of a user interface for real estate experience processes utilizing an asset generator module (e.g., asset generator module 165), according to embodiments of the invention. The example screenshot 1210 illustrates a user interface for a visualization of the asset data that may be stored within a container file (e.g., architectural design assets). For example, visualization area 1230 includes an interactive 3D model 1232 that a user may reorient, expand, rotate, etc., the position and orientation of 3D model 1232. The current pose of the 3D model 1232 is displayed to the user via pose indicator 1234. Additionally, screenshot 1210 includes a panel 1240 of additional display and interaction options.

[0141] The example screenshot 1250 illustrates a user interface for a visualization of the home vault interface associated with the asset generation process for creating a container file. In particular, user profile area 1260 includes a selectable element 1262 to

provide a user a link to a dashboard window for all of the user's open projects or associated listings. The user profile area 1260 further includes a selectable element 1264 to provide a user a link to mood boards. The user profile area 1260 further includes a selectable element 1266 to provide a user a link to customize notifications for activities for all of the user's open projects or associated listings. The user profile area 1260 further includes a selectable element 1268 to provide a user a link to view an associated 3D home vault. Furthermore, screenshot 1250 includes area 1270 that includes the designed 3D model and a plurality of options to further update that model by uploading a survey at selectable element 1272, uploading floorplans at selectable element 1274, uploading drawings at selectable element 1276, and uploading image files at selectable element 1278.

[0142] **Figure 13** illustrates an example environment 1300 in which an asset generator module 165 of a real estate system (e.g., host system server 160) may generate a container file 1330 based on an asset generator request 1302, according to embodiments of the invention. As illustrated in example environment 1300, the asset generator module 165 is communicatively coupled (e.g., via the host system server 160 over the network 102) with one or more real estate database(s) 125 to access real estate data 126, one or more public information database(s) 152 to access due diligence data 153, a preference database 170 to access preference data 171A and/or a style preference 410, and one or more asset database(s) 125 to access asset data 173 and/or store the generated container file 1330 as asset data 173. The databases communicatively coupled to the asset generator module 165 as illustrated in example environment 1300 are illustrated for example processes to generate a container file 1330 and are not meant to be limiting. For example, the asset generator module 165 may be communicatively coupled, via the host system server 160, to any/all of the databases, servers, computers, etc., as illustrated herein with reference to example environment 100 of Figure 1.

[0143] Operations of an example process of the example environment 1300 may be implemented, for example, by a system that includes one or more data processing apparatus, such as host system server 160 of Figure 1 utilizing an asset generator module 165 of the instruction sets 161. The example process of the example environment 1300 may also be implemented by instructions stored on computer storage medium, where execution of the instructions by a system that includes a data processing apparatus cause the data processing apparatus to perform the operations of the example process of the example environment 1300.

[0144] An example process flow to generate a container file based on an asset generator request for example environment 1300 may include receiving, from a client device via a user interface or via data instructions associated with an application programming interface (API) for the user interface, an asset generator request relating to a real estate asset (e.g., home, office building, empty lot, etc.). For example, the host system (host system server 160) can access and aggregate public information, topography data, image data, design score data, social mood board data, and the like, to create a due diligence packet.

[0145] The example process flow of example environment 1300 may further include obtaining, based on the asset generator request, due diligence data associated with the real estate asset from at least one public information database. In some implementations, the due diligence data relates to a legal status of the real estate asset and may be obtained from a public system server (e.g., public data provider server(s) 150).

[0146] The example process flow of example environment 1300 may further include obtaining a style preference associated with the client device or a user of the client device from a user preference database. For example, the style preference may be based on the user style quiz and stored in a user profile in the user preference database 170.

[0147] The example process flow of example environment 1300 may further include obtaining information relating to existing conditions of the real estate asset, where the information relating to existing conditions relates to physical properties of the real estate asset. For example, information relating to existing conditions of the real estate asset may include surveys, floorplans, etc., from the home vault/user profile, stored in the user preference database 170 or asset database 172.

[0148] The example process flow of example environment 1300 may further include generating a container file (e.g., architectural design assets) associated with the real estate asset based on the due diligence data, the style preference, the existing conditions data. For example, the container file may be used for the building of regular design projects (e.g., architects, etc.). The container file may also get reused in the development of 3D NFTs that then get attached to the DPRM token.

[0149] The example process flow of example environment 1300 may further include storing the container file at an asset database. For example, a container file may be associated with a user profile and accessed by users such as clients.

[0150] In some implementations, the example process flow of example environment 1300 may further include generating a new project request ticket based on real estate data associated with the real estate asset and user preference data associated with the user of the client device. For example, a new project request ticket with real estate asset data may be created which may include user preference data. Additionally, a new project request ticket may be included with a container file with (e.g., design assets) that are specific to the user's design preferences for download and use via a user interface (e.g., screenshots 1210, 1250).

[0151] In some implementations, the style preference may be determined based on providing, to a user at a client device via a user interface, a first portion of a style quiz that comprises a plurality of selectable images, where each of the plurality of selectable images represent one or more predetermined architectural or design styles. The style preference may be determined further based on providing, via a user interface, a second portion of the style quiz that comprises a questionnaire regarding home style and user preferences relating to the user. The style preference may be determined further based on receiving information relating to one or more user selections of one or more of the plurality of selectable images. The style preference may be determined further based on calculating a questionnaire score based upon the user-provided information in response to the questionnaire. The style preference may be determined further based on determining a style preference based on the received information relating to one or more user selections and the questionnaire score. The style preference may be determined further based on presenting a representation of the style preference to the user at the user interface.

[0152] **Figure 14** illustrates an example screenshot 1400 of a user interface for real estate experience processes utilizing a digital certificate module, according to embodiments of the invention. In particular, screenshot 1400 illustrates an example digital certificate 1430 issued upon verification of an owner to physical ownership. For example, John Smith was verified as the asset owner of "123 First Lane...". In an exemplary embodiment, the digital certificate 1430 holds data related to the parent, registerer of the digital IP, certificate holder, and the unique identify (e.g., one-of-a-kind digital address: "123FirstLaneEastHamptonNY.dprm"). Example screenshot 1400 further illustrates a selectable element 1440 that allows a user to view the digital certificate 1430 on an NFT marketplace (e.g., on a digital exchange database 156 via one or more digital exchange servers 155). Example screenshot 1400 further illustrates a selectable element 1450 that allows a user to sell the digital certificate 1430 on an NFT marketplace.

[0153] **Figure 15** illustrates an example environment 1500 in which a digital certificate module 166 of a real estate system (e.g., host system server 160) may verify real property ownership, establishing a 1:1 relationship between the real property (e.g., address, land, assets, etc.) and generate a digital certificate 1510 based on a digital certificate request 1502 to be placed on the blockchain that embodies the separate, yet related digital Intellectual property rights of that correlate to that real property address (e.g., digital address, land, assets, etc.), according to embodiments of the invention. As illustrated in example environment 1500, the digital certificate module 166 is communicatively coupled (e.g., via the host system server 160 over the network 102) with one or more real estate database(s) 125 to access real estate data 126, one or more public information database(s) 152 to access due diligence data 153, and one or more digital certificate database(s) 174 to access certificate data 175 and/or store the generated digital certificate 1510 as certificate data 175. The databases communicatively coupled to the digital certificate module 166 as illustrated in example environment 1500 are illustrated for example processes to generate a digital certificate 1510 and are not meant to be limiting. For example, the digital certificate module 166 may be communicatively coupled, via the host system server 160, to any/all of the databases, servers, computers, etc., as illustrated herein with reference to example environment 100 of Figure 1.

[0154] **Figure 16** illustrates an example process flow diagram 1600 of the example environment 1500 of Figure 15, according to embodiments of the invention. Operations of an example process of the example environment 1500 as process flow diagram 1600 may be implemented, for example, by a system that includes one or more data processing apparatus, such as host system server 160 of Figure 1 utilizing a digital certificate module 166 of the instruction sets 161. The example process of the example environment 1500 as process flow diagram 1600 may also be implemented by instructions stored on computer storage medium, where execution of the instructions by a system that includes a data processing apparatus cause the data processing apparatus to perform the operations of the example process of the example environment 1500 as process flow diagram 1600.

[0155] An example process flow to determine a digital certificate based on a digital certificate request for example environment 1500 as process flow diagram 1600 may include receiving, from a requester at a client device via a user interface or via data instructions associated with an application programming interface (API) for the user interface, a digital certificate request 1602 relating to a real estate asset, where the digital certificate request 1602 includes a physical address or lot identifier of the real estate asset. For example, a

user enters an address and searches a property, such as a home, office building, empty lot, and the like.

[0156] The example process flow of example environment 1500 as process flow diagram 1600 may further include determining at least one of the following, based on the digital certificate request and referencing a digital certificate database: i) whether a digital certificate associated with the real estate asset exists and is registered in the digital certificate database (e.g. claimed 1614), or ii) whether a digital certificate associated with the real estate asset is available for registry (e.g., unclaimed 1612). For example, the host system may display to the user that the property and the owners as represented on the deed to claim ownership.

[0157] In response to determining a digital certificate associated with the real estate asset is available for registry (e.g., unclaimed 1612), the example process flow of example environment 1500 as process flow diagram 1600 may further include displaying the ownership information associated with the real estate asset via the user interface (e.g., block 1630) or via data instructions associated with an API. For example, if available, the host system (e.g., host system server 160) may pull public ownership information for display via ingested third-party data source, title search, and the like (e.g., via public data provider server(s) 150).

[0158] In response to determining a digital certificate associated with the real estate asset is available for registry (e.g., unclaimed 1612), the example process flow of example environment 1500 as process flow diagram 1600 may further include request and obtain verification information relating to ownership from the requester via the user interface or via the API. For example, at block 1640, the host system (e.g., host system server 160) may provide a verification from a requester of their ownership via uploaded and validated documentation (e.g., ID upload, licenses, bank accounts, social security cards, third-party transaction data, and the like).

[0159] In response to determining a digital certificate associated with the real estate asset is available for registry (e.g., unclaimed 1612), the example process flow of example environment 1500 as process flow diagram 1600 may further include determining that the requestor is verified as the owner of the real estate asset based on the provided verification information. For example, the host system may verify ownership (e.g., deed + identity) and issue a 1:1 virtual deed (e.g., digital certificate 1510).

[0160] In response to determining a digital certificate associated with the real estate asset is available for registry (e.g., unclaimed 1612), the example process flow of example

environment 1500 as process flow diagram 1600 may further include generating a digital certificate 1510 (e.g., a digital/virtual deed) associated with the requester and the real estate asset based on the determination that requestor is a sufficient owner of the real estate asset. For example, generating a digital certificate 1510 may include minting a certificate of ownership which may bestow the IP rights associated with that real asset. For example, bestow the IP rights associated with that real asset to the digital certificate 1510 means the digital address, digital land, digital structures are associated within that property. Thus, the host system is the root verifying authority of digital rights for this property.

[0161] In response to determining a digital certificate associated with the real estate asset is available for registry (e.g., unclaimed 1612), the example process flow of example environment 1500 as process flow diagram 1600 may further include storing the digital certificate at the digital certificate database. For example, the digital certificate 1510 may be associated with a user profile and accessed by users such as clients.

[0162] In some implementations, the example process flow of example environment 1500 as process flow diagram 1600 may further include attaching the digital certificate to a DPRM token associated with the real estate asset. For example, the digital certificate 1510 may be attached/linked to the DPRM token 220.

[0163] In some implementations, the digital certificate includes a unique identifiable digital address (e.g., stored on a blockchain/digital ledger). For example, a digital certificate 1510 may include a unique web 3.0 address for the property (E.g., "123firstlaneeasthamptonny.dprm").

[0164] In some implementations, the digital certificate includes meta data that associates the digital certificate and the real estate asset based on a unique identifier of the digital certificate and the physical address or lot identifier of the real estate asset. For example, the digital certificate 1510 equates to digital IP right (e.g., air rights of a physical asset). In some implementations, the digital unique address is a 1:1 link source of truth attribution to the property. Additionally, meta data may be included associating the digital certificate 1510 with real property and the digital property.

[0165] In some implementations, in response to determining a digital certificate associated with the real estate asset exists (e.g., already owned - claimed 1614) and is registered in the digital certificate database, the example process flow of example environment 1500 as process flow diagram 1600 may further include provide for display on the user interface a transaction portal configured to enable acquisition of the digital certificate associated with the real estate asset. For example, at block 1622, if somebody

searches for a property who's digital IP is already owned and certified on the blockchain, a user, through an interface, may request to purchase a digital certificate.

[0166] In some implementations, in response to determining a digital certificate associated with the real estate asset exists (e.g., already owned - claimed 1614) and is not registered in the digital certificate database, the example process flow of example environment 1500 as process flow diagram 1600 may further include provide for display on the user interface a transaction portal configured to provide an option to purchase a first right of refusal associated the digital certificate associated with the real estate asset. For example, block 1624 (e.g., right of first refusal (ROFR)), if someone searches for a property whose digital IP has not already been certified within a registry, a user may be provided with an option purchase a first right of refusal that gets issued onto the digital certificate.

[0167] **Figure 17A** illustrates an example screenshot 1700A of a user interface for real estate experience processes utilizing a three-dimensional (3D) model module, according to embodiments of the invention. In particular, screenshot 1700A illustrates a selectable element 1710 for a user to build a 3D IP model 1720 (e.g., via a design shop as discussed herein). Additionally, screenshot 1700A illustrates an element 1725 for accessing a 3D experience. The selectable element 1725 may be a selectable element, or may be some type of link to a 3D experience, such as two-dimensional matrix barcode (e.g., a QR code). An example 3D experience that may be linked to the element 1725 is further illustrated in Figure 17B.

[0168] Screenshot 1700A further illustrates an example digital certificate 1730 issued upon verification of an owner to a physical ownership, and generating a 3D NFT attachment link at element 1735. Thus, screenshot 1700A illustrates that a 3D model has been attached to a token and illustrated in tandem with the digital certificate 1730. For example, John Smith was verified as the asset owner of "123 First Lane...". In an exemplary embodiment, the digital certificate 1730 holds data related to the parent, registerer of the digital IP, certificate holder, and the unique identify (e.g., one-of-a-kind digital address: "123FirstLaneEastHamptonNY.dprm"). Example screenshot 1700 further illustrates a selectable element 1440 that allows a user to view the digital certificate 1730 on an NFT marketplace (e.g., on a digital exchange database 156 via one or more digital exchange servers 155). Example screenshot 1700A further illustrates a selectable element 1750 that allows a user to sell the digital certificate 1730 on an NFT marketplace.

[0169] **Figure 17B** illustrates an example 3D environment 1700B of an experience associated with an example 3D showroom, according to embodiments of the invention. In

particular, 3D environment 1700B illustrates an extended reality (XR) experience of an example 3D showroom 1770. The example 3D showroom experience of 3D environment 1700B includes a collection of interactable listings 160. Each listing may include just a 3D IP model, such as a 3D IP model 1720, or each listing 1760 may include any additional information related to the real estate asset, such as the example screenshot 1700A. The 3D environment 1700B further includes a representation 1790 of a user (e.g., an avatar) as he or she interacts with one or more of the listings 1760. The listed options in the option section 1780 may include one or more links to different 3D showroom experiences or provide customized selections/options based on the user interactions within the 3D showroom 1770. For example, as the user or the representation 1790 of the user interacts with one or more of the listings 1760 within the 3D showroom 1770, different options may be presented in the option section 1780.

[0170] An XR experience or XR environment refers to a wholly or partially simulated environment that people sense and/or interact with via an electronic device, such as a head mounted device (HMD). For example, an XR environment may include augmented reality (AR) content, mixed reality (MR) content, virtual reality (VR) content, and/or the like.

[0171] **Figure 18** illustrates an example environment 1800 in which a 3D model module 167 of a real estate system (e.g., host system server 160) may generate, and/or upload and connect, data related to a 3D model to a digital token via a sanctioned 3D model link 1810 based on a 3D model link request 1802, according to embodiments of the invention. For example, host system server 160 may verify a 3D models association with a related digital certificate and link that 3D model and related NFT, or upload a 3D model and related NFT to the DPRM token via a created unique identifier based on a 3D model request 1802. As illustrated in example environment 1800, the 3D model module 167 is communicatively coupled (e.g., via the host system server 160 over the network 102) with the asset database 172 to access asset data 173, the digital certificate database 174 to access certificate data 175 and/or the generated digital certificate 1510, and a 3D model/experience database 176 to access 3D model data 177 and/or store the generated 3D model and related NFT 1810 as 3D model data 177. Moreover, the 3D model and related NFT (either created or uploaded) may be attached (e.g., linked, such as sanctioned 3D model link 1810) to the DPRM token 220 via unique identifiers. The databases communicatively coupled to the 3D model module 167 as illustrated in example environment 1800 are illustrated for example processes to verify a 3D model's and related NFT 1810 association with owned digital IP (e.g., digital certificate 1510), and are not meant to be limiting. For example, the 3D model module 167 may be communicatively coupled, via the host system server 160, to any/all of

the databases, servers, computers, etc., as illustrated herein with reference to example environment 100 of Figure 1.

[0172] Operations of an example process of the example environment 1800 may be implemented, for example, by a system that includes one or more data processing apparatus, such as host system server 160 of Figure 1 utilizing an 3D model module 167 of the instruction sets 161. The example process of the example environment 1800 may also be implemented by instructions stored on computer storage medium, where execution of the instructions by a system that includes a data processing apparatus cause the data processing apparatus to perform the operations of the example process of the example environment 1800.

[0173] An example process flow to generate a 3D model 1810 based on a 3D model request 1802 for example environment 1800 may include receiving, from a requester at a client device via a user interface, a request to connect data related to a 3D model via a sanctioned link to a digital token relating to a real estate asset (e.g., home, office building, empty lot, etc.). For example, the host system (e.g., host system server 160) may access and aggregate public information, real estate data, metadata, image data, tracked marketplace actions/behaviors, and the like, to create (or obtain) a 3D model and publish (e.g., link to) as an NFT.

[0174] The example process flow of example environment 1800 may further include obtaining, based on the 3D model request, asset data associated with the real estate asset from an asset database, wherein the asset data includes an asset ticket relating to assets associated with the physical address. For example, an "asset ticket" may include assets generated by the asset generator module 165 based on the public information, real estate data, metadata, image data, tracked marketplace action/behavior data, the due diligence data, and/or the style preference, as discussed herein.

[0175] The example process flow of example environment 1800 may further include based on the 3D model request, at least one of i) generating a 3D model of the real estate asset based on the asset data, or ii) obtaining a 3D model from the requestor at the client device via the user interface. For example, the host system (e.g., host system server 160) may design a 3D model, or the user may upload their own 3D model, where the asset data runs through a verification process.

[0176] The example process flow of example environment 1800 may further include obtaining a digital token associated with the real estate asset based on the generated 3D model or the obtained and verified 3D model from the requestor. For example, the host

system (e.g., host system server 160) may create a digital token or the user could have already created a digital token either via the host system or obtained from another source. In some implementations, the digital token is a non-fungible token (NFT).

[0177] The example process flow of example environment 1800 may further include generating a sanctioned 3D model link associated with the real estate asset based on verifying and connecting the i) generated 3D model or the obtained and verified 3D model, and ii) the digital token associated with the real estate asset. For example, the host system (e.g., host system server 160) may generate, and/or upload and connect, data related to a 3D model to a digital token and create a sanctioned 3D model link (e.g., with a unique address) that may be stored, shared, and the like.

[0178] The example process flow of example environment 1800 may further include storing the sanctioned 3D model link relating to the verified 3D model and the associated NFT in a 3D model database. For example, the sanctioned 3D model link relating to the verified 3D model and the associated NFT may be stored in the 3D model/experience database 176.

[0179] The example process flow of example environment 1800 may further include providing a representation of the sanctioned 3D model link at the user interface. For example, screenshot 1700 provides a user interface that may include a representation at element 1735 that signifies a verified sanctioned 3D model link between the 3D model and the NFT.

[0180] In some implementations, the 3D model is generated based on a style preference obtained from the client device from a user preference database. For example, the style preference may be based on the user style quiz and stored in a user profile in the user preference database 170.

[0181] In some implementations, obtaining the asset data comprises obtaining public information, real estate data, metadata, image data, tracked marketplace action/behavior data, due diligence data, and a style preference associated with the real estate asset. In some implementations, the asset ticket is generated based on the obtained public information, real estate data, metadata, image data, tracked marketplace action/behavior data, the due diligence data, and the style preference.

[0182] In some implementations, the example process flow of example environment 1800 may further include utilizing a verification process to determine that requestor is a

sufficient owner of a DPRM token related to a digital certificate associated with the real estate asset prior to generating a sanctioned link to a DPRM token.

[0183] In some implementations, the example process flow of example environment 1800 may further include establishing a unique identifier for the 3D model and the related NFT to a DPRM token associated with the real estate asset. For example, a 3D model NFT may be attached to a user's virtual deed (e.g., digital certificate 1510) via blockchain.

[0184] **Figures 19A and 19B** illustrate example screenshots 1905, 1910, and 1950 of user interfaces for real estate experience processes for a listing of a real property for sale (with a 3D asset) and the syndicated certification of the digital property rights of that address, it's land, digital assets and other related metadata associated to those rights utilizing an asset verification and syndication module, according to embodiments of the invention. In particular, screenshot 1905 illustrates a backend infrastructure system ingesting real property data from a third-party real estate database and searching the digital certificate database 174 to verify that a digital certificate (e.g., 1:1 digital IP rights) has been established for a real estate asset (e.g., a search within the digital certificate registry) and pairing the search results (e.g., via a check mark) to that real property.

[0185] Screenshot 1910 illustrates the pairing of real property data (e.g., UI area 1912) with digital certificate data (e.g., UI element 1924) within the host system. In some implementations, data pairing may be shown and hosted on the host system but may also be automatically syndicated. Screenshot 1910 further illustrates a selectable icon 1914 to display to the user an enhanced design of the user's real estate asset. Screenshot 1910 further illustrates area 1920 which is a configurator displaying the digital IP associated with the real estate asset. Screenshot 1910 further illustrates a selectable icon 1922 that indicates to the user that the 3D linked NFT is linked to the user profile or home vault. Screenshot 1910 further illustrates a selectable icon 1930 that initiates an asset verification request and opens the window as indicated to screenshot 1950.

[0186] Screenshot 1950 illustrates syndicated data on third-party sites. For example, digital IP rights data associated to the real estate asset (e.g., a digital certificate) and metadata held within a DPRM token which may include 3D assets, revenues, options, and the like. In some implementations, the syndicated data is sent to third-party sites automatically once the data is paired and verified. Additionally, or alternatively, in some implementations, the syndicated data is sent to third-party sites after a user initiates an asset verification request. Area 1960 illustrates a geographical map associated with the real estate asset. Icon 1962 indicates a certification check mark of a verification between the real estate

asset and the digital IP associated with the real estate asset. Area 1970 illustrates a pricing option for the associated digital IP (e.g., NFT) if it is available to purchase and a potential listing price (e.g., in a standard currency, a digital currency, or the like). Area 1976 illustrates a listing price or a current value estimate for the real estate asset associated with the digital IP. Screenshot 1910 further illustrates an icon 1990 that notifies the user of an asset verification and an icon 1995 that notifies the user if a smart contract is associate with the digital IP and the real estate asset.

[0187] **Figure 20** illustrates an example environment 2000 in which an asset verification and syndication module 169 of a real estate system (e.g., host system server 160) may generate an asset verification certification 2010 based on an asset verification request 2002, according to embodiments of the invention. As illustrated in example environment 2000, the asset verification and syndication module 169 is communicatively coupled (e.g., via the host system server 160 over the network 102) with one or more real estate database(s) 125 to access real estate data 126, the asset database 172 to access asset data 173, the digital certificate database 174 to access certificate data 175 and/or the generated digital certificate 1510, and a 3D model/experience database 176 to access 3D model data 177 and/or the generated 3D model 1810. Moreover, the asset verification certification 2010 may be attached (e.g., linked) to the DPRM token 220. The databases communicatively coupled to the asset verification and syndication module 169 as illustrated in example environment 2000 are illustrated for example processes to generate an asset verification certification 2010 and are not meant to be limiting. For example, the asset verification and syndication module 169 may be communicatively coupled, via the host system server 160, to any/all of the databases, servers, computers, etc., as illustrated herein with reference to example environment 100 of Figure 1.

[0188] Operations of an example process of the example environment 2000 may be implemented, for example, by a system that includes one or more data processing apparatus, such as host system server 160 of Figure 1 utilizing an asset verification and syndication module 169 of the instruction sets 161. The example process of the example environment 2000 may also be implemented by instructions stored on computer storage medium, where execution of the instructions by a system that includes a data processing apparatus cause the data processing apparatus to perform the operations of the example process of the example environment 2000.

