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(12) **United States Patent**
Boudreau et al.

(10) **Patent No.: US 9,270,682 B2**
(45) **Date of Patent: Feb. 23, 2016**

(54) **ADMINISTRATION OF POLICIES FOR WIRELESS DEVICES IN A WIRELESS COMMUNICATION SYSTEM**

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(73) Assignee: **BlackBerry Limited**, Waterloo, Ontario (CA)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 270 days.

(21) Appl. No.: **12/171,975**

(22) Filed: **Jul. 11, 2008**

(65) **Prior Publication Data**

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Related U.S. Application Data

(60) Provisional application No. 60/952,544, filed on Jul. 27, 2007, provisional application No. 60/952,552, filed on Jul. 28, 2007.

(51) **Int. Cl.**

H04L 29/06	(2006.01)
H04L 12/58	(2006.01)
H04W 8/24	(2009.01)

(52) **U.S. Cl.**

CPC ***H04L 63/102*** (2013.01); ***H04L 12/5895*** (2013.01); ***H04L 51/38*** (2013.01); *H04W 8/245* (2013.01)

(58) **Field of Classification Search**

CPC H04L 47/10; H04L 47/35; H04L 47/30; H04L 47/32

USPC 370/252, 328; 455/418

See application file for complete search history.

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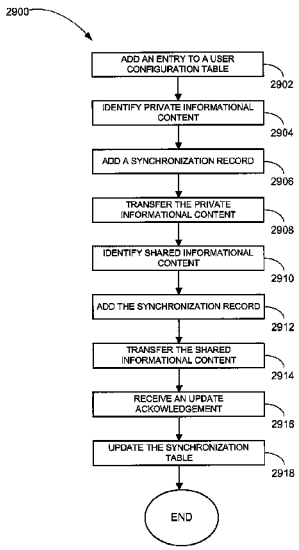
(57) **ABSTRACT**

Systems and methods are described for providing a administration mechanism for wireless systems. In an embodiment, a mobile wireless server including a plurality of parameters that may be set to configure a mobile wireless client. The mobile wireless server also includes at least one computer program to set one or more of the parameters. The computer programs permit a user of at least one of the wireless clients to select a desired mode of operation for one or more of the wireless clients. Other embodiments are described and claimed.

31 Claims, 35 Drawing Sheets



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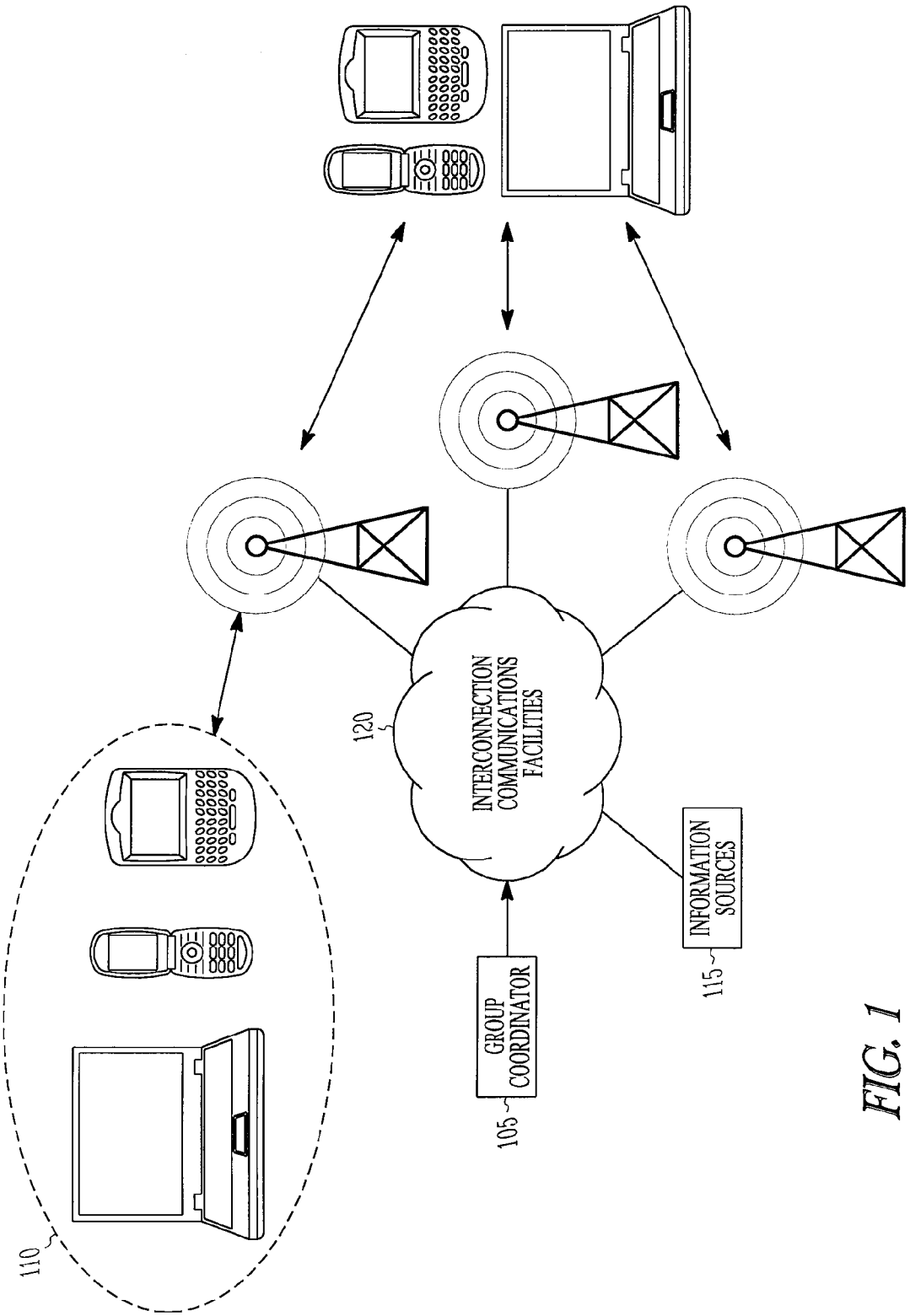

INTERCONNECTION COMMUNICATIONS FACILITIES
120
GROUP COORDINATOR
105
INFORMATION SOURCES
115
110

FIG. 1

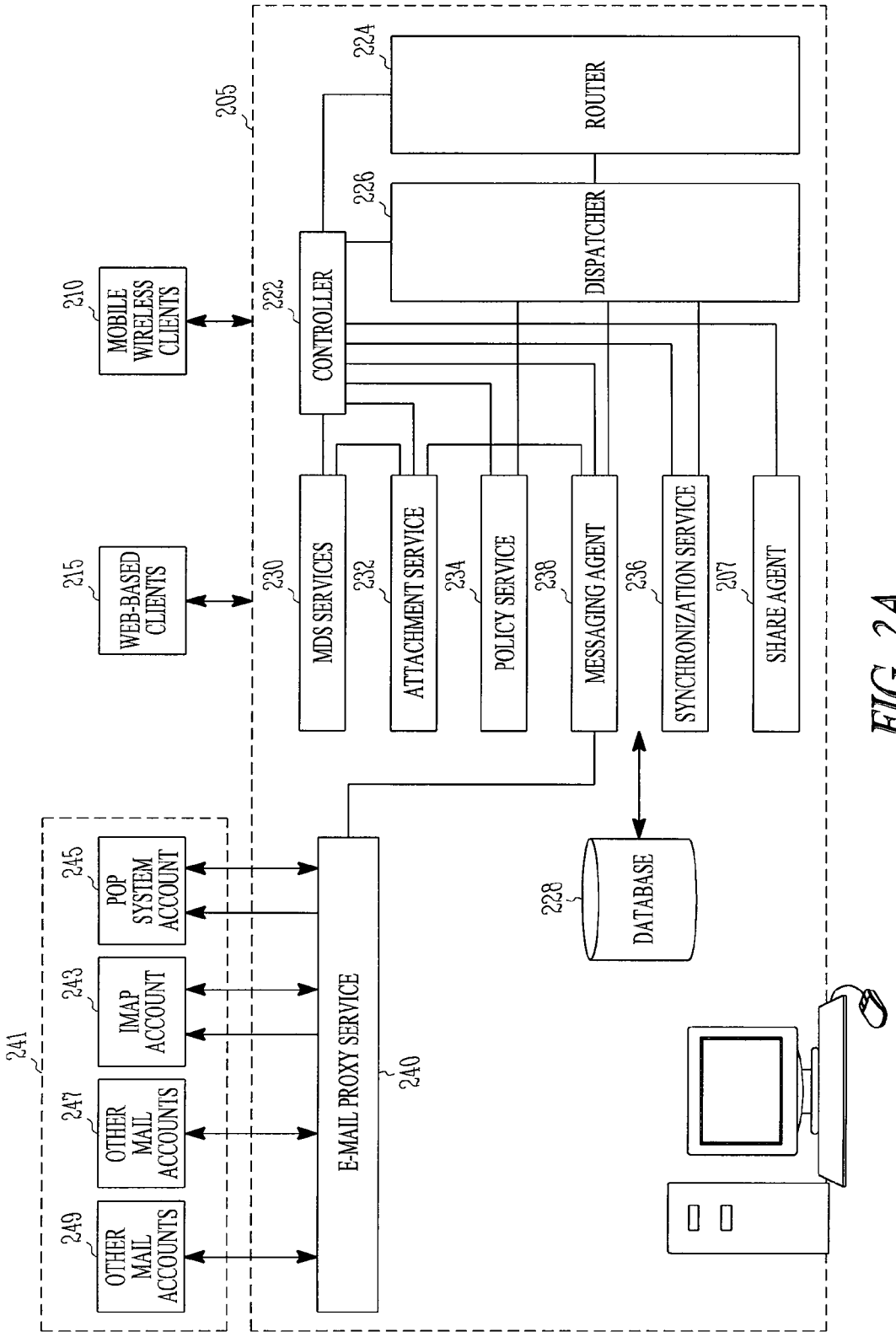

205
224
ROUTER
226
DISPATCHER
210
MOBILE WIRELESS CLIENTS
222
CONTROLLER
215
WEB-BASED CLIENTS
230
MDS SERVICES
232
ATTACHMENT SERVICE
234
POLICY SERVICE
238
MESSAGING AGENT
236
SYNCHRONIZATION SERVICE
207
SHARE AGENT
228
DATABASE
241
245
POP SYSTEM ACCOUNT
243
IMAP ACCOUNT
247
OTHER MAIL ACCOUNTS
249
OTHER MAIL ACCOUNTS
E-MAIL PROXY SERVICE
240

FIG. 2A

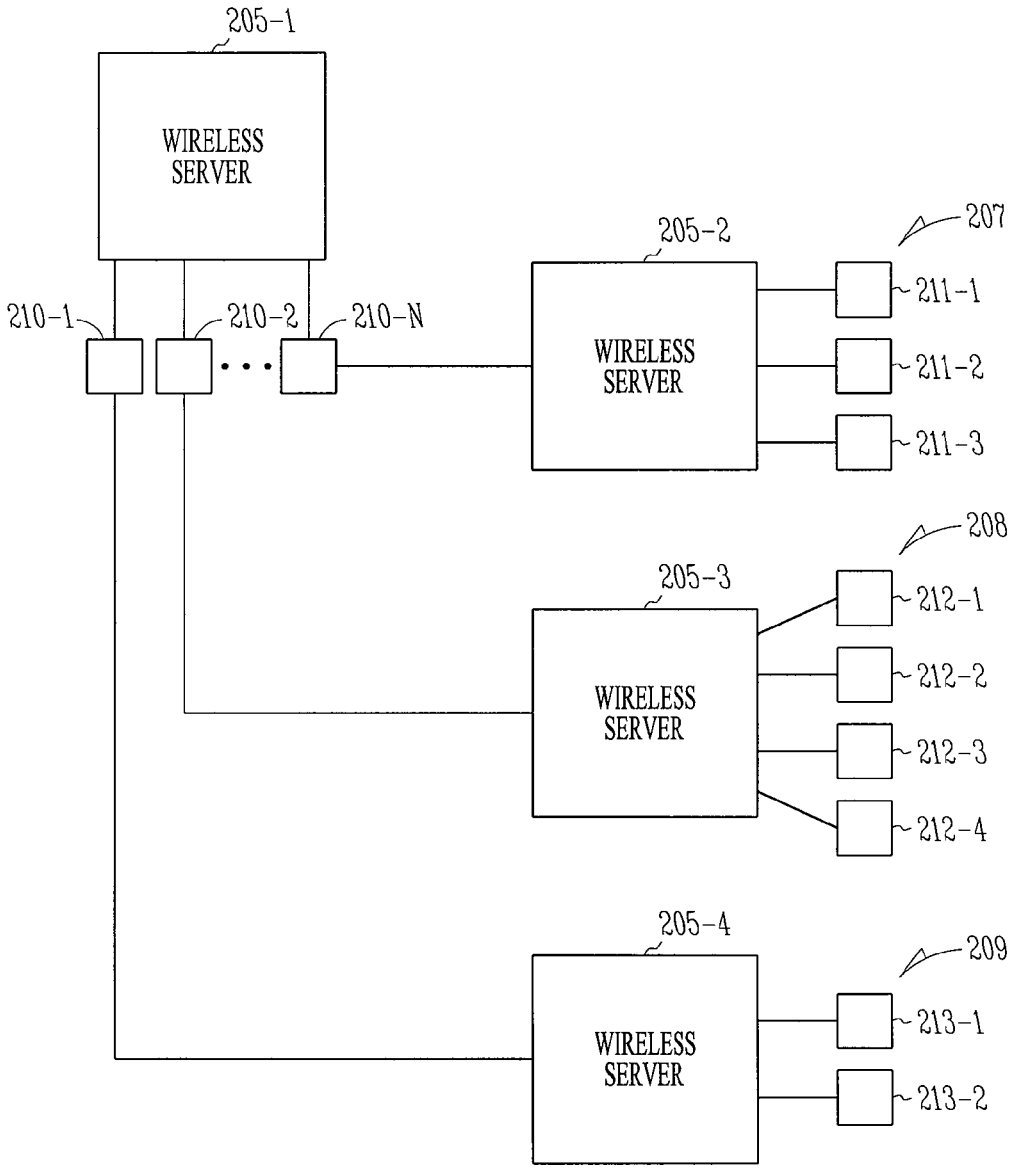
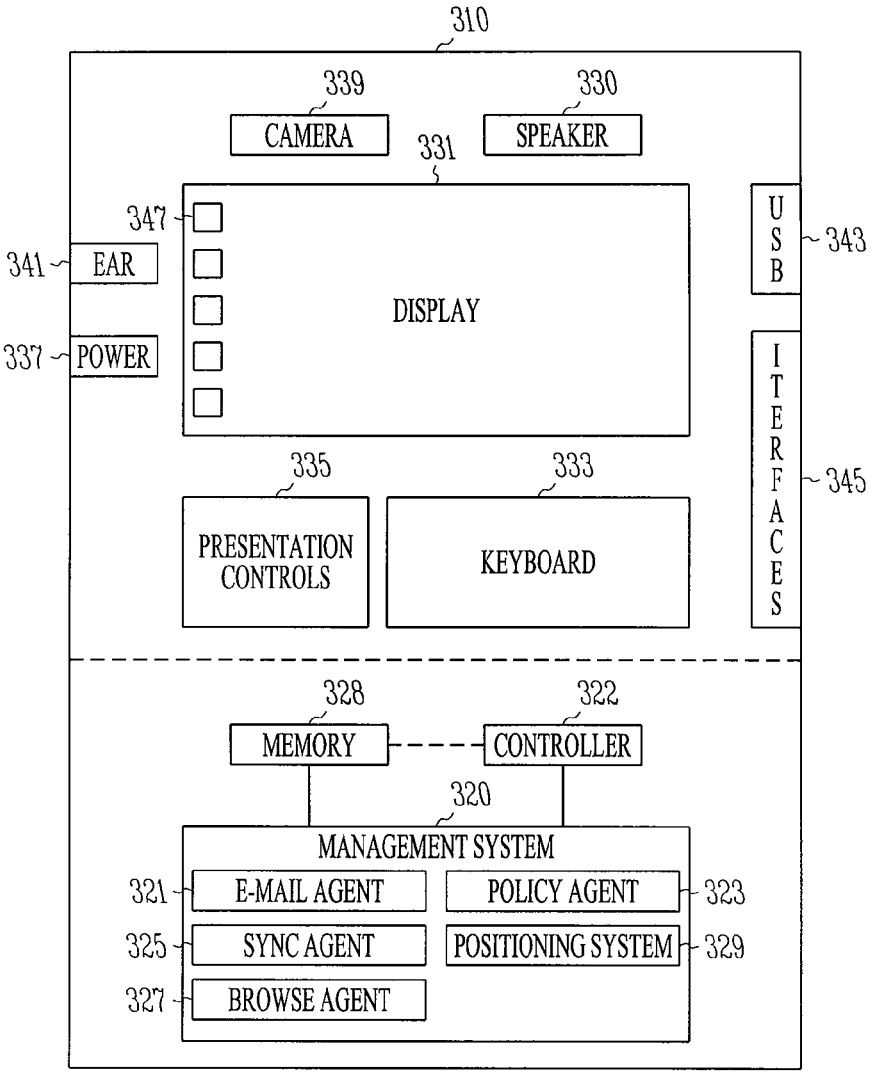

