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DESCRIPTION

BACKGROUND

[0001] The present disclosure relates to a mobile operating environment, and more particularly, to providing improved apparatus and methods of distributing integrated mobile applications for user devices.

[0002] Mobile operators or mobile device carriers play a major part in the telecommunication industry today. Initially, mobile operators concentrated their efforts on generating revenue by increasing their subscriber base. However, it will be appreciated that in several countries, the scope for increasing the subscriber base has now become very limited, as the market has reached close to the saturation point. As a result, the mobile operators have been branching into providing value added services to subscribers in order to increase their revenue. US 2010/058353 A1 relates to a method for exposing a remotely invokable method, through a webpage, to an application outside a web browser, comprising transmitting to a web browser a webpage specifying at least one remotely invokable method invokable by at least one application configured to execute outside the web browser. Anonymous: "How to change the default program to open a file with",, 18 December 2009, relates to instructions for changing the default program to open a txt file using Microsoft Windows. Anonymous: "File association web service",, 8 April 2008, relates to information relating to a Microsoft file association web service. Anonymous: "Windows file association - txt",, 5 June 2010, relates to a webpage to help find software needed to open a file.

[0003] One way of generating increased revenue is through the sales of premium services, such as ringtones, wallpaper, games, etc., to users. These services may be provided by the mobile operator themselves, or by business entities who may operate in collaboration with the mobile operators to provide such services. The services may be available for download to a mobile device or user equipment upon payment of a fee.

[0004] Many benefits, such as maximizing the potential earnings for sales, accrue upon recommending and promoting to users content or services that are the most likely to be of interest to the users. The users can have a better experience using their mobile device in light of these individually recommended content and services.

[0005] A burgeoning area of such content and services pertains to applications. For example, an on-device mobile application store has become a crowded, hard-to-browse experience as more and more applications come online. Similarly, given the general user interface limitations of most mobile computing platforms, applications that are installed can have functionality that can only be used one at a time. Each application generally runs standalone. Conventionally, mobile platforms in some instances allow for the sharing of data (e.g., contact details) across the mobile platform. That functionality does not extend, however, to the sharing of full, custom

user interface (UI) extensions between third party and core applications.

SUMMARY

[0006] Aspects of the invention are defined in the claims.

BRIEF DESCRIPTION OF THE DRAWINGS

[0007] The disclosed aspects will hereinafter be described in conjunction with the appended drawings, provided to illustrate and not to limit the disclosed aspects, wherein like designations denote like elements.

FIG. 1 illustrates a schematic diagram for an apparatus for extending services of a user device, according to one aspect.

FIG. 2 illustrates a flow diagram of a methodology for extending services of a user device, according to one aspect.

FIG. 3 illustrates sequential depictions of a graphical user interface of a mobile computing platform presenting contextually integrated applications, according to one aspect.

FIG. 4 presents sequential depictions of the graphical user interface presenting contextually related applications that could be installed, according to one aspect.

FIG. 5 presents sequential depictions of the graphical user interface presenting operations to review and install the contextually related application, according to one aspect.

FIG. 6 presents sequential depictions of the graphical user interface after installing the contextually related application, according to one aspect.

FIG. 7 presents sequential depictions of the graphical user interface of interacting with the newly installed application in a standalone manner, according to one aspect.

FIG. 8 presents sequential depictions of the graphical user interface of interacting with a calendar application enhanced by integrated application services, according to one aspect.

FIG. 9 presents sequential depictions of the graphical user interface of interacting with a location application enhanced by integrated application services, according to one aspect.

FIG. 10 presents sequential depictions of the graphical user interface of interacting with a photograph application enhanced by integrated application services, according to one aspect.

FIGS. 11A-11B present examples of an augmented reality application, according to one aspect.

FIG. 12 illustrates a communication system for user interface application contextual integration

on a mobile computing platform, according to one aspect.

FIG. 13 illustrates a flow diagram of a methodology for contextual integration of applications on a mobile computing platform, according to one aspect.

FIG. 14 illustrates a schematic diagram of an exemplary environment of a user device for extending application services, according to one aspect.

FIG. 15 illustrates a schematic diagram of an exemplary environment of a network entity for extending application services, according to one aspect.

FIG. 16 illustrates a schematic diagram of a logical grouping of electrical components for extending services of a user device, according to one aspect.

DETAILED DESCRIPTION

[0008] Current mobile devices are limited in the way core mobile applications, such as contacts, calendars, maps, photos etc., can be extended. While some mobile operating systems allow for third party downloadable applications to share some of their data, the same does not apply to their user interfaces. Additionally, the current standard model of a virtual application store from which mobile applications can be downloaded provides a single point of entry for application discovery (usually an application store icon on a home screen of a mobile device).

[0009] The present disclosure provides a mobile platform User Interface (UI) that can be structured to provide a mechanism for an application, such as one or more third party applications, to provide UI and data extensions into one or more other applications, such as core applications, stored on a mobile device. As used herein, a core application includes any application preconfigured on a mobile device, while a third party application includes any application that is not a core application, although the principles described herein relate to extending any application based on functionality of another application. Further, the provided UI and data extensions refer to additional services that can be added to one application based on another application. As used herein, the term service includes any application-related functionality. In some aspects, the extension of a service is based on one application utilizing a service or data type that is compatible with another application, where data type relates to a type or format of data used by the application. The present disclosure further provides multiple, contextual points of access for discovering and downloading of one or more applications, such as third party applications, from inside the UI of one or more other applications, such as core mobile applications, thereby allowing users to easily discover and download one or more new applications which functionality extends any resident application.

[0010] Various aspects are now described with reference to the drawings. In the following

description, for purposes of explanation, numerous specific details are set forth in order to provide a thorough understanding of one or more aspects. It may be evident, however, that the various aspects may be practiced without these specific details. In other instances, well-known structures and devices are shown in block diagram form in order to facilitate describing these aspects.

[0011] In **FIG. 1,** the present disclosure provides an apparatus **100** for extending services of a user device **102,** according to one aspect of the invention as defined in the claims. An extension manager **104** identifies a first application **106** resident on the user device **102** having a first service **108** that utilizes a first data type **110.** A discovery agent **112** identifies a second application **114,** of a plurality of applications **116,** having a second service **118** that utilizes a second data type **120.** The discovery agent **112** identifies the second application **114** by matching a compatibility of a selected one of the first service **108** or the first data type **110** of the first application **106** with a respective one of the second service **118** or the second data type **120** of the second application **114.**

[0012] For example, the discovery agent **112** can match a compatibility of the first service **108** of the first application **106** with the second data type **120** of the second application **114** as depicted at **122.** For example, the first service **108** may include a contact service and the second data type **120** may include an online gamer contact. In another example, the first service **108** may include a contact service and the second data type **120** may include a location service.

[0013] Alternatively or in addition, the discovery agent **112** can match a compatibility of the first data type **110** of the first application **106** with the second service **118** of the second application **114** as depicted at **124.** For example, the first data type **110** may include a media format and the second service **118** may include a media viewer. In another example, the first data type **110** may includes a media format and the second service **118** may include an uploader to a server. As an additional example, the first data type **110** may include an image format associated with at least one location and the second service **118** may include a service associated with the at least one location.

[0014] A user interface **126** presents the first application **106** with a representation of a discovery agent **112** for activating the identifying of the second application **114,** wherein the first application **106** provides a direct access point into an application store which only lists second applications having a matching compatibility to the respective first application **106,** and extending functionality of the first application by providing UI and data extensions from the second application into the first application and presenting the functionality contextually in the first application where it is needed.

[0015] In one aspect, the first application **106** may include at least one of a plurality of services **130** or a plurality of data types **132.** The user interface **126** can present a current context **134** that identifies the first service **108** and the first data type **110.** Accordingly, rather than consider all of the plurality of services **130** or the plurality of data types **132,** in an aspect the discovery

agent **112** may identify the current context **134** and then may identify the second application **114** according to the current context **134.**

[0016] In one aspect, an application adder **136** manages the acquisition and storage of the second application **114** on the user device **102,** for example from a server **138.** In an exemplary aspect, the user interface **126** presents the first application **106** with a representation, depicted as a download or "add" icon **140,** of the application adder **136** for activating or initiating the acquisition and storage, e.g. downloading, of the second application **114.**

[0017] In one aspect, a data structure **142** may define one or more of the compatibilities of the plurality of applications **116.** For example, data structure **142** may identify service types and/or data types of a respective application, compatible service types and/or data types that work with a respective application, and/or other applications that are compatible with a respective application. The discovery agent **112** may access the data structure **142** for use in determining matching of the compatibility of the first application **106** with one or more of the plurality of applications **116,** such as for matching with the second application **114** as discussed above. For example, the data structure **142** can be resident on the user device **102** for all of the plurality of applications **116.** Alternatively, the data structure **142** can be resident on the user device **102** for a subset of the plurality of applications **116** that are resident or stored on the user device **102.** Alternatively or in addition, the data structure **142** can be resident on the server **138** for all of the plurality of applications **116,** and linked to an application store **144** for downloading to one or more user devices, such as user device **102.** In an aspect, for example, the user device **102** can access the data structure **142** via a network interface **146** on user device **102** that is capable of communication with a network interface **148** of the server **138.**

[0018] Thus, in one aspect, the extension manager **104** obtains and integrates the respective one of the second data type **120** or second service **118** of the second application **114** for use by the selected one of the first service **108** or the first data type **110** of the first application **106** in response to a user selection.

[0019] FIG. 2 relates to another aspect of the invention as defined in the claims for a method **200** for extending services of a user device, which includes identifying a first application resident on a user device which has a first service that utilizes a first data type (block **202).** For example, the extension manager **104** identifies the first application **106** on the user device **102** having the first service **108** that utilizes the first data type **110** (FIG. 1). The method **200** further includes identifying a second application of a plurality of applications having a second service that utilizes a second data type (block **204).** For example, the discovery agent **112** identifies the second application **114** of the plurality of applications **116** having the second service **118** that utilizes the second data type **120** (FIG. 1). The method **200** further includes matching a compatibility of a selected one of the first service or the first data type of the first application with a respective one of the second service type or the second data type of the second application (block **206).** For example, the discovery agent **112** identifies the second application **114** by matching a compatibility of the selected one of the first service **108** or the first data type

110 of the first application **106** with the respective one of the second data type **120** or second service **118** of the second application **114** (FIG. 1). The method **200** further includes presenting the first application with a representation of the discovery agent for activating the identifying of the second application (block **208),** wherein the first application **106** provides a direct access point into an application store which only lists second applications having a matching compatibility to the respective first application **106,** and extending functionality of the first application by providing UI and data extensions from the second application into the first application and presenting the functionality contextually in the first application where it is needed. For example, the user interface **126** presents the first application **106** with the representation, depicted as the discovery icon **128,** of the discovery agent **112** for activating the identifying of the second application **114** (FIG. 1).

[0020] In one aspect, the first application **106** may include at least one of a plurality of services or a plurality of data types. In this case, the method **200** can further include identifying a current context defined by the first service and the first data type, and identifying the second application according to the current context.

[0021] In one aspect, the method **200** can further include acquiring and storing the second application on the user device, e.g. by downloading from a server. In an exemplary aspect, the method **200** may further include presenting on a user interface the first application with a representation of the application adder for activating the acquisition and storage of the second application in the user device.

[0022] In one aspect, the method **200** of matching a compatibility (block **206)** may identify a match between the first service of the first application and the second data type of the second application. For example, the first service may include a contact service and the second data type comprises an online gamer contact. For another example, the first service may include a contact service and the second data type comprises a location service.

[0023] In one aspect, the method **200** of matching a compatibility (block **206)** may identify a match between the first data type of the first application and the second service of the second application. For example, the first data type may include a media format and the second service comprises a media viewer. For another example, the first data type may include a media format and the second service comprises an uploader to a server. For another example, the first data type may include an image format associated with at least one location and the second service comprises a service associated with the at least one location.

[0024] In one aspect, the method **200** may include obtaining a data structure that defines one or more of the compatibilities of the plurality of applications. For example, in an aspect, the data structure may be obtained by accessing the data structure via a network interface.

[0025] In one aspect, the method **200** may include obtaining and integrating the respective one of the second data type or second service of the second application for use by the selected one of the first service or the first data type of the first application in response to a

user selection.