[0189] An example process flow to generate an asset verification certification 2010 based on an asset verification request 2002 for example environment 2000 may include

receiving, from a requester at a client device via a user interface or via data instructions associated with an API for the user interface, a verification request for authorization of a pairing between physical property rights and digital property rights associated with a real estate asset (e.g., home, office building, empty lot, and the like). For example, the host system (e.g., host system server 160) may provide a 1:1 asset verification and pairing of the real estate asset to the 3D model and digital certificate (e.g., virtual deed), and request for a digital IP certificate authorizing the pairing of the IP rights (e.g., DPRM) and real property listings. For example, the host system (e.g., host system server 160) may pull in the traditional real estate data (e.g., from a real estate listing platform such as real estate database(s) 125 via real estate data provider server(s) 120), verify and pair it to the digital IP (e.g., digital certificate 1510).

[0190] The example process flow of example environment 2000 may further include obtaining, based on the verification request, real estate data associated with the real estate asset from a real estate database. For example, the host system (e.g., host system server 160) may pull in the traditional real estate data from a real estate listing platform such as from real estate database(s) 125 via real estate data provider server(s) 120.

[0191] The example process flow of example environment 2000 may further include obtaining a digital certificate (e.g., a virtual/digital deed) associated with the real estate asset from a digital certificate database. For example, the host system (e.g., host system server 160) may provide the user with an opportunity to claim ownership via a digital deed / certificate (e.g., digital certificate 1510).

[0192] The example process flow of example environment 2000 may further include generating an asset verification certification (e.g., a check mark, badge, or the like) based upon determining a correlation between the digital certificate and the real estate asset. For example, the host system (e.g., host system server 160) may verify a 1:1 relationship between physical property and digital property.

[0193] In some implementations, the example process flow of example environment 2000 may further include associating the asset verification certification with a user profile (e.g., a home vault) stored in a user preference database. For example, the asset verification certification may be stored in a user profile in the user preference database 170.

[0194] In some implementations, the example process flow of example environment 2000 may further include obtaining meta data associated with digital property rights from a DPRM token associated with the real estate asset. For example, the entity verifying the certificate may pull and display the meta data associated with the digital property rights (e.g.,

transaction history, the 3D model, first rights of refusal, revenue history, and the like, held within the DPRM token 220).

[0195] In some implementations, determining a correlation between the digital certificate, the 3D model, and the real estate asset is based on the meta data from the DPRM token. In some implementations, the example process flow of example environment 2000 may further include providing a representation of the digital certificate, the 3D model, and the verification with the metadata at the user interface.

[0196] In some implementations, the example process flow of example environment 2000 may further include obtaining a 3D model associated with the digital certificate for the real estate asset from a 3D model database, and updating the asset verification certification (e.g., asset verification certification 2010, such as a check mark, badge, and like) based upon determining a correlation between the digital certificate, the 3D model, and the real estate asset. For example, a 3D model either uploaded or generated and sanctioned-based on the asset data, real estate data, metadata, image data, tracked marketplace action/behavior data, due diligence data, style preference, digital IP, and/or home vault/user profile.

[0197] In some implementations, the digital certificate is generated based on meta data associating the digital certificate with real estate asset. In some implementations, the example process flow of example environment 2000 may further include providing the digital certificate and the asset verification certification to an external entity. For example, providing the digital certificate 1510 to digital exchange server(s) 155, and/or providing the virtual deed (e.g., digital certificate 1510) and 3D IP 1:1 asset verification certification 2010 to other third-parties.

[0198] **Figure 21** illustrates an example environment in which a digital property rights management (DPRM) token module 168 of a real estate system (e.g., host system server 160) may generate a DPRM token and record the DPRM token on a blockchain in response to receiving a notification of a creation of a digital certificate, according to embodiments of the invention. For example, as illustrated in environment 2100, the DPRM token module 170 is communicatively coupled (e.g., via the host system server 160 over the network 102) with the asset database 172 to access asset data 173 and/or the generated asset verification certification 2010, the digital certificate database 174 to access certificate data 175 and/or the generated digital certificate 1510, and a 3D model/experience database 176 to access 3D model data 177 and/or the generated 3D model 1810. Moreover, the asset verification certification 2010 may be attached (e.g., linked) to the DPRM token 220. The databases

communicatively coupled to the DPRM token module 170 as illustrated in example environment 2100 are illustrated for example processes to generate an asset verification certification 2010 and are not meant to be limiting. For example, the DPRM token module 170 may be communicatively coupled, via the host system server 160, to any/all of the databases, servers, computers, etc., as illustrated herein with reference to example environment 100 of Figure 1.

[0199] In some embodiments, the DPRM token is a smart contract published to the blockchain that embodies at least some, if not all, of the digital property rights bestowed to its owner. Additionally, in some embodiments, the DPRM token tracks, monitors, and enforces those rights. Additionally, in some embodiments, the DPRM token may be a tradable asset that may be exchanged from one owner to another, and the DPRM token may be configured to maintain a ledger of any or all activity related to the digital property associated with the DPRM token and/or the associated real estate asset related to the DPRM token (e.g., digital land rights, digital asset rights on that land, and the like). In some embodiments, the DPRM token may be the source of truth for all digital assets, revenues, royalties, etc., related to the digital IP. In some embodiments, the DPRM token may be the access required to manage build and deploy the digital property (e.g., a user may be able to place his or her land up for sale or into any metaverse). In some embodiments, the DPRM token may be the foundation from which other 3rd party apps and integrations may be built on top of. In some embodiments, the DPRM token may be non-fungible (e.g., an NFT), represented with a unique address which there may only ever be one of attributed and linked to the physical asset in which it was certified.

[0200] **Figure 22** illustrates an example process flow diagram of the example environment of Figure 21, according to embodiments of the invention. Operations of an example process of the example environment 2100 as process flow diagram 2200 may be implemented, for example, by a system that includes one or more data processing apparatus, such as host system server 160 of Figure 1 utilizing a DPRM token module 170 of the instruction sets 161. The example process of the example environment 2100 as process flow diagram 2200 may also be implemented by instructions stored on computer storage medium, where execution of the instructions by a system that includes a data processing apparatus cause the data processing apparatus to perform the operations of the example process of the example environment 2100 as process flow diagram 2200.

[0201] An example process flow to generate a DPRM token and record the DPRM token on a blockchain associated with a real estate asset network for example environment 2100

as process flow diagram 2200 may include in response to receiving a notification of a creation of a digital certificate associated with a physical address or lot identifier for a real estate asset, automatically generating a digital property rights management (DPRM) token request associated with the digital certificate.

[0202] The example process flow of example environment 2100 as process flow diagram 2200 may further include obtaining the digital certificate from a digital certificate database. The example process flow of example environment 2100 as process flow diagram 2200 may further include generating a DPRM token based on an asset verification of the digital certificate, wherein the DPRM token comprises DPRM rules based on meta data associated with digital property rights associated with the digital certificate.

[0203] The example process flow of example environment 2100 as process flow diagram 2200 may further include storing the DPRM token at a DPRM token database. The example process flow of example environment 2100 as process flow diagram 2200 may further include recording the DPRM token on a blockchain associated with a real estate asset network. (e.g., once "minted" these new digital property rights may forever be associated to the physical properties location / address so that it may be tied back to the traditional re. marketplace in perpetuity. Modwell through its Smart Contracts and blockchain integrations may store, manage, display and distribute these property rights back into the market.; The D(P)RM token is a vehicle that gets deployed onto blockchain(s) transferability and hosting is agnostic and not specific to one chain.)

[0204] In some implementations, the example process flow of example environment 2100 as process flow diagram 2200 may further include obtaining a non-fungible verified connection request associated with a 3D model of the real estate asset from a 3D model database, and updating the DPRM token on the blockchain based on the non-fungible verified connection request. For example, the 3D model may be generated based on the asset data, real estate data, metadata, image data, tracked marketplace action/behavior data, due diligence data, and/or style preference.

[0205] In some implementations, the DPRM token comprises a programable smart contract configured to track digital asset experience steps associated with digital property rights associated with the real estate asset.

[0206] In some implementations, the experience steps include at least one of tracking a transfer history of the digital property rights, monitoring a value of the digital property rights, monitoring revenue generated by the digital property rights, managing royalty rights distributions associated with the digital property rights, adding additional 3D assets to the

DPRM token, issuing a first right of refusal associated with the DPRM token, managing third-party interactions associated with the digital property rights, and monitoring interactions associated with a digital address associated with the digital certificate. (e.g., as the digital asset is utilized in varying experiences, the digital IP Identifier may track: Product placement, Ecommerce, Audience Impressions and advertising associated with it, leasing, any other activations associated with the digital property. Etc.)

[0207] In some implementations, the DPRM token includes a digital land construct, a digital structures construct, and a unique digital identifier address.

[0208] In some implementations, the example process flow of example environment 2100 as process flow diagram 2200 may further include providing a representation of the DPRM token at the user interface.

[0209] In some implementations, the 3D model is generated based on asset data, real estate data, metadata, image data, tracked marketplace action/behavior data, due diligence data, or a style preference associated with the real estate asset.

[0210] In some implementations, the example process flow of example environment 2100 as process flow diagram 2200 may further include providing the DPRM token to an external entity. For example, the host system (e.g., host system server 160) may verify a 1:1 relationship between physical property and digital property. For example, providing the digital certificate 1510 to digital exchange server(s) 155, and/or providing the virtual deed (e.g., digital certificate 1510) and 3D IP 1:1 asset verification certification 2010 to other third-parties.

[0211] **Figures 23A–23F** illustrate example screenshots of a user interface for real estate experience processes utilizing a DPRM token module in which DPRM tokens are created and managed, according to embodiments of the invention. In particular, Figure 23A provides screenshot 2310 which illustrates how a user verifies and claims his or her digital IP, creating a digital certificate (e.g., virtual deed) which automatically triggers the creation of a corresponding DRPM token which may be published to a Blockchain. Figure 23B provides screenshot 2320 which illustrates users connecting to and managing his or her DRPM tokens represented by the DRPM tokens unique, one-of-a-kind, digital address via web 3.0 portals (e.g., via a virtual wallet). Figure 23C provides screenshot 2330 which illustrates a user interface in which the owners of a digital token may be able access the tokens vault to build, attach, and/or engage with third-party applications. Figure 23D provides screenshot 2340 which illustrates a dashboard of currently owned tokens with a user interface for DPRM token settings and options. Figure 23E provides screenshot 2350

which illustrates a dashboard in which users may be able to search and interact with the DPRM and digital certificate databases with associated options. Figure 23F provides screenshot 2360 which illustrates a web 3.0 public facing illustration of a user profile display of a DPRM token, and meta data and associated elements issued via the unique attributed address of the DPRM token. For example, the unique attributed address (e.g., "12346pheasantswoodslaneeasthamptonnewyork.dprm") is the web 3.0 domain for the DPRM token.

[0212] **Figure 24** illustrates an exemplary environment 2400 for implementing a real estate experience process for a real estate operating ecosystem and simultaneously servicing both physical real property assets and corresponding digital property real estate assets, according to embodiments of the invention. Additionally, exemplary environment 2400 illustrates an example of interactions between industry professionals and consumers may be able to interact with the real estate system described herein, and the interconnected use of the various systems and modules within the system. The illustration of Figure 24 presents three exemplary subsystems (e.g., subsystems 2410, 2420, and 2430) of the real estate operating ecosystem described herein, similar to a Venn diagram format with overlapping subsystems.

[0213] Subsystem 2410 illustrates the example modules that may be used by an industry professional (e.g., design configurator display module 164, asset generator module 165, and 3D model module 167), and how those modules may utilize the real estate operating system to search for physical real property that are in alignment with a client's design style. For example, an industry professional may create listings that including 3D reimagined designs. Professionals may also simultaneously investigate the existence of digital rights associated with that same address/property. The real estate ecosystem provides avenues for professionals to help their clients buy real property and claim/protect the digital rights to that same property.

[0214] Subsystem 2420 illustrates ways in which consumers may use design preference searches to find physical properties the align with their design preferences with 3D enhanced designs while identifying whether the real estate assets (e.g., real properties) already have claimed their digital rights (e.g., digital certificates/virtual deeds) and corresponding digital tokens (e.g., an NFT, DPRM token, etc.). Additionally, consumers may be able to locate properties in which they may have first mover advantage to claim those digitals rights/token.

[0215] Subsystem 2430 illustrates interoperability of the same real estate operating ecosystem being used by consumers who want to simply claim his or her digital rights to their owned property, obtain his or her DPRM token, and protect/add value to his or her physical asset by holding or building upon the associated digital rights. As an extension of the real estate ecosystem described herein, consumers may search and obtain other digital IP rights for other properties listed for sale.

[0216] **Figure 25** illustrates an example computer architecture 2500 for a computer 2502 capable of executing the software components described herein for the sending/receiving and processing of tasks. The computer architecture 2500 (also referred to herein as a "server") shown in Figure 25 illustrates a server computer, workstation, desktop computer, laptop, a server operating in a cloud environment, or other computing device, and may be utilized to execute any aspects of the software components presented herein described as executing on a host server, or other computing platform. The computer 2502 preferably includes a baseboard, or "motherboard," which is a printed circuit board to which a multitude of components or devices may be connected by way of a system bus or other electrical communication paths. In one illustrative embodiment, one or more central processing units (CPUs) 2504 operate in conjunction with a chipset 2506. The CPUs 2504 may be programmable processors that perform arithmetic and logical operations necessary for the operation of the computer 2502.

[0217] The CPUs 2504 preferably perform operations by transitioning from one discrete, physical state to the next through the manipulation of switching elements that differentiate between and change these states. Switching elements may generally include electronic circuits that maintain one of two binary states, such as flip-flops, and electronic circuits that provide an output state based on the logical combination of the states of one or more other switching elements, such as logic gates. These basic switching elements may be combined to create more complex logic circuits, including registers, adders-subtractors, arithmetic logic units, floating-point units, or the like.

[0218] The chipset 2506 provides an interface between the CPUs 2504 and the remainder of the components and devices on the baseboard. The chipset 2506 may provide an interface to a memory 2508. The memory 2508 may include a random-access memory (RAM) used as the main memory in the computer 2502. The memory 2508 may further include a computer-readable storage medium such as a read-only memory (ROM) or non-volatile RAM (NVRAM) for storing basic routines that that help to startup the computer 2502 and to transfer information between the various components and devices. The ROM or

NVRAM may also store other software components necessary for the operation of the computer 2502 in accordance with the embodiments described herein.

[0219] According to various embodiments, the computer 2502 may operate in a networked environment using logical connections to remote computing devices through one or more networks 2512, a local-area network (LAN), a wide-area network (WAN), the Internet, or any other networking topology known in the art that connects the computer 2502 to the devices and other remote computers. The chipset 2506 includes functionality for providing network connectivity through one or more network interface controllers (NICs) 2510, such as a gigabit Ethernet adapter. For example, the NIC 2510 may be capable of connecting the computer 2502 to other computer devices in the utility provider's systems. It should be appreciated that any number of NICs 2510 may be present in the computer 2502, connecting the computer to other types of networks and remote computer systems beyond those described herein.

[0220] The computer 2502 may be connected to at least one mass storage device 2518 that provides non-volatile storage for the computer 2502. The mass storage device 2518 may store system programs, application programs, other program modules, and data, which are described in greater detail herein. The mass storage device 2518 may be connected to the computer 2502 through a storage controller 2514 connected to the chipset 2506. The mass storage device 2518 may consist of one or more physical storage units. The storage controller 2514 may interface with the physical storage units through a serial attached SCSI (SAS) interface, a serial advanced technology attachment (SATA) interface, a fiber channel (FC) interface, or other standard interface for physically connecting and transferring data between computers and physical storage devices.

[0221] The computer 2502 may store data on the mass storage device 2518 by transforming the physical state of the physical storage units to reflect the information being stored. The specific transformation of physical state may depend on various factors, in different embodiments of the invention of this description. Examples of such factors may include, but are not limited to, the technology used to implement the physical storage units, whether the mass storage device 2518 is characterized as primary or secondary storage, or the like. For example, the computer 2502 may store information to the mass storage device 2518 by issuing instructions through the storage controller 2514 to alter the magnetic characteristics of a particular location within a magnetic disk drive unit, the reflective or refractive characteristics of a particular location in an optical storage unit, or the electrical characteristics of a particular capacitor, transistor, or other discrete component in a solid-

state storage unit. Other transformations of physical media are possible without departing from the scope and spirit of the present description, with the foregoing examples provided only to facilitate this description. The computer 2502 may further read information from the mass storage device 2518 by detecting the physical states or characteristics of one or more particular locations within the physical storage units.

[0222] The mass storage device 2518 may store an operating system 2520 utilized to control the operation of the computer 2502. According to some embodiments, the operating system includes the LINUX operating system. According to another embodiment, the operating system includes the WINDOWS® SERVER operating system from MICROSOFT Corporation of Redmond, Wash. According to further embodiments, the operating system may include the UNIX or SOLARIS operating systems. It should be appreciated that other operating systems may also be utilized. The mass storage device 2518 may store other system or application programs and data utilized by the computer 2502, such as user preference/profile module 2521, design configurator display module 2522, asset generator module 2523, digital certificate module 2524, 3D model/experience module 2525, asset verification and syndication module 2526, and DPRM token module 2527, according to embodiments described herein. Other system or application programs and data utilized by the computer 2502 may be provided as well (e.g., a payment processing module, a security module, a user interface module, etc.).

[0223] In some embodiments, the mass storage device 2518 may be encoded with computer-executable instructions that, when loaded into the computer 2502, transforms the computer 2502 from being a general-purpose computing system into a special-purpose computer capable of implementing the embodiments described herein. These computer-executable instructions transform the computer 2502 by specifying how the CPUs 2504 transition between states, as described above. According to some embodiments, from the simulation server 130 perspective, the mass storage device 2518 stores computer-executable instructions that, when executed by the computer 2502, perform portions of the process 800, for implementing a simulation system, as described herein. In further embodiments, the computer 2502 may have access to other computer-readable storage medium in addition to or as an alternative to the mass storage device 2518.

[0224] The computer 2502 may also include an input/output controller 2530 for receiving and processing input from a number of input devices, such as a keyboard, a mouse, a touchpad, a touch screen, an electronic stylus, or other type of input device. Similarly, the input/output controller 2530 may provide output to a display device, such as a computer

monitor, a flat-panel display, a digital projector, a printer, a plotter, or other type of output device. It will be appreciated that the computer 2502 may not include all of the components shown in Figure 25, and may include other components that are not explicitly shown in Figure 25, or may utilize an architecture completely different than that shown in Figure 25.

[0225] Those of ordinary skill in the art will appreciate that well-known systems, methods, components, devices, and circuits have not been described in exhaustive detail so as not to obscure more pertinent aspects of the example implementations described herein. Moreover, other effective aspects and/or variants do not include all of the specific details described herein. Thus, several details are described in order to provide a thorough understanding of the example aspects as shown in the drawings. Moreover, the drawings merely show some example embodiments of the present disclosure and are therefore not to be considered limiting.

[0226] While this specification contains many specific implementation details, these should not be construed as limitations on the scope of any inventions or of what may be claimed, but rather as descriptions of features specific to particular embodiments of particular inventions. Certain features that are described in this specification in the context of separate embodiments may also be implemented in combination in a single embodiment. Conversely, various features that are described in the context of a single embodiment may also be implemented in multiple embodiments separately or in any suitable subcombination. Moreover, although features may be described above as acting in certain combinations and even initially claimed as such, one or more features from a claimed combination can in some cases be excised from the combination, and the claimed combination may be directed to a subcombination or variation of a subcombination.

[0227] Similarly, while operations are depicted in the drawings in a particular order, this should not be understood as requiring that such operations be performed in the particular order shown or in sequential order, or that all illustrated operations be performed, to achieve desirable results. In certain circumstances, multitasking and parallel processing may be advantageous. Moreover, the separation of various system components in the embodiments described above should not be understood as requiring such separation in all embodiments, and it should be understood that the described program components and systems can generally be integrated together in a single software product or packaged into multiple software products.

[0228] Thus, particular embodiments of the subject matter have been described. Other embodiments are within the scope of the following claims. In some cases, the actions recited

in the claims may be performed in a different order and still achieve desirable results. In addition, the processes depicted in the accompanying figures do not necessarily require the particular order shown, or sequential order, to achieve desirable results. In certain implementations, multitasking and parallel processing may be advantageous.

[0229] Embodiments of the subject matter and the operations described in this specification may be implemented in digital electronic circuitry, or in computer software, firmware, or hardware, including the structures disclosed in this specification and their structural equivalents, or in combinations of one or more of them. Embodiments of the subject matter described in this specification may be implemented as one or more computer programs, i.e., one or more modules of computer program instructions, encoded on computer storage medium for execution by, or to control the operation of, data processing apparatus. Alternatively, or additionally, the program instructions may be encoded on an artificially generated propagated signal, e.g., a machine-generated electrical, optical, or electromagnetic signal, that is generated to encode information for transmission to suitable receiver apparatus for execution by a data processing apparatus. A computer storage medium may be, or be included in, a computer-readable storage device, a computer-readable storage substrate, a random or serial access memory array or device, or a combination of one or more of them. Moreover, while a computer storage medium is not a propagated signal, a computer storage medium may be a source or destination of computer program instructions encoded in an artificially generated propagated signal. The computer storage medium may also be, or be included in, one or more separate physical components or media (e.g., multiple CDs, disks, or other storage devices).

[0230] The term “data processing apparatus” encompasses all kinds of apparatus, devices, and machines for processing data, including by way of example a programmable processor, a computer, a system on a chip, or multiple ones, or combinations, of the foregoing. The apparatus can include special purpose logic circuitry, e.g., an FPGA (field programmable gate array) or an ASIC (application specific integrated circuit). The apparatus may also include, in addition to hardware, code that creates an execution environment for the computer program in question, e.g., code that constitutes processor firmware, a protocol stack, a database management system, an operating system, a cross-platform runtime environment, a virtual machine, or a combination of one or more of them. The apparatus and execution environment can realize various different computing model infrastructures, such as web services, distributed computing and grid computing infrastructures. Unless specifically stated otherwise, it is appreciated that throughout this specification discussions utilizing the terms such as “processing,” “computing,” “calculating,” “determining,” and

"identifying" or the like refer to actions or processes of a computing device, such as one or more computers or a similar electronic computing device or devices, that manipulate or transform data represented as physical electronic or magnetic quantities within memories, registers, or other information storage devices, transmission devices, or display devices of the computing platform.

[0231] The system or systems discussed herein are not limited to any particular hardware architecture or configuration. A computing device can include any suitable arrangement of components that provides a result conditioned on one or more inputs. Suitable computing devices include multipurpose microprocessor-based computer systems accessing stored software that programs or configures the computing system from a general purpose computing apparatus to a specialized computing apparatus implementing one or more implementations of the present subject matter. Any suitable programming, scripting, or other type of language or combinations of languages may be used to implement the teachings contained herein in software to be used in programming or configuring a computing device.

[0232] Implementations of the methods disclosed herein may be performed in the operation of such computing devices. The order of the blocks presented in the examples above may be varied for example, blocks may be re-ordered, combined, and/or broken into sub-blocks. Certain blocks or processes may be performed in parallel. The operations described in this specification may be implemented as operations performed by a data processing apparatus on data stored on one or more computer-readable storage devices or received from other sources.

[0233] The use of "adapted to" or "configured to" herein is meant as open and inclusive language that does not foreclose devices adapted to or configured to perform additional tasks or steps. Additionally, the use of "based on" is meant to be open and inclusive, in that a process, step, calculation, or other action "based on" one or more recited conditions or values may, in practice, be based on additional conditions or value beyond those recited. Headings, lists, and numbering included herein are for ease of explanation only and are not meant to be limiting.

[0234] It will also be understood that, although the terms "first," "second," etc. may be used herein to describe various elements, these elements should not be limited by these terms. These terms are only used to distinguish one element from another. For example, a first node could be termed a second node, and, similarly, a second node could be termed a first node, which changing the meaning of the description, so long as all occurrences of the

"first node" are renamed consistently and all occurrences of the "second node" are renamed consistently. The first node and the second node are both nodes, but they are not the same node.

[0235] The terminology used herein is for the purpose of describing particular implementations only and is not intended to be limiting of the claims. As used in the description of the implementations and the appended claims, the singular forms "a," "an," and "the" are intended to include the plural forms as well, unless the context clearly indicates otherwise. It will also be understood that the term "and/or" as used herein refers to and encompasses any and all possible combinations of one or more of the associated listed items. It will be further understood that the terms "comprises" and/or "comprising," when used in this specification, specify the presence of stated features, integers, steps, operations, elements, and/or components, but do not preclude the presence or addition of one or more other features, integers, steps, operations, elements, components, and/or groups thereof.

[0236] As used herein, the term "if" may be construed to mean "when" or "upon" or "in response to determining" or "in accordance with a determination" or "in response to detecting," that a stated condition precedent is true, depending on the context. Similarly, the phrase "if it is determined [that a stated condition precedent is true]" or "if [a stated condition precedent is true]" or "when [a stated condition precedent is true]" may be construed to mean "upon determining" or "in response to determining" or "in accordance with a determination" or "upon detecting" or "in response to detecting" that the stated condition precedent is true, depending on the context.