205-1
WIRELESS SERVER
210-1
210-2
210-N
205-2
WIRELESS SERVER
207
211-1
211-2
211-3
208
205-3
WIRELESS SERVER
212-1
212-2
212-3
212-4
205-4
WIRELESS SERVER
209
213-1
213-2

FIG. 2B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339
CAMERA
330
SPEAKER
331
347
341
EAR
337
POWER
DISPLAY
USB
343
ITERFACES
345
335
PRESENTATION CONTROLS
333
KEYBOARD
328
MEMORY
322
CONTROLLER
320
MANAGEMENT SYSTEM
321
E-MAIL AGENT
POLICY AGENT
323
325
SYNC AGENT
POSITIONING SYSTEM
329
327
BROWSE AGENT

FIG. 3

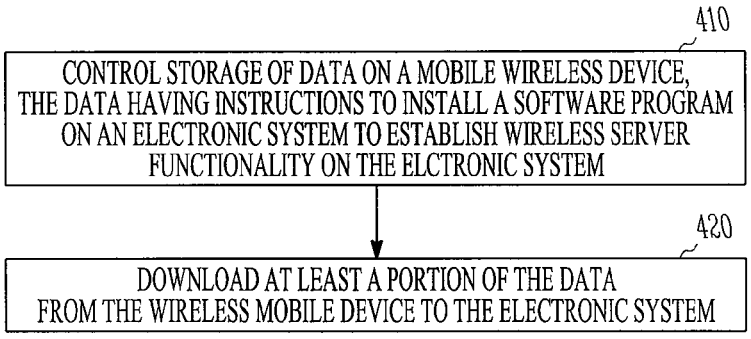
410
CONTROL STORAGE OF DATA ON A MOBILE WIRELESS DEVICE, THE DATA HAVING INSTRUCTIONS TO INSTALL A SOFTWARE PROGRAM ON AN ELECTRONIC SYSTEM TO ESTABLISH WIRELESS SERVER FUNCTIONALITY ON THE ELCTRONIC SYSTEM
420
DOWNLOAD AT LEAST A PORTION OF THE DATA FROM THE WIRELESS MOBILE DEVICE TO THE ELECTRONIC SYSTEM

FIG. 4

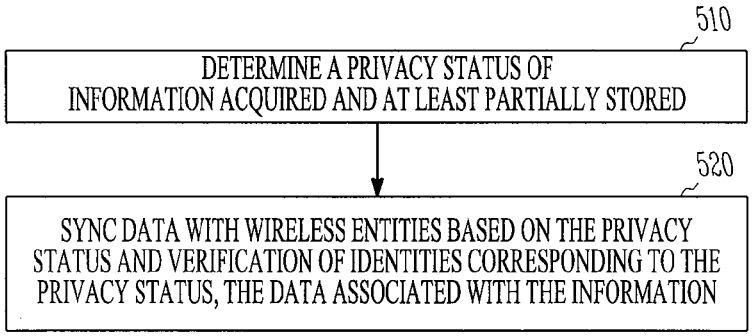
510
DETERMINE A PRIVACY STATUS OF INFORMATION ACQUIRED AND AT LEAST PARTIALLY STORED
520
SYNC DATA WITH WIRELESS ENTITIES BASED ON THE PRIVACY STATUS AND VERIFICATION OF IDENTITIES CORRESPONDING TO THE PRIVACY STATUS, THE DATA ASSOCIATED WITH THE INFORMATION

FIG. 5

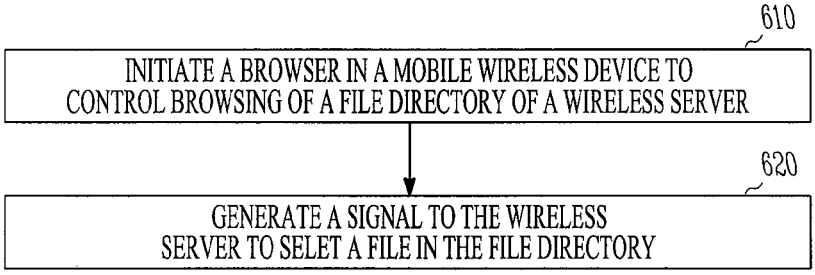
610
INITIATE A BROWSER IN A MOBILE WIRELESS DEVICE TO CONTROL BROWSING OF A FILE DIRECTORY OF A WIRELESS SERVER
620
GENERATE A SIGNAL TO THE WIRELESS SERVER TO SELET A FILE IN THE FILE DIRECTORY

FIG. 6

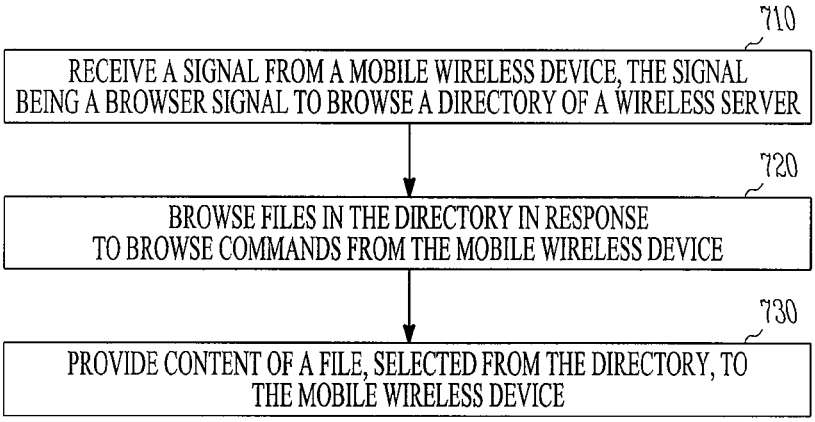
710
RECEIVE A SIGNAL FROM A MOBILE WIRELESS DEVICE, THE SIGNAL BEING A BROWSER SIGNAL TO BROWSE A DIRECTORY OF A WIRELESS SERVER
720
BROWSE FILES IN THE DIRECTORY IN RESPONSE TO BROWSE COMMANDS FROM THE MOBILE WIRELESS DEVICE
730
PROVIDE CONTENT OF A FILE, SELECTED FROM THE DIRECTORY, TO THE MOBILE WIRELESS DEVICE

FIG. 7

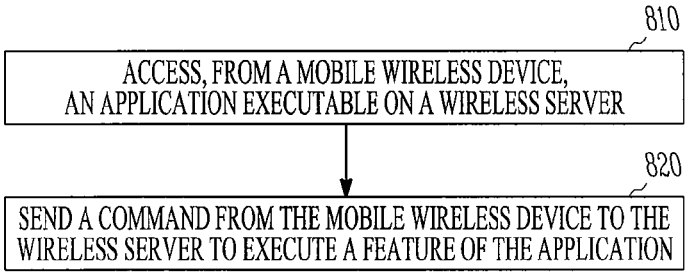

FIG. 8A

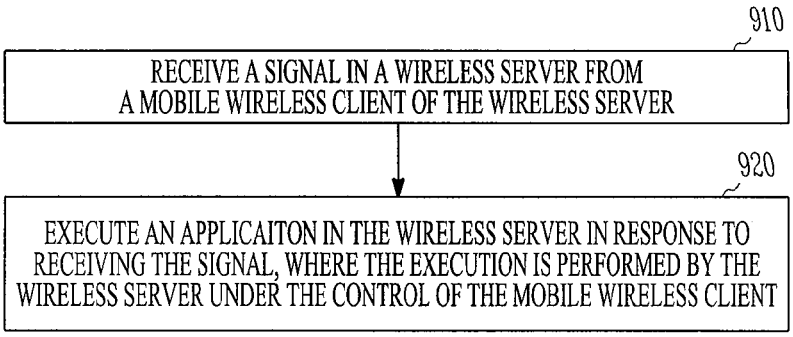

FIG. 8B

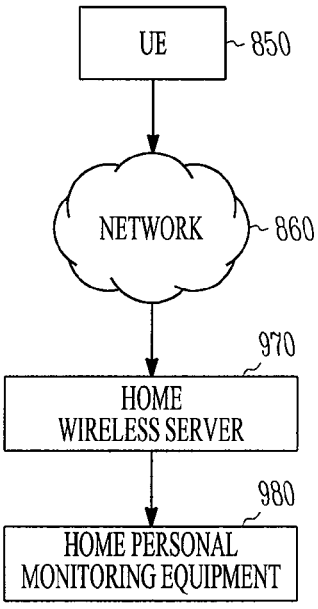

FIG. 9

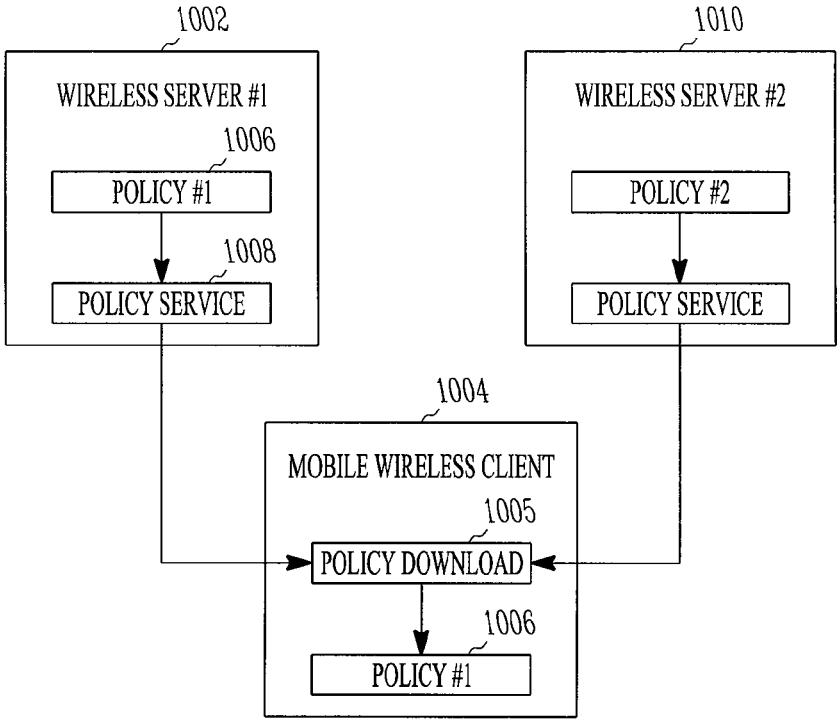
1002
WIRELESS SERVER #1
1006
POLICY #1
1008
POLICY SERVICE
1010
WIRELESS SERVER #2
POLICY #2
POLICY SERVICE
1004
MOBILE WIRELESS CLIENT
1005
POLICY DOWNLOAD
1006
POLICY #1

FIG. 10A

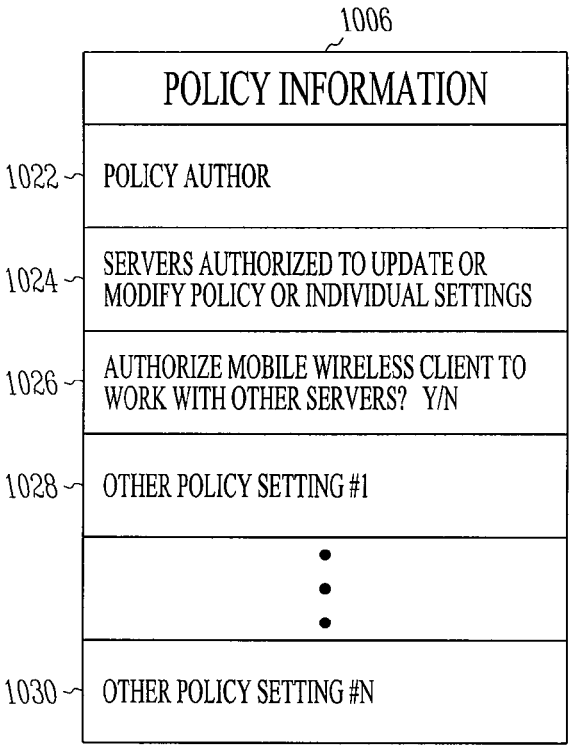
1006
POLICY INFORMATION
1022
POLICY AUTHOR
1024
SERVERS AUTHORIZED TO UPDATE OR MODIFY POLICY OR INDIVIDUAL SETTINGS
1026
AUTHORIZE MOBILE WIRELESS CLIENT TO WORK WITH OTHER SERVERS? Y/N
1028
OTHER POLICY SETTING #1
1030
OTHER POLICY SETTING #N