[0026] As examples of use, in **FIGS. 3-10** and **11A-11B,** an exemplary mobile device **300** presents a graphical user interface (GUI) **302** for interacting with a UI application integrator according to one aspect consistent with the present disclosure.

[0027] In **FIG. 3,** a first UI state depicted at **304** presents a home screen populated with a plurality of applications **306,** one of which is a People application **308.**

[0028] As depicted at **310,** after selecting the People application **308,** the GUI **302** lists contacts **312.** Previously, a related location application (e.g., Locate Person Application) has been integrated that enhances the contacts **312** by presenting a current location if discernible. Upon selecting a particular contact, as depicted at **314,** contact details **316** are displayed as well as location details **318.** For instance, the Locate Person Application, downloaded from an application store, can provide a map UI within a contact detail user interface for a contact, thereby showing the location of the contact.

[0029] In one aspect, the integration of one or more applications can be dynamically performed. Thus, the application services can be easily toggled, added or removed as needed.

[0030] For instance, as depicted in **FIG. 4,** a locate person detail user interface **404** may be generated in response to a user selection **319** received at UI **314 (FIG. 3).** In an aspect, a UI application integrator icon **402** is accessed from a core application. For example, in this case, UI application integrator icon **402** is located in a lower portion of UI **404.** In response to a user selection of UI application integrator icon **402,** a user interface is depicted at **406** that provides a listing of currently installed applications that are contextually relevant. As depicted at virtual key **408,** the user can select an opportunity to discover one or more additional recommended contextually-related applications **410** from an application store **412.** These contextually-related applications **410,** like the "Gamer Net" application **414,** for example, can have their UI extended into multiple core applications according to the aspects described herein. Each application provides a service that is tailored for a specific purpose, and will affect the relevant core application in its own way.

[0031] For example, in **FIG. 5,** in response to a user selection of the "Gamer Net" application **414 (FIG. 4),** a details user interface **502** is depicted for the Gamer Net application **414,** which includes two services provided by Gamer Net application **414** that can be integrated. In this case, the Gamer Net application **414** may extend to both a People application **501** and an Events application **503.**

[0032] For instance, as depicted at **504,** the user selects People application **501** to see how the services of the Gamer Net application **414** can enhance the People application **501.** As depicted at **504,** examples are presented for how the Gamer Net application **414** would enhance information for the People Application **501.** Going back to UI **502,** the user may select to add the Gamer Net application **414** to the collection of applications or services resident on

the user device, which results in the installed collection of applications or services as depicted at UI **506** including the Gamer Net application **414.** Once installed, new applications or services appear in the relevant core applications tabs. In an aspect, for example, a Contacts application on the user device may list Contacts with Gamer Net accounts and display gamer profiles within, for example, a contact details screen. For example, in this case contacts may be stored in People application **501,** and the Gamer Net application **414** or service will affect the entry for the contact in the People application **501.** The user can then select the contextually related People application **501** to see the integration in operation.

[0033] For example, in **FIG. 6,** as depicted at **602** the enhanced People application is shown for the previously selected contact that now shows a status **603** for the individual on Gamer Net. Selecting the People application **501** again backs out to a contact list UI, as depicted at **604,** with gamer status **603** now annotated in addition to location **605.**

[0034] In one aspect, how a service affects core applications can be determined by third party application developers, using flexibility inherent in the UI application integrator Application Programming Interface (API).

[0035] In **FIG. 7,** the collection of services as depicted at **702** shows the Gamer Net icon **703.** Since Gamer Net is also a standalone application, Gamer Net is also accessible from the home screen. When selected for standalone operation as depicted at **704,** additional services provided by Gamer Net are presented.

[0036] With initial reference to **FIG. 8,** some additional examples of how these services can be incorporated into the core applications are depicted. In the calendar application as depicted at **802,** services from third party applications can change the core UI to add customized content directly into a calendar view, such as the Week view. For example, a calendar event **803** has a UI which has been enhanced by a Sports application. When the calendar event **803** is selected, an example of the functionality of this integrated service is depicted at **804,** wherein additional information has been presented.

[0037] In an additional example, referring to **FIG. 9,** at **902** in a Maps application, UI layers, e.g. layer **903,** can be added to show additional information as needed. When a layer is selected, such as the selection of layer **903** resulting in UI **904,** one or more integrated services from another UI application, depicted as a Maps Location Synchronization service at **904,** may then be available. In this case, for example, Maps Location Synchronization service at **904** enables locations or directions to be sent directly to the user device.

[0038] As a further example in **FIG. 10,** the present disclosure can be incorporated into a Photos application as depicted at **1002** that provides a catalog of user photographs. When selecting a photograph as depicted at **1004,** one or more integrated services from other compatible applications are displayed. For example, in this case, the integrated services may include a process service that allows photos to be processed directly from within the core photo application without having to launch a separate application. Further, for example, the

integrated services from other compatible applications may include an auto correct photograph service and a social site and/or photo share site upload service.

[0039] In **FIGS. 11A-11B,** an Augmented Reality Application is depicted at **1102** and at **1104** wherein UI layers, such as layers **1106** and **1108,** can be added in a similar way to provide extra functionality to a real world depiction, such as a street view for shopping at **1102** and a sky view of a star constellation mapping service at **1104.**

[0040] In **FIG. 12,** in one aspect, a communication system **1200** is provided wherein an apparatus, depicted as mobile device **1202** such as handset, user equipment, smartphone, access terminal, user device, etc., provides integrated services on a mobile computing platform **1204.** In particular, the mobile computing platform **1204** executes a first application **1206** on a user interface (UI) **1208.** The user interface **1208** displays a user interface feature **1210** of a second application **1212** in response to the mobile computing platform **1204** determining a contextual similarity with the first application **1206.**

[0041] In one aspect, the second application **1212** is locally stored on the mobile device **1202.** In another aspect, the second application **1212** is remotely stored on a core network **1214** and is downloaded via a wireless wide area network (WWAN) via a node **1216** to a transceiver **1218** of the mobile device **1202.** Alternatively or in addition, the second application **1212** is downloaded via a wireless local access network (WLAN) via an access point **1220.**

[0042] In an exemplary aspect, the user interface is designed to promote third party application discovery in a context that is useful to the user (e.g., related to the task or application the user is currently using and which functionality and/or services the user wishes to acquire to extend the capability of the application currently in use). Accordingly, in one or more implementations, the described aspects provide a framework that allows application developers to extend the UI for the application developer's own application into a core application of a mobile device.

[0043] The present disclosure further allows deep integration of application functionality and/or services across the entire mobile UI, making an application store **1222** more of an end point than a start point for the discovery of new application or services (e.g., messaging, events, contacts, maps, browsers, photos, etc.). With the present disclosure, third party applications can extend their UI into core applications on the device, presenting functionality contextually in a respective core application where it is needed. These UI extensions can be referred to as services.

[0044] In one aspect, for one or more applications on the device, such as but not limited to a core application, a direct access point may be provided into the application store which only lists applications that have services related, e.g. having a matching compatibility, to the respective application.

[0045] In another aspect, an application details screen can identify an application on the

device with which one or more other applications can be integrated. In addition, controls can be provided that allow the user to select one of the functionalities or services listed for the other applications to see more details about this integration. For example, a depiction can be presented of how a respective other application integrates with the resident application, which may include a preview image alongside of this depiction.

[0046] In **FIG. 13,** a methodology **1300** is depicted for integrating services on a mobile platform. A mobile device executes a first application on a mobile computing platform (block **1302).** The mobile device determines a contextual similarity of the first application to a second application, or a service provided by a second application (block **1304).** The mobile device displays a user interface feature of a second application in response to the determined contextual similarity with the first application (block **1306).** The mobile device receives a user selection of the user interface feature (block **1308).** A determination is made whether the second application is installed (block **1310).** If not, the second application is downloaded from an application store (e.g., via WWAN or WLAN) (block **1312)** and then the service of the second application referenced by a defined extension ("service") may be executed (block **1314).** If so, the service of the second application referenced by a defined extension ("service") is executed (block **1314).**

[0047] Referring to **FIG. 14,** in one aspect, the user device **102** (FIG. 1) may include a processor **1402** for carrying out processing functions associated with one or more of components and functions described herein. Processor **1402** can include a single or multiple set of processors or multi-core processors as part. Moreover, processor **1402** can be implemented as an integrated processing system and/or a distributed processing system, depicted as a computing platform **1404.**

[0048] User device **102** further includes a memory **1408,** such as for storing local versions of applications being executed by processor **1402.** Memory **1408** can include any type of memory usable by a computer, such as random access memory (RAM), read only memory (ROM), tapes, magnetic discs, optical discs, volatile memory, non-volatile memory, and any combination thereof.

[0049] Further, user device **102** includes a communications component **1410** that provides for establishing and maintaining communications with one or more parties utilizing hardware, software, and services as described herein. Communications component **1410** may carry communications between components on user device **102,** as well as between user device **102** and external devices, such as devices located across a communications network and/or devices serially or locally connected to user device **102.** For example, communications component **1410** may include one or more buses **1412,** and may further include transmit chain components and receive chain components associated with a transmitter **1414** and a receiver **1416,** respectively, operable for interfacing with external devices. In another example, communications component **1410** may communicate with external devices via a network interface **146.**

[0050] Additionally, user device **102** may further include a data store **1420,** which can be hardware and/or software, and which provides for mass storage of information, databases, and programs employed in connection with aspects described herein. For example, data store **1420** may be a data repository for applications not currently being executed by processor **1402.**

[0051] User device **102** may additionally include a user interface **126** operable to receive inputs from a user of user device **102** and further operable to generate outputs for presentation to the user. User interface **126** may include one or more input devices, including but not limited to a keyboard, a number pad, a mouse, a touch-sensitive display, a navigation key, a function key, a microphone, a voice recognition component, any other mechanism capable of receiving an input from a user, or any combination thereof. Further, user interface **126** may include one or more output devices, including but not limited to a display, a speaker, a haptic feedback mechanism, a printer, any other mechanism capable of presenting an output to a user, or any combination thereof.

[0052] Resident in memory **1408,** data store **1420** or both, aspects of the apparatus **102** can incorporate the extension manager **104,** discovery agent **112,** application adder **136,** data structure **142,** the first application **106** having the first service **108** and the first data type **110,** and the second application **114** having the second service **118** and the second data type **120.**

[0053] Referring to **FIG. 15,** in one aspect, the server **138** (FIG. 1) may include a processor **1502** for carrying out processing functions associated with one or more of components and functions described herein. Processor **1502** can include a single or multiple set of processors or multi-core processors. Moreover, processor **1502** can be implemented as an integrated processing system and/or a distributed processing system, depicted as a computing platform **1504.** The server **138** can support the user device **102** (FIG. 1) as described above. Alternatively, processing or storage aspects can be distributed between the server **138** and the user device **102,** such as having the server **138** perform additional functions for a thin client on a user device **102.**

[0054] Server **138** further includes a memory **1508,** such as for storing local versions of applications being executed by processor **1502.** Memory **1508** can include any type of memory usable by a computer, such as random access memory (RAM), read only memory (ROM), tapes, magnetic discs, optical discs, volatile memory, non-volatile memory, and any combination thereof.

[0055] Further, server **138** includes a communications component **1510** that provides for establishing and maintaining communications with one or more parties utilizing hardware, software, and services as described herein. Communications component **1510** may carry communications between components on server **138,** as well as between server **138** and external devices, such as user devices **102** located across a communications network and/or devices serially or locally connected to server **138.** For example, communications component **1510** may include one or more buses **1512,** and may further include transmit chain

components and receive chain components associated with a transmitter **1514** and a receiver **1516,** respectively, operable for interfacing with external devices. For another example, communications component **1510** may communicate to external devices via a network interface **148.**

[0056] Additionally, server **138** may further include a data store **1520,** which can be any suitable combination of hardware and/or software, that provides for mass storage of information, databases, and programs employed in connection with aspects described herein. For example, data store **1520** may be a data repository for applications not currently being executed by processor **1502.**

[0057] Server **138** may additionally include a user interface **1522** operable to receive inputs from a user of user device **102** (FIG. 1), and further operable to generate outputs for presentation to the user. User interface **1522** may interface with one or more input devices, including but not limited to a keyboard, a number pad, a mouse, a touch-sensitive display, a navigation key, a function key, a microphone, a voice recognition component, any other mechanism capable of remotely receiving an input from a user, or any combination thereof. Further, user interface **1522** may interface with one or more output devices, including but not limited to a display, a speaker, a haptic feedback mechanism, a printer, any other mechanism capable of presenting an output to a user, or any combination thereof.