What is claimed is:

1. A computer-implemented method, comprising:

providing, by one or more processors, a user interface, or data instructions associated for with application programming interface for the user interface, at a client device, the user interface presenting a plurality of options for user selection by a user, the options comprising:

a plurality of design assets associated with a design project relating to a real estate asset;

a plurality of design asset ingestion options, wherein the design asset ingestion options are associated with at least one of creating options, hosting options, and display options;

a real estate tool configured to associate the design project with an associated real estate listing; and

a user profile tool configured to associate the design project with a user profile of the user of the client device;

receiving, by the one or more processors, user design selection data based on a selection of at least a portion of the plurality of options for user selection;

receiving, by the one or more processors, at least one of third-party data, tracked user activity data, and other data or metadata that represent the user's preferences;

generating, by the one or more processors, a design configuration element based on at least one of the user design selection data, the third-party data, the tracked user activity data, and the other data or metadata that represent the user's preferences; and

providing, by the one or more processors, a representation of the design configuration element for display on the client device via the user interface.

2. The computer-implemented method of claim 1 wherein the plurality of options for user selections further comprises:

a digital IP tool configured to associate the design project with a DPRM token.

3. The computer-implemented method of claims 1 or 2, wherein the plurality of options for user selection further comprises:

an export tool configured to export data associated with the design project to an electronic file.

4. The computer-implemented method of any of claims 1-3, wherein the plurality of options for user selection further comprises:

a customization tool configured to add, remove, or customize the display of user interface design elements associated with the design project.

5. The computer-implemented method of any of claims 1-4, further comprising:

storing, by the one or more processors, the design configuration element.

6. The computer-implemented method of any of claims 1-5, further comprising:

providing, by the one or more processors, the design configuration element as an embedded element or data instructions associated for an application programming interface for a third-party website.

7. The computer-implemented method of any of claims 1-6, wherein the design configuration element comprises a hyperlink to a DPRM token associated with the real estate asset.

8. The computer-implemented method of any of claims 1-7, wherein the design configuration element comprises a selectable icon, used for at least one of social sharing and syndication, and stored in a user profile.

9. The computer-implemented method of any of claims 1-8, wherein the representation of the design configuration element is one of a plurality of representations of different design configuration elements associated with one or more real estate assets and one or more users.

10. The computer-implemented method of claim 9, wherein the representation of the different design configuration elements associated with one or more real estate assets and one or more users are configured for display in a three-dimensional showroom in an extended reality environment.

11. A computing apparatus comprising:

one or more processors;

at least one memory device operatively coupled to the one or more processors; and

a data communications interface operably associated with the one or more processors,

wherein the memory device contains a plurality of program instructions that, when executed by the one or more processors, cause the one or more processors to perform the steps of any of claims 1-10.

12. A non-transitory computer storage medium encoded with a computer program, the computer program comprising a plurality of program instructions that when executed by one or more processors cause the one or more processors to perform operations comprising the steps of any of claims 1-10.

13. A computer-implemented method, comprising:

providing, by one or more processors to a user at a client device via a user interface or via data instructions associated with an application programming interface for the user interface, a visual style quiz that comprises a plurality of selectable images, wherein each of the plurality of selectable images represent one or more predetermined architectural or design styles;

receiving, by the one or more processors, information relating to one or more user selections of the one or more of the plurality of selectable images;

receiving, by the one or more processors, at least one of behavioral selection data, third-party data, tracked user activity data, and other data or metadata that represent the user's preferences;

determining, by the one or more processors, a style preference based on the received information relating to one or more user selections and at least one of the behavioral selection data, the third-party data, the tracked user activity data, and the other data or metadata that represent the user's preferences; and

presenting, by the one or more processors, a representation of the style preference to the user at the user interface.

14. The computer-implemented method of claim 13, wherein the behavioral selection data is based on receiving information associated with user selections from a

behavioral quiz that comprises a questionnaire regarding home style and user preferences relating to the user.

15. The computer-implemented method of claim 14, further comprising:

uploading the style preference to a user profile.

16. The computer-implemented method of claims 14 or 15, wherein the plurality of selectable images are categories based on a plurality of different location categories within a house.

17. The computer-implemented method of any of claims 14-16, further comprising:

generating a real estate search for design preferences of the user based on the style preference.

18. The computer-implemented method of any of claims 14-17, further comprising:

providing, via a user interface, three-dimensional design options showing proposed modifications for a selected real estate asset.

19. The computer-implemented method of any of claims 14-18, wherein the style preference is presented at the user interface in a graphical format.

20. The computer-implemented method of any of claims 14-19, further comprising:

generating a container file with design elements based on the style preference; and

providing the container file to an architectural system.

21. The computer-implemented method of any of claims 14-20, further comprising:

identifying, in response to a request from the user via the user interface, search results associated with one or more design entities or matching home goods products based on the style preference; and

presenting the search results to the user at the user interface.

22. The computer-implemented method of any of claims 14-21, wherein the style preference is based upon an underlying score in a number of discrete different categories.

23. A computing apparatus comprising:

one or more processors;

at least one memory device operatively coupled to the one or more processors; and

a data communications interface operably associated with the one or more processors,

wherein the memory device contains a plurality of program instructions that, when executed by the one or more processors, cause the one or more processors to perform the steps of any of claims 14-22.

24. A non-transitory computer storage medium encoded with a computer program, the computer program comprising a plurality of program instructions that when executed by one or more processors cause the one or more processors to perform operations comprising the steps of any of claims 14-22.

25. A computer-implemented method, comprising:

receiving, by one or more processors from a client device via a user interface or via data instructions associated with an application programming interface for the user interface, an asset generator request relating to a real estate asset;

obtaining, by the one or more processors and based on the asset generator request, due diligence data associated with the real estate asset from at least one public information database, wherein the due diligence data relates to a legal status of the real estate asset;

obtaining, by the one or more processors, a style preference associated with the client device or a user of the client device from a user preference database;

obtaining, by the one or more processors, information relating to existing conditions of the real estate asset, wherein the information relating to existing conditions relates to physical properties of the real estate asset;

generating, by the one or more processors, a container file associated with the real estate asset based on the due diligence data, the style preference, the existing conditions data; and

storing, by the one or more processors, the container file at an asset database.

26. The computer-implemented method of claim 25, further comprising:

generating a new project request ticket based on real estate data associated with the real estate asset and user preference data associated with the user of the client device.

27. The computer-implemented method of claims 25 or 26, wherein the style preference is determined based on:

providing, to the user at the client device via the user interface or via the data instructions associated with the application programming interface for the user interface, a visual style quiz that comprises a plurality of selectable images, wherein each of the plurality of selectable images represent one or more predetermined architectural or design styles;

receiving, by the one or more processors, information relating to one or more user selections of the one or more of the plurality of selectable images;

receiving, by the one or more processors, at least one of behavioral selection data, third-party data, tracked user activity data, and other data or metadata that represent the user's preferences;

determining, by the one or more processors, a style preference based on the received information relating to one or more user selections and at least one of the behavioral selection data, the third-party data, the tracked user activity data, and the other data or metadata that represent the user's preferences; and

presenting, by the one or more processors, a representation of the style preference to the user at the user interface.

28. A computing apparatus comprising:

one or more processors;

at least one memory device operatively coupled to the one or more processors; and

a data communications interface operably associated with the one or more processors,

wherein the memory device contains a plurality of program instructions that, when executed by the one or more processors, cause the one or more processors to perform the steps of any of claims 25-27.

29. A non-transitory computer storage medium encoded with a computer program, the computer program comprising a plurality of program instructions that when executed by one or more processors cause the one or more processors to perform operations comprising the steps of any of claims 25-27.

30. A computer-implemented method, comprising:

receiving, by one or more processors from a requester at a client device via a user interface or via data instructions associated with an application programming interface for the user interface, a digital certificate request relating to a real estate asset, wherein the digital certificate request comprises a physical address or lot identifier of the real estate asset;

determining, by the one or more processors, at least one of the following, based on the digital certificate request and referencing a digital certificate database: i) whether a digital certificate associated with the real estate asset exists and is registered in the digital certificate database, or ii) whether a digital certificate associated with the real estate asset is available for registry; and

in response to determining, by the one or more processors, a digital certificate associated with the real estate asset is available for registry:

displaying, by the one or more processors, the ownership information associated with the real estate asset via the user interface, request and obtain verification information relating to ownership from the requester via the user interface;

determining, by the one or more processors, that the requestor is verified as the owner of the real estate asset based on the provided verification information;

generating, by the one or more processors, a digital certificate associated with the requester and the real estate asset based on the determination that requestor is a sufficient owner of the real estate asset; and

storing, by the one or more processors, the digital certificate at the digital certificate database.

31. The computer-implemented method of claim 30, further comprising:

attaching, by the one or more processors, the digital certificate to a DPRM token associated with the real estate asset.

32. The computer-implemented method of claims 30 or 31, wherein the digital certificate comprises a unique identifiable digital address.

33. The computer-implemented method of any of claims 30-32, wherein the digital certificate comprises meta data that associates the digital certificate and the real estate asset based on a unique identifier of the digital certificate and the physical address or lot identifier of the real estate asset.

34. The computer-implemented method of any of claims 30-33, wherein in response to determining a digital certificate associated with the real estate asset exists and is registered in the digital certificate database:

providing, by the one or more processors for display on the user interface, a transaction portal configured to enable acquisition of the digital certificate associated with the real estate asset.

35. The computer-implemented method of any of claims 30-34, wherein in response to determining a digital certificate associated with the real estate asset exists and is not registered in the digital certificate database:

providing, by the one or more processors for display on the user interface, a transaction portal configured to provide an option to purchase a first right of refusal associated the digital certificate associated with the real estate asset.

36. A computing apparatus comprising:

one or more processors;

at least one memory device operatively coupled to the one or more processors; and

a data communications interface operably associated with the one or more processors,

wherein the memory device contains a plurality of program instructions that, when executed by the one or more processors, cause the one or more processors to perform the steps of any of claims 30-35.

37. A non-transitory computer storage medium encoded with a computer program, the computer program comprising a plurality of program instructions that when

executed by one or more processors cause the one or more processors to perform operations comprising the steps of any of claims 30-35.

38. A computer-implemented method, comprising:

receiving, by one or more processors from a requester at a client device via a user interface or via data instructions associated with an application programming interface for the user interface, a request to connect data related to a three-dimensional (3D) model via a sanctioned link to a digital token associated with a real estate asset;

obtaining, by the one or more processors and based on the 3D model request, asset data associated with the real estate asset from an asset database, wherein the asset data comprises an asset ticket relating to assets associated with the physical address;

based on the 3D model request, at least one of: i) generating, by the one or more processors, a 3D model of the real estate asset based on the asset data, or ii) obtaining, by the one or more processors, a 3D model from the requestor at the client device via the user interface;

obtaining, by the one or more processors, a digital token associated with the real estate asset based on the generated 3D model or the obtained and verified 3D model from the requestor;

generating, by the one or more processors, a sanctioned 3D model link associated with the real estate asset based on verifying and connecting: i) the generated 3D model or the obtained and verified 3D model, and ii) the digital token associated with the real estate asset;

storing, by the one or more processors, the sanctioned 3D model link relating to the verified 3D model and the associated NFT in a 3D model database; and

providing, by the one or more processors, a representation of the sanctioned 3D model link at the user interface.

39. The computer-implemented method of claim 38, wherein the 3D model is generated based on a style preference obtained from the client device from a user preference database.

40. The computer-implemented method of claims 38 or 39, wherein obtaining the asset data comprises obtaining public information, real estate data, metadata, image

data, tracked marketplace action/behavior data, due diligence data, and a style preference associated with the real estate asset.

41. The computer-implemented method of any of claims 38-40, wherein the asset ticket is generated based on the obtained public information, real estate data, metadata, the image data, tracked marketplace action/behavior data, the due diligence data, and the style preference.

42. The computer-implemented method of any of claims 38-41, further comprising:

utilizing, by the one or more processors, a verification process to determine that requestor is a sufficient owner of the digital token related to a digital certificate associated with the real estate asset prior to generating the sanctioned 3D model link to the digital token.

43. The computer-implemented method of any of claims 38-42, further comprising:

establishing, by the one or more processors, a unique identifier for the 3D model and the related digital token to a DPRM token associated with the real estate asset.

44. The computer-implemented method of any of claims 38-43, wherein the digital token is a non-fungible token (NFT).

45. A computing apparatus comprising:

one or more processors;

at least one memory device operatively coupled to the one or more processors; and

a data communications interface operably associated with the one or more processors,

wherein the memory device contains a plurality of program instructions that, when executed by the one or more processors, cause the one or more processors to perform the steps of any of claims 38-44.

46. A non-transitory computer storage medium encoded with a computer program, the computer program comprising a plurality of program instructions that when

executed by one or more processors cause the one or more processors to perform operations comprising the steps of any of claims 38-44.

47. A computer-implemented method, comprising:

receiving, by one or more processors and from a requester at a client device via a user interface or via data instructions associated with an application programming interface for the user interface, a verification request for authorization of a pairing between physical property rights and digital property rights associated with a real estate asset;

obtaining, by the one or more processors and based on the verification request, real estate data associated with the real estate asset from a real estate database;

obtaining, by the one or more processors, a digital certificate associated with the real estate asset from a digital certificate database; and

generating, by the one or more processors, an asset verification certification based upon determining a correlation between the digital certificate, and the real estate asset.

48. The computer-implemented method of claim 47, further comprising:

associating, by the one or more processors, the asset verification certification with a user profile stored in a user preference database.

49. The computer-implemented method of claims 47 or 48, further comprising:

obtaining, by the one or more processors, meta data associated with digital property rights from a DPRM token associated with the real estate asset.

50. The computer-implemented method of any of claims 47-49, wherein determining a correlation between the digital certificate, the 3D model, and the real estate asset is based on the meta data from the DPRM token.

51. The computer-implemented method of any of claims 47-50, further comprising:

providing a representation of the digital certificate, the 3D model, and the verification with the metadata at the user interface.

52. The computer-implemented method of any of claims 47-51, further comprising:

obtaining a 3D model associated with the digital certificate for the real estate asset from a 3D model database; and updating the asset verification certification based upon determining a correlation between the digital certificate, the 3D model, and the real estate asset.

53. The computer-implemented method of any of claims 47-52, wherein the digital certificate is generated based on meta data associating the digital certificate with real estate asset.

54. The computer-implemented method of any of claims 47-53, further comprising:

providing the digital certificate and the asset verification certification to an external entity.

55. A computing apparatus comprising:

one or more processors;

at least one memory device operatively coupled to the one or more processors; and

a data communications interface operably associated with the one or more processors,

wherein the memory device contains a plurality of program instructions that, when executed by the one or more processors, cause the one or more processors to perform the steps of any of claims 47-54.

56. A non-transitory computer storage medium encoded with a computer program, the computer program comprising a plurality of program instructions that when executed by one or more processors cause the one or more processors to perform operations comprising the steps of any of claims 47-54.

57. A computer-implemented method, comprising:

in response to receiving a notification of a creation of a digital certificate associated with a physical address or lot identifier for a real estate asset, automatically generating, by one or more processors, a digital property rights

management (DPRM) token request associated with the digital certificate;

obtaining the digital certificate from a digital certificate database;

generating, by the one or more processors, a DPRM token based on an asset verification of the digital certificate, wherein the DPRM token comprises DPRM rules based on meta data associated with digital property rights associated with the digital certificate;

storing, by the one or more processors, the DPRM token at a DPRM token database; and

recording, by the one or more processors, the DPRM token on a blockchain associated with a real estate asset network.

58. The computer-implemented method of claim 56, wherein the plurality of program instructions that, when executed by the one or more processors, further cause the one or more processors to perform the step of:

obtaining, by the one or more processors, a non-fungible verified connection request associated with a 3D model of the real estate asset from a 3D model database; and

updating, by the one or more processors, the DPRM token on the blockchain based on the non-fungible verified connection request.

59. The computer-implemented method of claims 57 or 58, wherein the DPRM token comprises a programable smart contract configured to track digital asset experience steps associated with digital property rights associated with the real estate asset.

60. The computer-implemented method of claim 59, wherein the experience steps comprise at least one of:

tracking, by the one or more processors, a transfer history of the digital property rights;

monitoring, by the one or more processors, a value of the digital property rights;

monitoring, by the one or more processors, revenue generated by the digital property rights;

managing, by the one or more processors, royalty rights distributions associated with the digital property rights;

adding, by the one or more processors, additional 3D assets to the DPRM token;

issuing, by the one or more processors, a first right of refusal associated with the DPRM token;

managing, by the one or more processors, third-party interactions associated with the digital property rights; and

monitoring, by the one or more processors, interactions associated with a digital address associated with the digital certificate.

61. The computer-implemented method of any of claims 57-60, wherein the DPRM token comprises:

a digital land construct;

a digital structures construct; and

a unique digital identifier address.

62. The computer-implemented method of any of claims 57-61, further comprising:

providing, by the one or more processors, a representation of the DPRM token at the user interface.

63. The computer-implemented method of any of claims 57-62, wherein the 3D model is generated based on asset data, real estate data, metadata, image data, tracked marketplace action/behavior data, due diligence data, or a style preference associated with the real estate asset.

64. The computer-implemented method of any of claims 57-63, further comprising:

providing, by the one or more processors, the DPRM token to an external entity.

65. A computing apparatus comprising:

one or more processors;

at least one memory device operatively coupled to the one or more processors; and

a data communications interface operably associated with the one or more processors,

wherein the memory device contains a plurality of program instructions that, when executed by the one or more processors, cause the one or more processors to perform the steps of any of claims 57-64.

66. A non-transitory computer storage medium encoded with a computer program, the computer program comprising a plurality of program instructions that when executed by one or more processors cause the one or more processors to perform operations comprising the steps of any of claims 57-64.

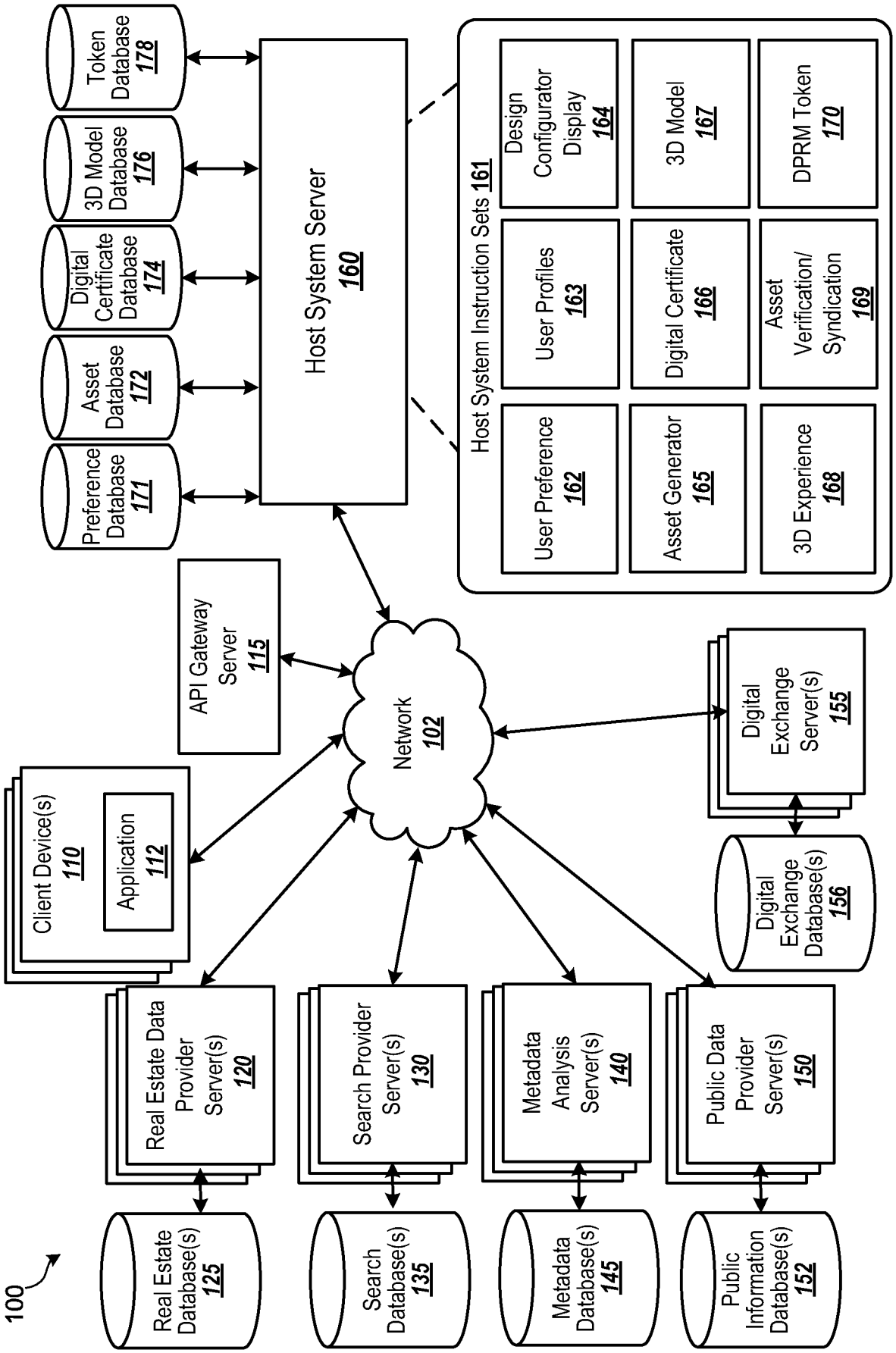
100
Real Estate Database(s) 125
Real Estate Data Provider Server(s) 120
Search Database(s) 135
Search Provider Server(s) 130
Metadata Database(s) 145
Metadata Analysis Server(s) 140
Public Information Database(s) 152
Public Data Provider Server(s) 150
Client Device(s) 110
Application 112
Network 102
API Gateway Server 115
Digital Exchange Database(s) 156
Digital Exchange Server(s) 155
Preference Database 171
Asset Database 172
Digital Certificate Database 174
3D Model Database 176
Token Database 178
Host System Server 160
Host System Instruction Sets 161
User Preference 162
User Profiles 163
Design Configurator Display 164
Asset Generator 165
Digital Certificate 166
3D Model 167
3D Experience 168
Asset Verification/ Syndication 169
DPRM Token 170

FIG. 1

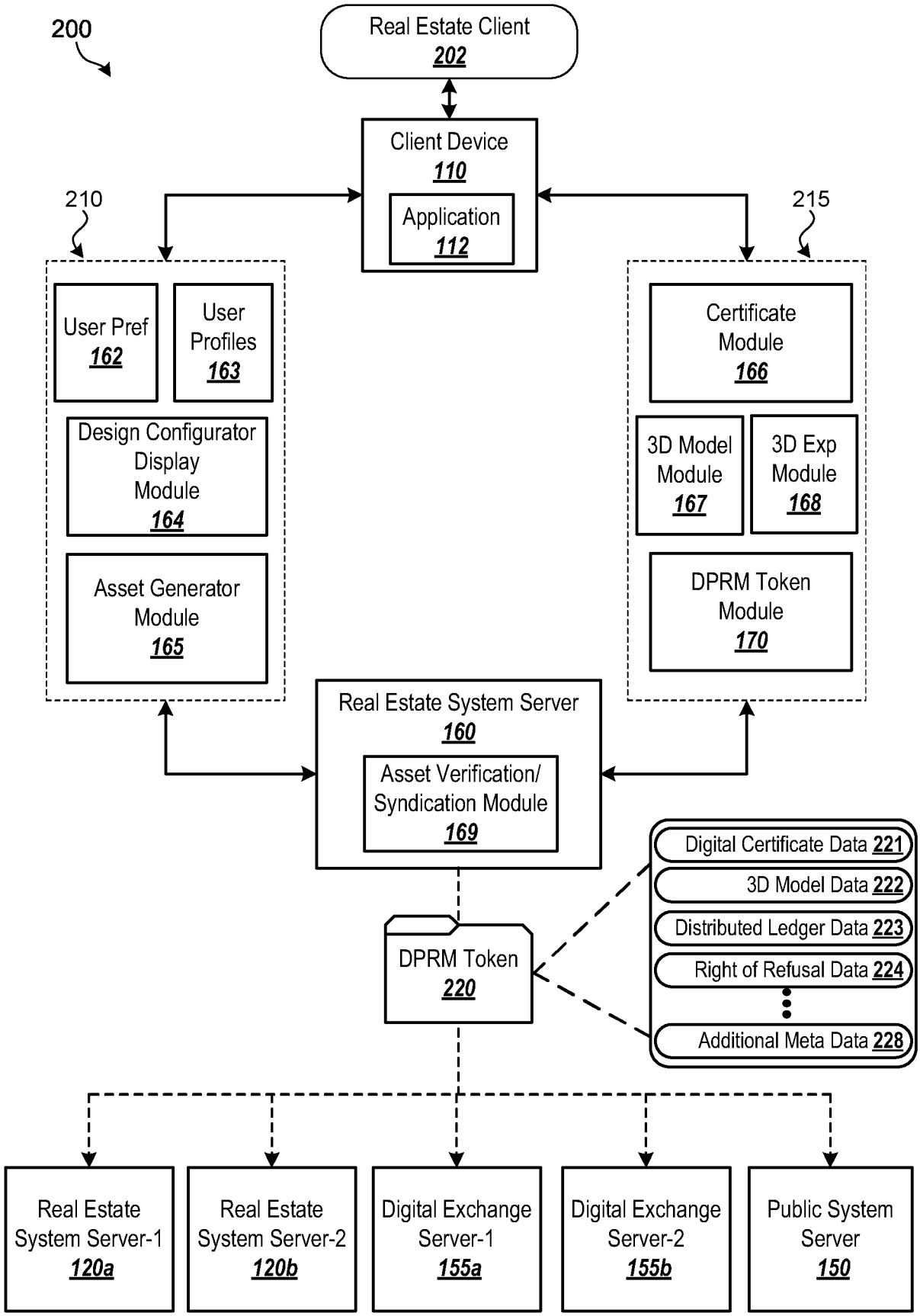
200
Real Estate Client
202
Client Device
110
Application
112
210
215
User Pref
162
User Profiles
163
Design Configurator Display Module
164
Asset Generator Module
165
Certificate Module
166
3D Model Module
167
3D Exp Module
168
DPRM Token Module
170
Real Estate System Server
160
Asset Verification/ Syndication Module
169
DPRM Token
220
Digital Certificate Data 221
3D Model Data 222
Distributed Ledger Data 223
Right of Refusal Data 224
Additional Meta Data 228
Real Estate System Server-1
120a
Real Estate System Server-2
120b
Digital Exchange Server-1
155a
Digital Exchange Server-2
155b
Public System Server
150