FIG. 10B

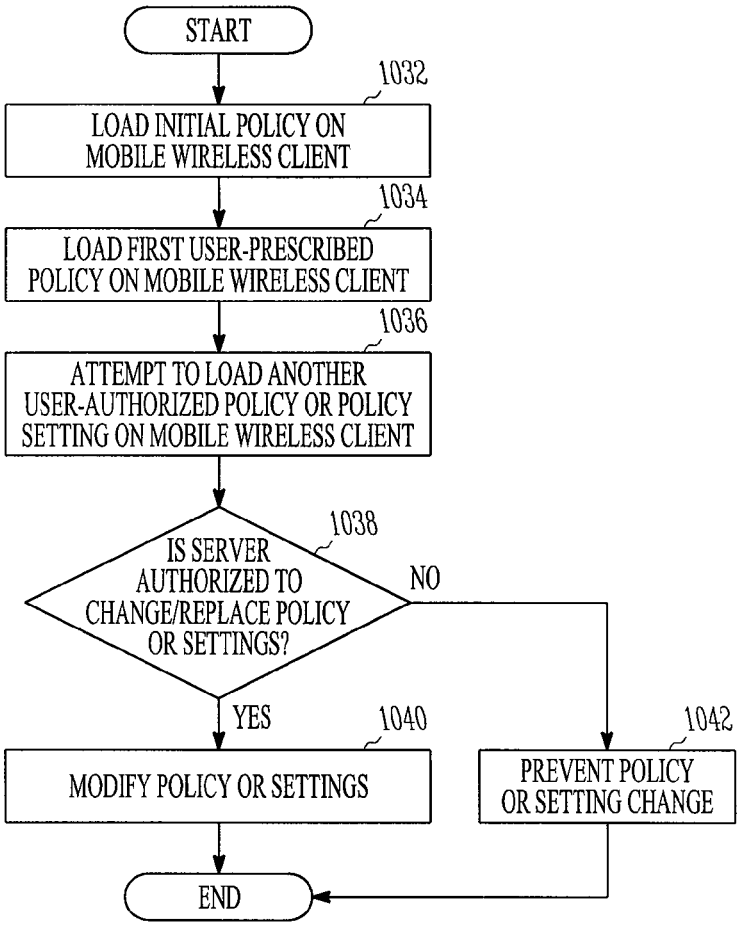
START
1032
LOAD INITIAL POLICY ON MOBILE WIRELESS CLIENT
1034
LOAD FIRST USER-PRESCRIBED POLICY ON MOBILE WIRELESS CLIENT
1036
ATTEMPT TO LOAD ANOTHER USER-AUTHORIZED POLICY OR POLICY SETTING ON MOBILE WIRELESS CLIENT
1038
IS SERVER AUTHORIZED TO CHANGE/REPLACE POLICY OR SETTINGS?
NO
YES
1040
MODIFY POLICY OR SETTINGS
1042
PREVENT POLICY OR SETTING CHANGE
END

FIG. 10C

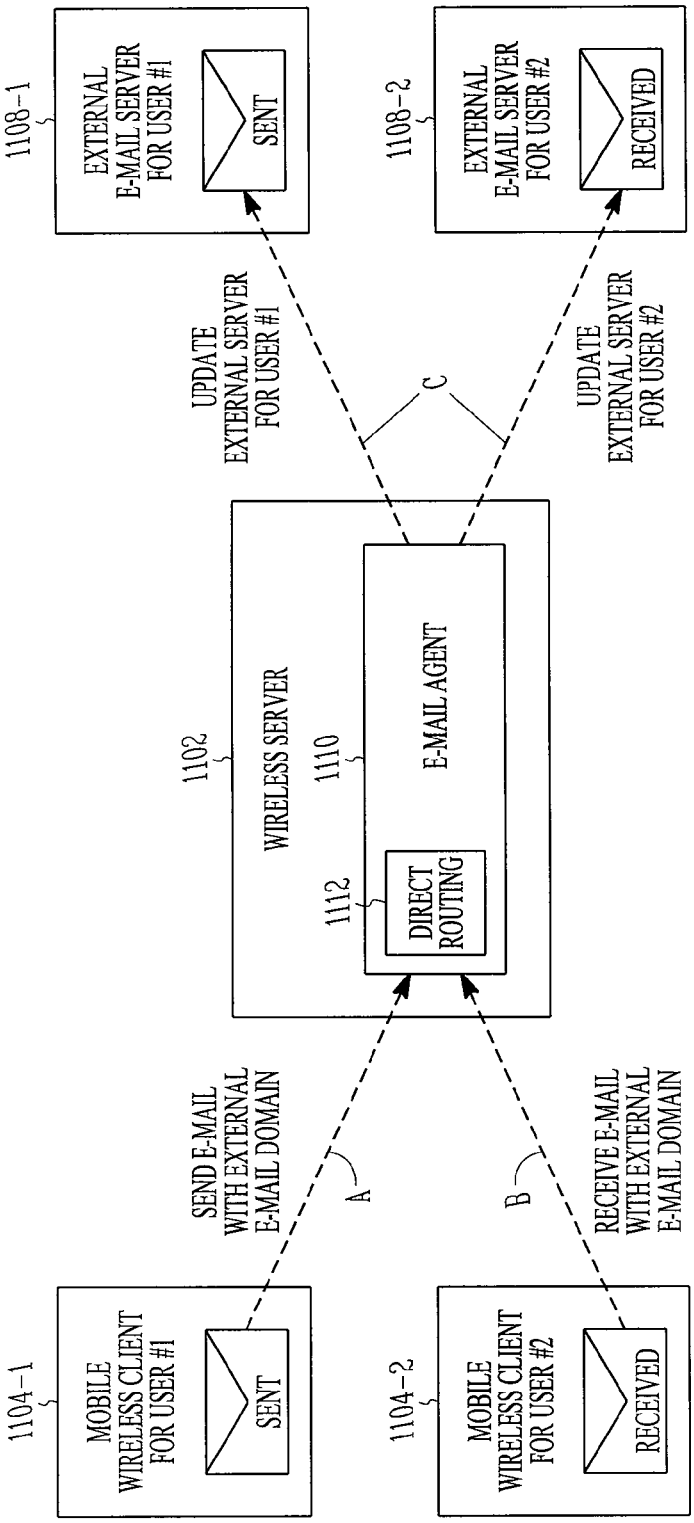
1108-1
EXTERNAL E-MAIL SERVER FOR USER #1
SENT
1108-2
EXTERNAL E-MAIL SERVER FOR USER #2
RECEIVED
UPDATE EXTERNAL SERVER FOR USER #1
C
UPDATE EXTERNAL SERVER FOR USER #2
1102
WIRELESS SERVER
1110
E-MAIL AGENT
1112
DIRECT ROUTING
SEND E-MAIL WITH EXTERNAL E-MAIL DOMAIN
A
B
RECEIVE E-MAIL WITH EXTERNAL E-MAIL DOMAIN
1104-1
MOBILE WIRELESS CLIENT FOR USER #1
SENT
1104-2
MOBILE WIRELESS CLIENT FOR USER #2
RECEIVED

FIG. 11A

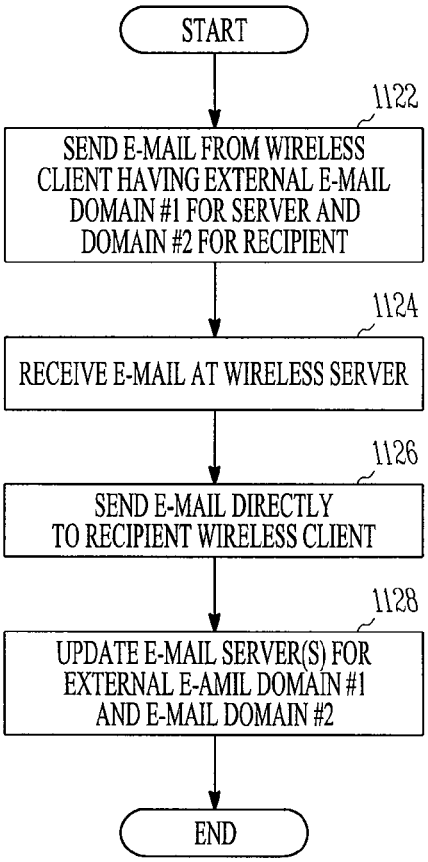
START
1122
SEND E-MAIL FROM WIRELESS CLIENT HAVING EXTERNAL E-MAIL DOMAIN #1 FOR SERVER AND DOMAIN #2 FOR RECIPIENT
1124
RECEIVE E-MAIL AT WIRELESS SERVER
1126
SEND E-MAIL DIRECTLY TO RECIPIENT WIRELESS CLIENT
1128
UPDATE E-MAIL SERVER(S) FOR EXTERNAL E-AMIL DOMAIN #1 AND E-MAIL DOMAIN #2
END

FIG. 11B

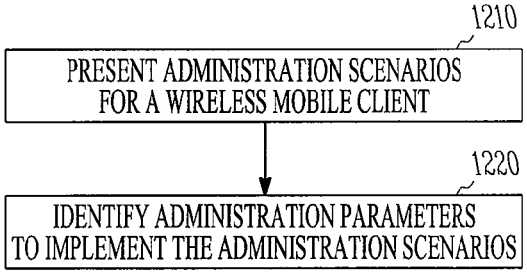
1210
PRESENT ADMINISTRATION SCENARIOS FOR A WIRELESS MOBILE CLIENT
1220
IDENTIFY ADMINISTRATION PARAMETERS TO IMPLEMENT THE ADMINISTRATION SCENARIOS

FIG. 12

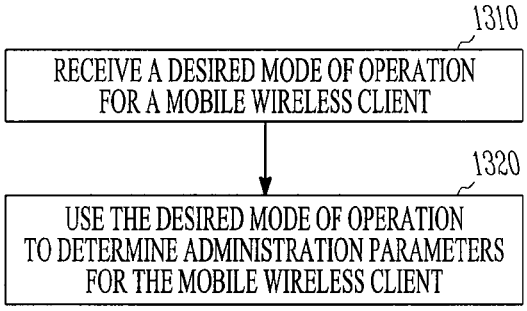
1310
RECEIVE A DESIRED MODE OF OPERATION FOR A MOBILE WIRELESS CLIENT
1320
USE THE DESIRED MODE OF OPERATION TO DETERMINE ADMINISTRATION PARAMETERS FOR THE MOBILE WIRELESS CLIENT

FIG. 13

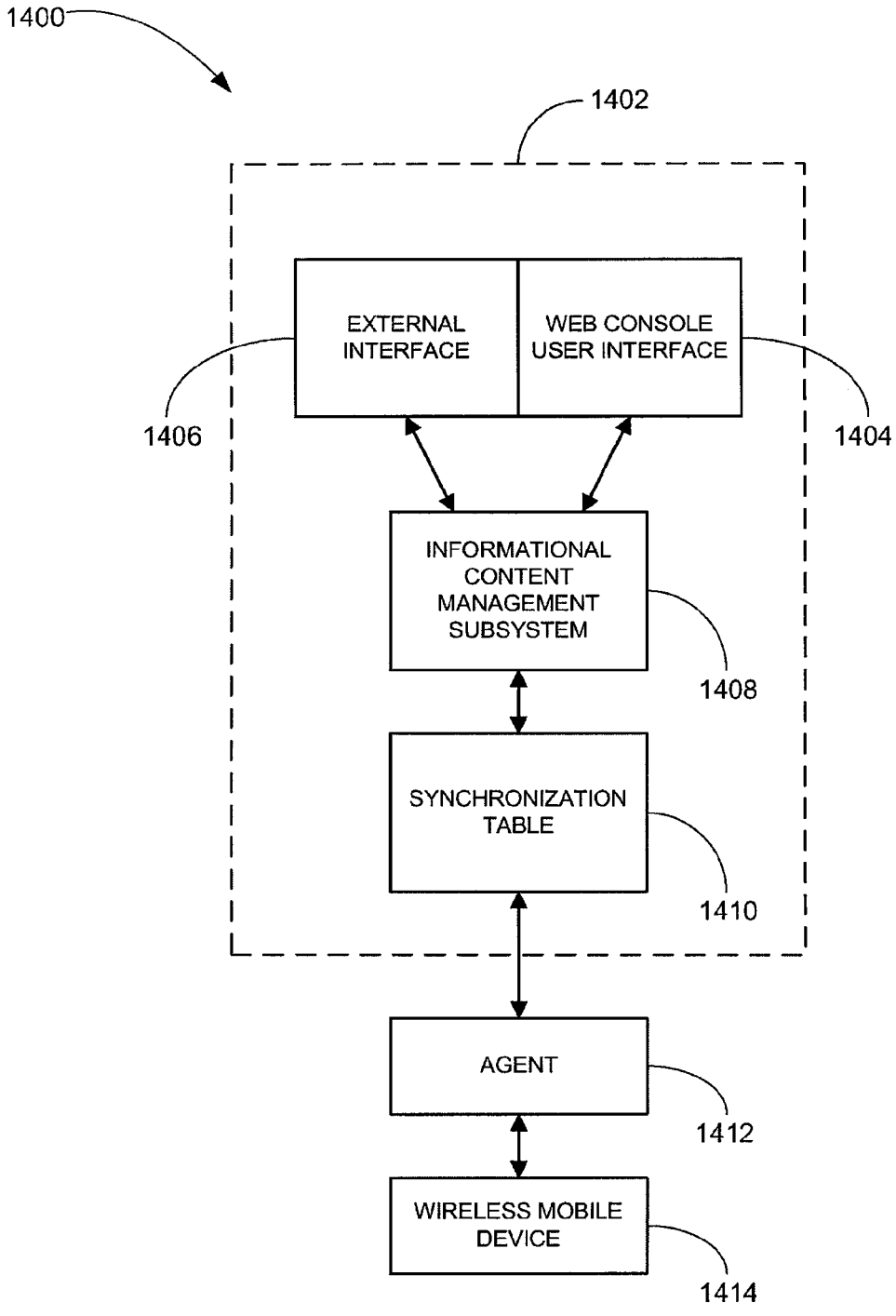
1400
1402
EXTERNAL INTERFACE
WEB CONSOLE USER INTERFACE
1406
1404
INFORMATIONAL CONTENT MANAGEMENT SUBSYSTEM
1408
SYNCHRONIZATION TABLE
1410
AGENT
1412
WIRELESS MOBILE DEVICE
1414