[0058] Resident in memory **1508,** data store **1520** or both, aspects of the server **138** can incorporate the extension manager **104,** discovery agent **112,** and application adder **136,** for example for downloading to a user device, such as user device **102 (FIG. 1).** Further, memory **1508,** data store **1520** or both, may include data structure **142,** and an application store **144** containing the plurality of applications **116.**

[0059] With reference to **FIG. 16,** illustrated is a system **1600** for extending services of a user device. For example, system **1600** can reside at least partially within user equipment. It is to be appreciated that system **1600** is represented as including functional blocks, which can be functional blocks that represent functions implemented by a computing platform, processor, software, or combination thereof (e.g., firmware). System **1600** includes a logical grouping **1602** of electrical components that can act in conjunction. For instance, logical grouping **1602** can include an electrical component **1604** for identifying a first application resident on a user device having a first service that utilizes a first data type. For another instance, logical grouping **1602** can include an electrical component **1606** for identifying a second application of a plurality of applications having a second service that utilizes a second data type. For an additional instance, logical grouping **1602** can include an electrical component **1608** for compatibility matching a selected one of the first service or the first data type of the first application with a respective one of the second service or the second data type of the second application. Optionally, as indicated by dashed lines, logical grouping **1602** can include an electrical component **1610** for presenting on a user interface the first application with a representation of the discovery agent for activating the identifying of the second application. Additionally, system **1600** can include a memory **1620** that retains instructions for executing

functions associated with electrical component **1604-1610.** While shown as being external to memory **1620,** it is to be understood that one or more of electrical component **1604-1610** can exist within memory **1620.**

[0060] Those of skill would further appreciate that the various illustrative logical blocks, modules, circuits, and algorithm steps described in connection with the aspects disclosed herein may be implemented as electronic hardware, computer software, or combinations of both. To clearly illustrate this interchangeability of hardware and software, various illustrative components, blocks, modules, circuits, and steps have been described above generally in terms of their functionality. Whether such functionality is implemented as hardware or software depends upon the particular application and design constraints imposed on the overall system. Skilled artisans may implement the described functionality in varying ways for each particular application, but such implementation decisions should not be interpreted as causing a departure from the scope of the present disclosure.

[0061] As used in this application, the terms "component", "module", "system", and the like are intended to refer to a computer-related entity, either hardware, a combination of hardware and software, software, or software in execution. For example, a component may be, but is not limited to being, a process running on a processor, a processor, an object, an executable, a thread of execution, a program, and/or a computer. By way of illustration, both an application running on a server and the server can be a component. One or more components may reside within a process and/or thread of execution and a component may be localized on one computer and/or distributed between two or more computers.

[0062] The word "exemplary" is used herein to mean serving as an example, instance, or illustration. Any aspect or design described herein as "exemplary" is not necessarily to be construed as preferred or advantageous over other aspects or designs.

[0063] Various aspects will be presented in terms of systems that may include a number of components, modules, and the like. It is to be understood and appreciated that the various systems may include additional components, modules, etc. and/or may not include all of the components, modules, etc. discussed in connection with the figures. A combination of these approaches may also be used. The various aspects disclosed herein can be performed on electrical devices including devices that utilize touch screen display technologies and/or mouse-and-keyboard type interfaces. Examples of such devices include computers (desktop and mobile), smart phones, personal digital assistants (PDAs), and other electronic devices both wired and wireless.

[0064] In addition, the various illustrative logical blocks, modules, and circuits described in connection with the aspects disclosed herein may be implemented or performed with a general purpose processor, a digital signal processor (DSP), an application specific integrated circuit (ASIC), a field programmable gate array (FPGA) or other programmable logic device, discrete gate or transistor logic, discrete hardware components, or any combination thereof designed to perform the functions described herein. A general purpose processor may be a

microprocessor, but in the alternative, the processor may be any conventional processor, controller, microcontroller, or state machine. A processor may also be implemented as a combination of computing devices, e.g., a combination of a DSP and a microprocessor, a plurality of microprocessors, one or more microprocessors in conjunction with a DSP core, or any other such configuration.

[0065] Furthermore, the one or more versions may be implemented as a method, apparatus, or article of manufacture using standard programming and/or engineering techniques to produce software, firmware, hardware, or any combination thereof to control a computer to implement the disclosed aspects. The term "article of manufacture" (or alternatively, "computer program product") as used herein is intended to encompass a computer program accessible from any computer-readable device, carrier, or media. For example, computer readable media can include but are not limited to magnetic storage devices (e.g., hard disk, floppy disk, magnetic strips...), optical disks (e.g., compact disk (CD), digital versatile disk (DVD)...), smart cards, and flash memory devices (e.g., card, stick). Additionally it should be appreciated that a carrier wave can be employed to carry computer-readable electronic data such as those used in transmitting and receiving electronic mail or in accessing a network such as the Internet or a local area network (LAN). Of course, those skilled in the art will recognize many modifications may be made to this configuration without departing from the scope of the disclosed aspects.

[0066] The steps of a method or algorithm described in connection with the aspects disclosed herein may be embodied directly in hardware, in a software module executed by a processor, or in a combination of the two. A software module may reside in RAM memory, flash memory, ROM memory, EPROM memory, EEPROM memory, registers, hard disk, a removable disk, a CD-ROM, or any other form of storage medium known in the art. An exemplary storage medium is coupled to the processor such that the processor can read information from, and write information to, the storage medium. In the alternative, the storage medium may be integral to the processor. The processor and the storage medium may reside in an ASIC. The ASIC may reside in a user terminal. In the alternative, the processor and the storage medium may reside as discrete components in a user terminal.

REFERENCES CITED IN THE DESCRIPTION

Cited references

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- US2010058353A1 [0002]

Non-patent literature cited in the description

- **ANONYMOUS**How to change the default program to open a file with, 2009, [0002]
- **ANONYMOUS**File association web service, 2008, [0002]
- **ANONYMOUS**Windows file association - txt, 2010, [0002]

Patentkrav

1. Fremgangsmåde til at udvide tjenester for en brugerindretning, hvilken fremgangsmåde omfatter:

at identificere (202) en første applikation, som repræsenterer en kerne-applikation, der findes på brugerindretningen med en første tjeneste, som anvender en første datatype;

at identificere (204) en anden applikation af en flerhed af applikationer med en anden tjeneste, som anvender en anden datatype;

at matche en kompatibilitet af en valgt en af den første tjeneste eller den første datatype af den første applikation med en respektiv en af den anden tjeneste eller den anden datatype af den anden applikation;

at præsentere, på en brugergrænseflade, UI, den første applikation med en repræsentation af en opdagelses-agent til at aktivere identifikationen af den anden applikation, hvor den første applikation tilvejebringer et direkte adgangspunkt til en applikationsbutik, som kun angiver anden applikationer med en kompatibilitet, som matcher den respektive første applikation, **kendetegnet ved**:

at udvide funktionalitet af den første applikation ved at tilvejebringe UI og dataudvidelser fra den anden applikation til den første applikation og at præsentere funktionaliteten kontekstuelt i den første applikation, hvor det er nødvendigt.

2. Fremgangsmåden ifølge krav 1, hvor den første applikation omfatter en af en flerhed af tjenester eller en flerhed af datatyper, hvilken fremgangsmåde yderligere omfatter:

at præsentere, på brugergrænsefladen, en nuværende kontekst omfattende den første tjeneste og den første datatype; og

at identificere den anden applikation ifølge den nuværende kontekst.

3. Fremgangsmåden ifølge et hvilket som helst foregående krav, yderligere omfattende lagring af den anden applikation på brugerindretningen.

4. Fremgangsmåden ifølge et hvilket som helst foregående krav, yderligere omfattende at præsentere, på brugergrænsefladen, den første applikation med en

repræsentation af en applikationstilføjer til at aktivere lagringen af den anden applikation.

5. Fremgangsmåden ifølge et hvilket som helst foregående krav, hvor matchning af kompatibiliteten yderligere omfatter matchning af den første tjeneste af den første applikation med den anden datatype af den anden applikation.

6. Fremgangsmåden ifølge krav 5, hvor den første tjeneste omfatter en kontakttjeneste, og den anden datatype omfatter en online-gamerkontakt; eller hvor den første tjeneste omfatter en kontakttjeneste, og den anden datatype omfatter en placeringstjeneste.

7. Fremgangsmåden ifølge et hvilket som helst foregående krav, hvor matchning af kompatibiliteten yderligere omfatter matchning af den første datatype af den første applikation med den anden tjeneste af den anden applikation.

8. Fremgangsmåden ifølge krav 7, hvor den første datatype omfatter et medieformat, og den anden tjeneste omfatter en mediefremviser; eller hvor den første datatype omfatter et medieformat, og den anden tjeneste omfatter en uploader til en server.

9. Fremgangsmåden ifølge krav 7, hvor den første datatype omfatter et billedformat associeret med mindst en placering, og den anden tjeneste omfatter en tjeneste associeret med den mindst ene placering.

10. Fremgangsmåden ifølge et hvilket som helst foregående krav, yderligere omfattende at opnå en datastruktur, som definerer kompatibiliteten af en eller flere af flerheden af applikationer.

11. Fremgangsmåden ifølge krav 10, yderligere omfattende at få adgang til datastrukturen via en netværksgrænseflade.

12. Fremgangsmåden ifølge et hvilket som helst foregående krav, yderligere omfattende: at opnå og integrere den respektive ene af den anden datatype eller den anden tjeneste af den anden applikation til anvendelse af den valgte ene af

den første tjeneste eller den første datatype af den første applikation som reaktion på et brugervalg.

13. Apparat til at udvide tjenester af en brugerindretning, hvilket apparat omfatter:

organ til at udføre fremgangsmåden ifølge et hvilket som helst af kravene 1 til 12.