FIG. 2

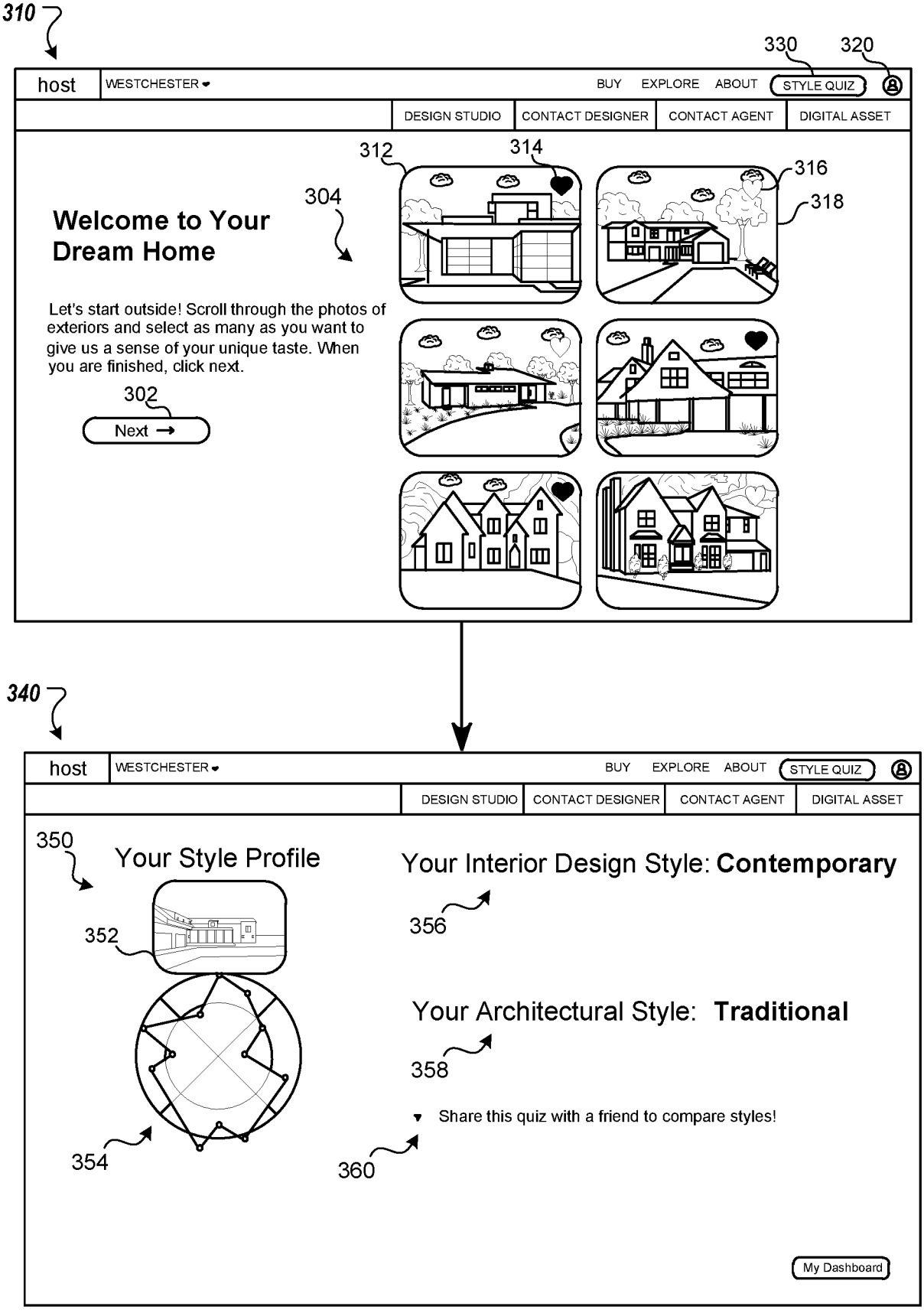
310
330
320
host
WESTCHESTER
BUY
EXPLORE
ABOUT
STYLE QUIZ
DESIGN STUDIO
CONTACT DESIGNER
CONTACT AGENT
DIGITAL ASSET
312
314
316
318
304
Welcome to Your Dream Home
Let's start outside! Scroll through the photos of exteriors and select as many as you want to give us a sense of your unique taste. When you are finished, click next.
302
Next
340
host
WESTCHESTER
BUY
EXPLORE
ABOUT
STYLE QUIZ
DESIGN STUDIO
CONTACT DESIGNER
CONTACT AGENT
DIGITAL ASSET
350
Your Style Profile
352
354
Your Interior Design Style: Contemporary
356
Your Architectural Style: Traditional
358
Share this quiz with a friend to compare styles!
360
My Dashboard

FIG. 3

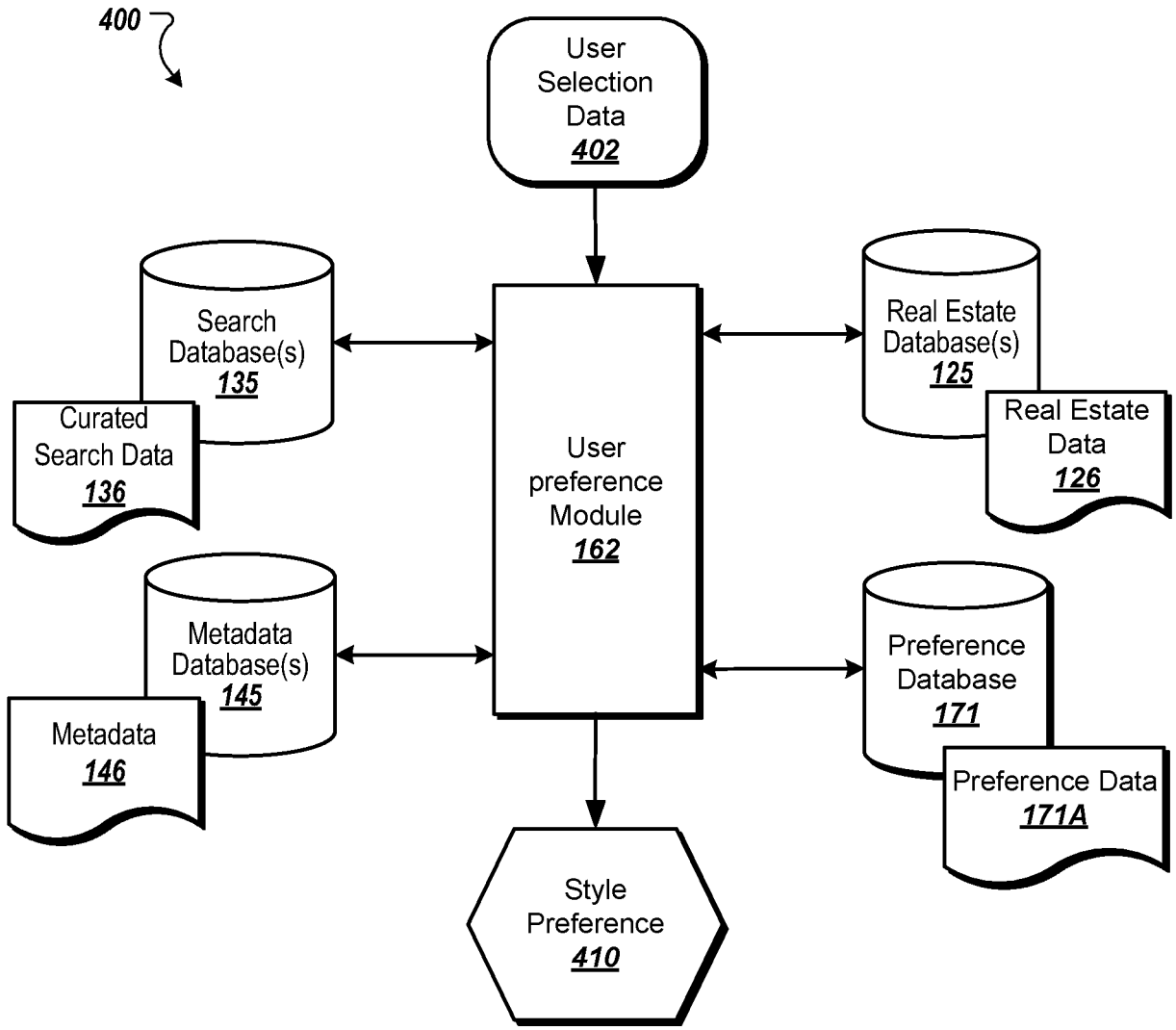
400
User Selection Data 402
Search Database(s) 135
Curated Search Data 136
User preference Module 162
Real Estate Database(s) 125
Real Estate Data 126
Metadata Database(s) 145
Metadata 146
Preference Database 171
Preference Data 171A
Style Preference 410

FIG. 4

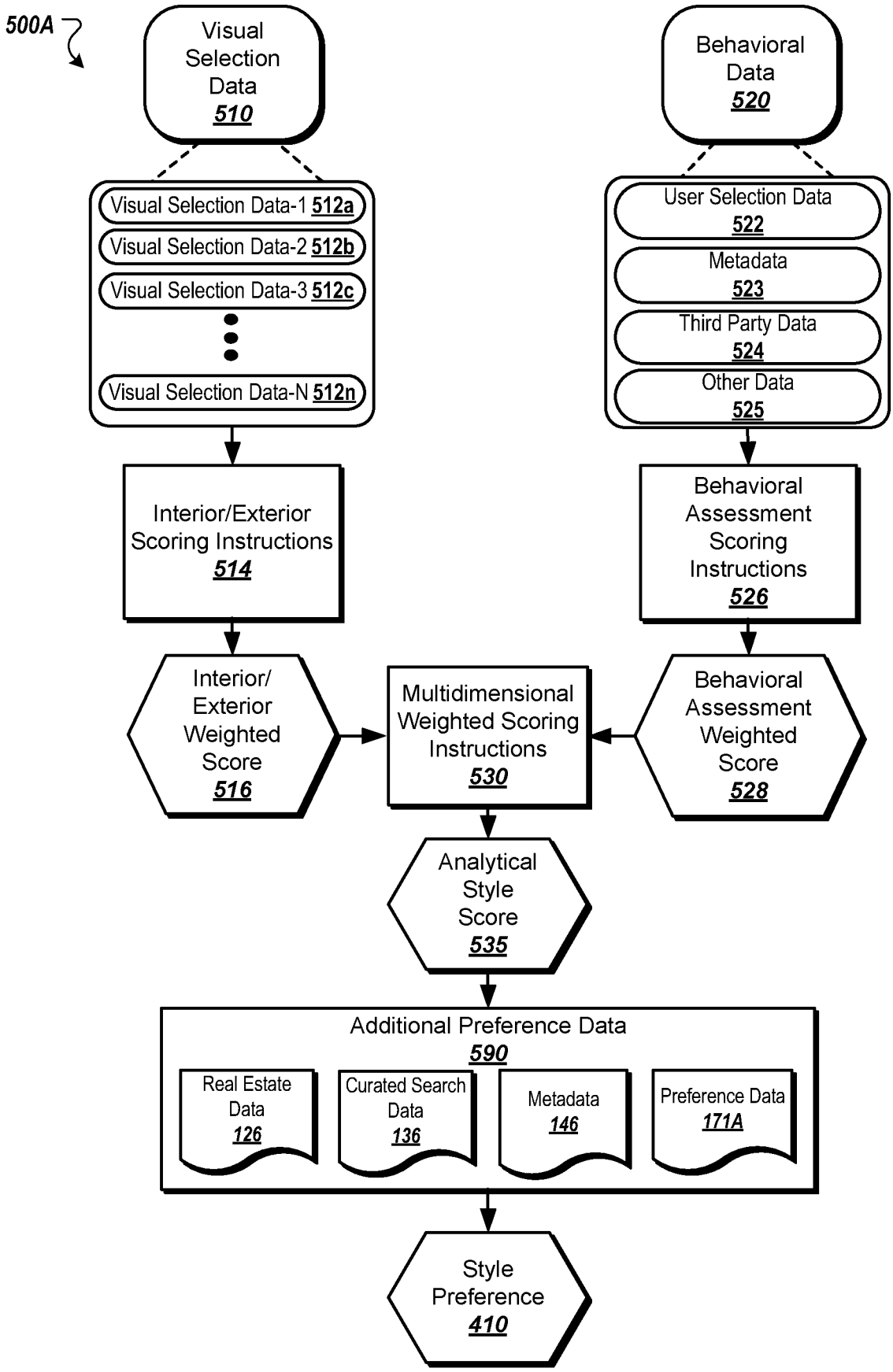
500A
Visual Selection Data 510
Behavioral Data 520
Visual Selection Data-1 512a
Visual Selection Data-2 512b
Visual Selection Data-3 512c
Visual Selection Data-N 512n
User Selection Data 522
Metadata 523
Third Party Data 524
Other Data 525
Interior/Exterior Scoring Instructions 514
Behavioral Assessment Scoring Instructions 526
Interior/ Exterior Weighted Score 516
Multidimensional Weighted Scoring Instructions 530
Behavioral Assessment Weighted Score 528
Analytical Style Score 535
Additional Preference Data 590
Real Estate Data 126
Curated Search Data 136
Metadata 146
Preference Data 171A
Style Preference 410

FIG. 5A

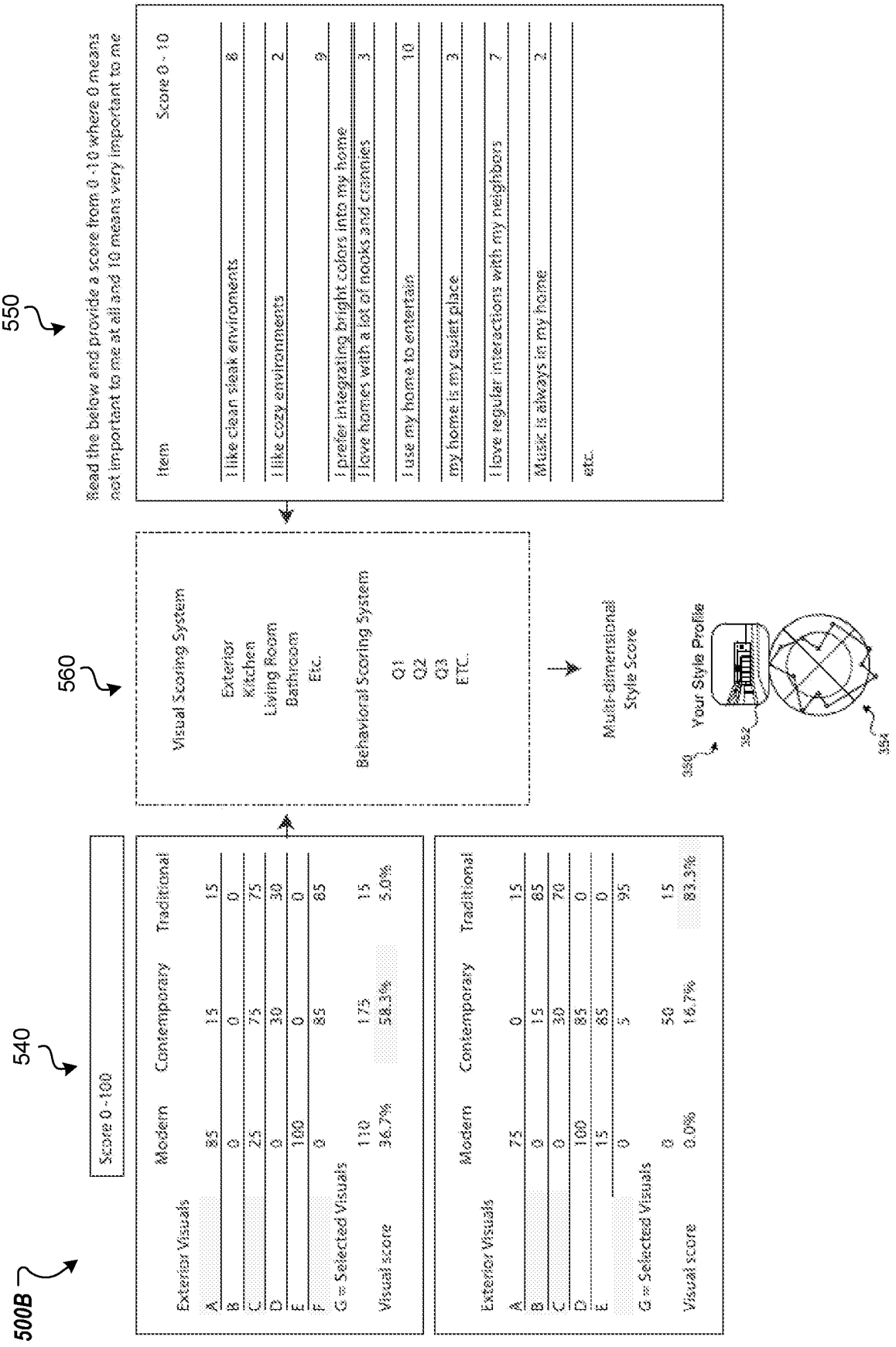
500B
540
Score 0 - 100
Modern Contemporary Traditional
Exterior Visuals
A 85 15 15
B 0 0 0
C 25 75 75
D 0 30 30
E 100 0 0
F 0 85 85
G = Selected Visuals
110 175 15
Visual score 36.7% 58.3% 5.0%
Modern Contemporary Traditional
Exterior Visuals
A 75 0 15
B 0 15 85
C 0 30 70
D 100 85 0
E 15 85 0
0 5 95
G = Selected Visuals
0 50 15
Visual score 0.0% 16.7% 83.3%
560
Visual Scoring System
Exterior
Kitchen
Living Room
Bathroom
Etc.
Behavioral Scoring System
Q1
Q2
Q3
ETC.
Multi-dimensional
Style Score
Your Style Profile
550
Read the below and provide a score from 0 - 10 where 0 means not important to me at all and 10 means very important to me
Item Score 0 - 10
I like clean sleek environments 8
I like cozy environments 2
I prefer integrating bright colors into my home 9
I love homes with a lot of nooks and crannies 3
I use my home to entertain 10
my home is my quiet place 3
I love regular interactions with my neighbors 7
Music is always in my home 2
etc.

FIG. 5B

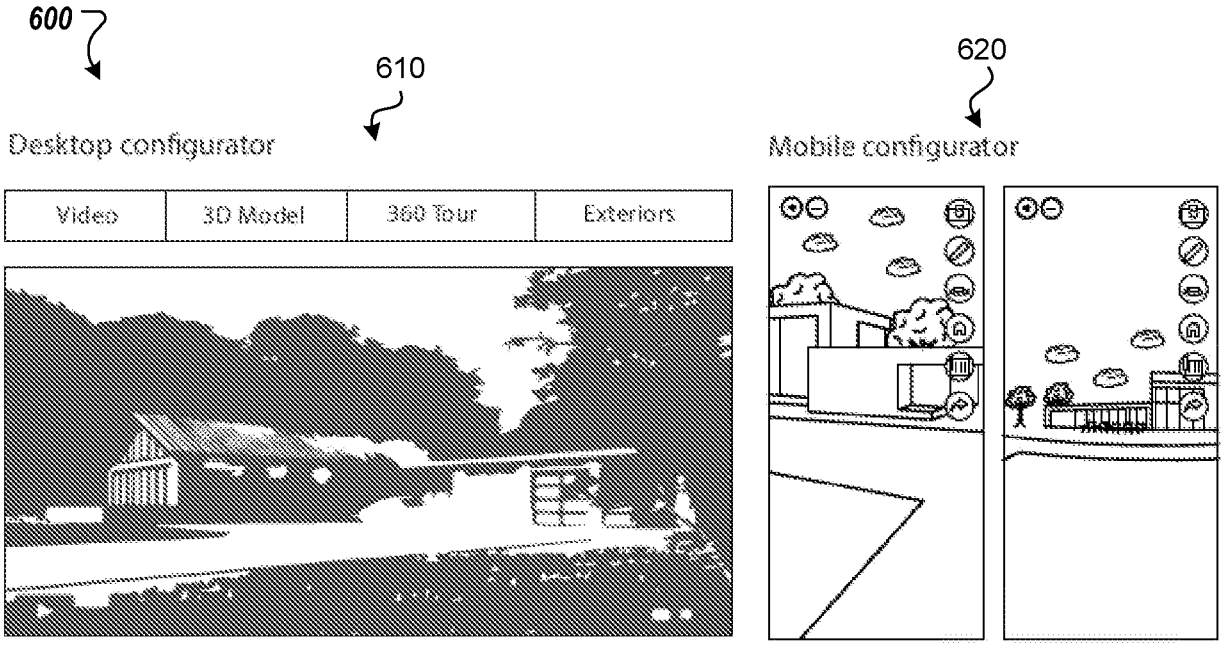
600
610
620
Desktop configurator
Mobile configurator
Video
3D Model
360 Tour
Exteriors

FIG. 6

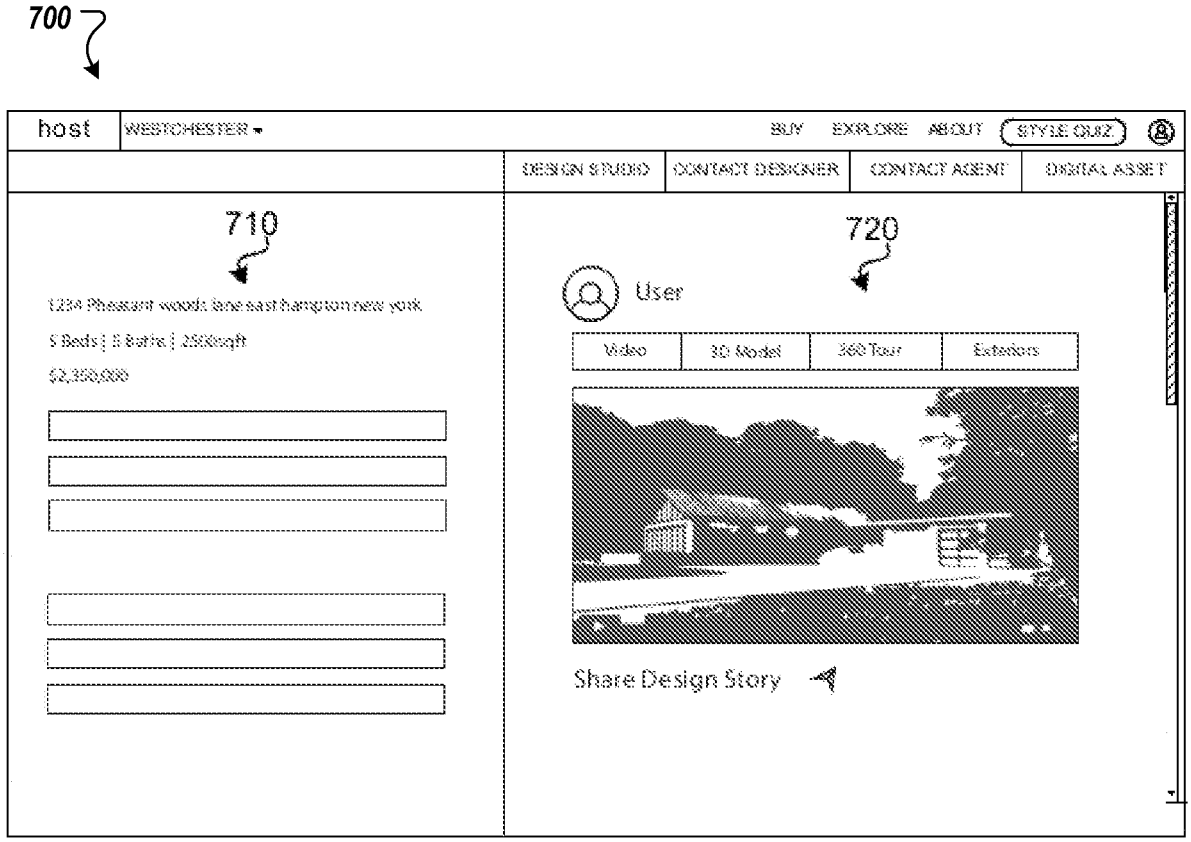
700
host
WESTCHESTER
BUY
EXPLORE
ABOUT
STYLE QUIZ
DESIGN STUDIO
CONTACT DESIGNER
CONTACT AGENT
DIGITAL ASSET
710
720
User
Video
3D Model
360 Tour
Exteriors
Share Design Story