FIG. 14

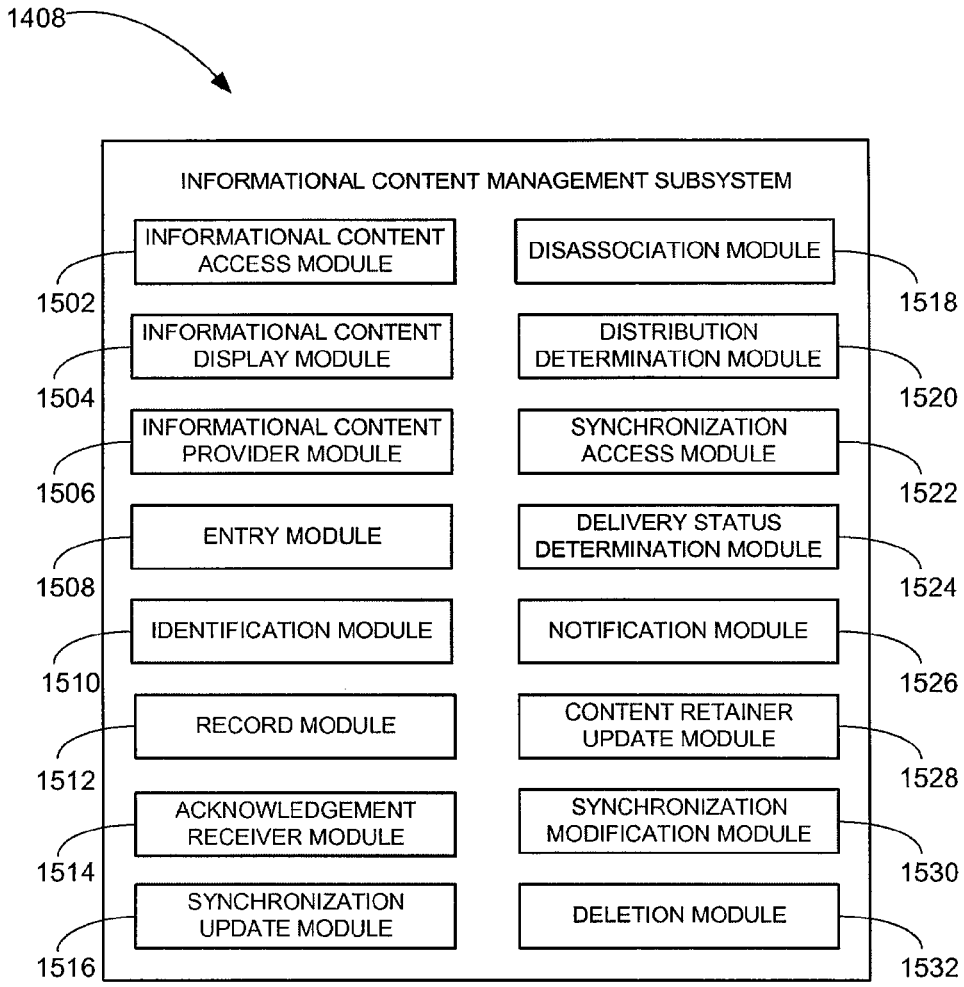
1408
INFORMATIONAL CONTENT MANAGEMENT SUBSYSTEM
INFORMATIONAL CONTENT ACCESS MODULE
1502
INFORMATIONAL CONTENT DISPLAY MODULE
1504
INFORMATIONAL CONTENT PROVIDER MODULE
1506
ENTRY MODULE
1508
IDENTIFICATION MODULE
1510
RECORD MODULE
1512
ACKNOWLEDGEMENT RECEIVER MODULE
1514
SYNCHRONIZATION UPDATE MODULE
1516
DISASSOCIATION MODULE
1518
DISTRIBUTION DETERMINATION MODULE
1520
SYNCHRONIZATION ACCESS MODULE
1522
DELIVERY STATUS DETERMINATION MODULE
1524
NOTIFICATION MODULE
1526
CONTENT RETAINER UPDATE MODULE
1528
SYNCHRONIZATION MODIFICATION MODULE
1530
DELETION MODULE
1532

FIG. 15

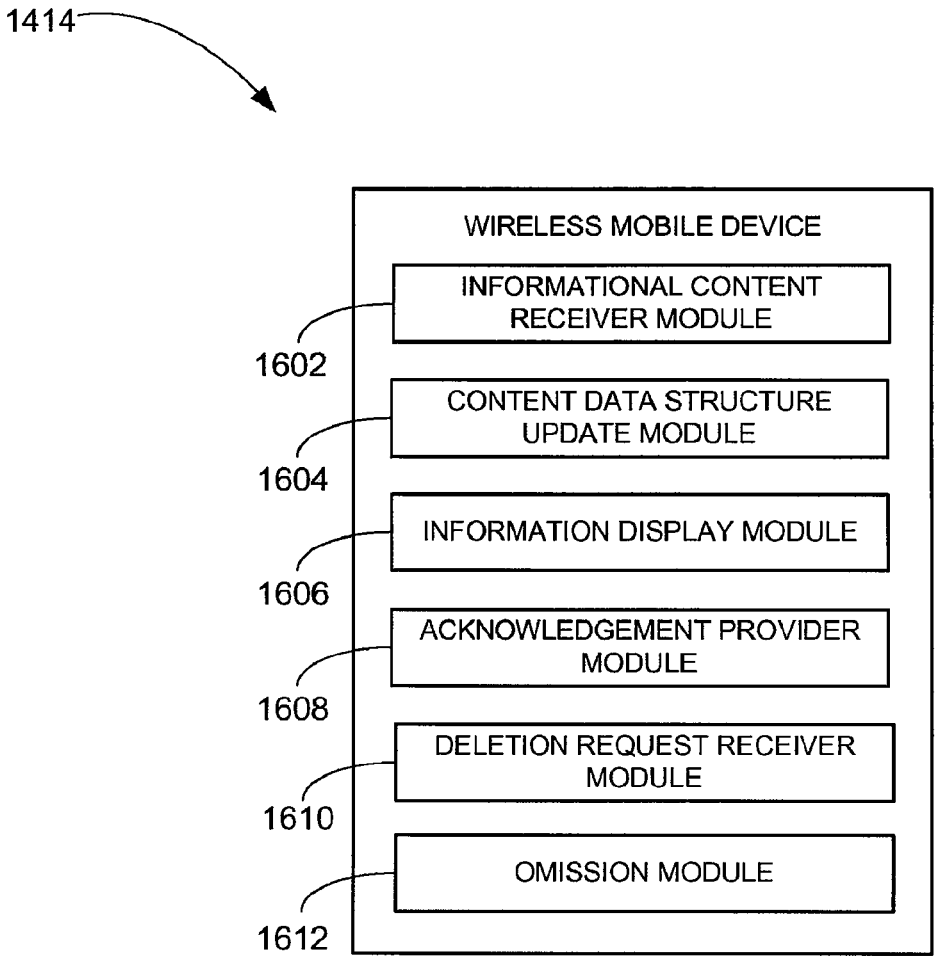
1414
WIRELESS MOBILE DEVICE
INFORMATIONAL CONTENT RECEIVER MODULE
1602
CONTENT DATA STRUCTURE UPDATE MODULE
1604
INFORMATION DISPLAY MODULE
1606
ACKNOWLEDGEMENT PROVIDER MODULE
1608
DELETION REQUEST RECEIVER MODULE
1610
OMISSION MODULE
1612

FIG. 16

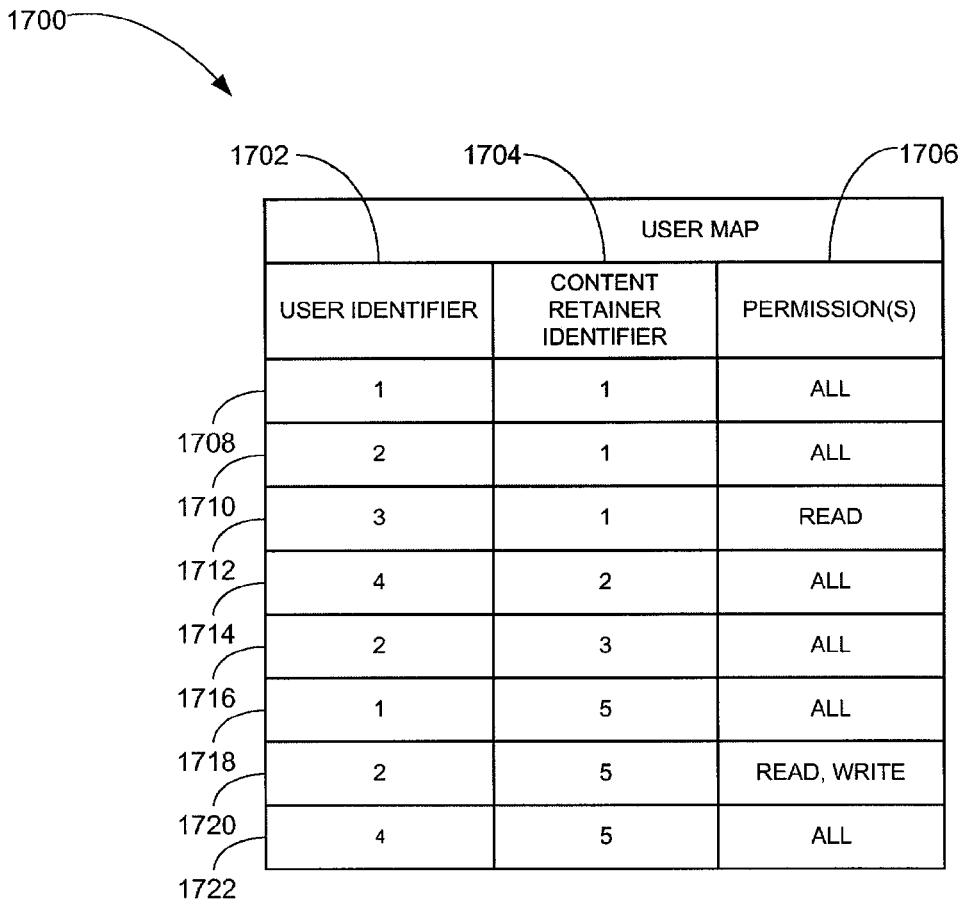
1700
1702
1704
1706
USER MAP
USER IDENTIFIER
CONTENT RETAINER IDENTIFIER
PERMISSION(S)
1708
1710
1712
1714
1716
1718
1720
1722
1 1 ALL
2 1 ALL
3 1 READ
4 2 ALL
2 3 ALL
1 5 ALL
2 5 READ, WRITE
4 5 ALL

FIG. 17

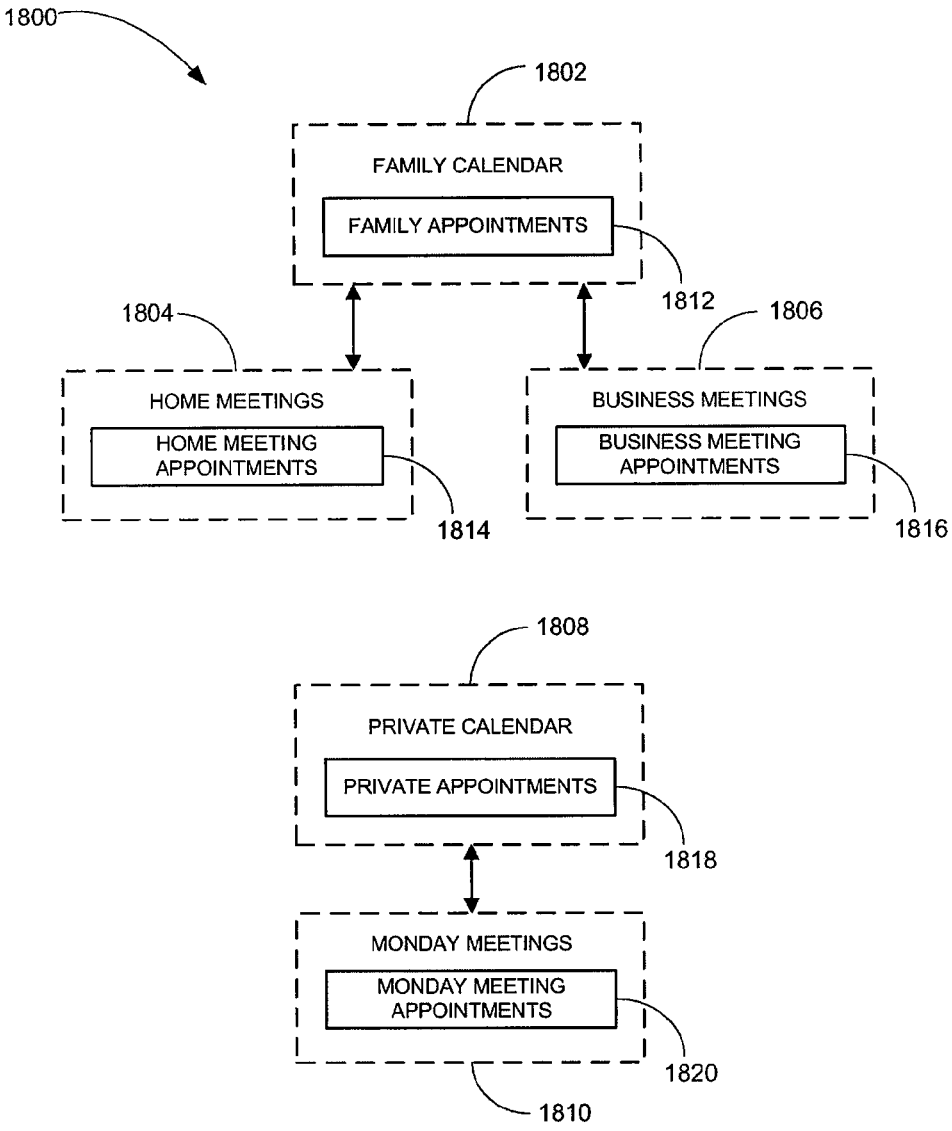
1800
1802
FAMILY CALENDAR
FAMILY APPOINTMENTS
1812
1804
1806
HOME MEETINGS
HOME MEETING APPOINTMENTS
1814
BUSINESS MEETINGS
BUSINESS MEETING APPOINTMENTS
1816
1808
PRIVATE CALENDAR
PRIVATE APPOINTMENTS
1818
MONDAY MEETINGS
MONDAY MEETING APPOINTMENTS
1820
1810