DRAWINGS

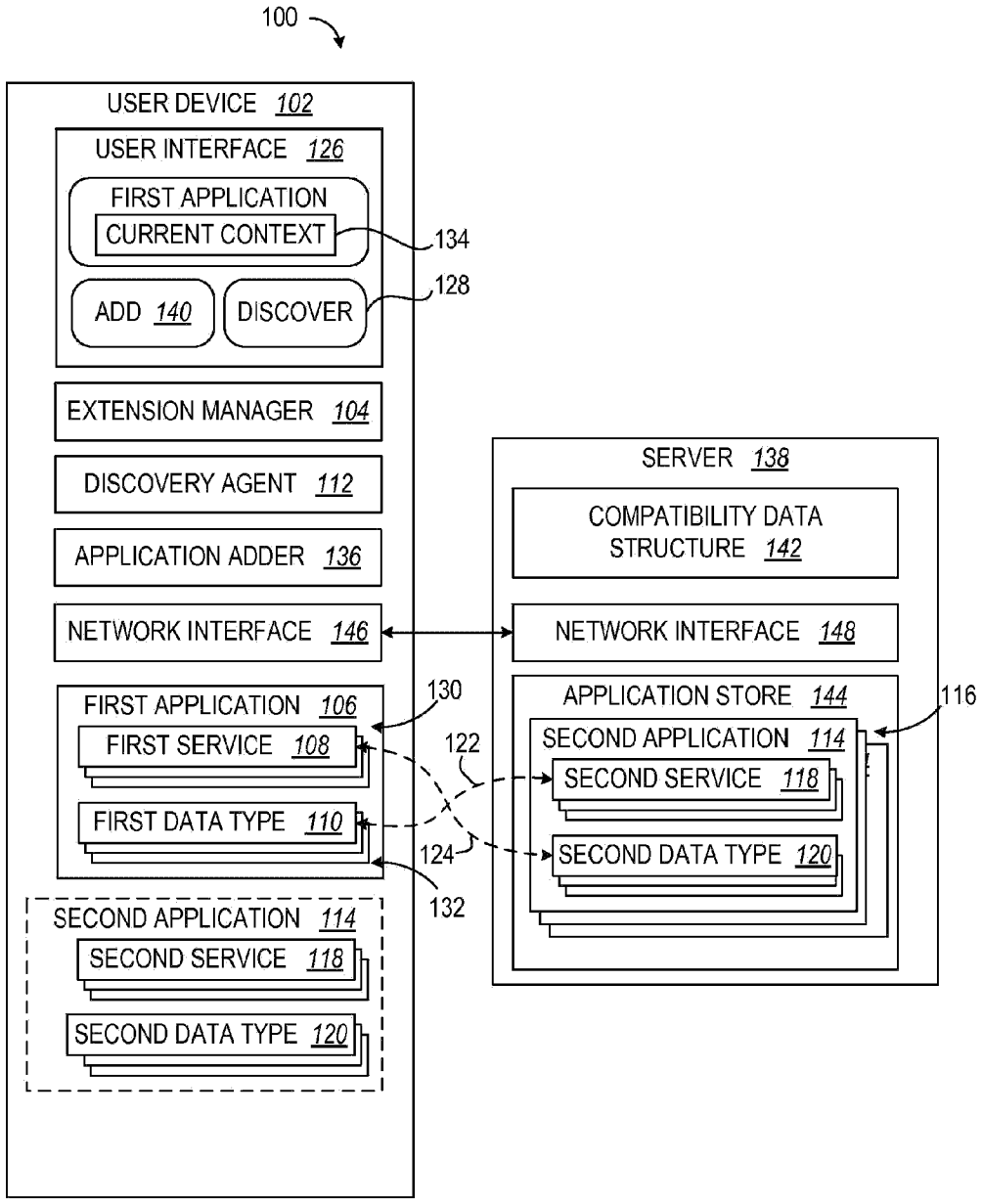

FIG. 1

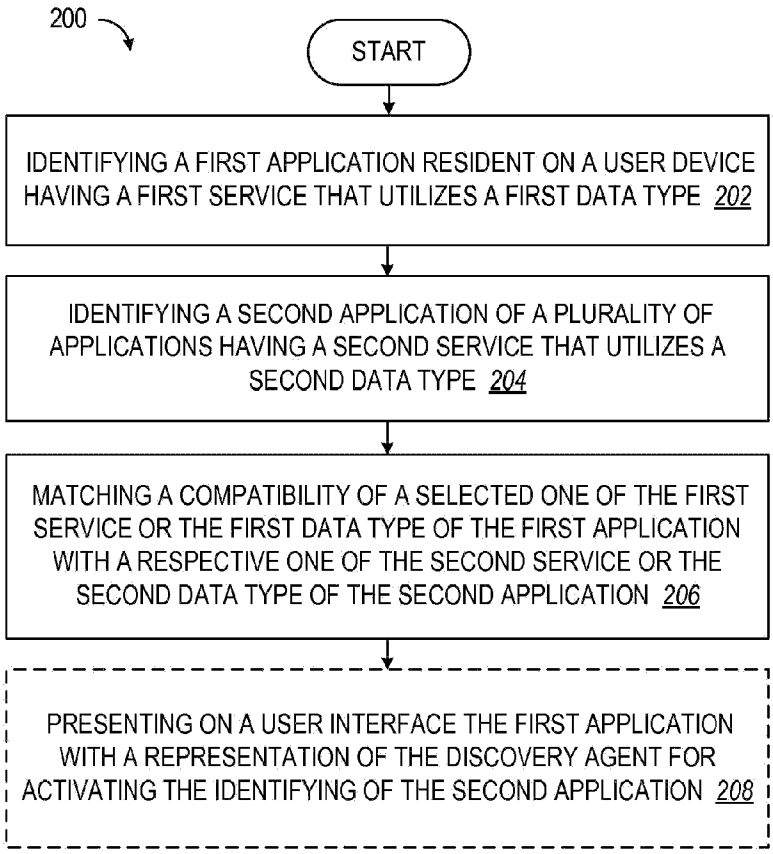
200
START
IDENTIFYING A FIRST APPLICATION RESIDENT ON A USER DEVICE HAVING A FIRST SERVICE THAT UTILIZES A FIRST DATA TYPE 202
IDENTIFYING A SECOND APPLICATION OF A PLURALITY OF APPLICATIONS HAVING A SECOND SERVICE THAT UTILIZES A SECOND DATA TYPE 204
MATCHING A COMPATIBILITY OF A SELECTED ONE OF THE FIRST SERVICE OR THE FIRST DATA TYPE OF THE FIRST APPLICATION WITH A RESPECTIVE ONE OF THE SECOND SERVICE OR THE SECOND DATA TYPE OF THE SECOND APPLICATION 206
PRESENTING ON A USER INTERFACE THE FIRST APPLICATION WITH A REPRESENTATION OF THE DISCOVERY AGENT FOR ACTIVATING THE IDENTIFYING OF THE SECOND APPLICATION 208

FIG. 2

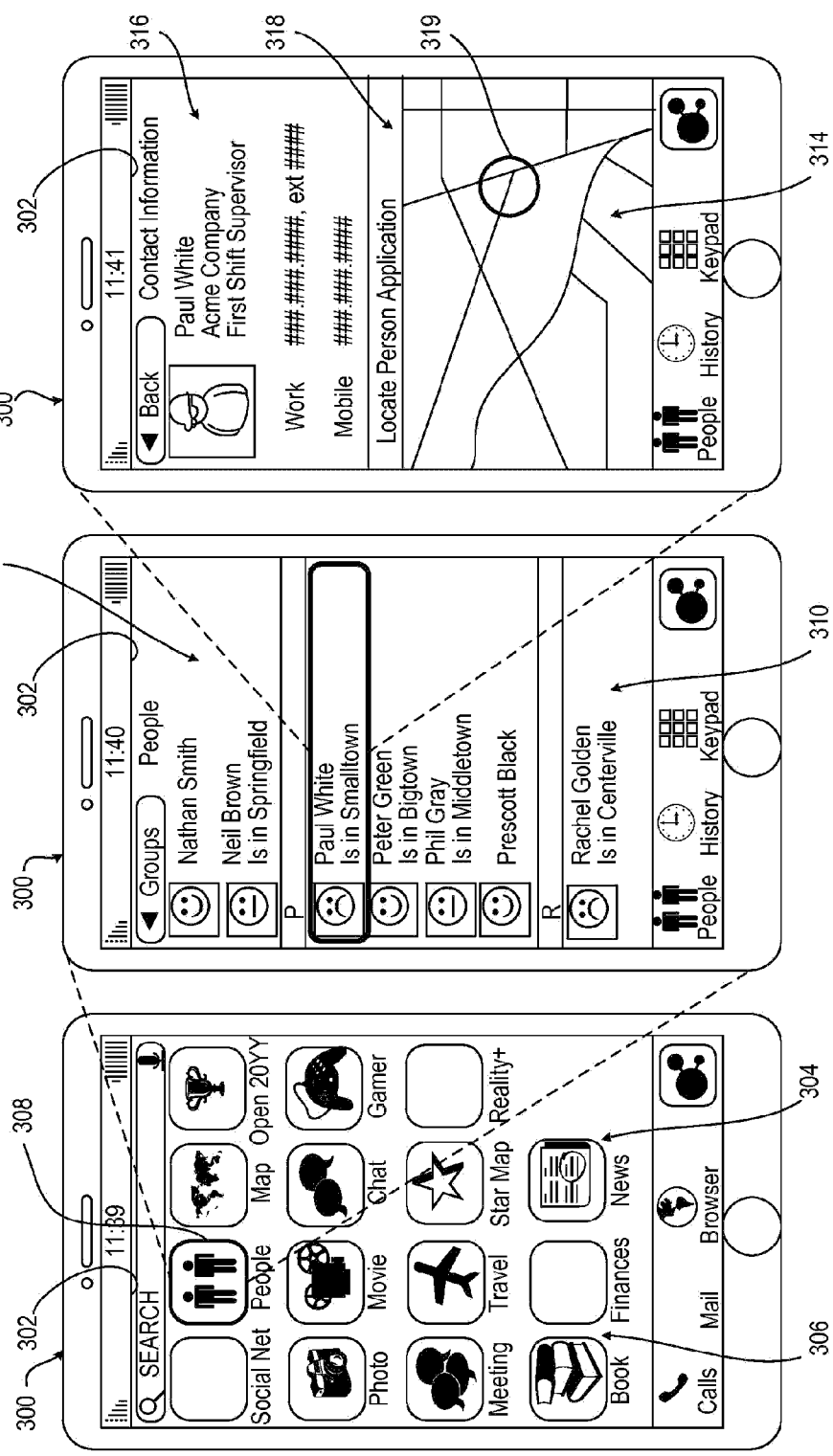
300
302
304
306
308
310
312
314
316
318
319
11:39
SEARCH
Social Net
People
Map
Open 20YY
Photo
Movie
Chat
Gamer
Meeting
Travel
Star Map
Reality+
Book
Finances
News
Calls
Mail
Browser
11:40
Groups
People
Nathan Smith
Neil Brown
Is in Springfield
P
Paul White
Is in Smalltown
Peter Green
Is in Bigtown
Phil Gray
Is in Middletown
Prescott Black
R
Rachel Golden
Is in Centerville
People
History
Keypad
11:41
Back
Contact Information
Paul White
Acme Company
First Shift Supervisor
Work
####, ext
Mobile
####
Locate Person Application
People
History
Keypad

FIG. 3

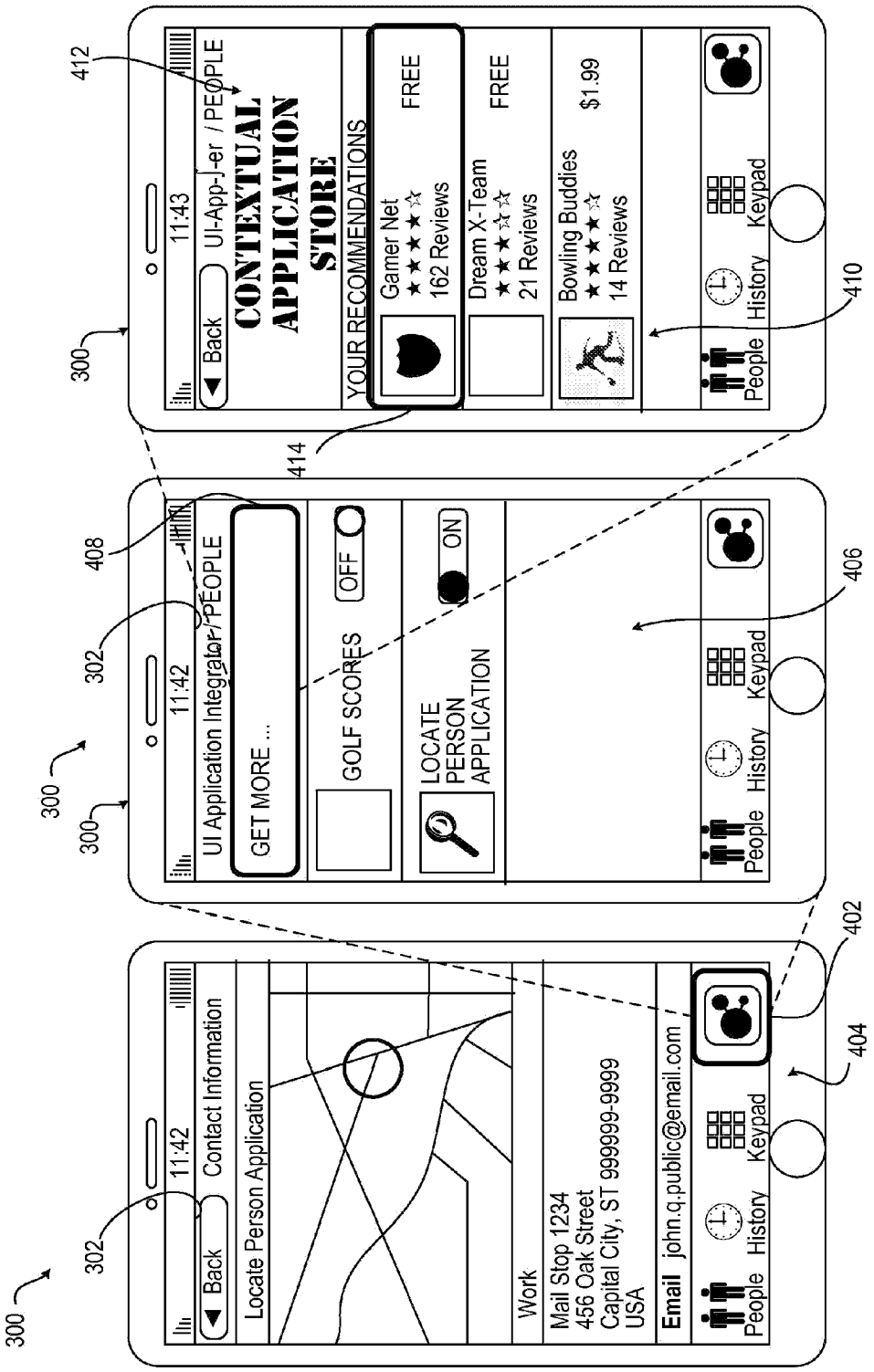
300
302
11:42
Back
Contact Information
Locate Person Application
Work
Mail Stop 1234
456 Oak Street
Capital City, ST 999999-9999
USA
Email john.q.public@email.com
People
History
Keypad
404
402
406
UI Application Integrator / PEOPLE
GET MORE ...
GOLF SCORES
OFF
LOCATE PERSON APPLICATION
ON
408
414
11:43
UI-App-J-er / PEOPLE
CONTEXTUAL APPLICATION STORE
YOUR RECOMMENDATIONS
Gamer Net
162 Reviews
FREE
Dream X-Team
21 Reviews
FREE
Bowling Buddies
14 Reviews
$1.99
410
412