FIG. 7

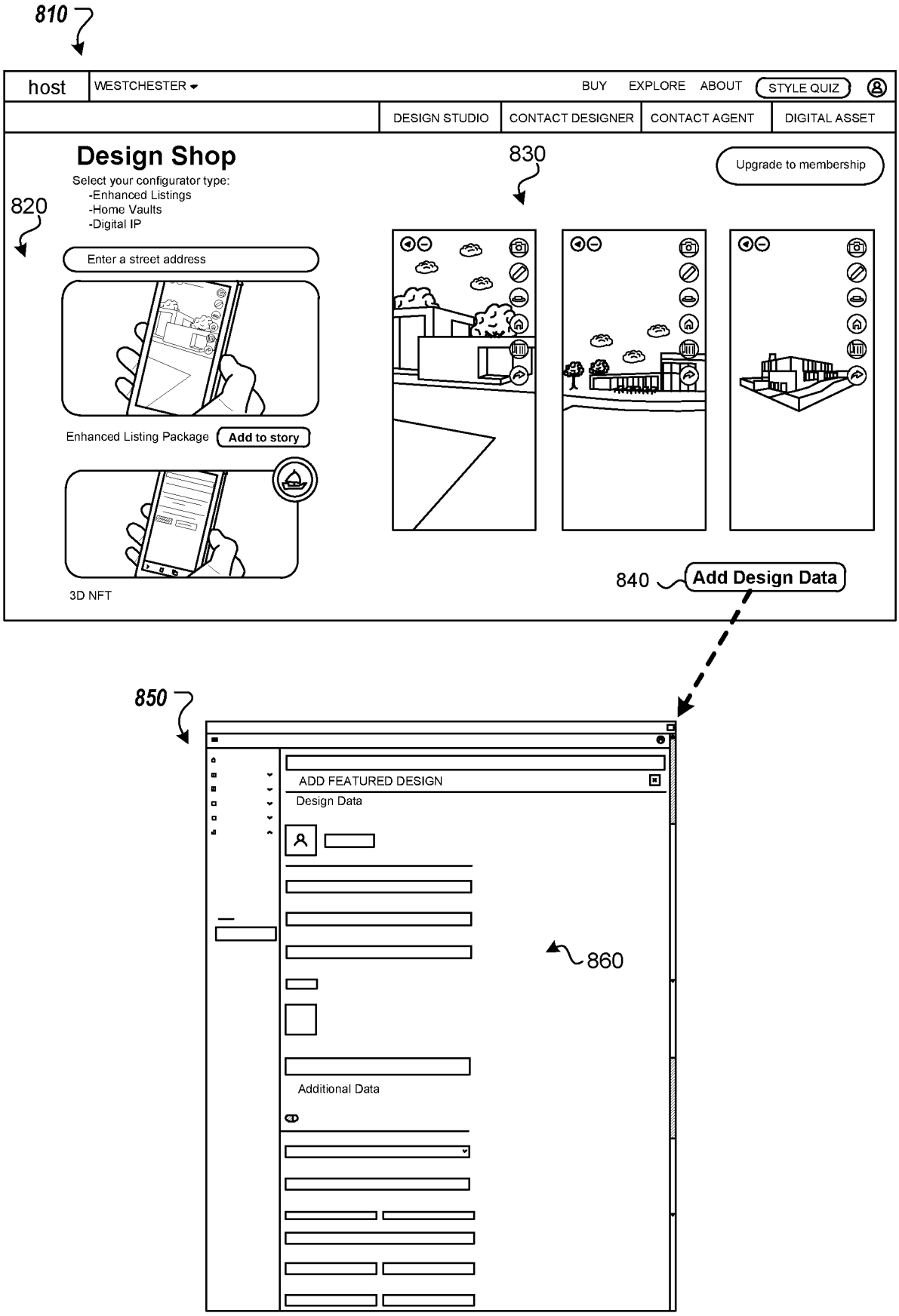
810
host
WESTCHESTER
BUY
EXPLORE
ABOUT
STYLE QUIZ
DESIGN STUDIO
CONTACT DESIGNER
CONTACT AGENT
DIGITAL ASSET
Design Shop
Select your configurator type:
-Enhanced Listings
-Home Vaults
-Digital IP
820
830
Upgrade to membership
Enter a street address
Enhanced Listing Package
Add to story
3D NFT
840
Add Design Data
850
ADD FEATURED DESIGN
Design Data
860
Additional Data

FIG. 8

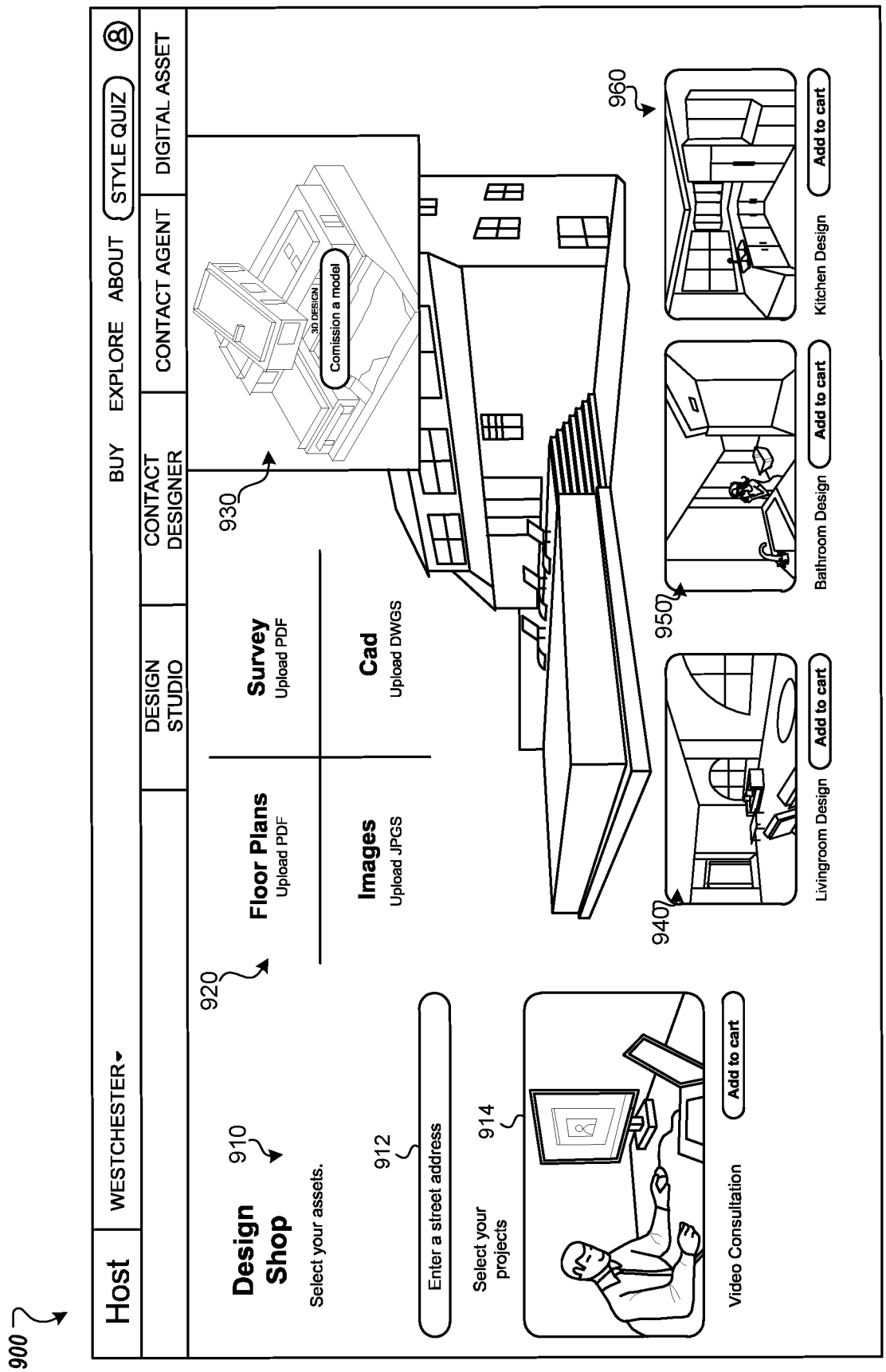
900
Host
WESTCHESTER
BUY
EXPLORE
ABOUT
STYLE QUIZ
DESIGN STUDIO
CONTACT DESIGNER
CONTACT AGENT
DIGITAL ASSET
Design Shop
910
Select your assets.
912
Enter a street address
Select your projects
914
Video Consultation
Add to cart
920
Floor Plans
Upload PDF
Survey
Upload PDF
Images
Upload JPGS
Cad
Upload DWGS
930
3D DESIGN
Comission a model
940
Livingroom Design
Add to cart
950
Bathroom Design
Add to cart
960
Kitchen Design
Add to cart

FIG. 9

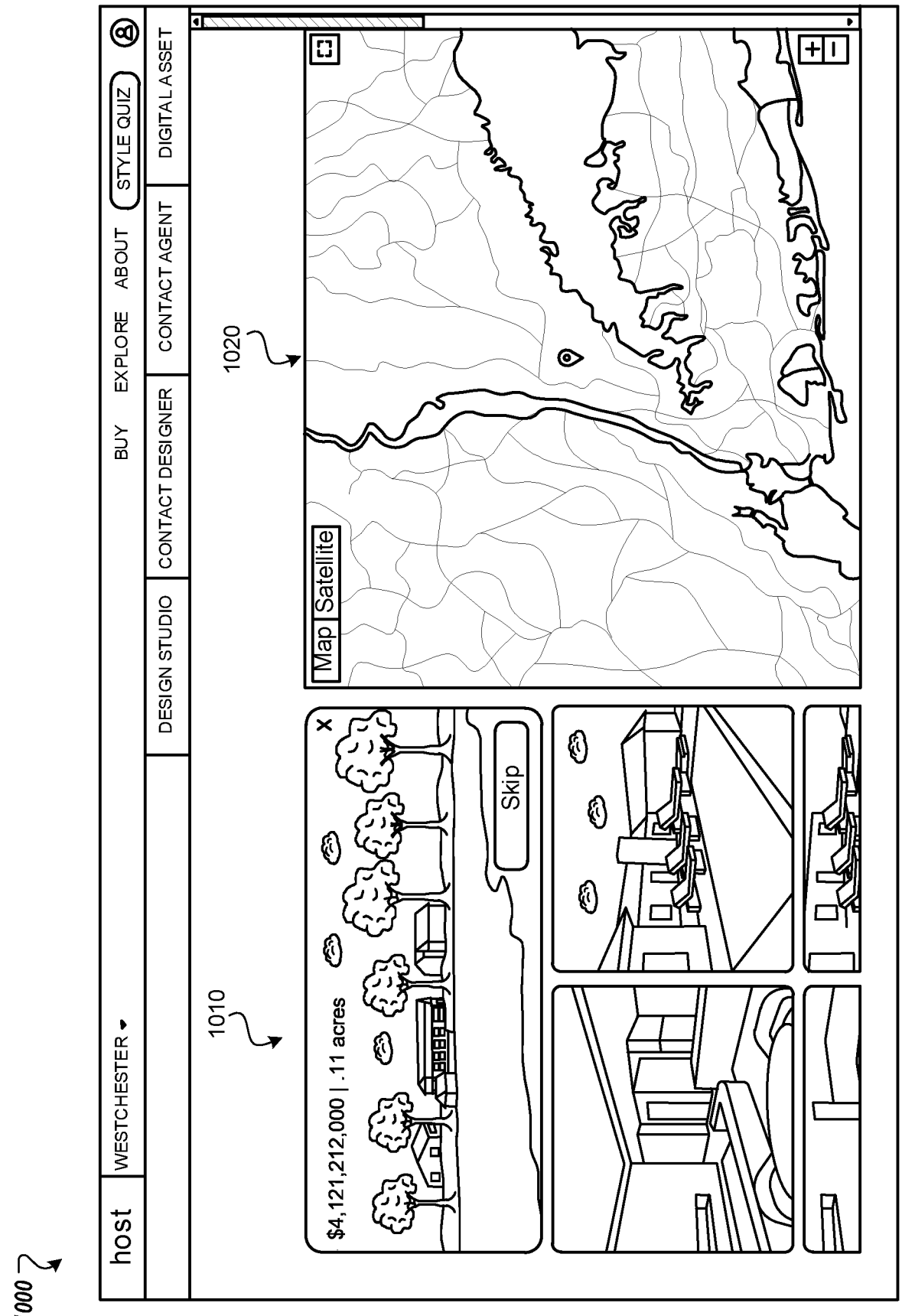
1000
host
WESTCHESTER
BUY
EXPLORE
ABOUT
STYLE QUIZ
DESIGN STUDIO
CONTACT DESIGNER
CONTACT AGENT
DIGITAL ASSET
1010
$4,121,212,000 | .11 acres
Skip
1020
Map
Satellite

FIG. 10

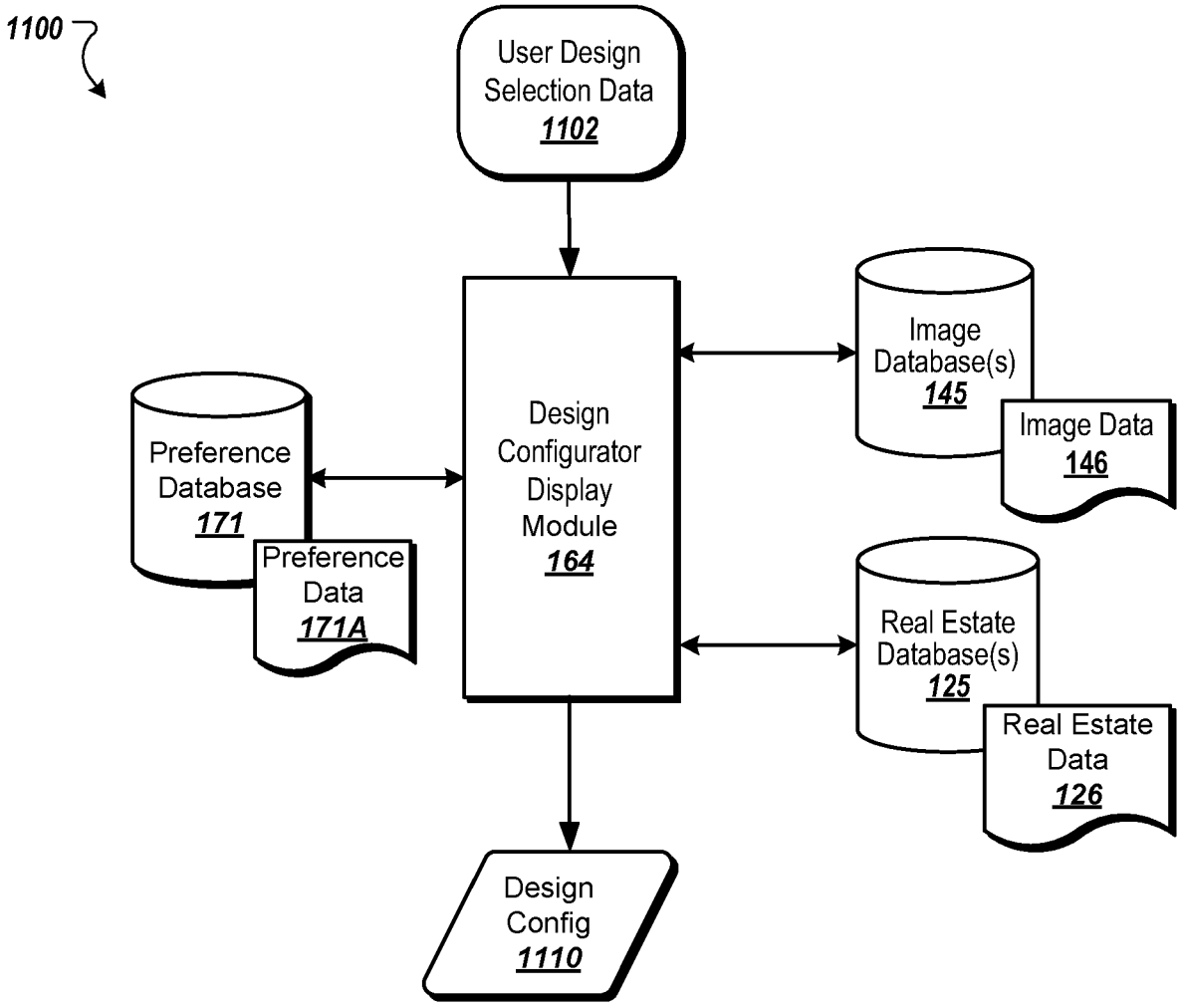
1100
User Design Selection Data 1102
Design Configurator Display Module 164
Preference Database 171
Preference Data 171A
Image Database(s) 145
Image Data 146
Real Estate Database(s) 125
Real Estate Data 126
Design Config 1110

FIG. 11

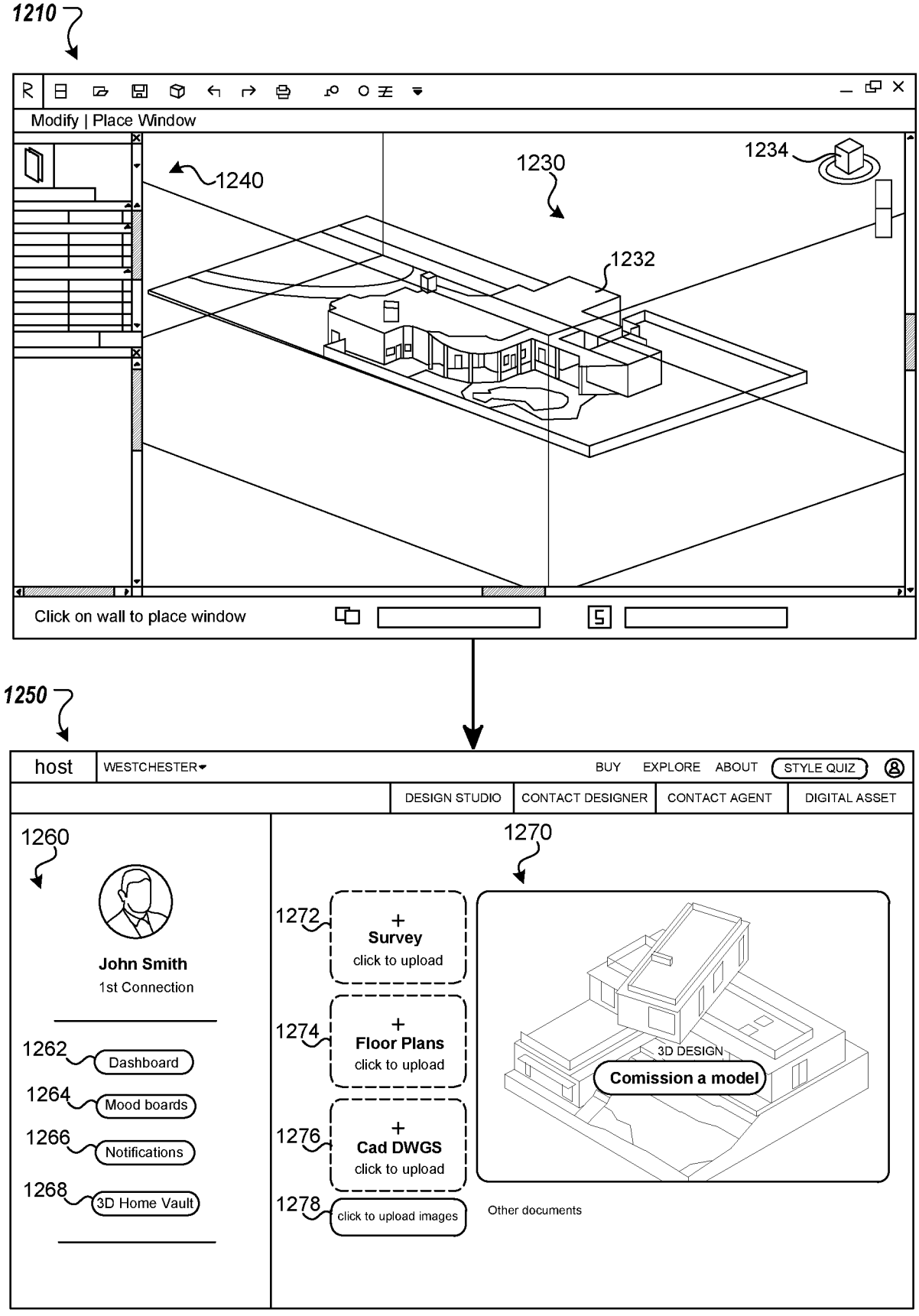
1210
Modify | Place Window
1240
1230
1234
1232
Click on wall to place window
1250
host
WESTCHESTER
BUY
EXPLORE
ABOUT
STYLE QUIZ
DESIGN STUDIO
CONTACT DESIGNER
CONTACT AGENT
DIGITAL ASSET
1260
John Smith
1st Connection
1262
Dashboard
1264
Mood boards
1266
Notifications
1268
3D Home Vault
1270
1272
+
Survey
click to upload
1274
+
Floor Plans
click to upload
1276
+
Cad DWGS
click to upload
1278
click to upload images
Other documents
3D DESIGN
Comission a model

FIG. 12

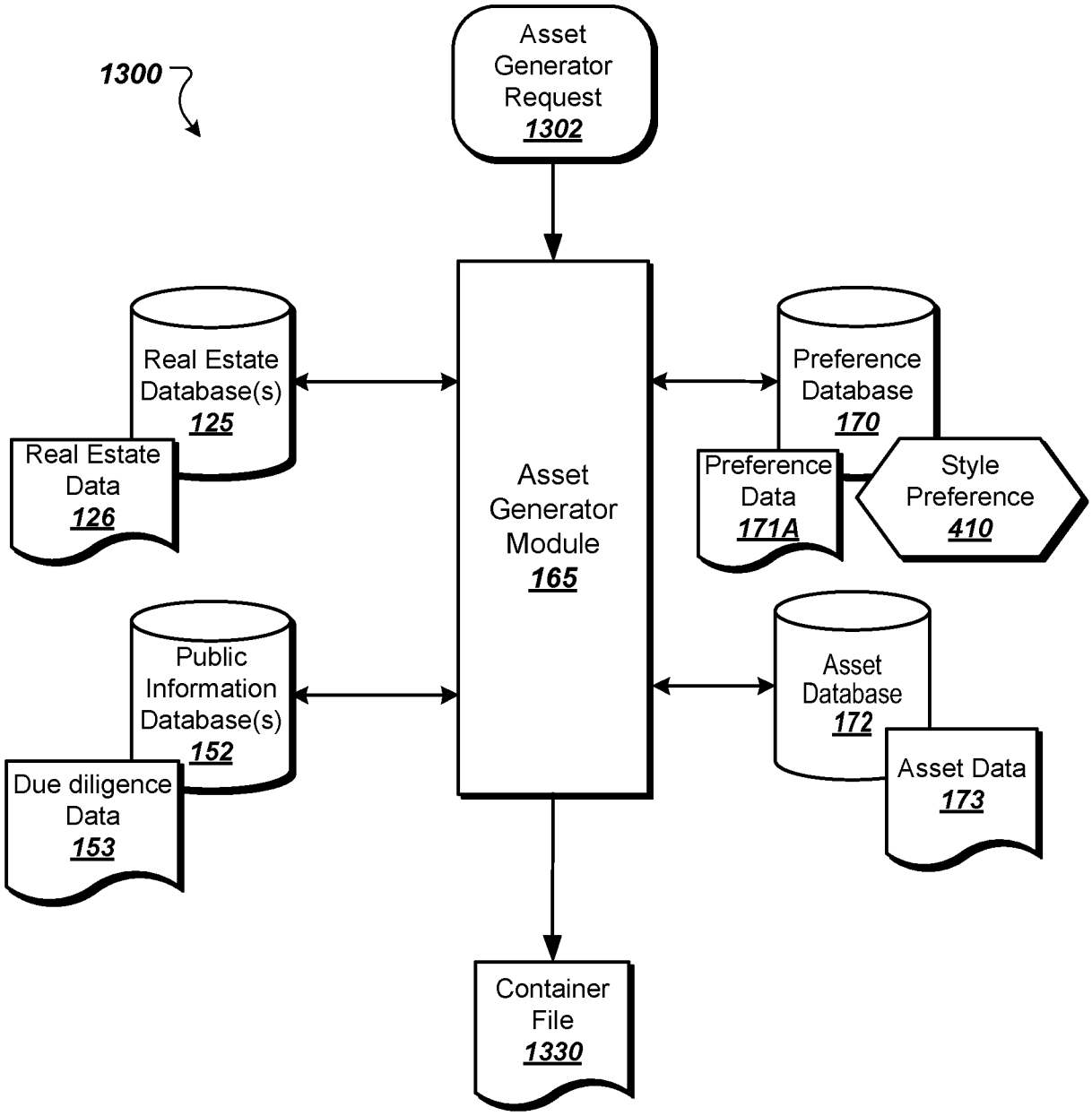
1300
Asset Generator Request 1302
Real Estate Database(s) 125
Real Estate Data 126
Asset Generator Module 165
Preference Database 170
Preference Data 171A
Style Preference 410
Public Information Database(s) 152
Due diligence Data 153
Asset Database 172
Asset Data 173
Container File 1330