FIG. 18

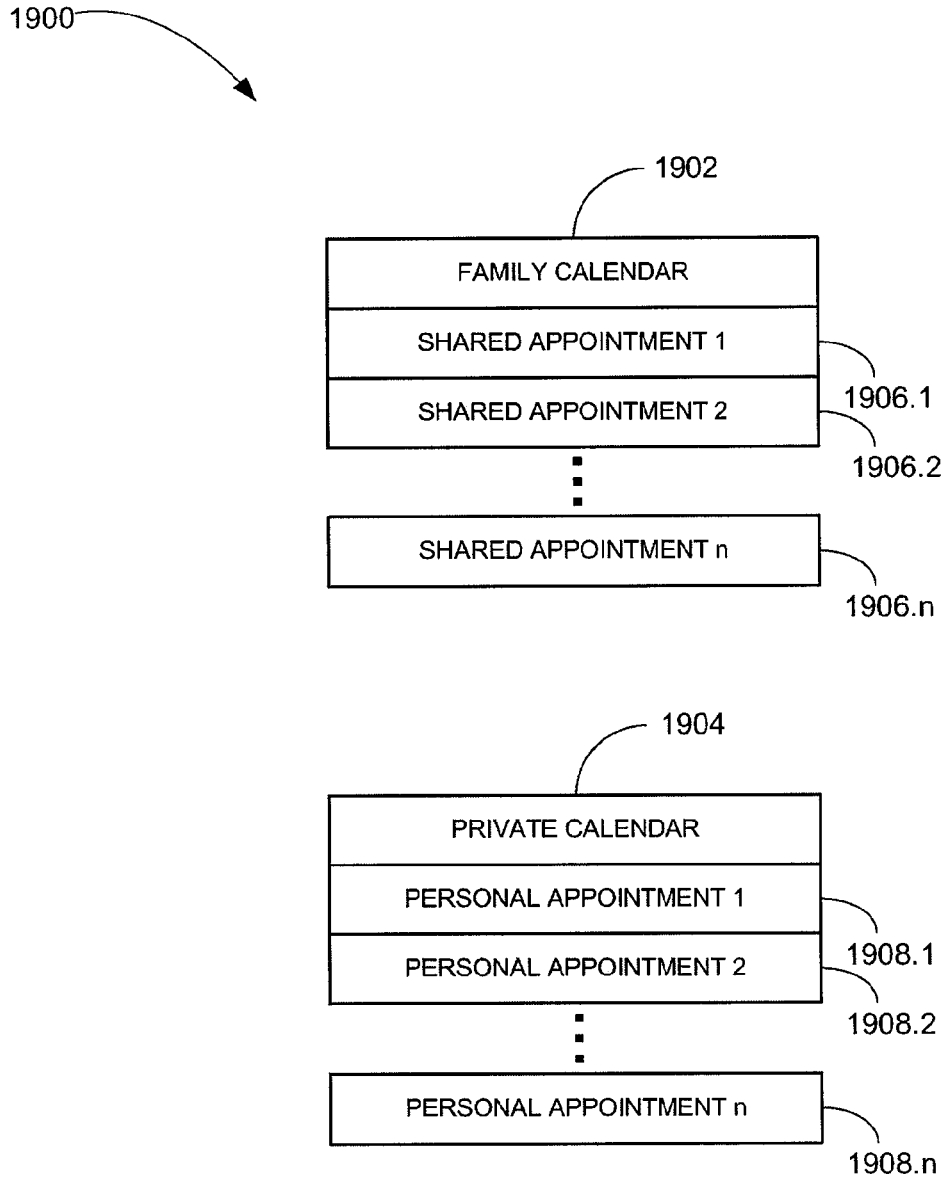
1900
1902
FAMILY CALENDAR
SHARED APPOINTMENT 1
SHARED APPOINTMENT 2
1906.1
1906.2
SHARED APPOINTMENT n
1906.n
1904
PRIVATE CALENDAR
PERSONAL APPOINTMENT 1
PERSONAL APPOINTMENT 2
1908.1
1908.2
PERSONAL APPOINTMENT n
1908.n

FIG. 19

APPOINTMENT	
ENTRY IDENTIFIER	1
DATE	6/9/2007
SUBJECT	BIRTHDAY
START TIME	11:30
DURATION	2:00
TIME ZONE	C.S.T.
REMINDER TIME	10:00
EVENT TITLE	EVAN'S BIRTHDAY PARTY
EVENT BODY	COME TO THE BASH FOR EVAN'S 2ND!
EVENT LOCATION	LONGVIEW FARM PARK
CONTENT RETAINER IDENTIFIER	2
OWNER IDENTIFIER	2
SHARED	SHARED

2002
2004
2006
2008
2010
2012
2014
2016
2018
2020
2022
2024
2026

FIG. 20

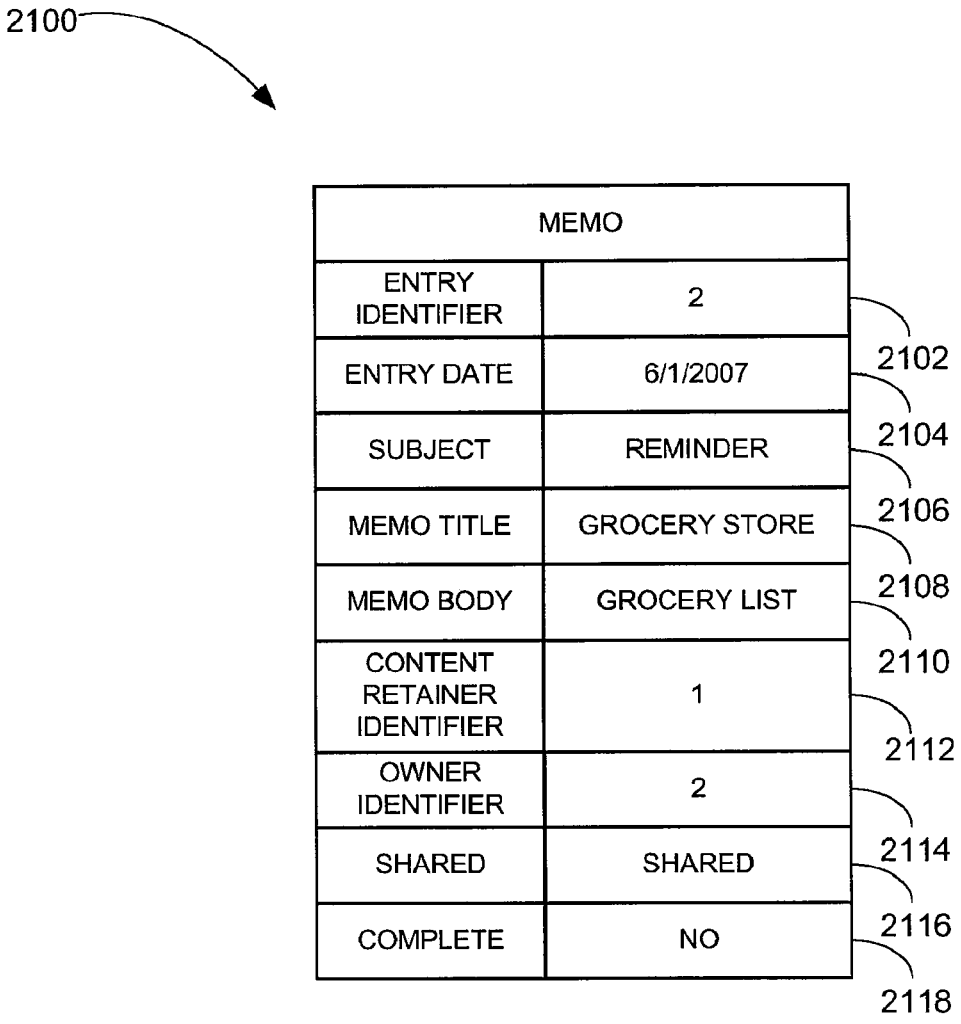
2100
MEMO
ENTRY IDENTIFIER
2
ENTRY DATE
6/1/2007
SUBJECT
REMINDER
MEMO TITLE
GROCERY STORE
MEMO BODY
GROCERY LIST
CONTENT RETAINER IDENTIFIER
1
OWNER IDENTIFIER
2
SHARED
SHARED
COMPLETE
NO
2102
2104
2106
2108
2110
2112
2114
2116
2118

FIG. 21

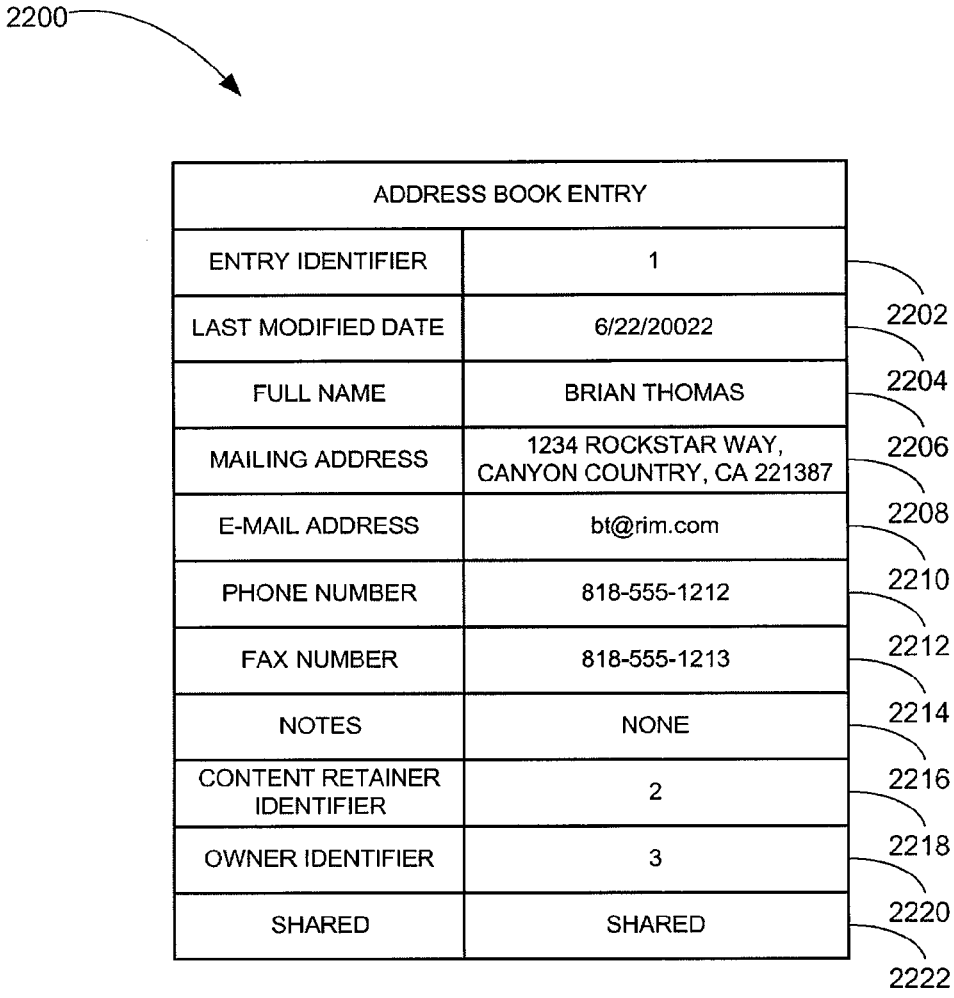
2200
ADDRESS BOOK ENTRY
ENTRY IDENTIFIER
1
LAST MODIFIED DATE
6/22/20022
FULL NAME
BRIAN THOMAS
MAILING ADDRESS
1234 ROCKSTAR WAY, CANYON COUNTRY, CA 221387
E-MAIL ADDRESS
bt@rim.com
PHONE NUMBER
818-555-1212
FAX NUMBER
818-555-1213
NOTES
NONE
CONTENT RETAINER IDENTIFIER
2
OWNER IDENTIFIER
3
SHARED
SHARED
2202
2204
2206
2208
2210
2212
2214
2216
2218
2220
2222

FIG. 22

RECURRENCE TABLE	
RECURRENCE IDENTIFIER	3
RECURRENCE INTERVAL	WEEKLY
RECURRENCE FREQUENCY	52
RECURRENCE UNTIL	12/31/2007
RECURRENCE MONTH	N/A
RECURRENCE WEEK START	01/01/07
RECURRENCE DAY OF WEEK	MONDAY
RECURRENCE DAY OF MONTH	N/A

2304 2306 2308 2310 2312 2314 2316 2318

2320 2322 2324 2326 2328 2330 2332 2334

FIG. 23

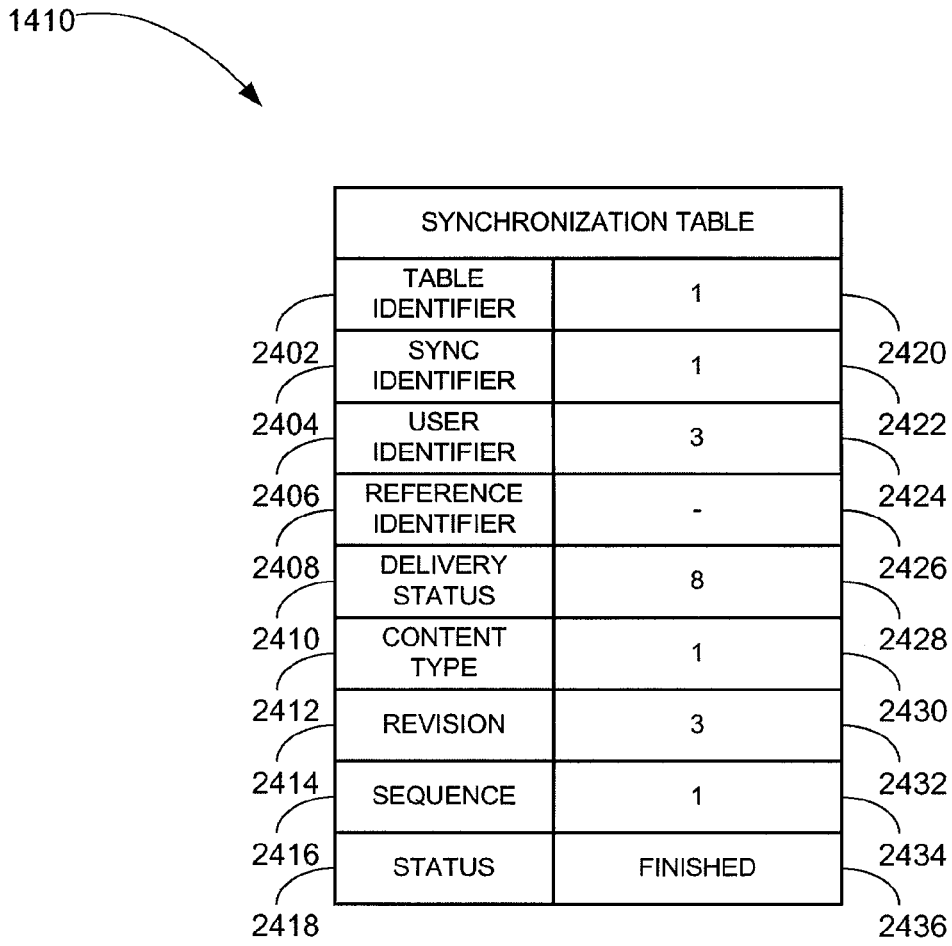
1410
SYNCHRONIZATION TABLE
TABLE IDENTIFIER
1
SYNC IDENTIFIER
1
USER IDENTIFIER
3
REFERENCE IDENTIFIER
-
DELIVERY STATUS
8
CONTENT TYPE
1
REVISION
3
SEQUENCE
1
STATUS
FINISHED
2402
2404
2406
2408
2410
2412
2414
2416
2418
2420
2422
2424
2426
2428
2430
2432
2434
2436