FIG. 4

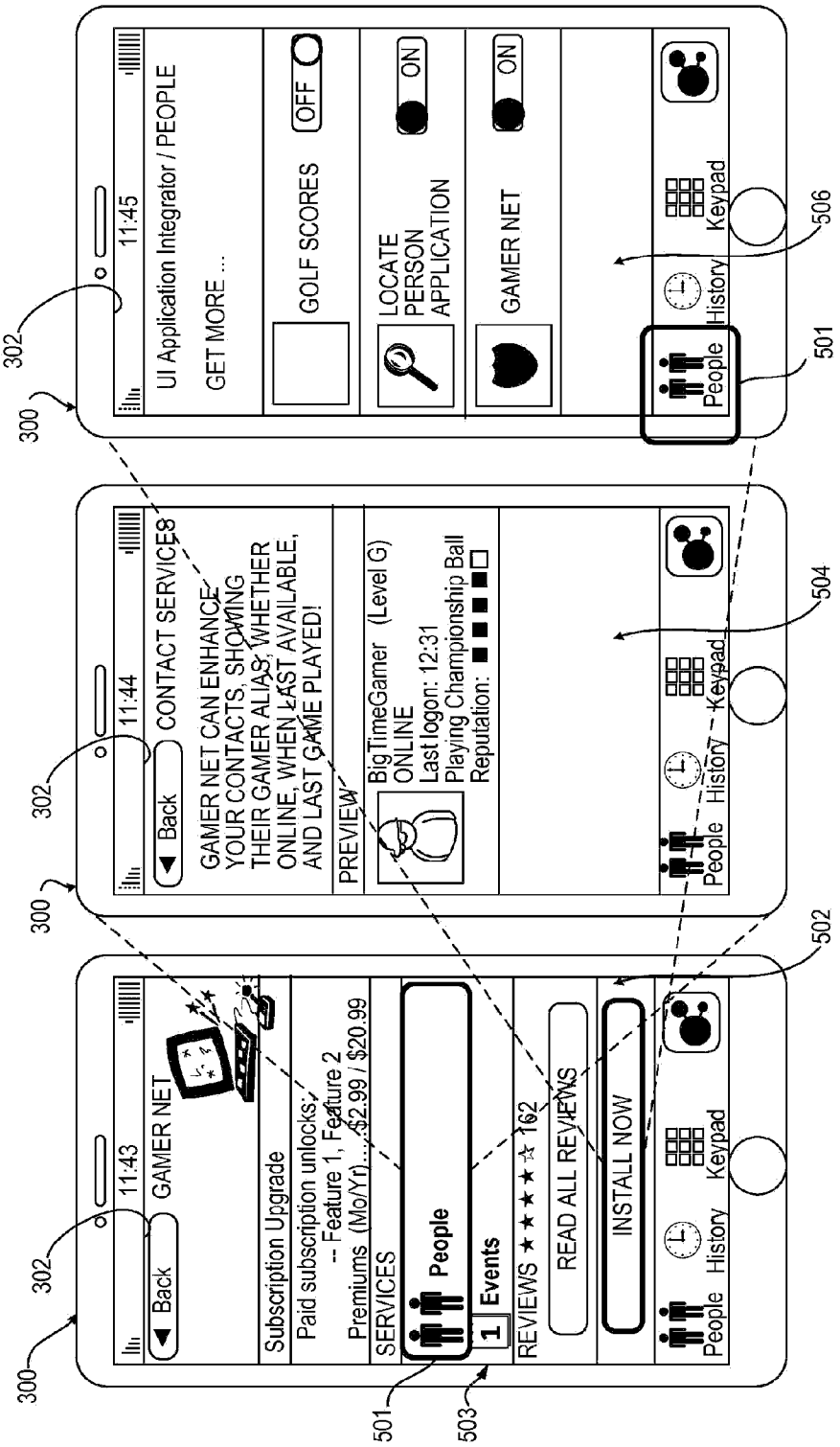
300
302
11:43
Back
GAMER NET
Subscription Upgrade
Paid subscription unlocks:
-- Feature 1, Feature 2
Premiums (Mo/Yr)...$2.99 / $20.99
SERVICES
People
Events
REVIEWS ★★★★☆ 162
READ ALL REVIEWS
INSTALL NOW
People
History
Keypad
501
503
502
11:44
Back
CONTACT SERVICES
GAMER NET CAN ENHANCE YOUR CONTACTS, SHOWING THEIR GAMER ALIAS, WHETHER ONLINE, WHEN LAST AVAILABLE, AND LAST GAME PLAYED!
PREVIEW
BigTimeGamer (Level G)
ONLINE
Last logon: 12:31
Playing Championship Ball
Reputation:
504
11:45
UI Application Integrator / PEOPLE
GET MORE ...
GOLF SCORES
OFF
LOCATE PERSON APPLICATION
ON
GAMER NET
ON
506

FIG. 5

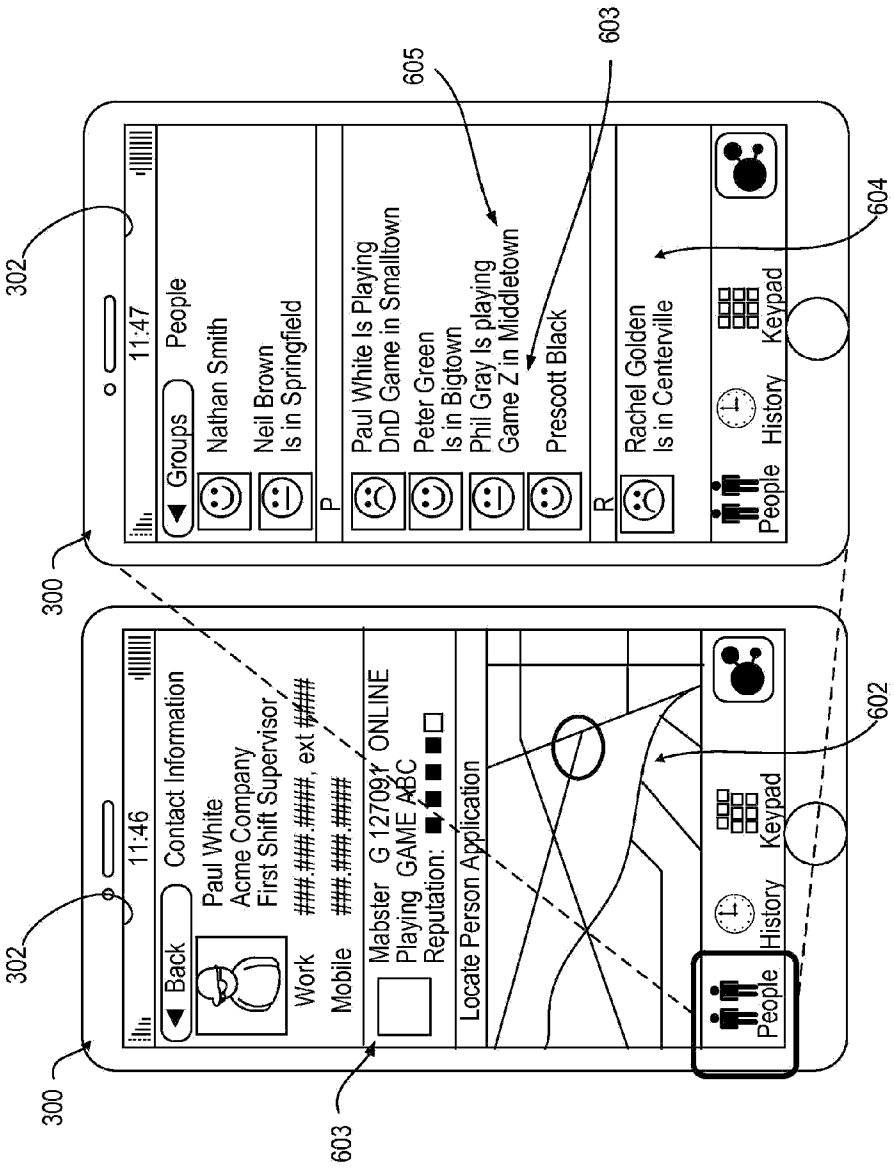
11:46
Back
Contact Information
Paul White
Acme Company
First Shift Supervisor
Work ###.###.####, ext ####
Mobile ###.###.####
Mabster G 12709Y ONLINE
Playing GAME ABC
Reputation:
Locate Person Application
People
History
Keypad
11:47
Groups
People
Nathan Smith
Neil Brown
Is in Springfield
P
Paul White Is Playing
DnD Game in Smalltown
Peter Green
Is in Bigtown
Phil Gray Is playing
Game Z in Middletown
Prescott Black
R
Rachel Golden
Is in Centerville
People
History
Keypad
300
302
603
602
604
605