FIG. 13

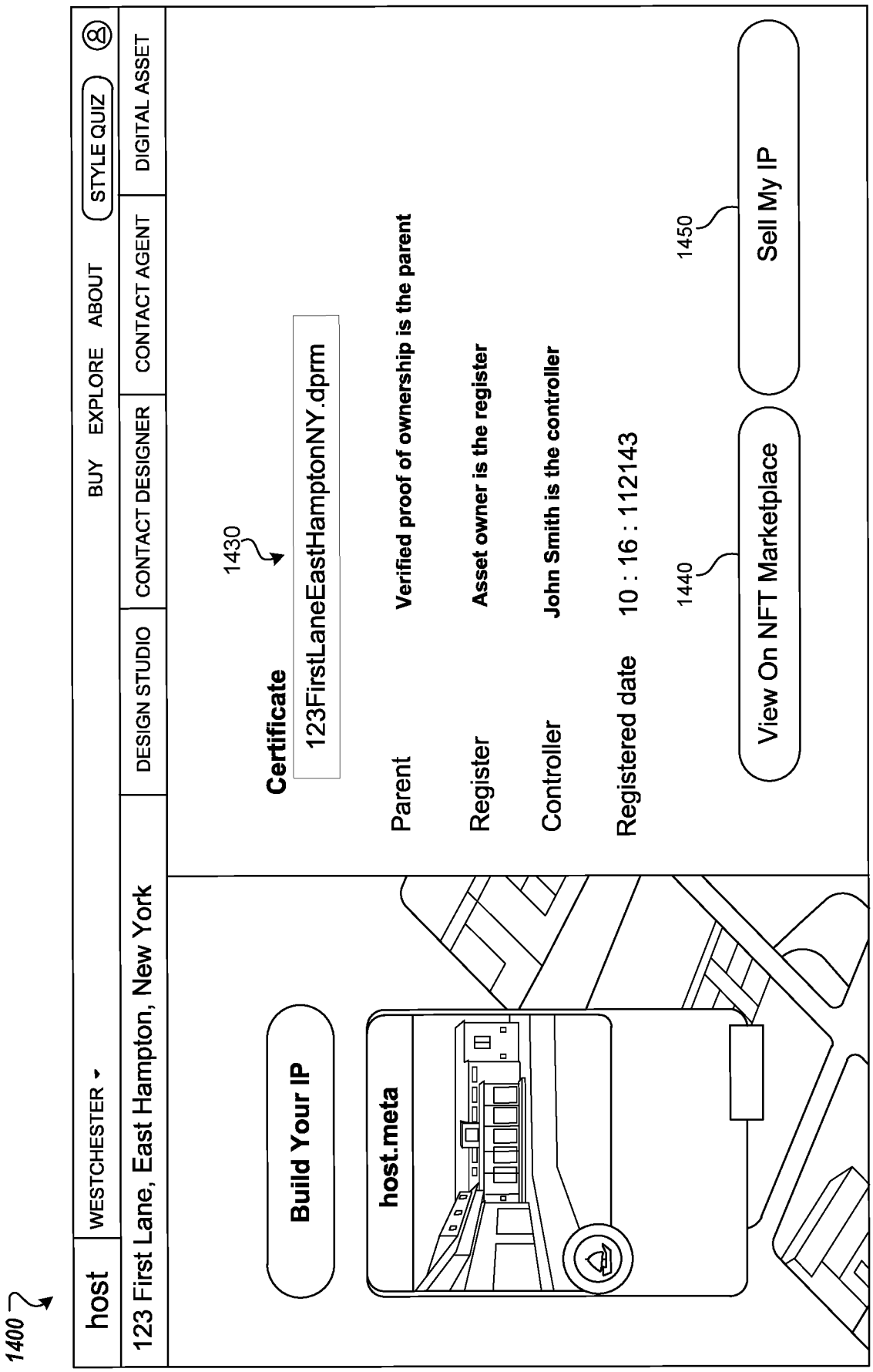
1400
host
WESTCHESTER
BUY EXPLORE ABOUT
STYLE QUIZ
123 First Lane, East Hampton, New York
DESIGN STUDIO
CONTACT DESIGNER
CONTACT AGENT
DIGITAL ASSET
Build Your IP
host.meta
1430
Certificate
123FirstLaneEastHamptonNY.dprm
Parent
Verified proof of ownership is the parent
Register
Asset owner is the register
Controller
John Smith is the controller
Registered date
10 : 16 : 112143
1440
View On NFT Marketplace
1450
Sell My IP

FIG. 14

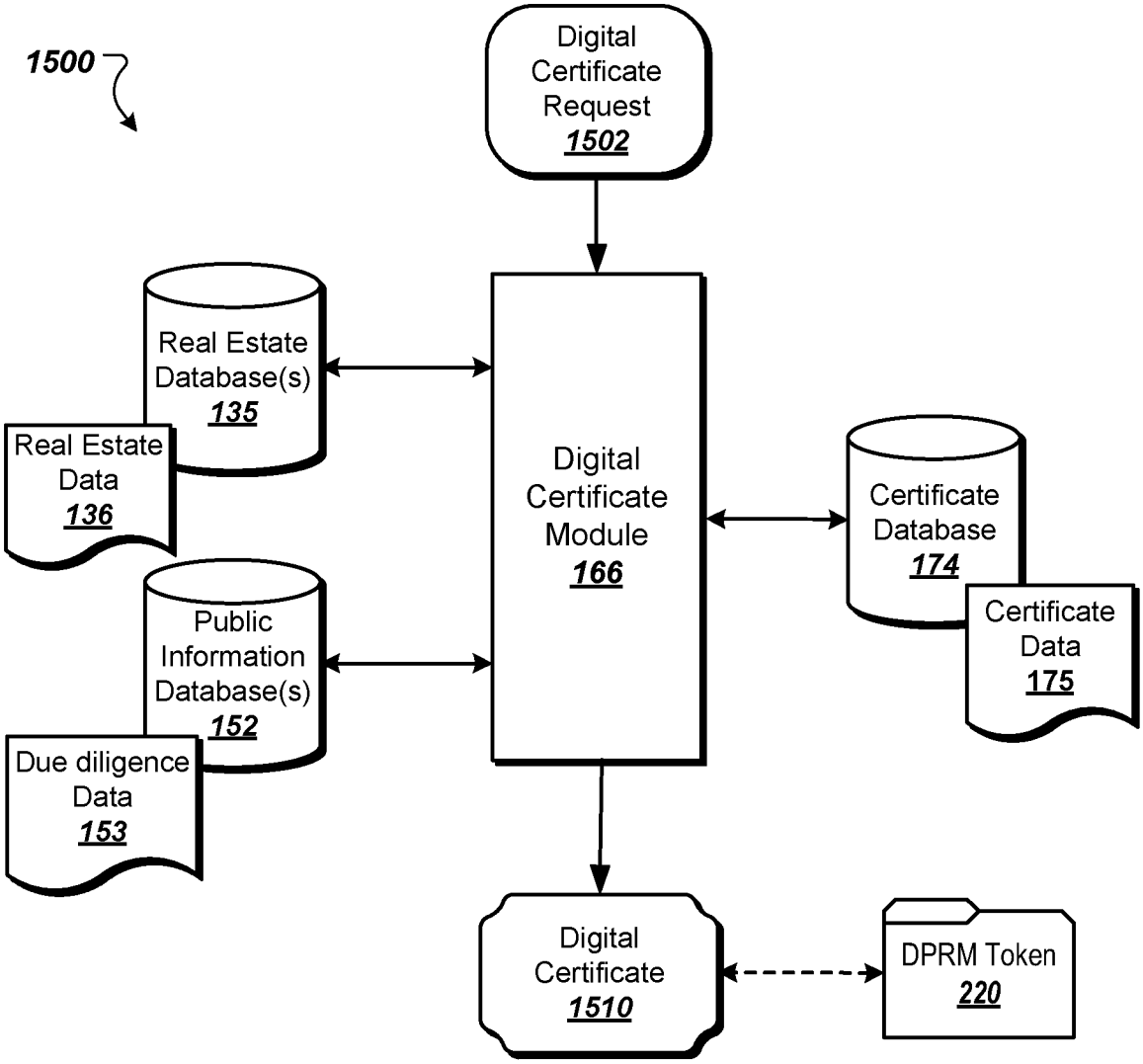
1500
Digital Certificate Request 1502
Real Estate Database(s) 135
Real Estate Data 136
Public Information Database(s) 152
Due diligence Data 153
Digital Certificate Module 166
Certificate Database 174
Certificate Data 175
Digital Certificate 1510
DPRM Token 220

FIG. 15

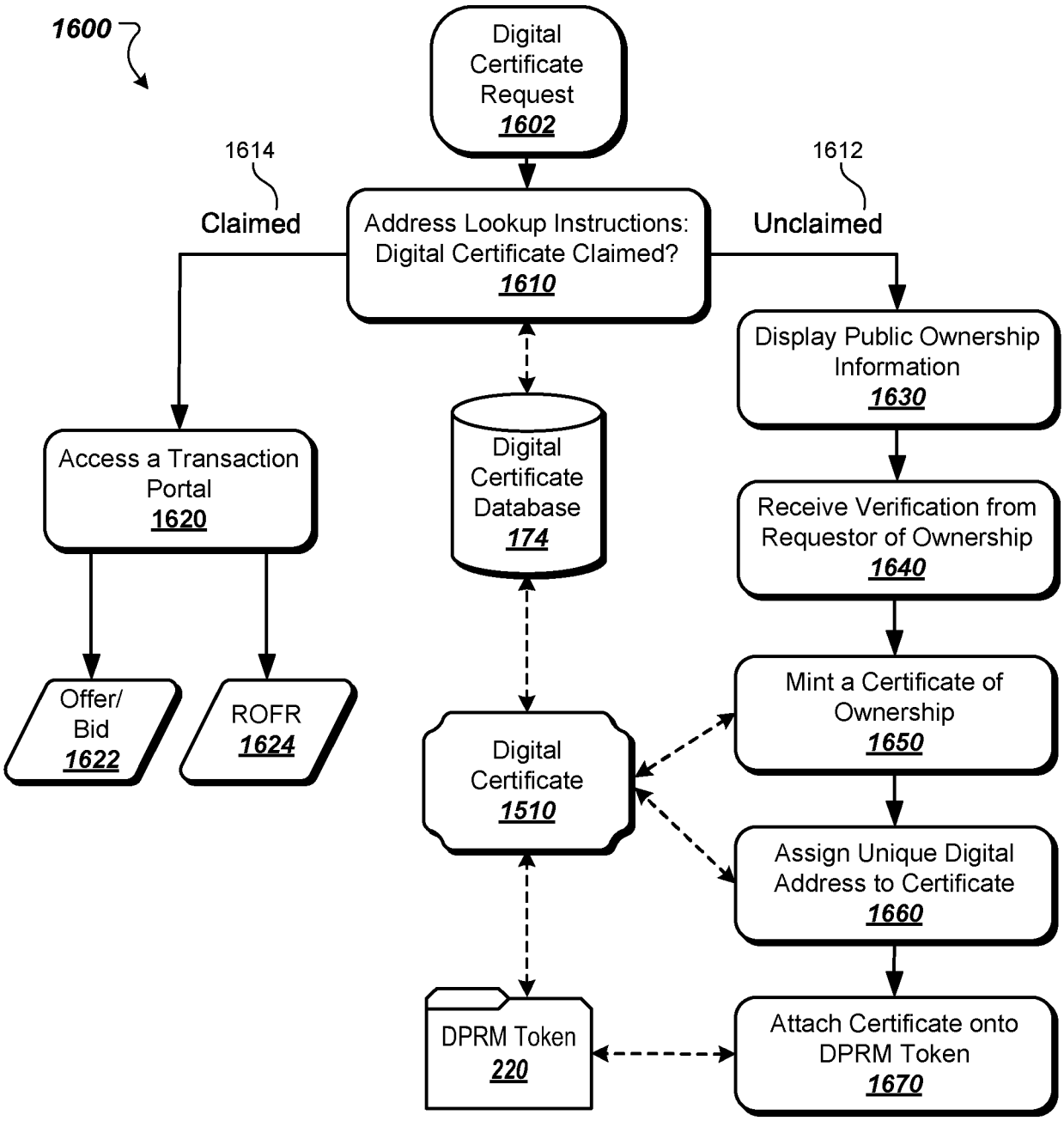
1600
Digital Certificate Request 1602
1614
Claimed
Address Lookup Instructions: Digital Certificate Claimed? 1610
1612
Unclaimed
Access a Transaction Portal 1620
Digital Certificate Database 174
Display Public Ownership Information 1630
Receive Verification from Requestor of Ownership 1640
Offer/ Bid 1622
ROFR 1624
Digital Certificate 1510
Mint a Certificate of Ownership 1650
Assign Unique Digital Address to Certificate 1660
DPRM Token 220
Attach Certificate onto DPRM Token 1670

FIG. 16

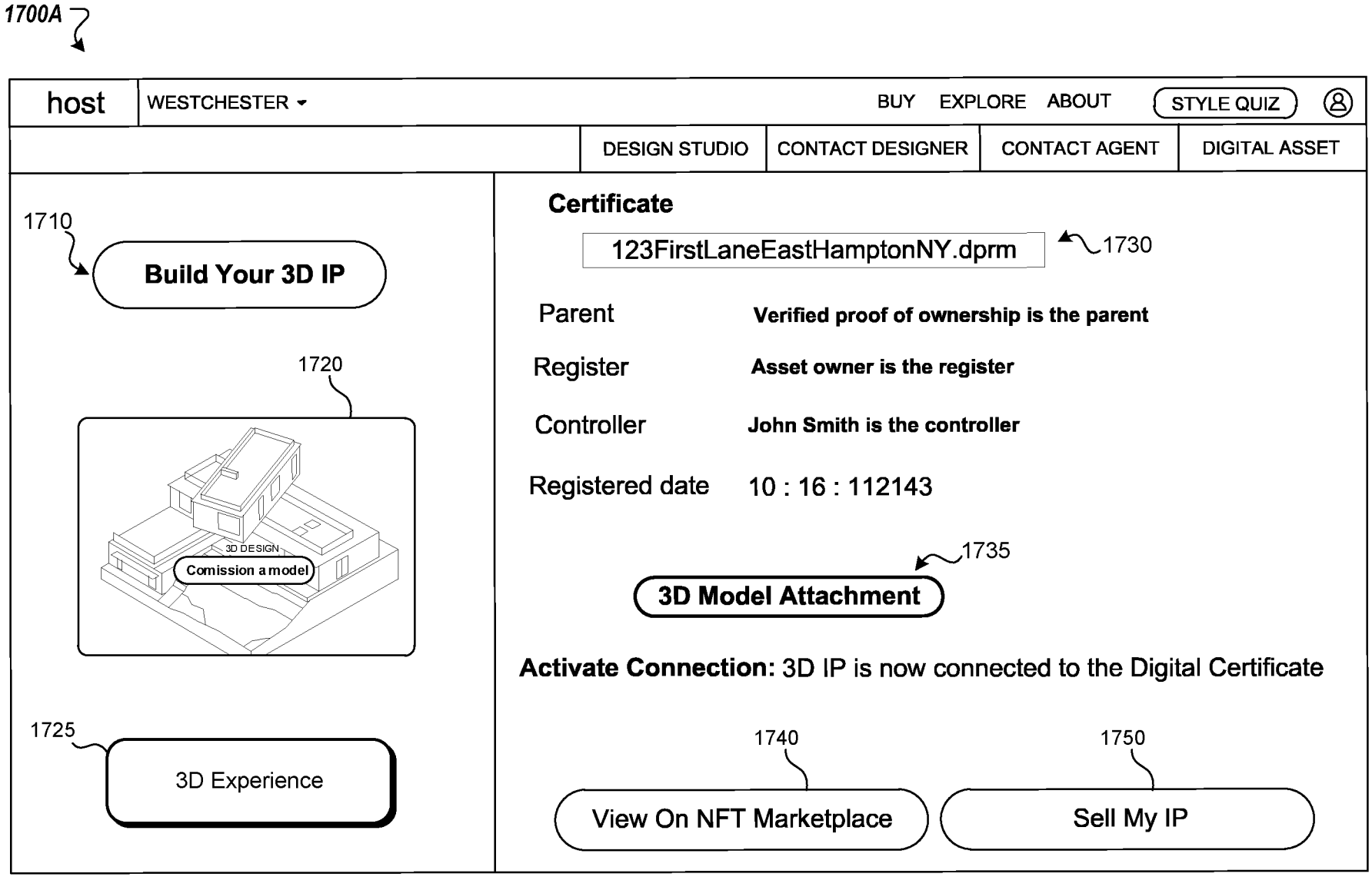
1700A
host
WESTCHESTER
BUY
EXPLORE
ABOUT
STYLE QUIZ
DESIGN STUDIO
CONTACT DESIGNER
CONTACT AGENT
DIGITAL ASSET
1710
Build Your 3D IP
1720
3D DESIGN
Comission a model
1725
3D Experience
Certificate
123FirstLaneEastHamptonNY.dprm
1730
Parent
Verified proof of ownership is the parent
Register
Asset owner is the register
Controller
John Smith is the controller
Registered date
10 : 16 : 112143
1735
3D Model Attachment
Activate Connection: 3D IP is now connected to the Digital Certificate
1740
1750
View On NFT Marketplace
Sell My IP

FIG. 17A

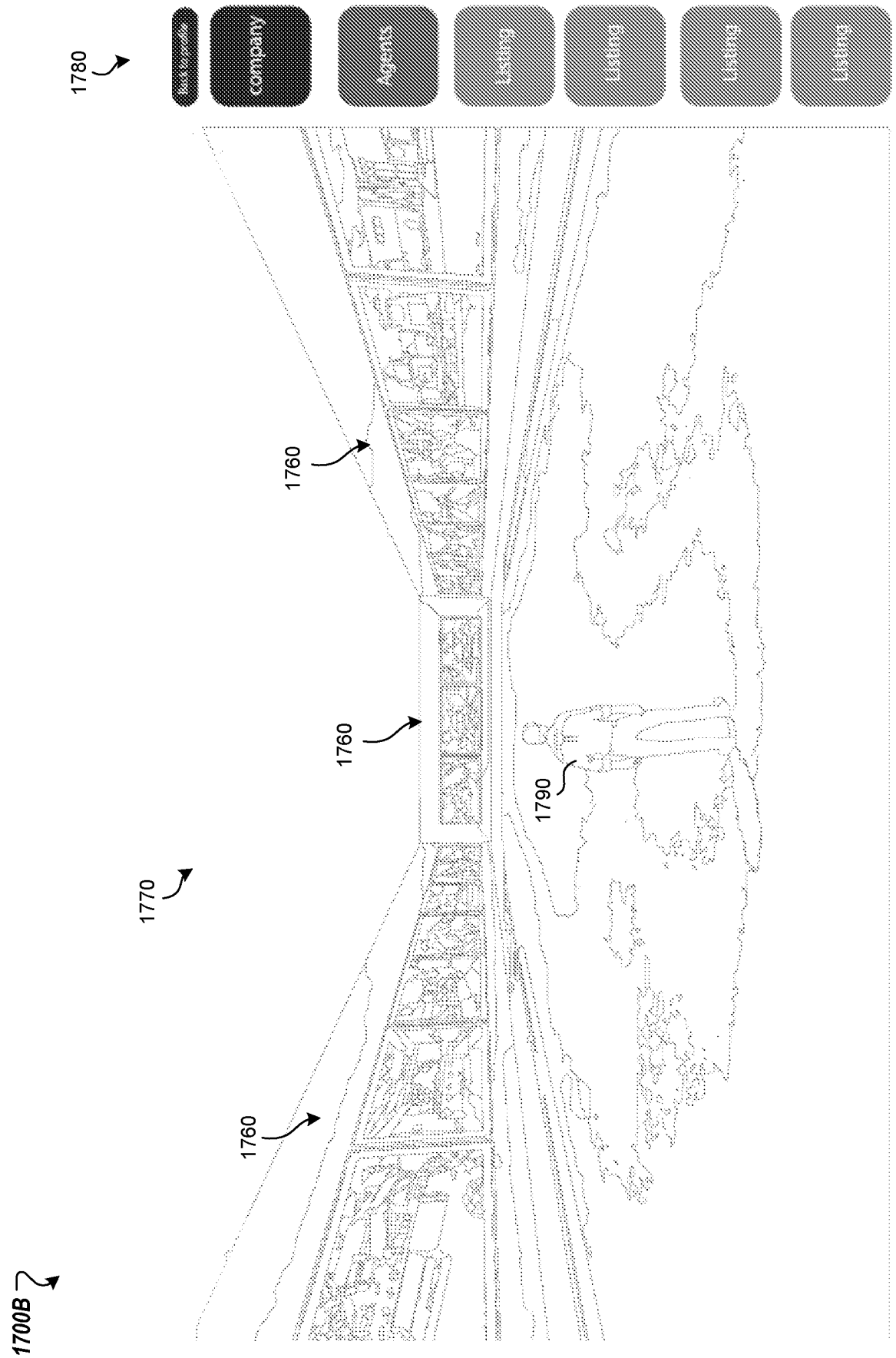
1780
company
Agents
Listing
Listing
Listing
Listing
1760
1760
1790
1770
1760
1700B

FIG. 17B

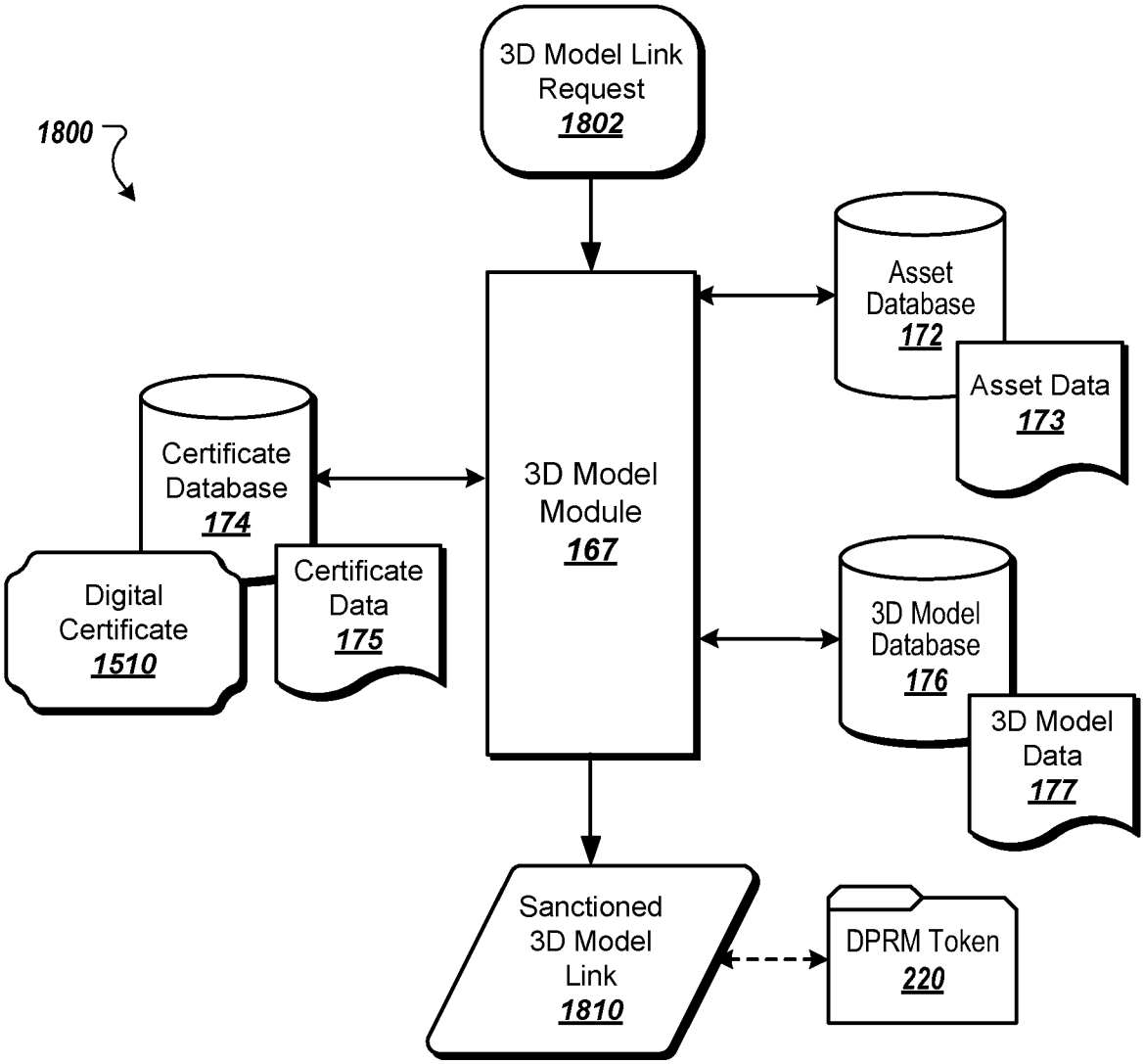
1800
3D Model Link Request
1802
Asset Database
172
Asset Data
173
Certificate Database
174
3D Model Module
167
Digital Certificate
1510
Certificate Data
175
3D Model Database
176
3D Model Data
177
Sanctioned 3D Model Link
1810
DPRM Token
220