FIG. 24

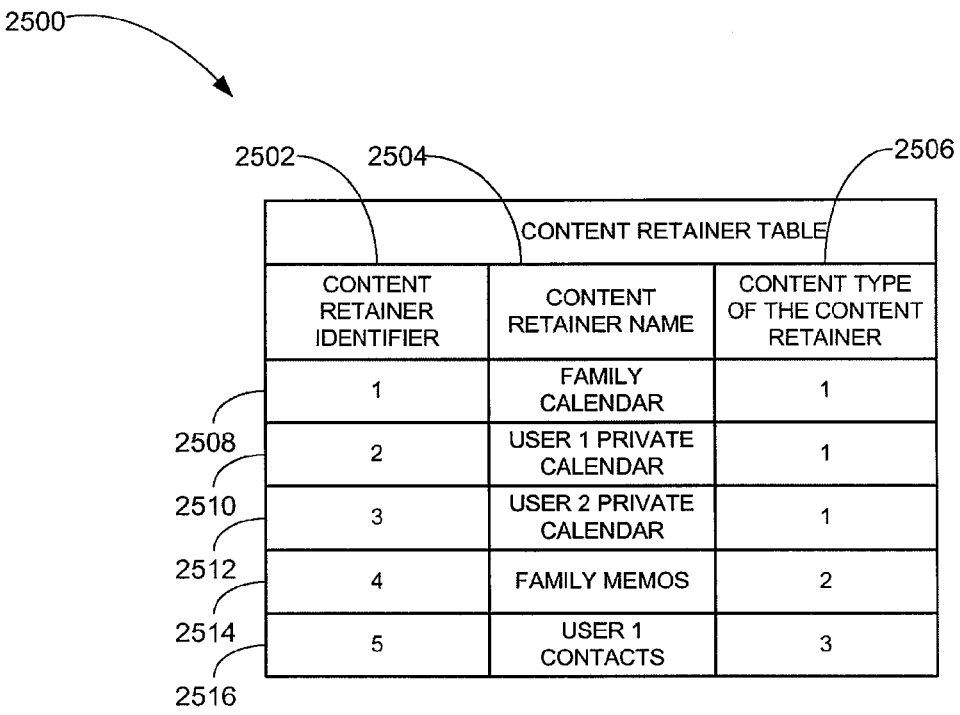
2500
2502
2504
2506
CONTENT RETAINER TABLE
CONTENT RETAINER IDENTIFIER
CONTENT RETAINER NAME
CONTENT TYPE OF THE CONTENT RETAINER
1
FAMILY CALENDAR
1
2508
2
USER 1 PRIVATE CALENDAR
1
2510
3
USER 2 PRIVATE CALENDAR
1
2512
4
FAMILY MEMOS
2
2514
5
USER 1 CONTACTS
3
2516

FIG. 25

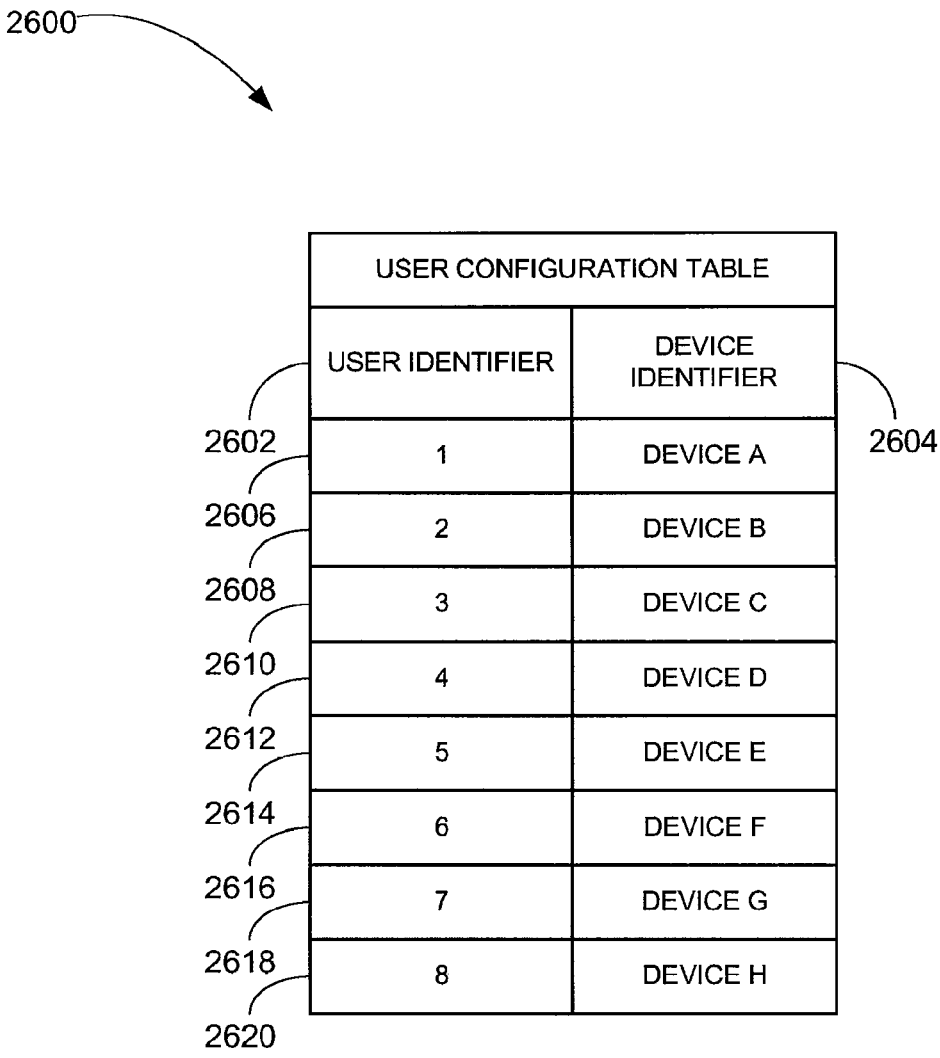
2600
USER CONFIGURATION TABLE
USER IDENTIFIER
DEVICE IDENTIFIER
2602
2604
1
DEVICE A
2606
2
DEVICE B
2608
3
DEVICE C
2610
4
DEVICE D
2612
5
DEVICE E
2614
6
DEVICE F
2616
7
DEVICE G
2618
8
DEVICE H
2620

FIG. 26

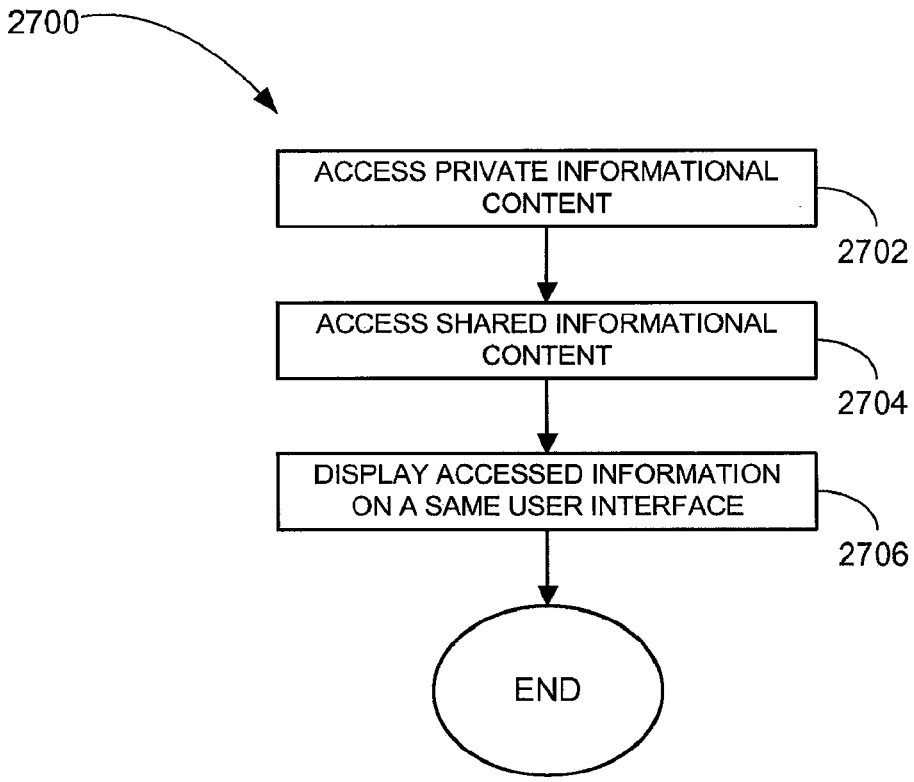
2700
ACCESS PRIVATE INFORMATIONAL CONTENT
2702
ACCESS SHARED INFORMATIONAL CONTENT
2704
DISPLAY ACCESSED INFORMATION ON A SAME USER INTERFACE
2706
END

FIG. 27

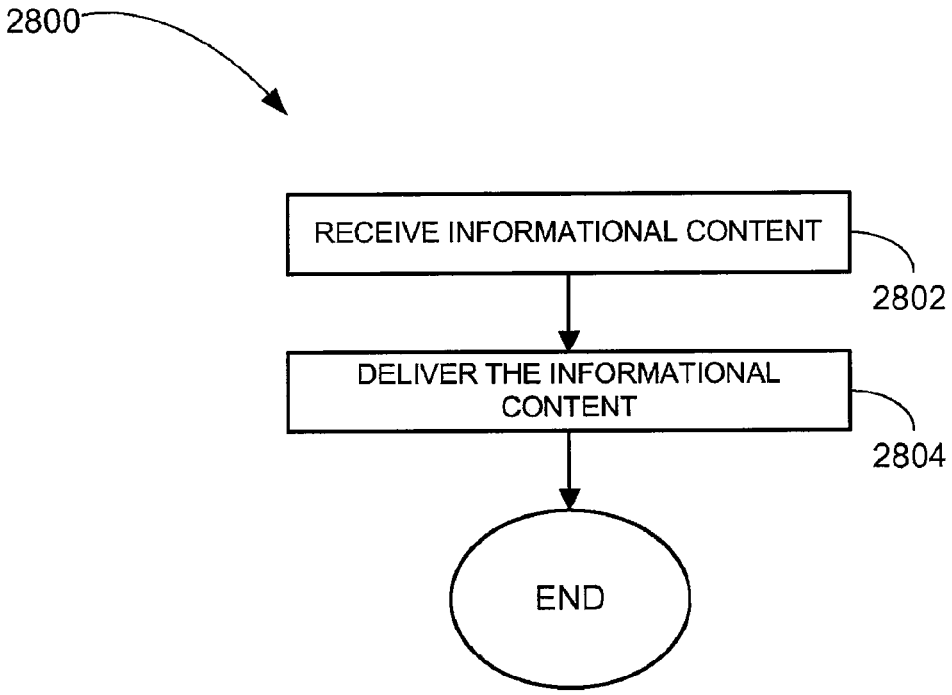
2800
RECEIVE INFORMATIONAL CONTENT
2802
DELIVER THE INFORMATIONAL CONTENT
2804
END

FIG. 28

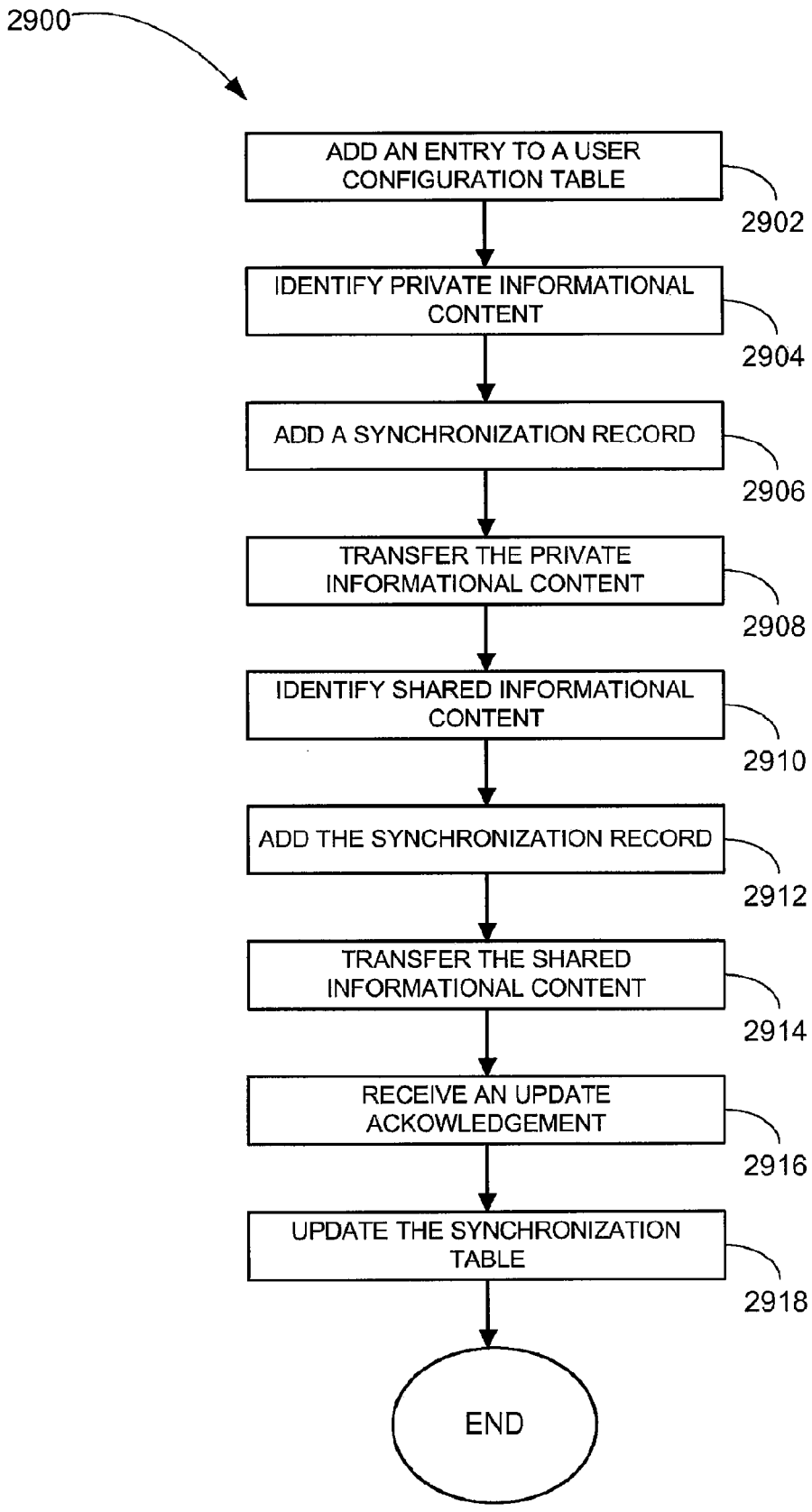
2900
ADD AN ENTRY TO A USER CONFIGURATION TABLE
2902
IDENTIFY PRIVATE INFORMATIONAL CONTENT
2904
ADD A SYNCHRONIZATION RECORD
2906
TRANSFER THE PRIVATE INFORMATIONAL CONTENT
2908
IDENTIFY SHARED INFORMATIONAL CONTENT
2910
ADD THE SYNCHRONIZATION RECORD
2912
TRANSFER THE SHARED INFORMATIONAL CONTENT
2914
RECEIVE AN UPDATE ACKOWLEDGEMENT
2916
UPDATE THE SYNCHRONIZATION TABLE
2918
END