FIG. 6

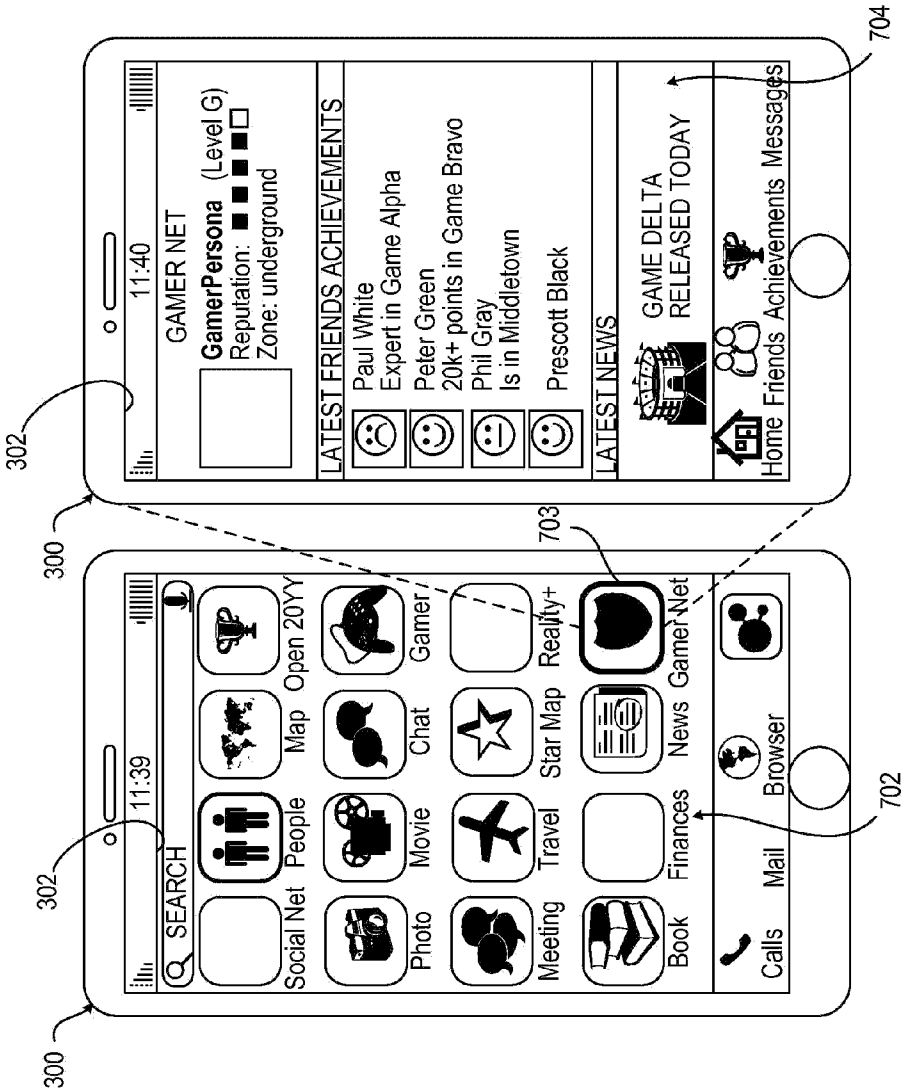
300
302
11:39
SEARCH
Social Net
People
Map
Open 20YY
Photo
Movie
Chat
Gamer
Meeting
Travel
Star Map
Reality+
Book
Finances
News
Gamer Net
Calls
Mail
Browser
702
703
300
302
11:40
GAMER NET
GamerPersona (Level G)
Reputation:
Zone: underground
LATEST FRIENDS ACHIEVEMENTS
Paul White
Expert in Game Alpha
Peter Green
20k+ points in Game Bravo
Phil Gray
Is in Middletown
Prescott Black
LATEST NEWS
GAME DELTA
RELEASED TODAY
Home
Friends
Achievements
Messages
704

FIG. 7

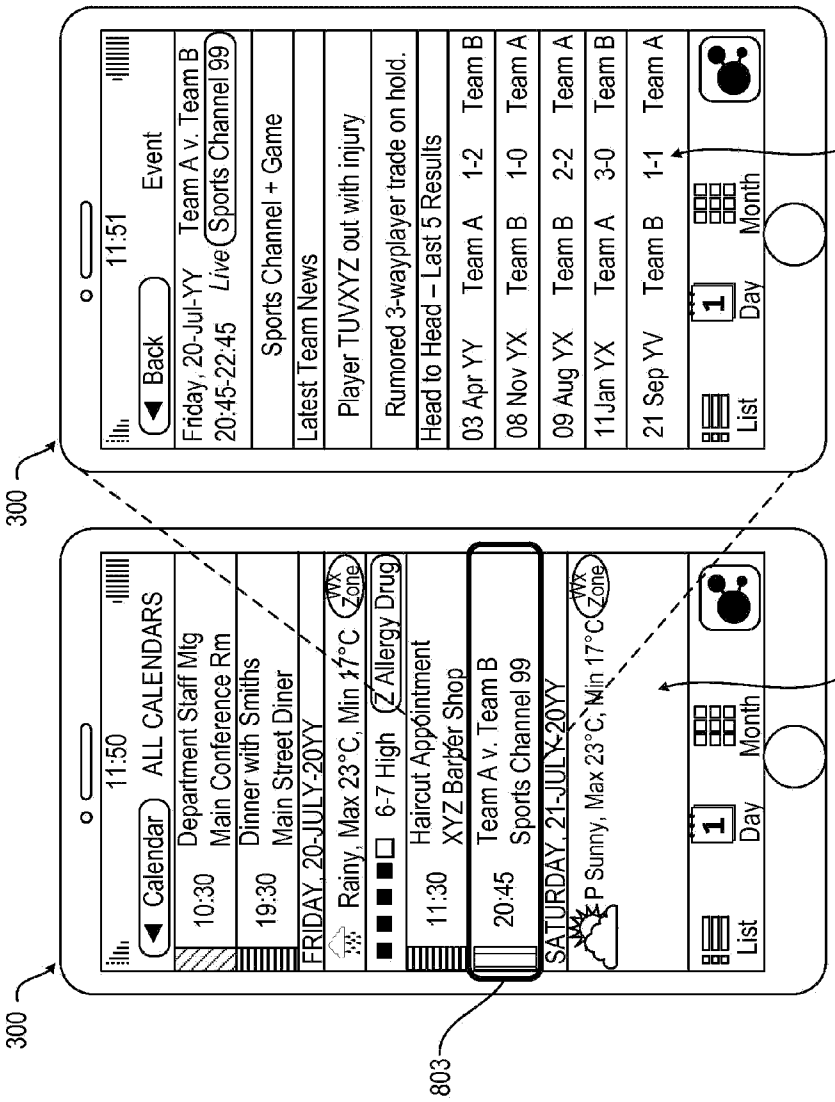
300
300
11:50
Calendar
ALL CALENDARS
10:30
Department Staff Mtg
Main Conference Rm
19:30
Dinner with Smiths
Main Street Diner
FRIDAY, 20-JULY-20YY
Rainy, Max 23°C, Min 17°C
Wx Zone
6-7 High
Allergy Drug
11:30
Haircut Appointment
XYZ Barber Shop
20:45
Team A v. Team B
Sports Channel 99
SATURDAY, 21-JULY-20YY
P Sunny, Max 23°C, Min 17°C
Wx Zone
List
Day
Month
802
803
11:51
Back
Event
Friday, 20-Jul-YY
20:45-22:45
Live
Team A v. Team B
Sports Channel 99
Sports Channel + Game
Latest Team News
Player TUVXYZ out with injury
Rumored 3-wayplayer trade on hold.
Head to Head – Last 5 Results
03 Apr YY Team A 1-2 Team B
08 Nov YX Team B 1-0 Team A
09 Aug YX Team B 2-2 Team A
11Jan YX Team A 3-0 Team B
21 Sep YV Team B 1-1 Team A
List
Day
Month
804

FIG. 8

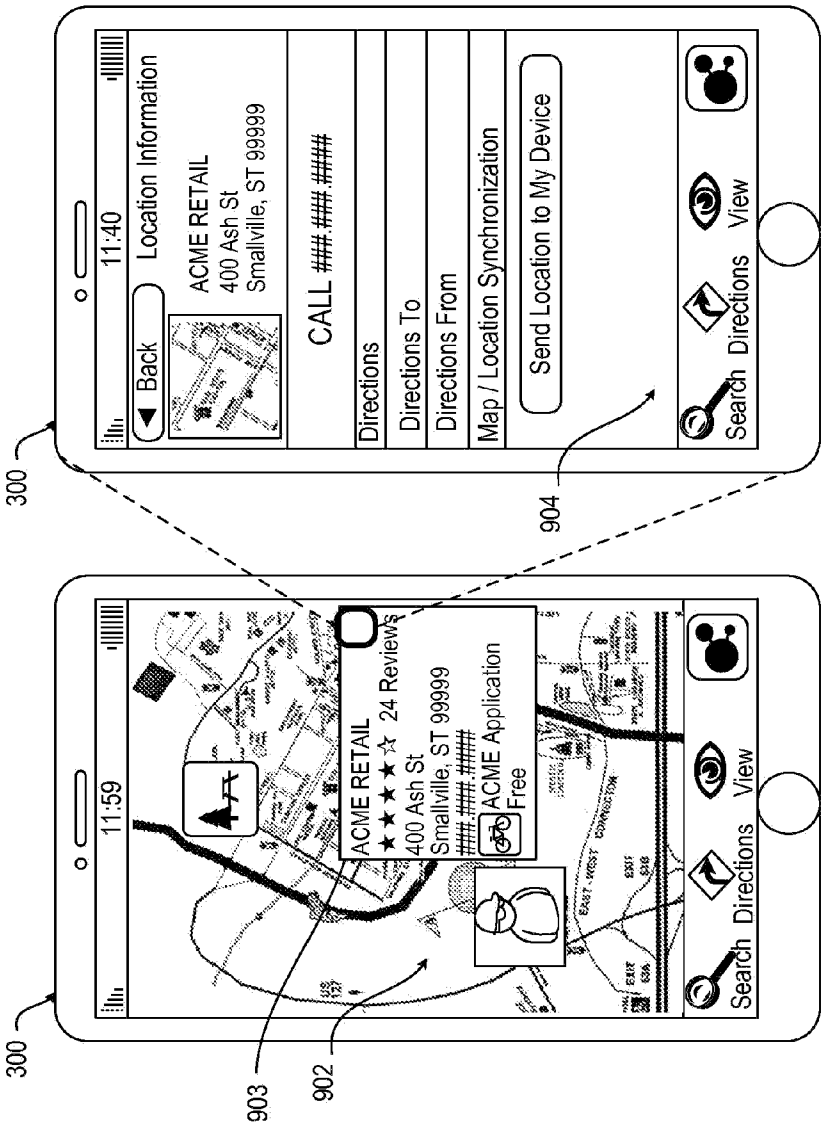
300
11:59
ACME RETAIL
★★★★☆ 24 Reviews
400 Ash St
Smallville, ST 99999
###.###.#####
ACME Application
Free
Search
Directions
View
903
902
300
11:40
Back
Location Information
ACME RETAIL
400 Ash St
Smallville, ST 99999
CALL ###.###.#####
Directions
Directions To
Directions From
Map / Location Synchronization
Send Location to My Device
Search
Directions
View
904

FIG. 9

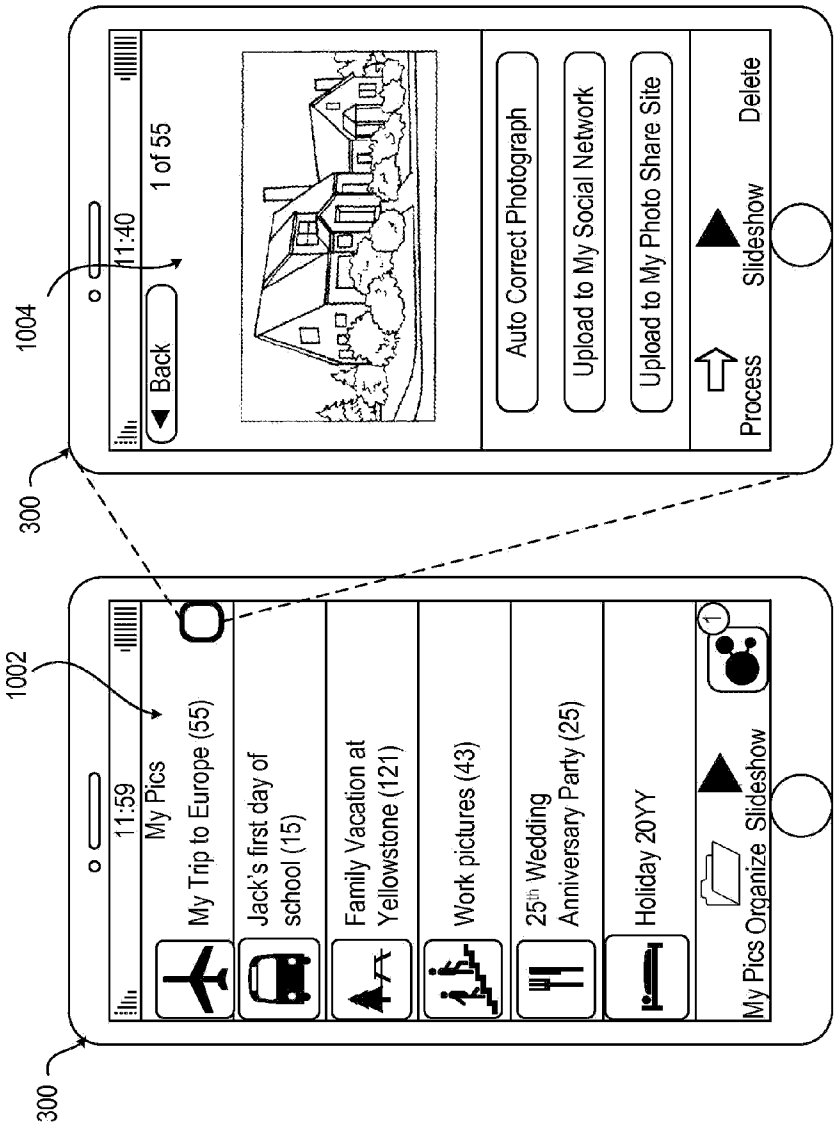
1002
300
11:59
My Pics
My Trip to Europe (55)
Jack's first day of school (15)
Family Vacation at Yellowstone (121)
Work pictures (43)
25th Wedding Anniversary Party (25)
Holiday 20YY
My Pics Organize Slideshow
1004
300
11:40
Back
1 of 55
Auto Correct Photograph
Upload to My Social Network
Upload to My Photo Share Site
Process
Slideshow
Delete