FIG. 18

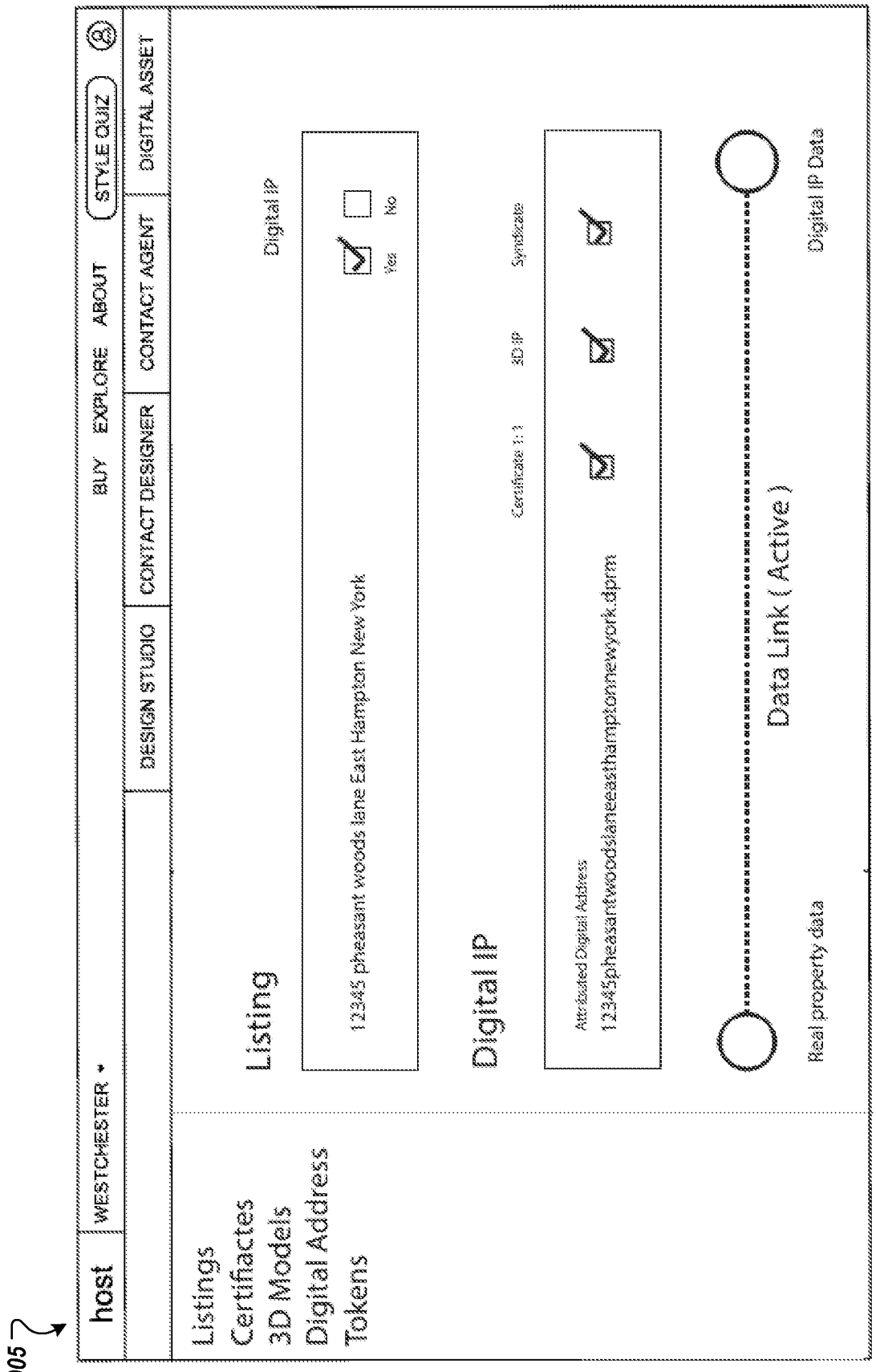
1905
host
WESTCHESTER
BUY
EXPLORE
ABOUT
STYLE QUIZ
DESIGN STUDIO
CONTACT DESIGNER
CONTACT AGENT
DIGITAL ASSET
Listings
Certifiactes
3D Models
Digital Address
Tokens
Listing
Digital IP
12345 pheasant woods lane East Hampton New York
Yes
No
Digital IP
Certificate
3D IP
Syndicate
Attributed Digital Address
12345pheasantwoodslaneeasthamptonnewyork.dprm
Data Link (Active)
Real property data
Digital IP Data

FIG. 19A

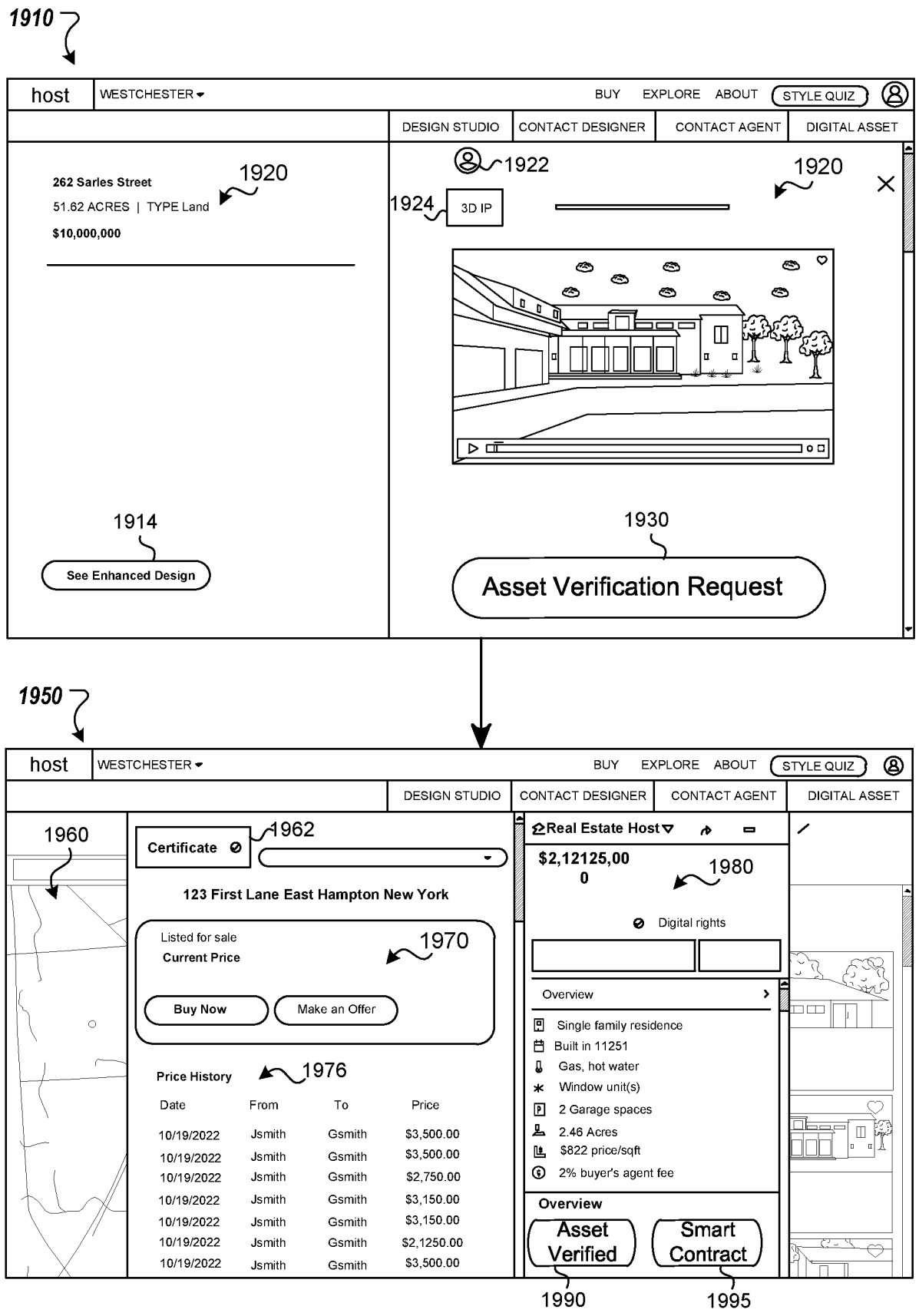
1910
host
WESTCHESTER
BUY
EXPLORE
ABOUT
STYLE QUIZ
DESIGN STUDIO
CONTACT DESIGNER
CONTACT AGENT
DIGITAL ASSET
262 Sarles Street
51.62 ACRES | TYPE Land
$10,000,000
1920
1922
1924
3D IP
1914
See Enhanced Design
1930
Asset Verification Request
1950
1960
Certificate
1962
123 First Lane East Hampton New York
Listed for sale
Current Price
1970
Buy Now
Make an Offer
Price History
1976
Date
From
To
Price
10/19/2022 Jsmith Gsmith $3,500.00
10/19/2022 Jsmith Gsmith $3,500.00
10/19/2022 Jsmith Gsmith $2,750.00
10/19/2022 Jsmith Gsmith $3,150.00
10/19/2022 Jsmith Gsmith $3,150.00
10/19/2022 Jsmith Gsmith $2,1250.00
10/19/2022 Jsmith Gsmith $3,500.00
Real Estate Host
$2,12125,00
0
1980
Digital rights
Overview
Single family residence
Built in 11251
Gas, hot water
Window unit(s)
2 Garage spaces
2.46 Acres
$822 price/sqft
2% buyer's agent fee
Overview
Asset Verified
Smart Contract
1990
1995

FIG. 19B

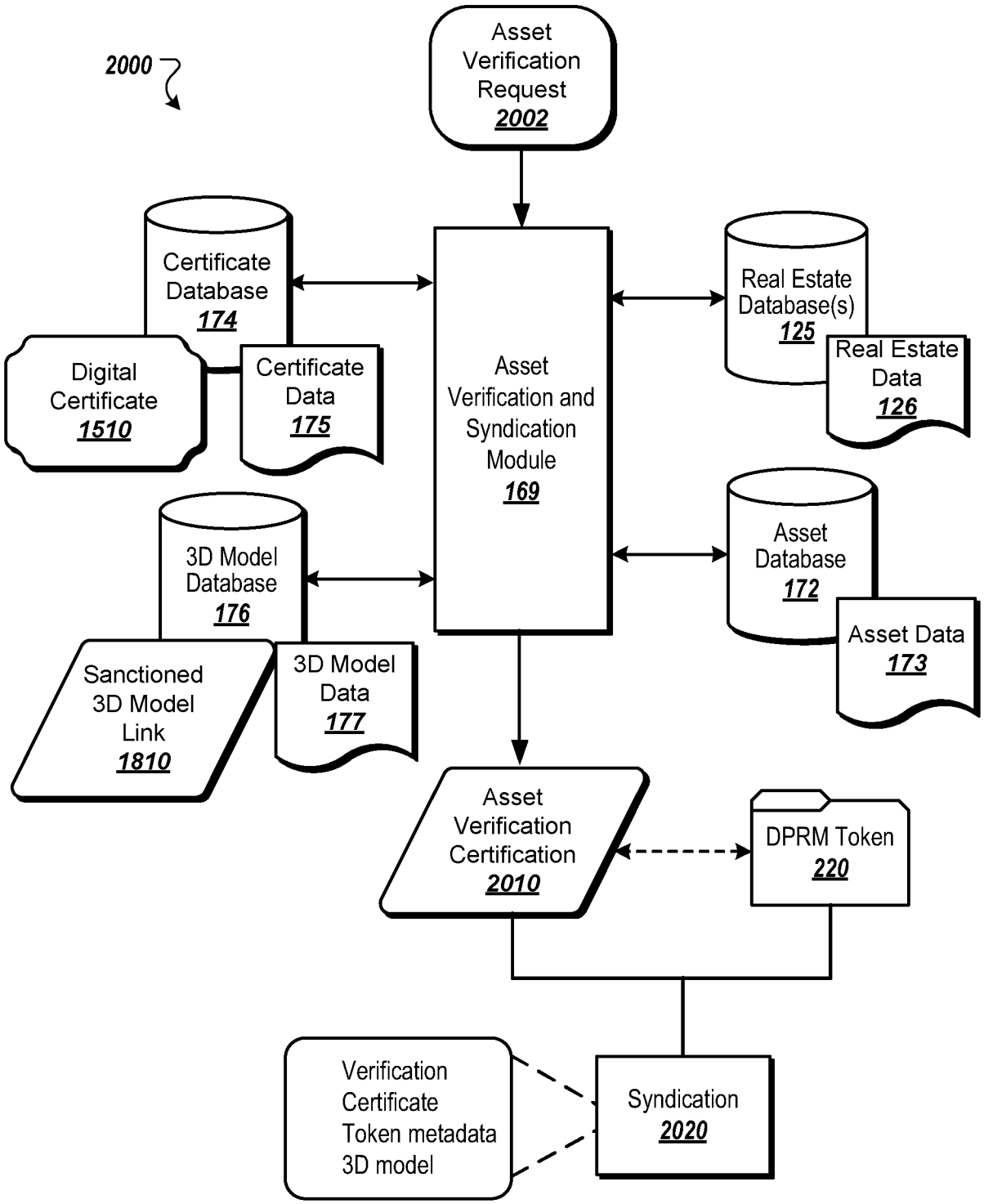
2000
Asset Verification Request 2002
Certificate Database 174
Digital Certificate 1510
Certificate Data 175
Asset Verification and Syndication Module 169
Real Estate Database(s) 125
Real Estate Data 126
3D Model Database 176
Sanctioned 3D Model Link 1810
3D Model Data 177
Asset Database 172
Asset Data 173
Asset Verification Certification 2010
DPRM Token 220
Verification Certificate Token metadata 3D model
Syndication 2020

FIG. 20

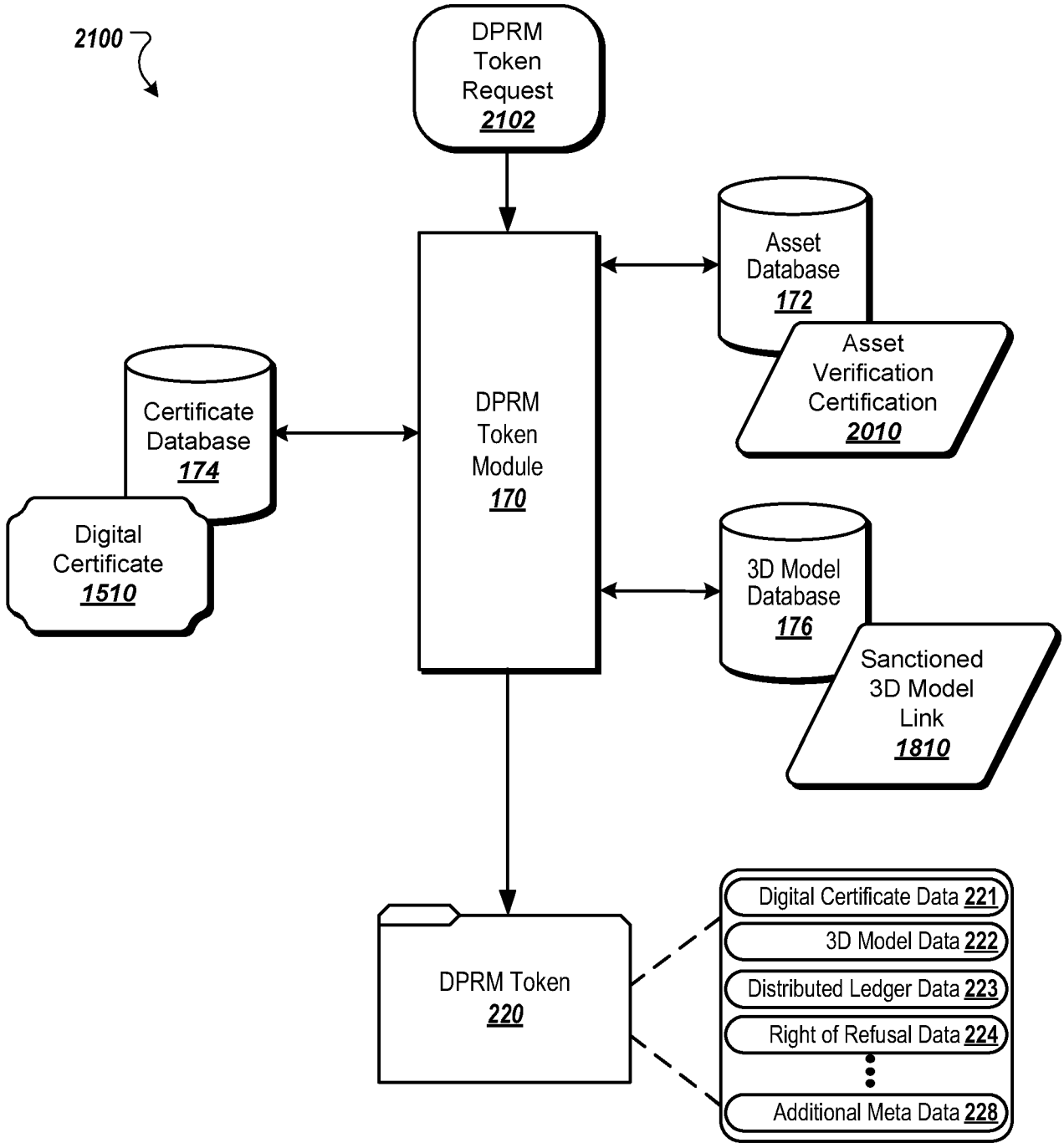
2100
DPRM Token Request 2102
DPRM Token Module 170
Asset Database 172
Asset Verification Certification 2010
Certificate Database 174
Digital Certificate 1510
3D Model Database 176
Sanctioned 3D Model Link 1810
DPRM Token 220
Digital Certificate Data 221
3D Model Data 222
Distributed Ledger Data 223
Right of Refusal Data 224
Additional Meta Data 228

FIG. 21

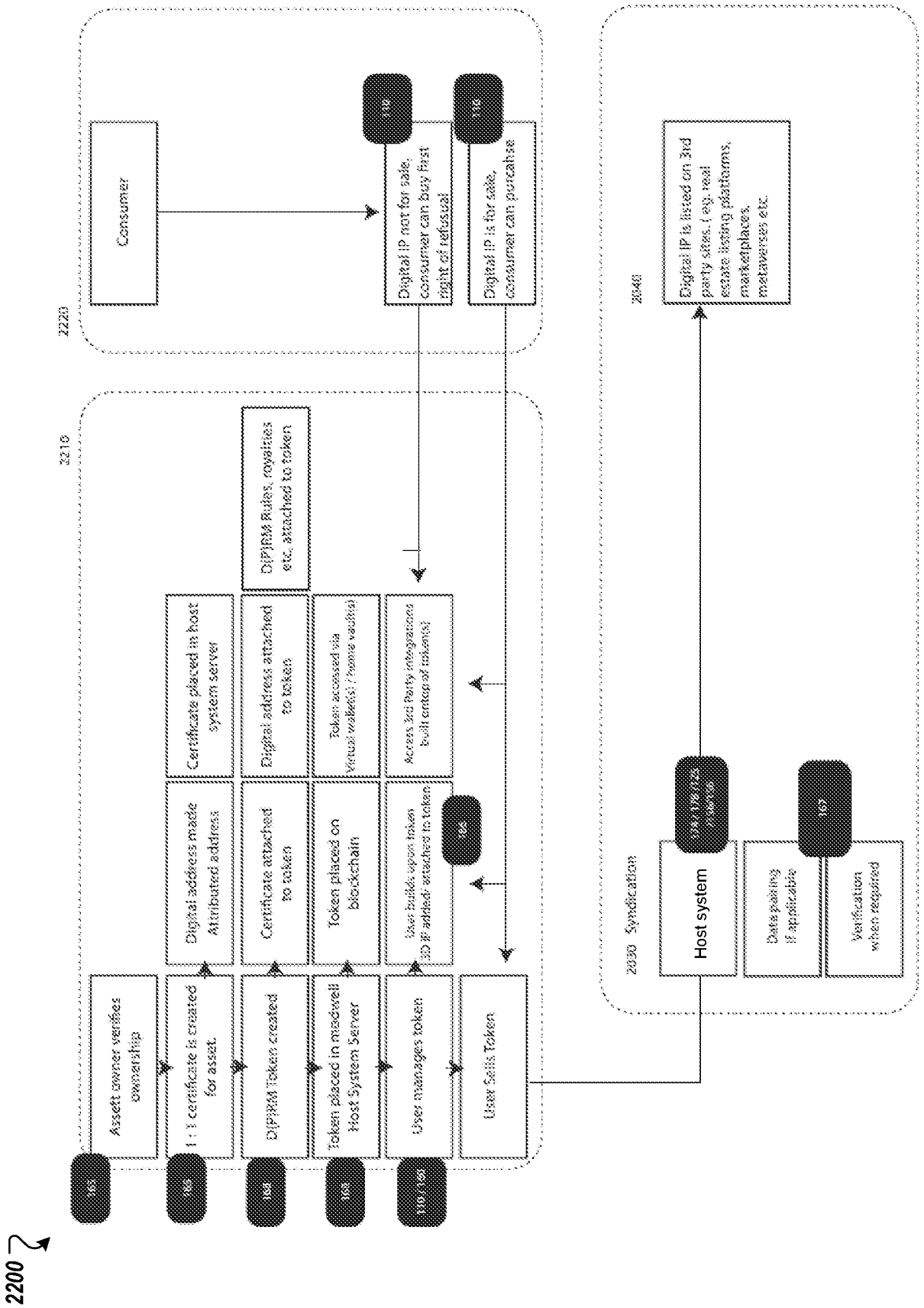
2200
2210
2220
2030 Syndication
2040
Assett owner verifies ownership
1 : 1 certificate is created for asset.
D(P)RM Token created
Token placed in modwell Host System Server
User manages token
User Sells Token
Digital address made Attributed address
Certificate attached to token
Token placed on blockchain
User builds upon token 3D IP added/ attached to token
Certificate placed in host system server
Digital address attached to token
Token accessed via Virtual wallet(s) / home vault(s)
Access 3rd Party integrations built ontop of token(s)
D(P)RM Rules, royalties etc. attached to token
Consumer
Digital IP not for sale, consumer can buy first right of refusal
Digital IP is for sale, consumer can purcahse
Host system
Data pairing if applicable
Verification when required
Digital IP is listed on 3rd party sites. (eg. real estate listing platforms, marketplaces, metaverses etc.