FIG. 29

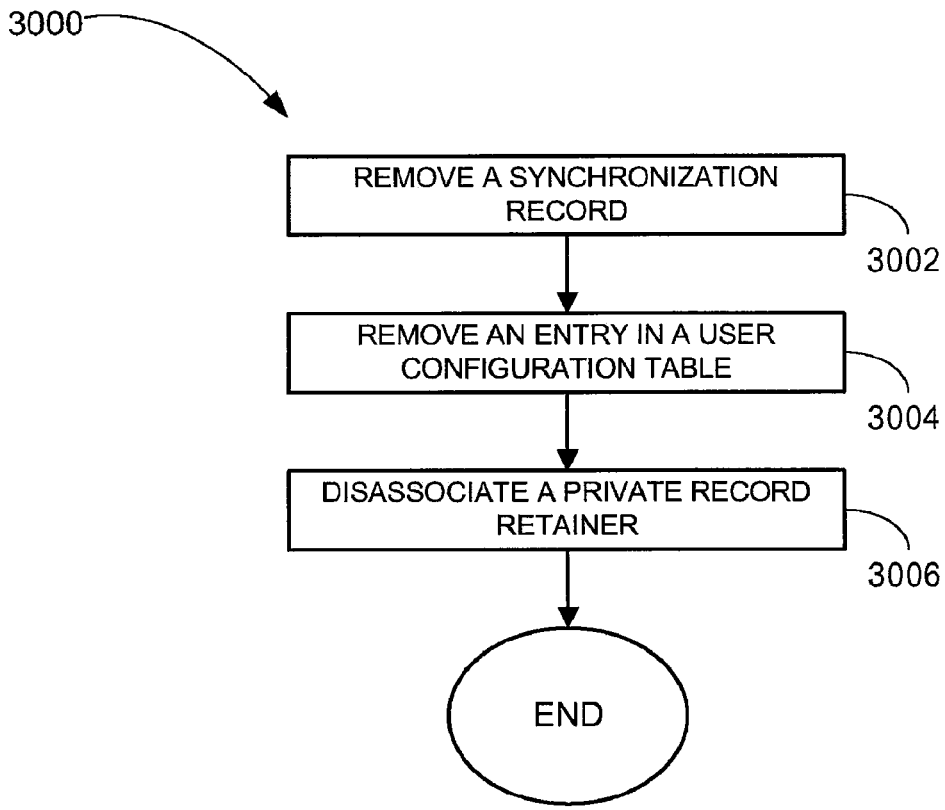
3000
REMOVE A SYNCHRONIZATION RECORD
3002
REMOVE AN ENTRY IN A USER CONFIGURATION TABLE
3004
DISASSOCIATE A PRIVATE RECORD RETAINER
3006
END

FIG. 30

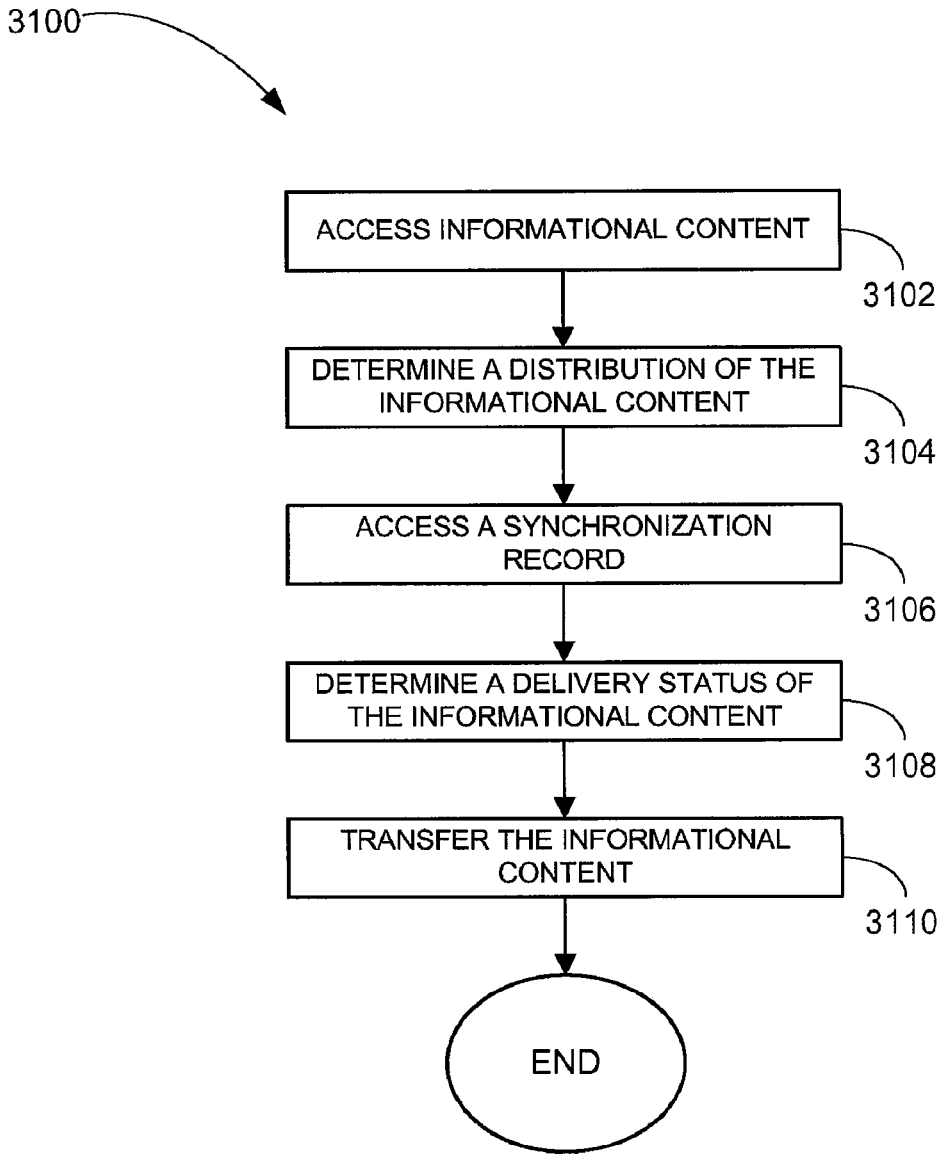
3100
ACCESS INFORMATIONAL CONTENT
3102
DETERMINE A DISTRIBUTION OF THE INFORMATIONAL CONTENT
3104
ACCESS A SYNCHRONIZATION RECORD
3106
DETERMINE A DELIVERY STATUS OF THE INFORMATIONAL CONTENT
3108
TRANSFER THE INFORMATIONAL CONTENT
3110
END

FIG. 31

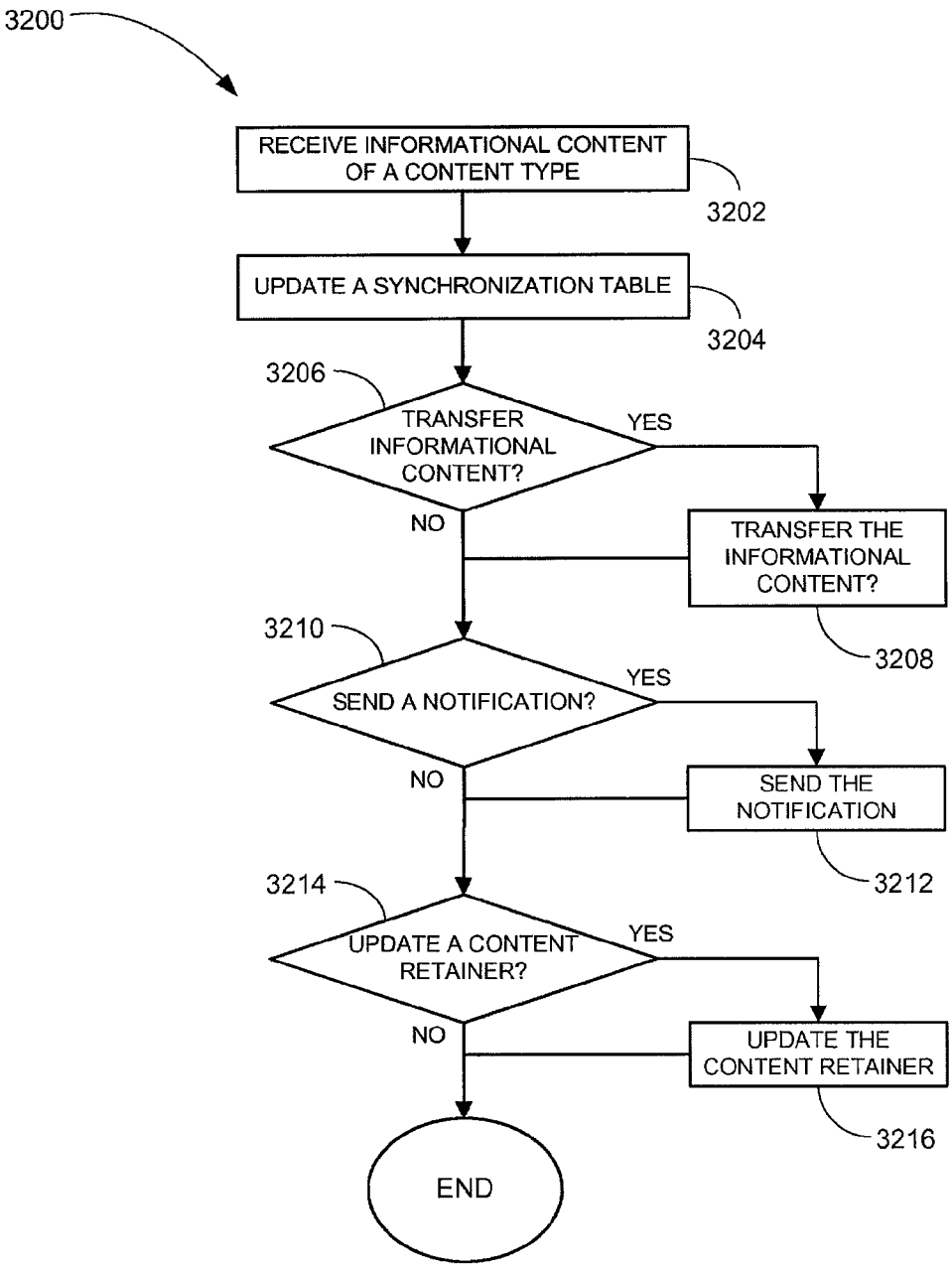
3200
RECEIVE INFORMATIONAL CONTENT OF A CONTENT TYPE
3202
UPDATE A SYNCHRONIZATION TABLE
3204
3206
TRANSFER INFORMATIONAL CONTENT?
YES
NO
TRANSFER THE INFORMATIONAL CONTENT?
3208
3210
SEND A NOTIFICATION?
YES
NO
SEND THE NOTIFICATION
3212
3214
UPDATE A CONTENT RETAINER?
YES
NO
UPDATE THE CONTENT RETAINER
3216
END

FIG. 32

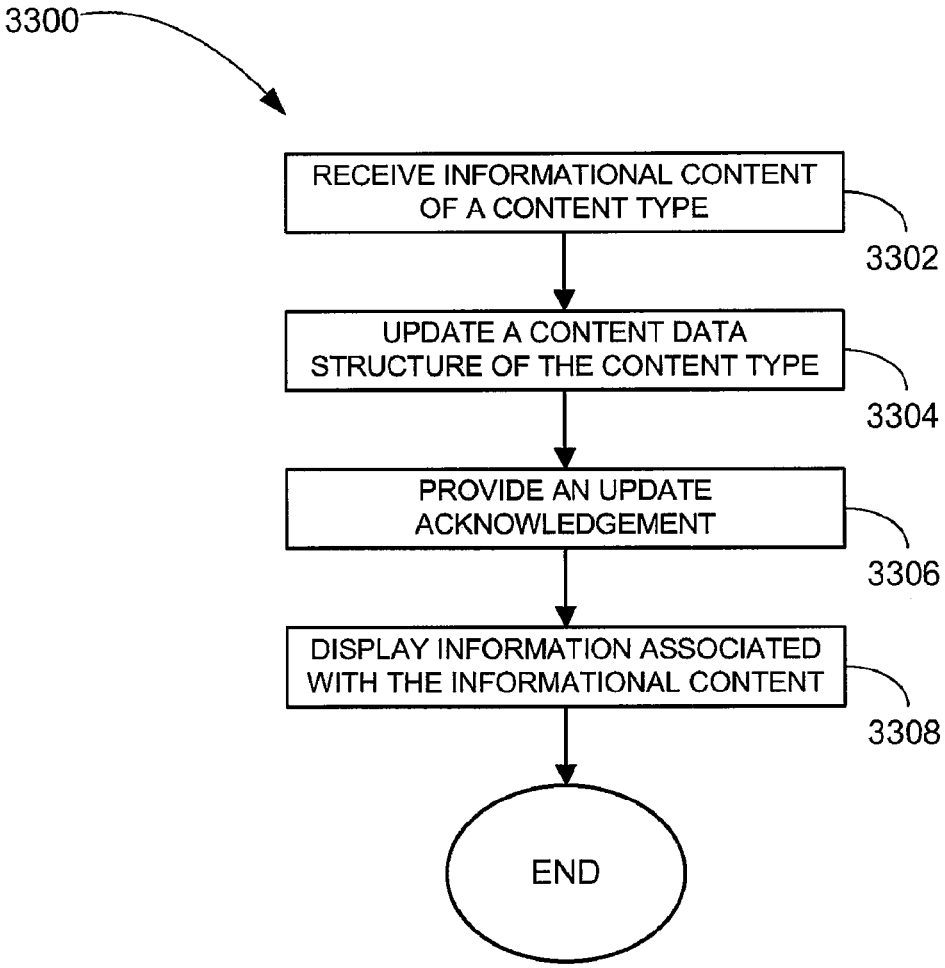
3300
RECEIVE INFORMATIONAL CONTENT OF A CONTENT TYPE
3302
UPDATE A CONTENT DATA STRUCTURE OF THE CONTENT TYPE
3304
PROVIDE AN UPDATE ACKNOWLEDGEMENT
3306
DISPLAY INFORMATION ASSOCIATED WITH THE INFORMATIONAL CONTENT
3308
END