FIG. 10

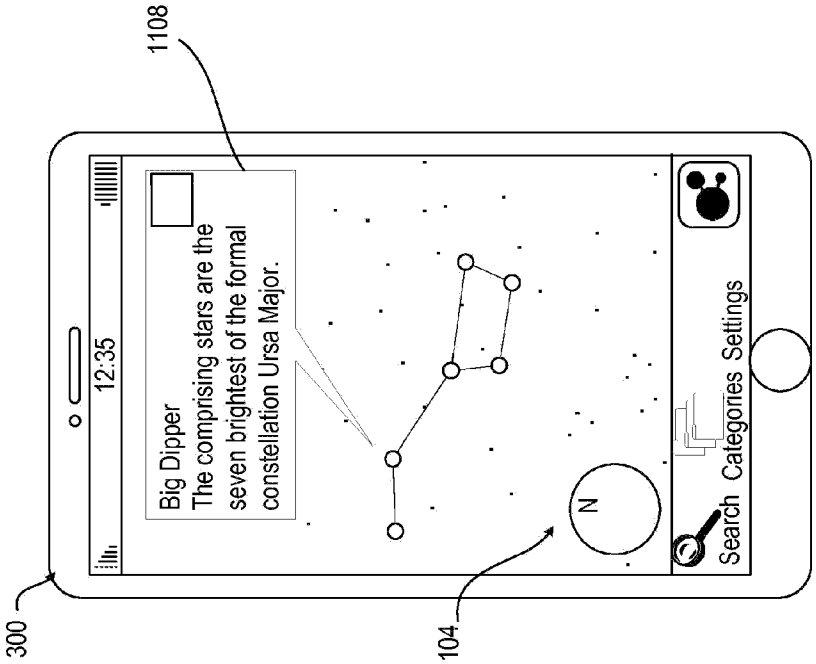

FIG. 11B

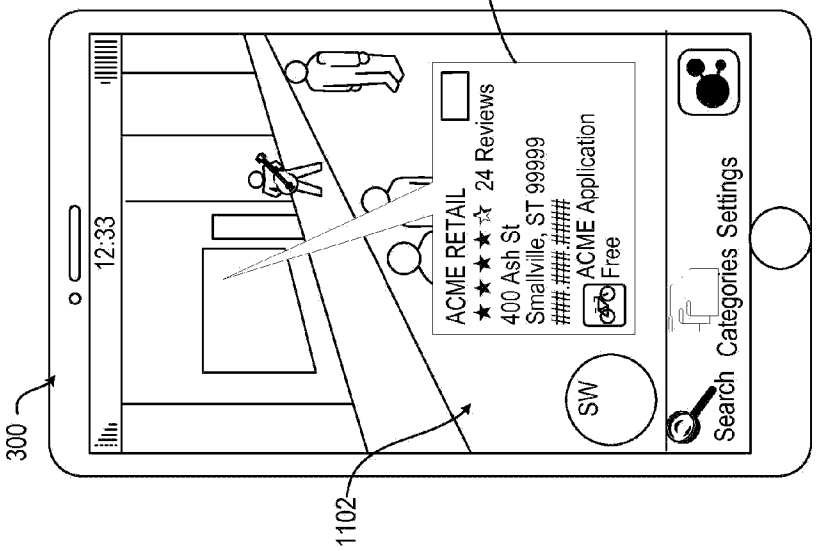

FIG. 11A

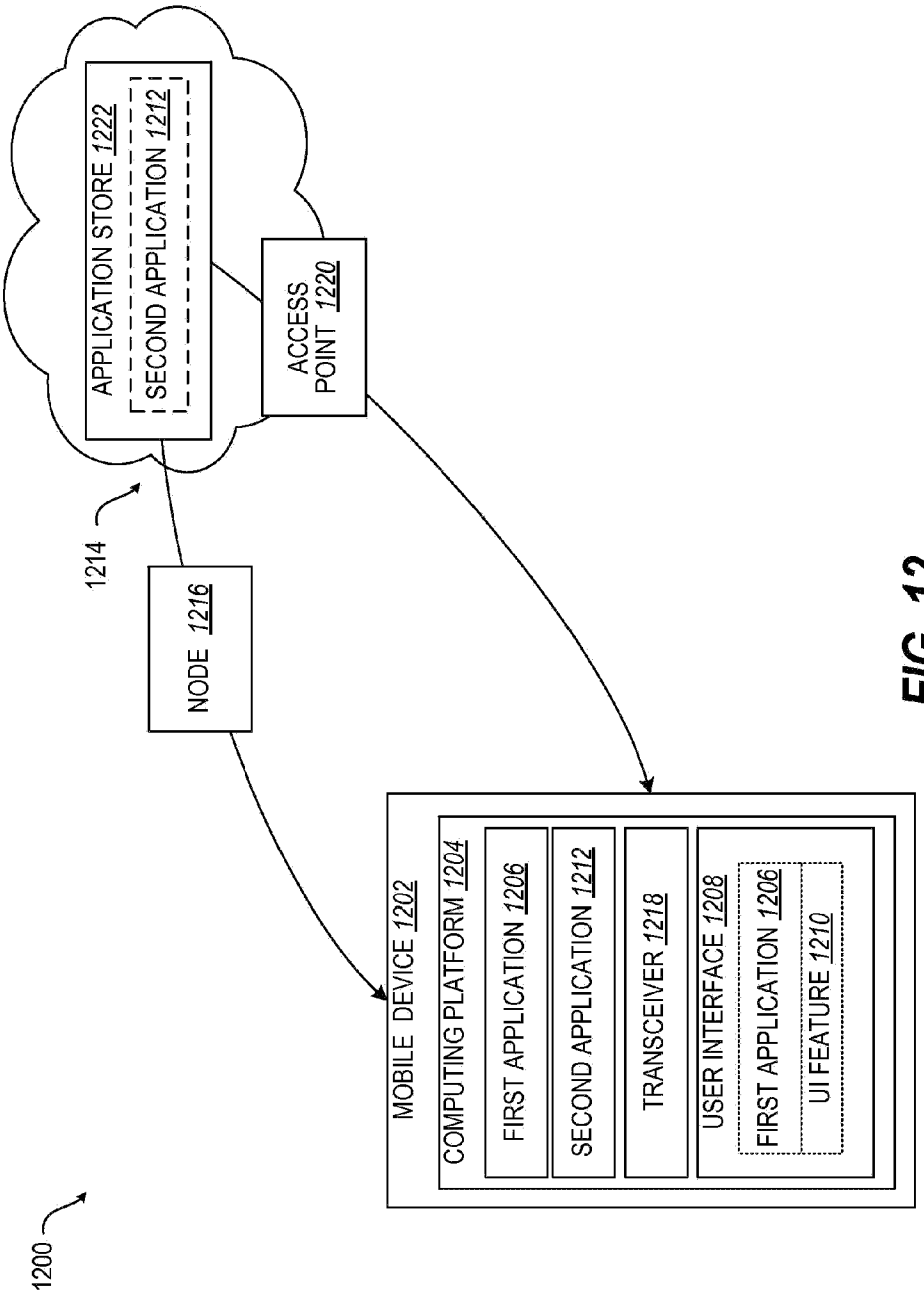
1200
1214
APPLICATION STORE 1222
SECOND APPLICATION 1212
ACCESS POINT 1220
NODE 1216
MOBILE DEVICE 1202
COMPUTING PLATFORM 1204
FIRST APPLICATION 1206
SECOND APPLICATION 1212
TRANSCEIVER 1218
USER INTERFACE 1208
FIRST APPLICATION 1206
UI FEATURE 1210

FIG. 12

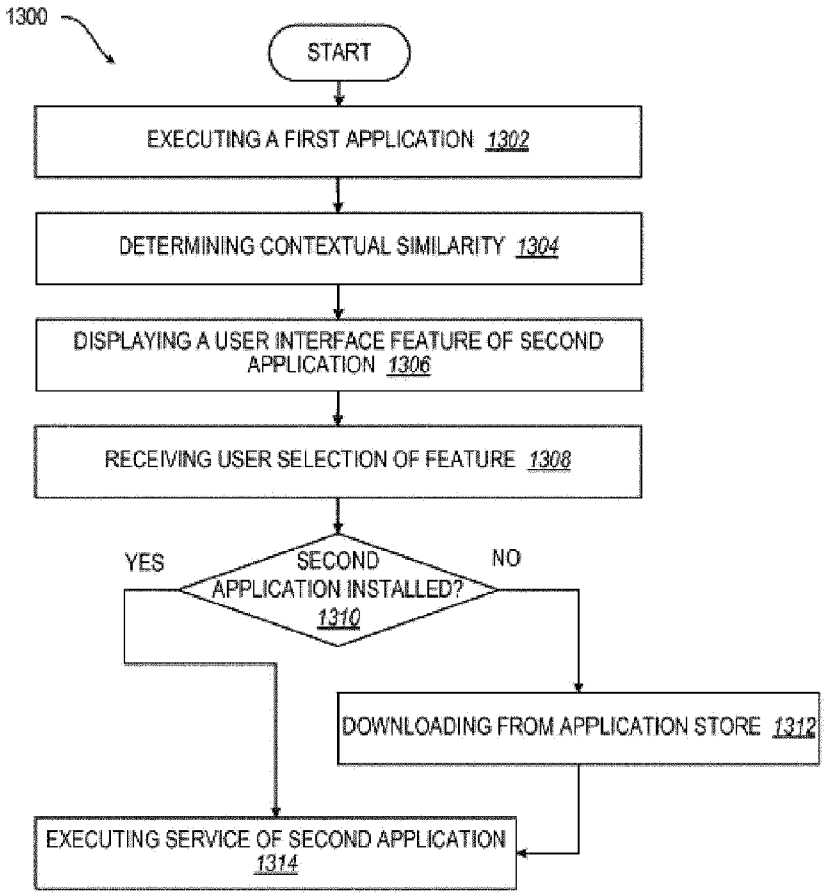
1300
START
EXECUTING A FIRST APPLICATION 1302
DETERMINING CONTEXTUAL SIMILARITY 1304
DISPLAYING A USER INTERFACE FEATURE OF SECOND APPLICATION 1306
RECEIVING USER SELECTION OF FEATURE 1308
YES
SECOND APPLICATION INSTALLED? 1310
NO
DOWNLOADING FROM APPLICATION STORE 1312
EXECUTING SERVICE OF SECOND APPLICATION 1314