FIG. 22

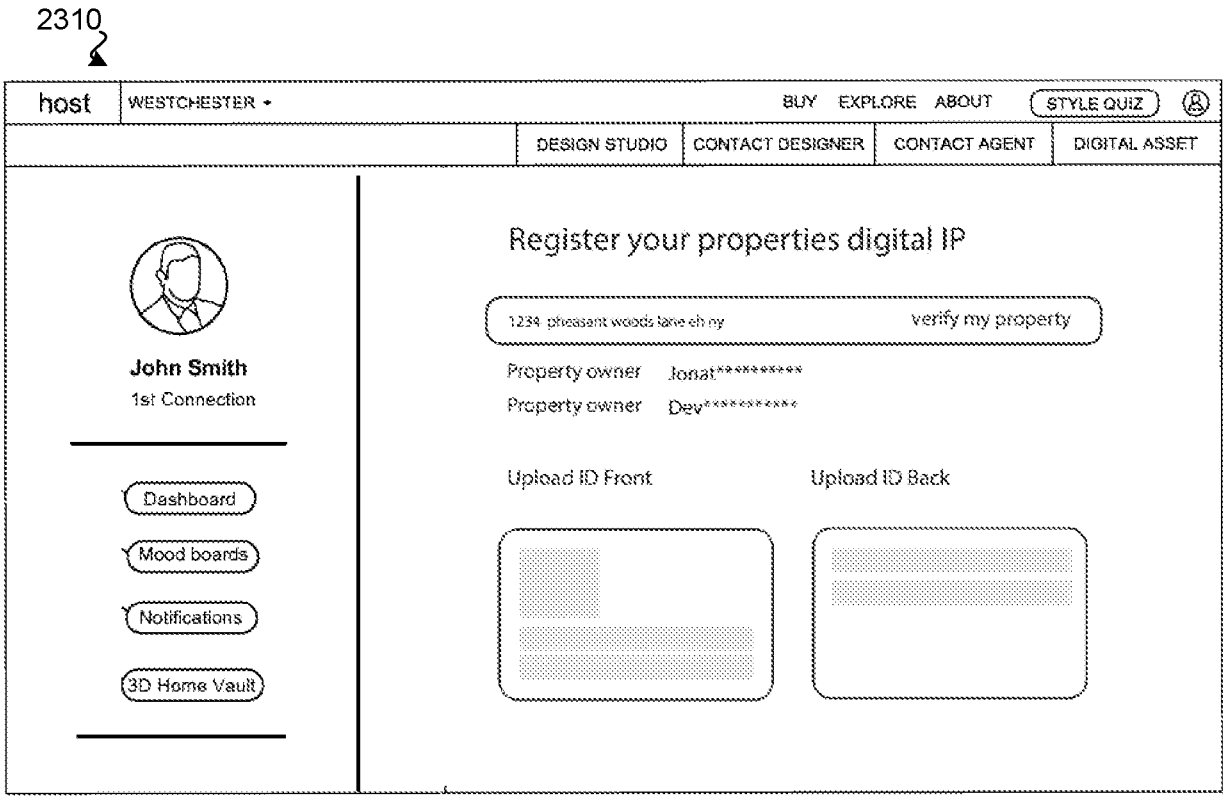

FIG. 23A

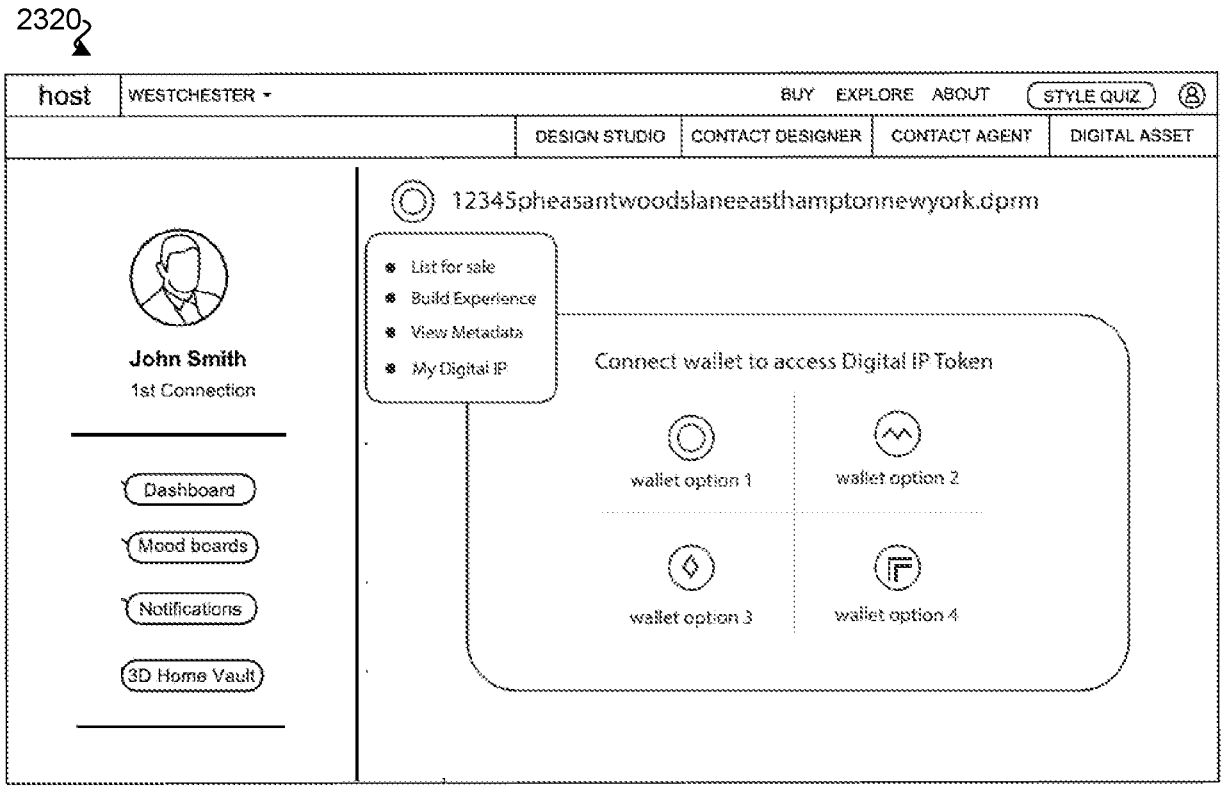

FIG. 23B

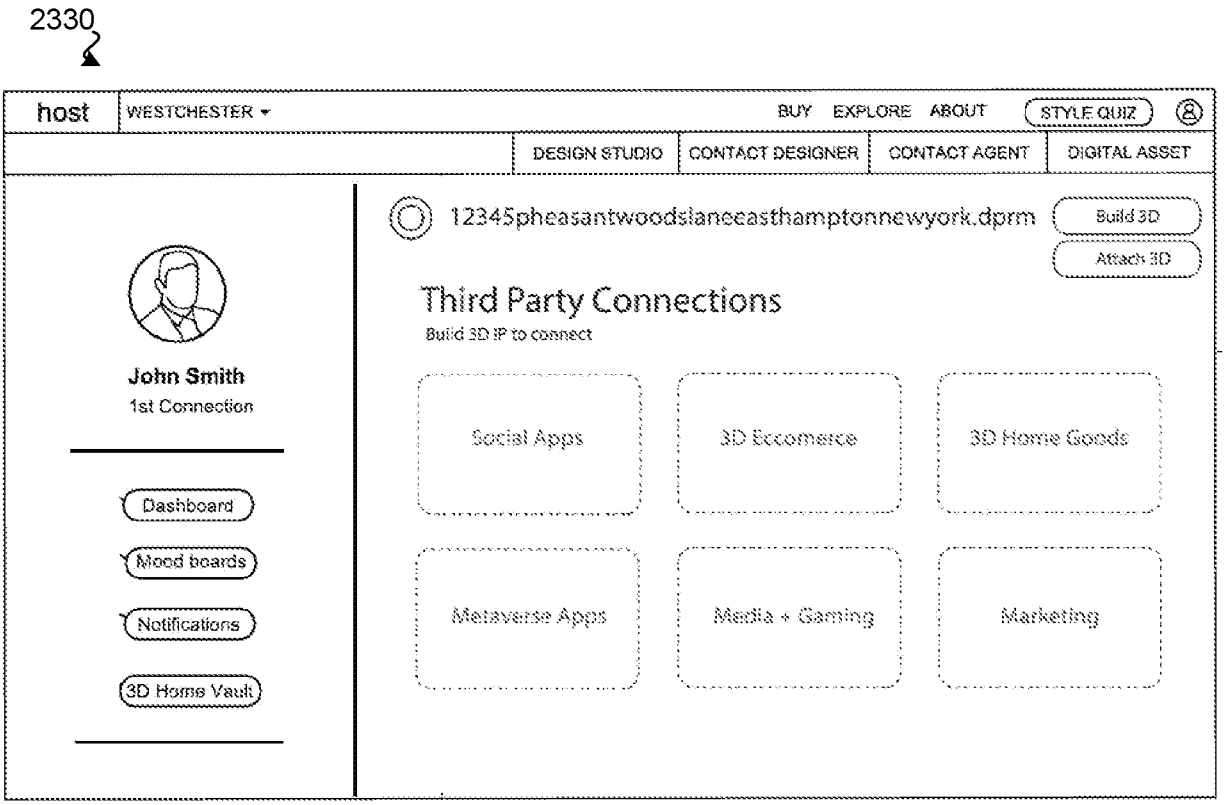

FIG. 23C

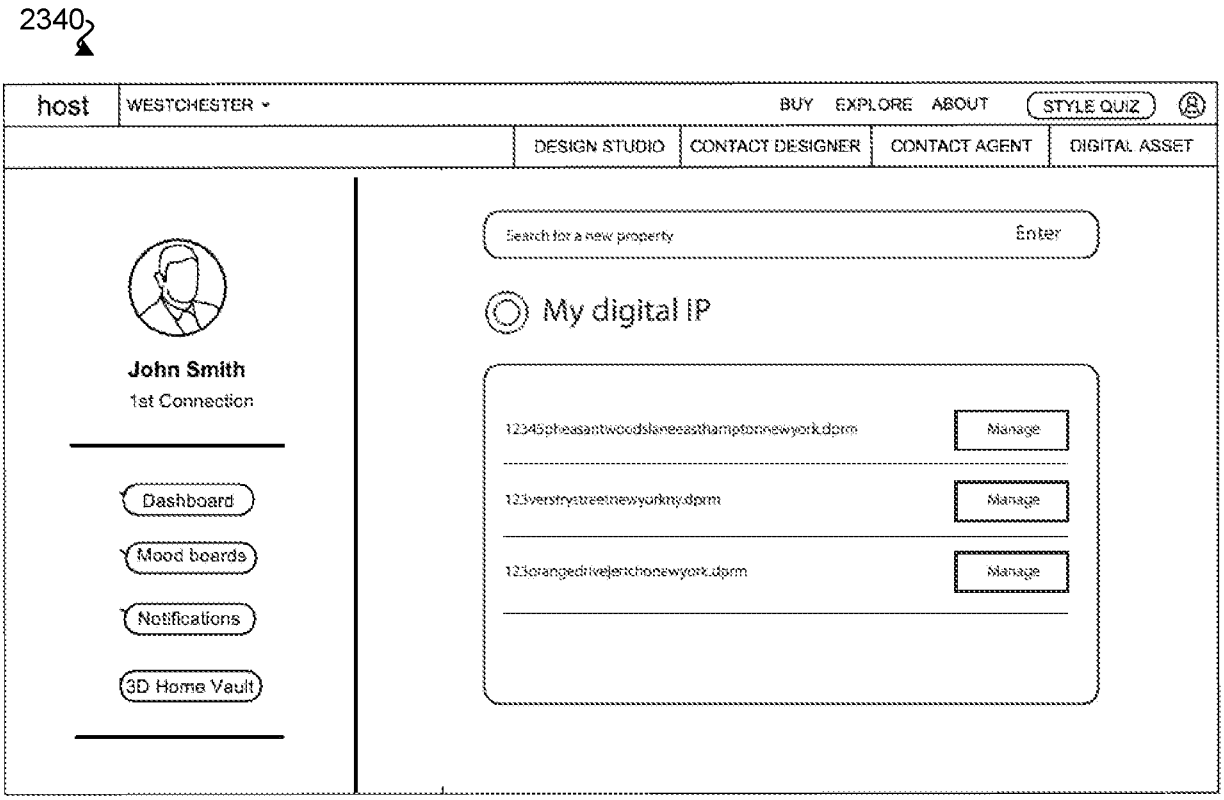

FIG. 23D

2350

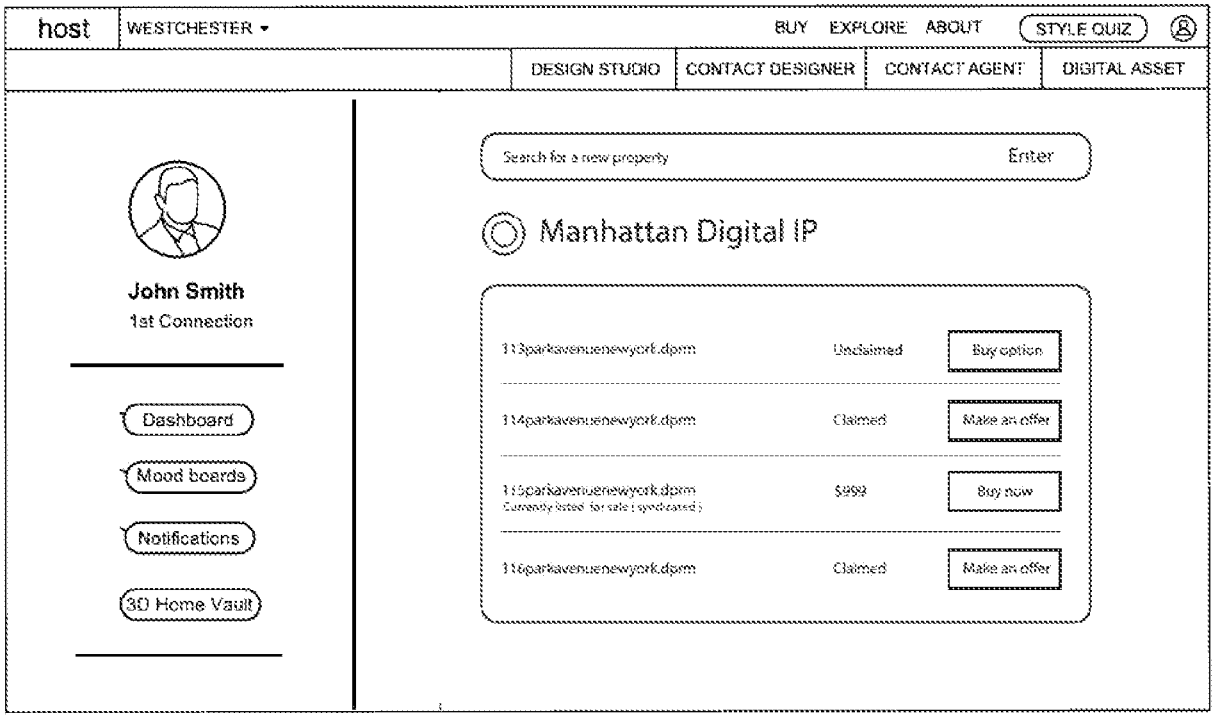

FIG. 23E

2360

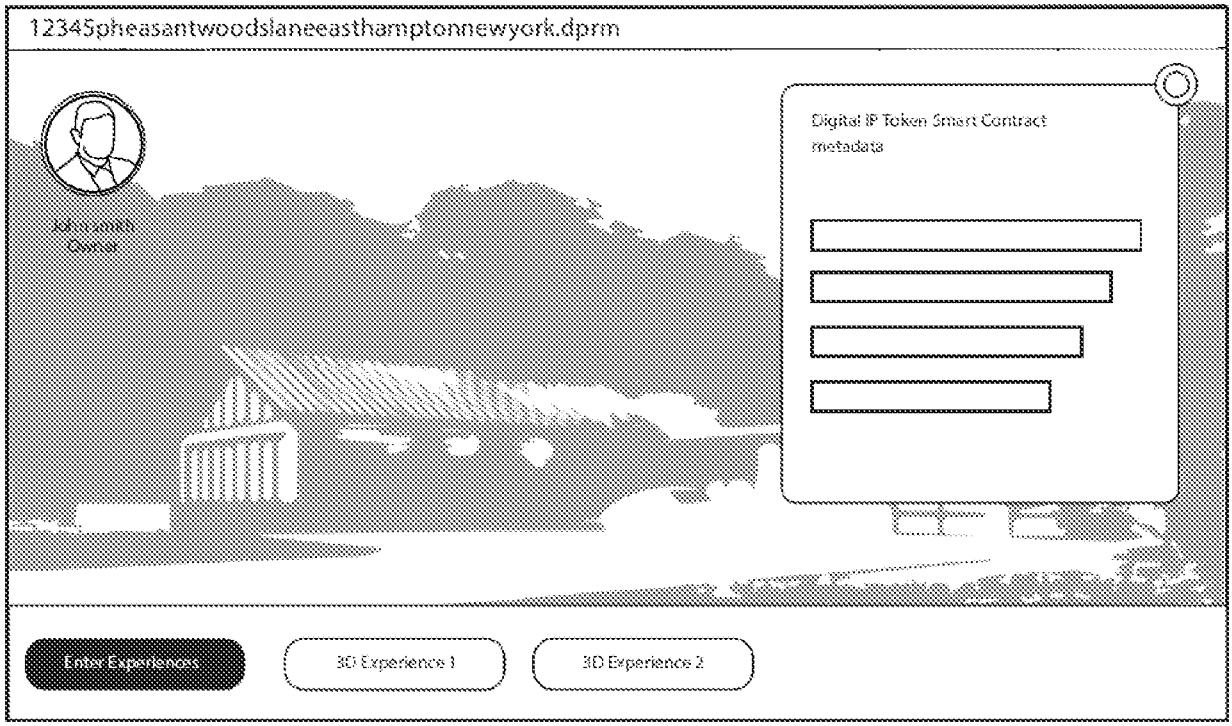

FIG. 23F

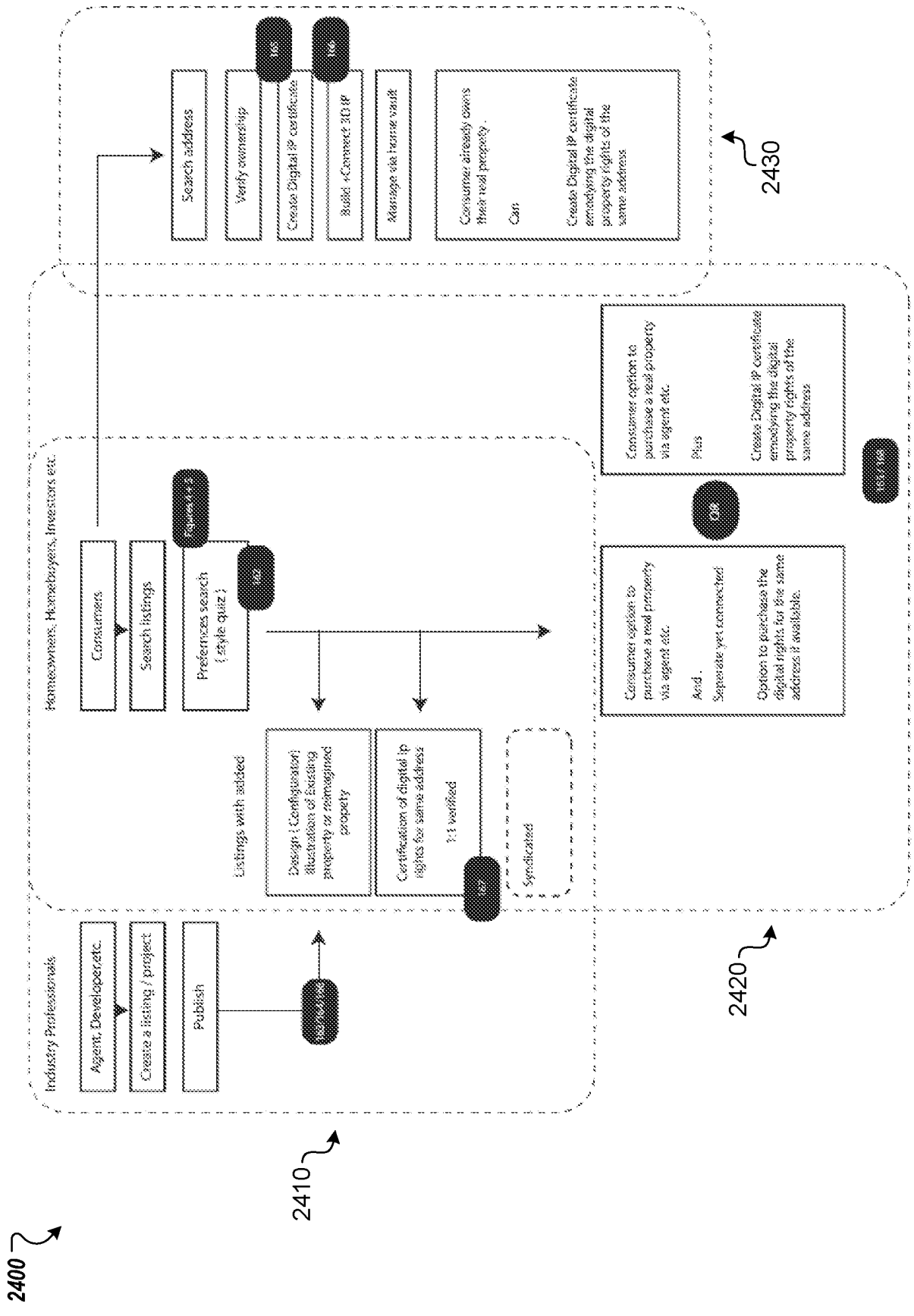
2400
2410
2420
2430
Industry Professionals
Agent, Developer etc.
Create a listing / project
Publish
Listings with added
Design / Configuration / Illustration of existing property or reimagined property
Certification of digital ip rights for same address
1:1 verified
Syndicated
Homeowners, Homebuyers, Investors etc.
Consumers
Search listings
Preferences search (style quiz)
Consumer option to purchase a real property via agent etc.
And .
Separate yet connected
Option to purchase the digital rights for the same address if available.
OR
Consumer option to purchase a real property via agent etc.
Plus
Create Digital IP certificate embodying the digital property rights of the same address
Search address
Verify ownership
Create Digital IP certificate
Build +Connect 3D IP
Manage via home vault
Consumer already owns their real property.
Can
Create Digital IP certificate embodying the digital property rights of the same address

FIG. 24

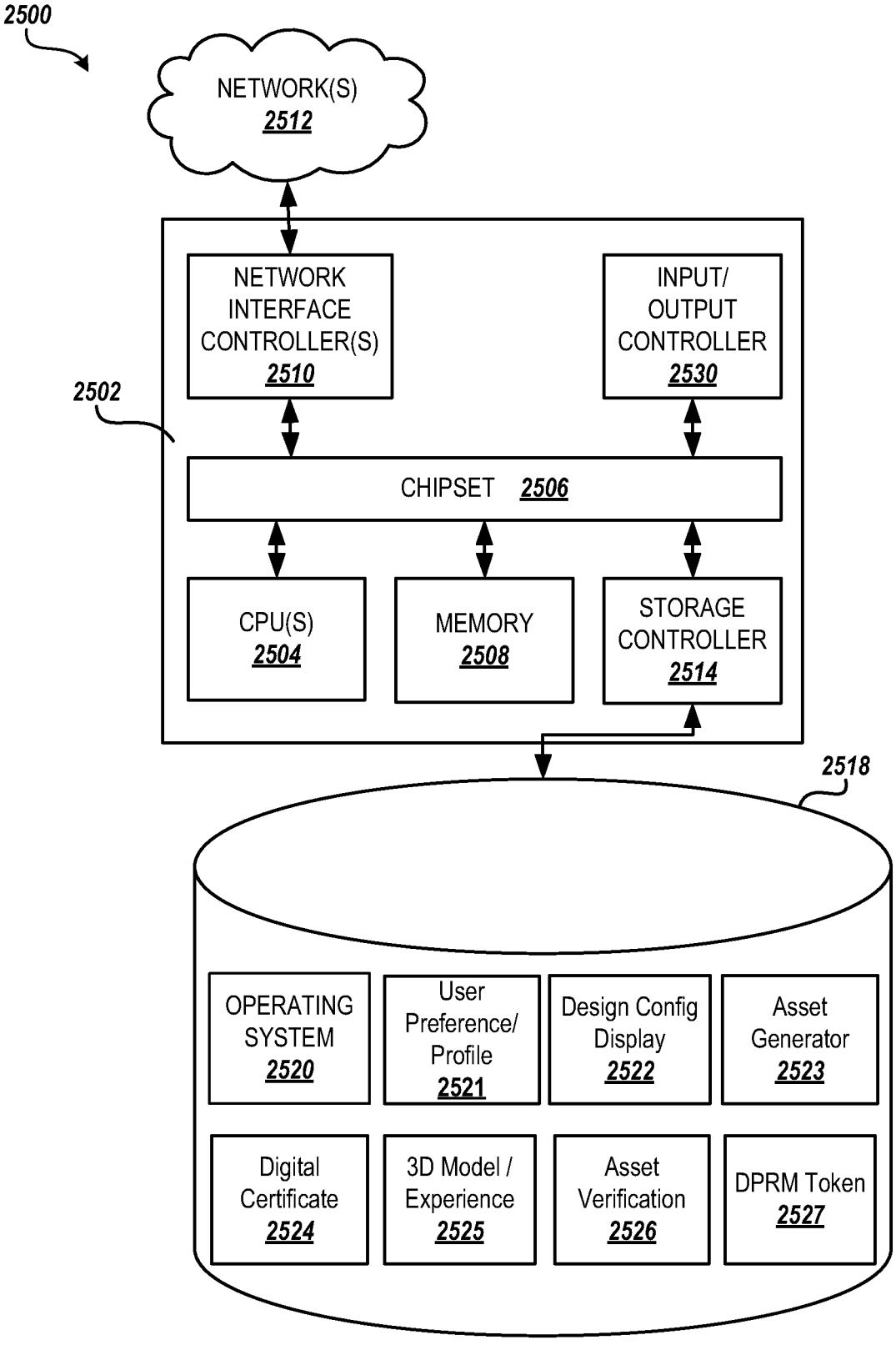
2500
NETWORK(S)
2512
NETWORK INTERFACE CONTROLLER(S)
2510
INPUT/ OUTPUT CONTROLLER
2530
2502
CHIPSET 2506
CPU(S)
2504
MEMORY
2508
STORAGE CONTROLLER
2514
2518
OPERATING SYSTEM
2520
User Preference/ Profile
2521
Design Config Display
2522
Asset Generator
2523
Digital Certificate
2524
3D Model / Experience
2525
Asset Verification
2526
DPRM Token
2527

FIG. 25