FIG. 13

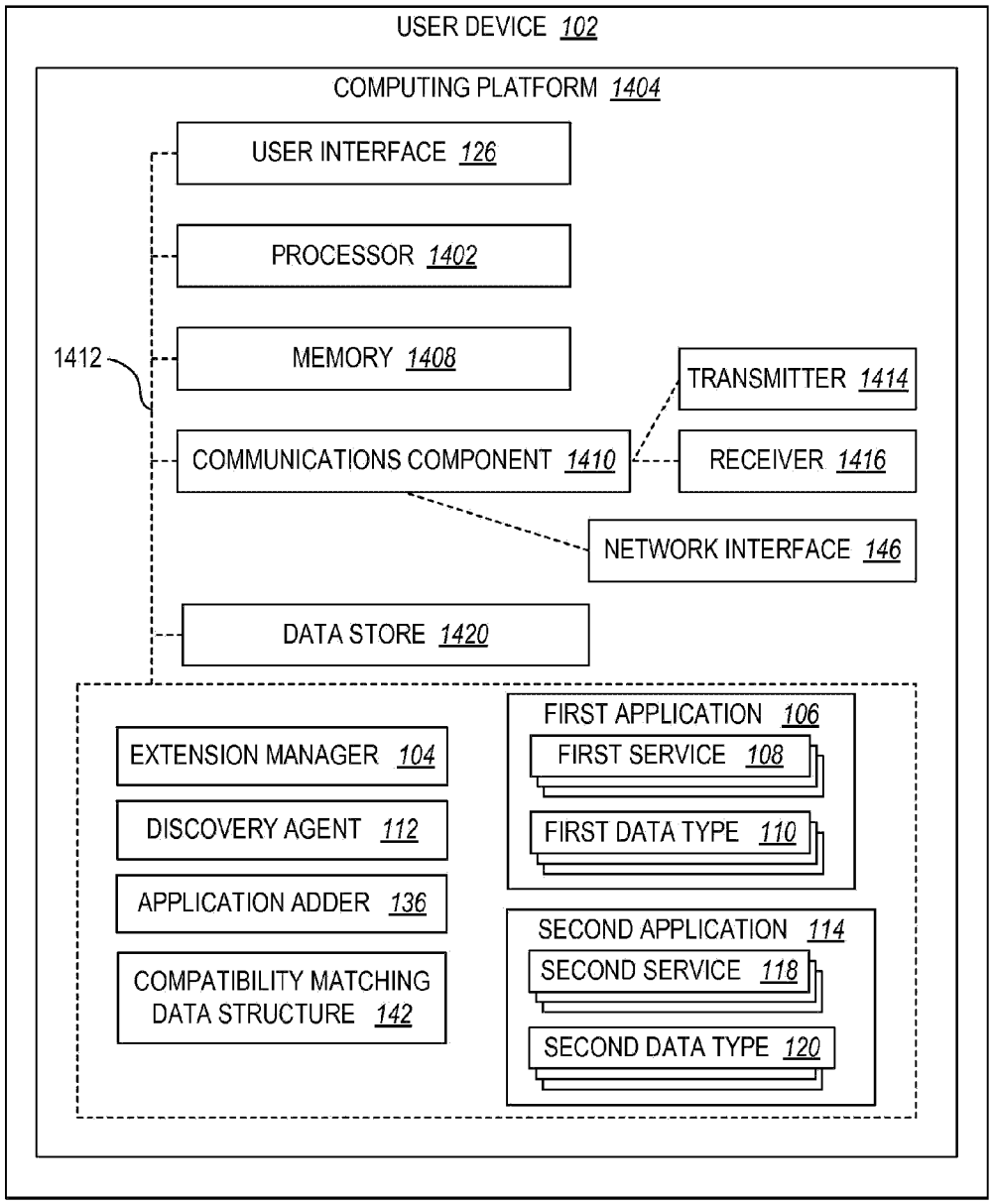
USER DEVICE 102
COMPUTING PLATFORM 1404
USER INTERFACE 126
PROCESSOR 1402
1412
MEMORY 1408
TRANSMITTER 1414
COMMUNICATIONS COMPONENT 1410
RECEIVER 1416
NETWORK INTERFACE 146
DATA STORE 1420
EXTENSION MANAGER 104
DISCOVERY AGENT 112
APPLICATION ADDER 136
COMPATIBILITY MATCHING DATA STRUCTURE 142
FIRST APPLICATION 106
FIRST SERVICE 108
FIRST DATA TYPE 110
SECOND APPLICATION 114
SECOND SERVICE 118
SECOND DATA TYPE 120

FIG. 14

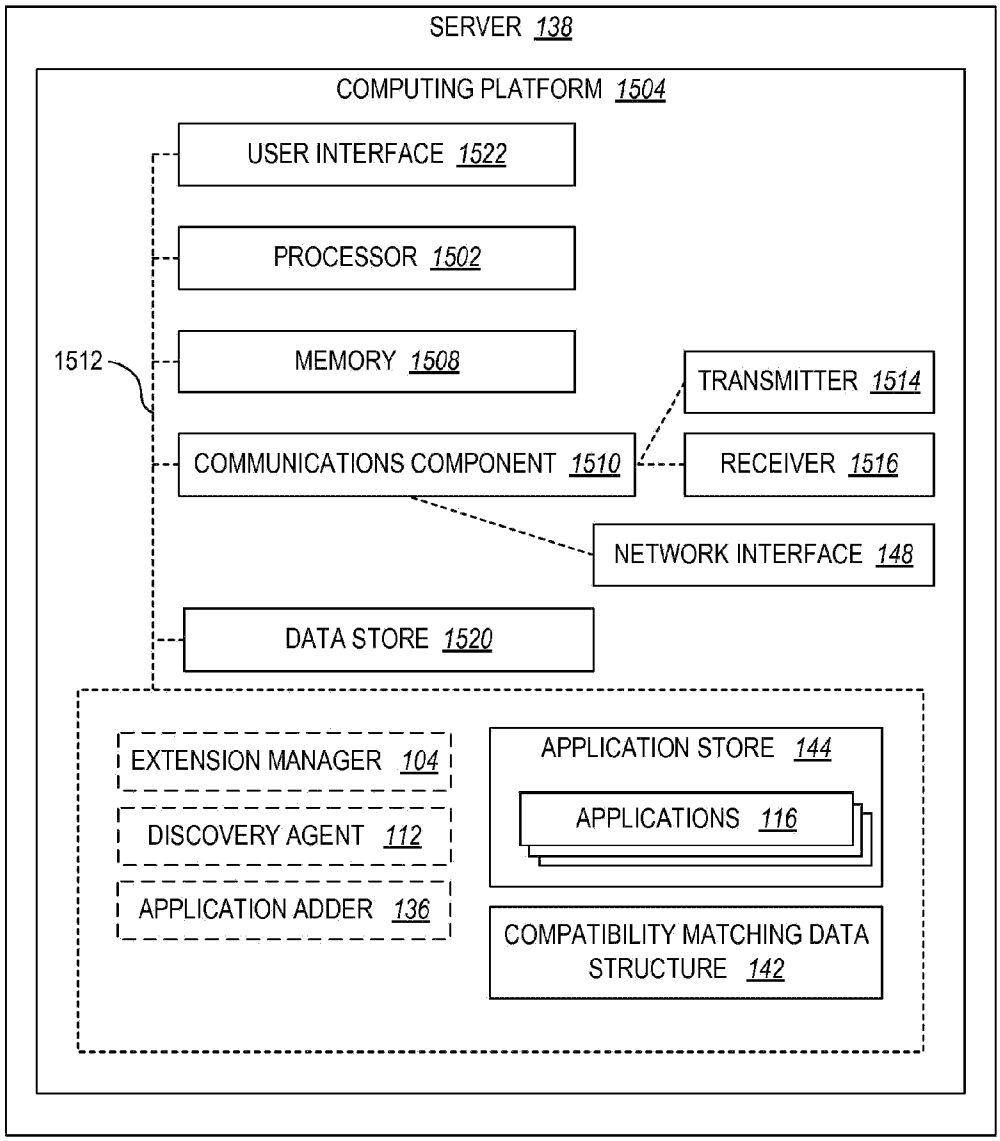
SERVER 138
COMPUTING PLATFORM 1504
USER INTERFACE 1522
PROCESSOR 1502
1512
MEMORY 1508
TRANSMITTER 1514
COMMUNICATIONS COMPONENT 1510
RECEIVER 1516
NETWORK INTERFACE 148
DATA STORE 1520
EXTENSION MANAGER 104
DISCOVERY AGENT 112
APPLICATION ADDER 136
APPLICATION STORE 144
APPLICATIONS 116
COMPATIBILITY MATCHING DATA STRUCTURE 142

FIG. 15

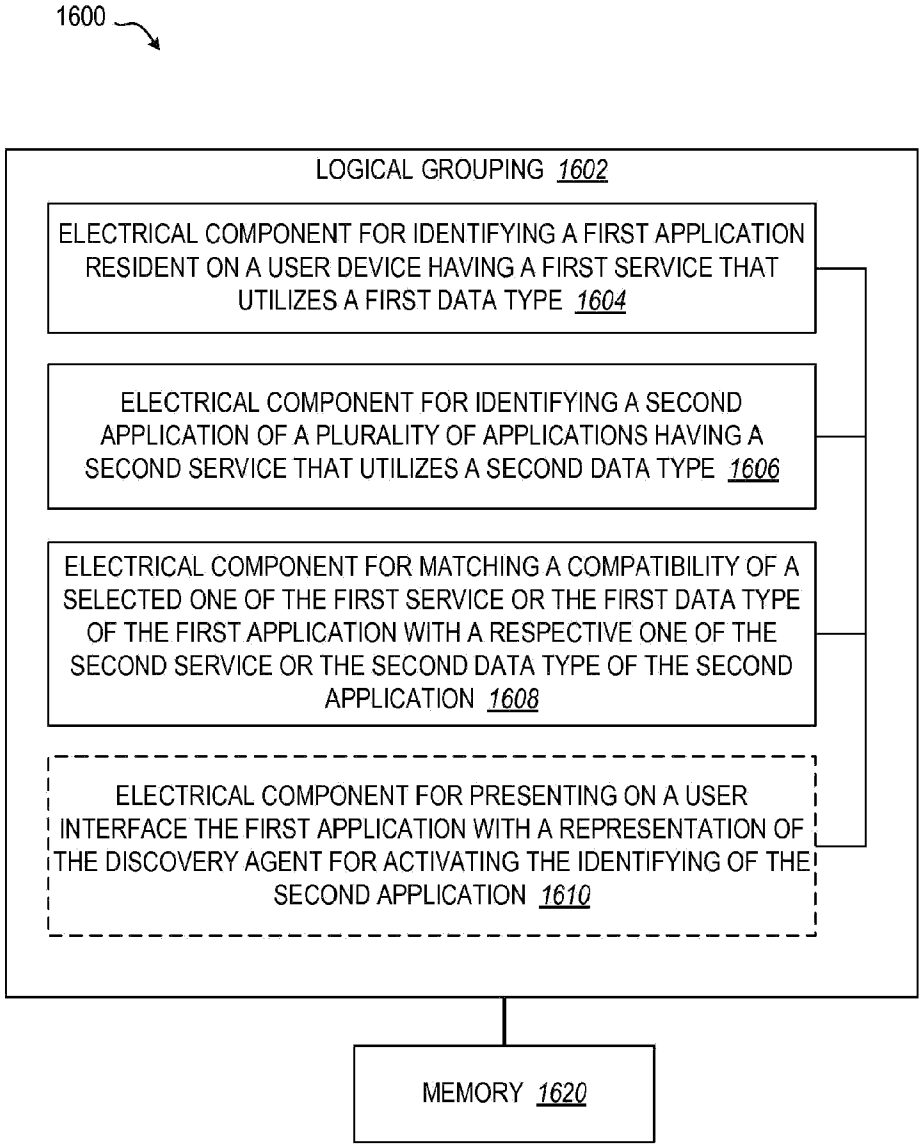
1600
LOGICAL GROUPING 1602
ELECTRICAL COMPONENT FOR IDENTIFYING A FIRST APPLICATION RESIDENT ON A USER DEVICE HAVING A FIRST SERVICE THAT UTILIZES A FIRST DATA TYPE 1604
ELECTRICAL COMPONENT FOR IDENTIFYING A SECOND APPLICATION OF A PLURALITY OF APPLICATIONS HAVING A SECOND SERVICE THAT UTILIZES A SECOND DATA TYPE 1606
ELECTRICAL COMPONENT FOR MATCHING A COMPATIBILITY OF A SELECTED ONE OF THE FIRST SERVICE OR THE FIRST DATA TYPE OF THE FIRST APPLICATION WITH A RESPECTIVE ONE OF THE SECOND SERVICE OR THE SECOND DATA TYPE OF THE SECOND APPLICATION 1608
ELECTRICAL COMPONENT FOR PRESENTING ON A USER INTERFACE THE FIRST APPLICATION WITH A REPRESENTATION OF THE DISCOVERY AGENT FOR ACTIVATING THE IDENTIFYING OF THE SECOND APPLICATION 1610
MEMORY 1620

FIG. 16