FIG. 33

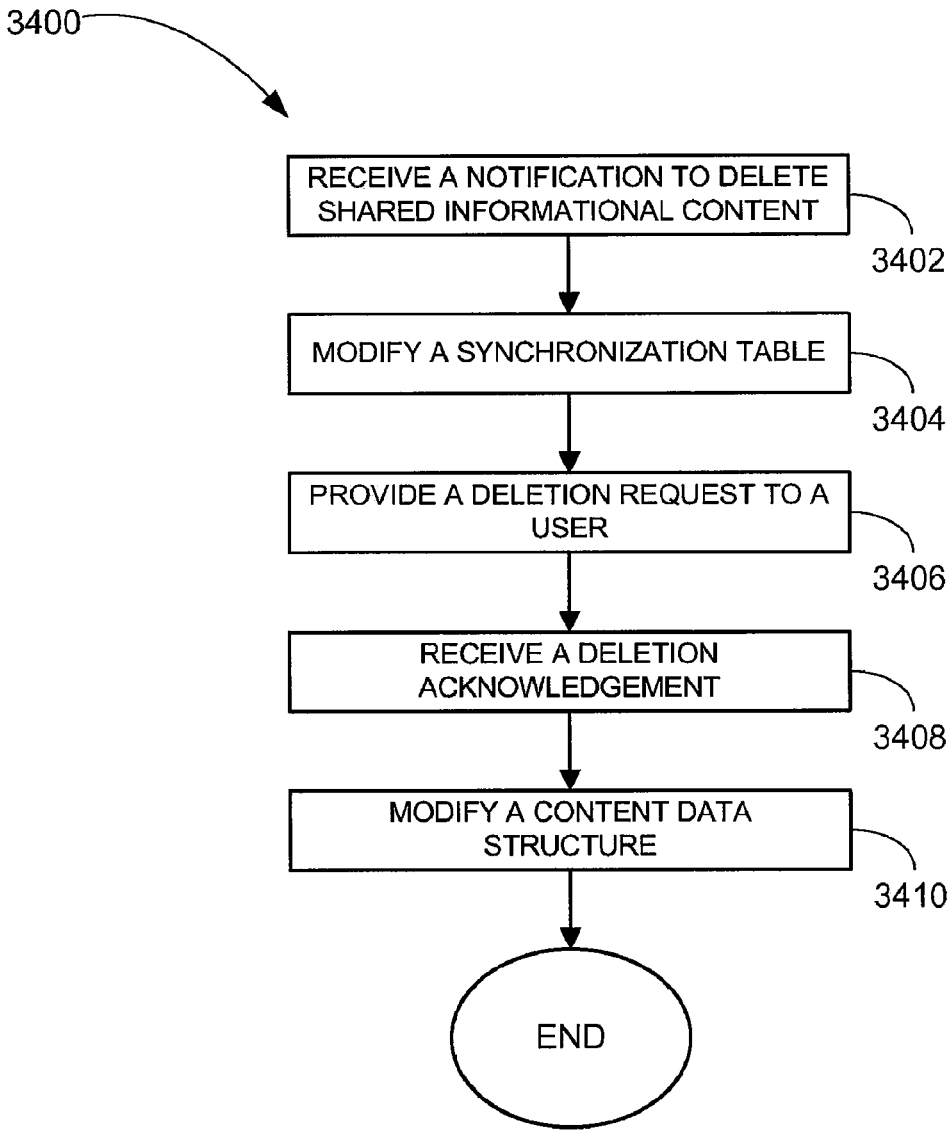
3400
RECEIVE A NOTIFICATION TO DELETE SHARED INFORMATIONAL CONTENT
3402
MODIFY A SYNCHRONIZATION TABLE
3404
PROVIDE A DELETION REQUEST TO A USER
3406
RECEIVE A DELETION ACKNOWLEDGEMENT
3408
MODIFY A CONTENT DATA STRUCTURE
3410
END

FIG. 34

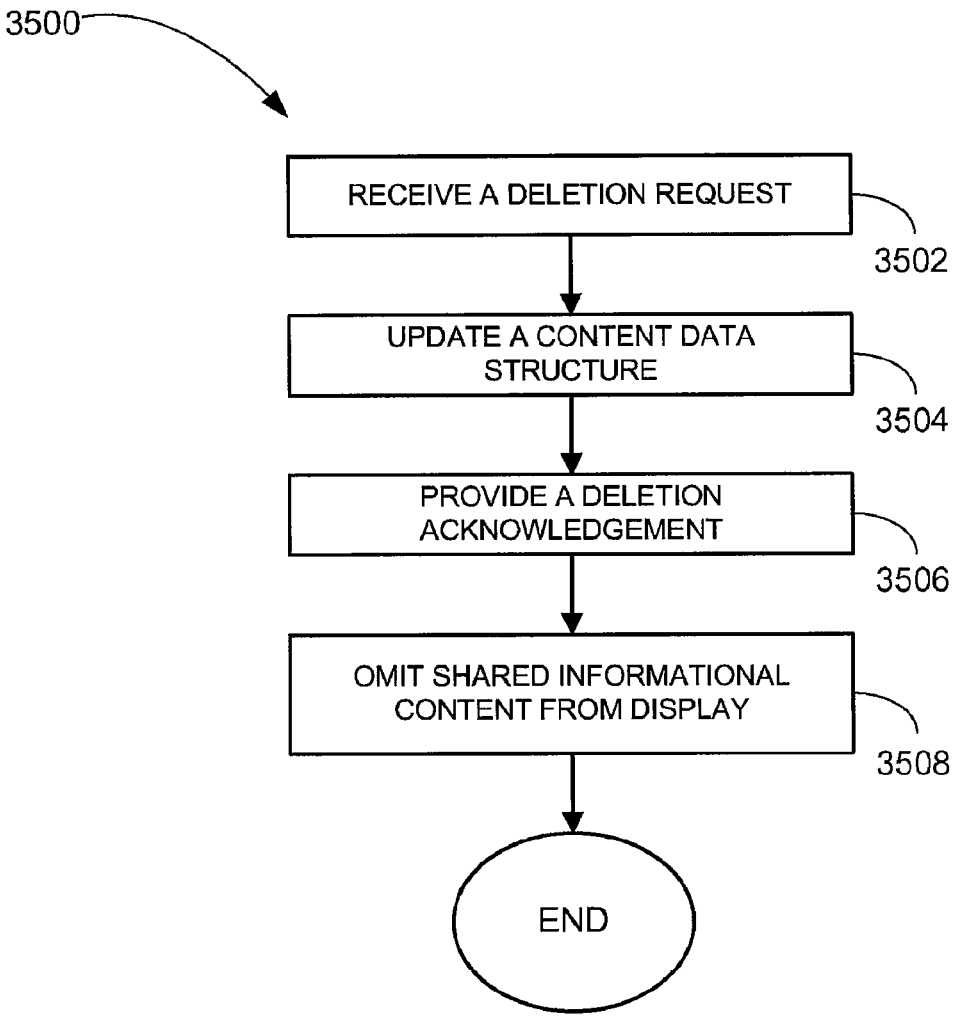
3500
RECEIVE A DELETION REQUEST
3502
UPDATE A CONTENT DATA STRUCTURE
3504
PROVIDE A DELETION ACKNOWLEDGEMENT
3506
OMIT SHARED INFORMATIONAL CONTENT FROM DISPLAY
3508
END

FIG. 35

ADMINISTRATION OF POLICIES FOR WIRELESS DEVICES IN A WIRELESS COMMUNICATION SYSTEM

RELATED APPLICATION(S)

This application claims the benefit of priority under 35 U.S.C. 119(e) to U.S. Provisional Patent Application Ser. No. 60/952,544, filed Jul. 27, 2007 and to U.S. Provisional Patent Application Ser. No. 60/952,552, filed Jul. 28, 2007, which are incorporated herein by reference.

BACKGROUND

Access to information is an important factor in the functioning of modern society. Improvements to the flow of information enhance one's ability to interact with others and respond to changing needs.

BRIEF DESCRIPTION OF THE DRAWINGS

Embodiments of the invention are illustrated by way of example and not limitation in the figures of the accompanying drawings in which:

FIG. **1** illustrates features of an embodiment of an architecture for operation of wireless entities to transfer informational content using wireless infrastructure.

FIG. **2**A illustrates features of an embodiment of an architecture for a wireless system including a wireless server.

FIG. **2**B depicts an embodiment of a wireless architecture in which a relationship between mobile wireless clients and multiple wireless servers is illustrated.

FIG. **3** illustrates features of an embodiment of a mobile wireless client associated with multiple wireless servers in a share group arrangement.

FIG. **4** shows features of an embodiment of a method to establish wireless server capabilities on an electronic system to provide a staging area of wireless communication on the electronic system.

FIG. **5** shows features of an embodiment of a method for synchronizing wireless entities based on a share basis.

FIG. **6** shows features of an embodiment of a method to browse a wireless server from a mobile wireless device.

FIG. **7** shows features of an embodiment of a method to select and provide content from a wireless server to a mobile wireless device based on commands from the mobile wireless device.

FIG. **8**A shows features of an embodiment of method including a mobile wireless device accessing and controlling an application executable on a wireless server.

FIG. **8**B shows features of an embodiment of method including a wireless server executing an application resident on the wireless server under the control of a set of commands from a mobile wireless client.

FIG. **9** shows features of an embodiment of an arrangement of a home-based wireless server coupled to home personal monitoring equipment with the home-based wireless server communicatively coupled to a mobile wireless client.

FIGS. **10**A, **10**B, and **10**C show embodiments of systems and methods for using a mobile wireless client with more than one wireless server.

FIGS. **11**A and **11**B show embodiments of systems and methods for routing e-mail messages with external domains directly between mobile wireless clients.

FIG. **12** shows an embodiment of a method of administering mobile wireless clients.

FIG. **13** shows an alternate embodiment of a method of administering mobile wireless clients.

FIG. **14** illustrates features of an embodiment of a wireless system that may be deployed in the architecture of FIG. **1** or FIG. **2**.

FIG. **15** illustrates features of an embodiment of an informational content management subsystem.

FIG. **16** illustrates features of an embodiment of a wireless mobile device.

FIG. **17** illustrates features of an embodiment of a user map.

FIG. **18** illustrates features of an embodiment of content retainers.

FIG. **19** illustrates features of an embodiment of content retainers.

FIG. **20** illustrates features of an embodiment of appointment data.

FIG. **21** illustrates features of an embodiment of memo data.

FIG. **22** illustrates features of an embodiment of an address book entry.

FIG. **23** illustrates features of an embodiment of a recurrence table.

FIG. **24** illustrates features of an embodiment of a synchronization table.

FIG. **25** illustrates features of an embodiment of a content retainer table.

FIG. **26** illustrates features of an embodiment of a user configuration table.

FIG. **27** shows features of an embodiment of a method to present informational content.

FIG. **28** shows features of an embodiment of a method to synchronize informational content.

FIG. **29** shows features of an embodiment of a method to add a user to a wireless server.

FIG. **30** shows features of an embodiment of a method to delete a user from a wireless server.

FIG. **31** shows features of an embodiment of a method to distribute informational content.

FIG. **32** shows features of an embodiment of a method to process informational content.

FIG. **33** shows features of an embodiment of a method to process informational content.

FIG. **34** shows features of an embodiment of a method to delete shared informational content.

FIG. **35** shows features of an embodiment of a method to delete shared informational content.

DETAILED DESCRIPTION

The following detailed description refers to the accompanying drawings that show, by way of illustration, details and embodiments in which the invention may be practiced. These embodiments are described in sufficient detail to enable those skilled in the art to practice embodiments of the present invention. Other embodiments may be utilized and structural, logical, and electrical changes may be made without departing from the inventive subject matter. The various embodiments disclosed herein are not necessarily mutually exclusive, as some embodiments can be combined with one or more other embodiments to form new embodiments. The following detailed description is, therefore, not to be taken in a limiting sense.

FIG. **1** illustrates an embodiment of an architecture for operation of wireless entities to transfer informational content using wireless infrastructure. The example architecture includes a group coordinator **105** that provides a variety of

services to a group **110** of mobile wireless devices. The mobile wireless devices may include, but are not limited to, mobile telephones, portable computers, personal digital assistants (PDAs), and other devices that may be conveniently carried by a user and provide wireless communication. Mobile telephones include wireless communication devices that have generally been referred to as cell phones. Mobile telephones may include a wide range of communication devices from portable phones with limited functionality beyond voice communication to portable phones capable of providing the functionality of a personal computer. A personal computer (PC) herein refers to computing devices having an operating system (OS) such that use of the personal computer may be conducted by individuals having little or no knowledge of the basics of the underlying hardware and software that operate the PC and whose operation may be conducted without individuals typically authoring computer programs to operate the computer. Portable computers may include portable personal computers (PC)s. An example of a portable PC is a laptop computer or notebook computer that typically has a display screen, keyboard, underlying hardware and software, and a display pointing device that are all integrated in a housing that can easily be carried by an individual. Some PDAs may be viewed as a type of portable computer.

Group coordinator **105** includes instrumentality to manage the operation of group **110** of mobile wireless devices under a common criterion or a common set of criteria. Group coordinator **105** controls dissemination of information among group **110**. In some instances, the information may be shared between one or more of the mobile wireless devices in group **110**. In some instances, the information may be shared to less than all the mobile wireless devices in group **110**. A privacy status may be used to maintain and regulate the privacy of the information relative to both members of group **110** and entities external to group **110**. The instrumentality can be realized in hardware implementations, software implementations, and combinations of hardware and software implementations. Some portions of the instrumentalities may be described in terms of algorithms and symbolic representations of operations on data bits within a machine memory. An algorithm is here, and generally, conceived to be a self-consistent sequence of steps leading to a desired result. The steps are those requiring physical manipulations of physical quantities. Usually, though not necessarily, these quantities take the form of electrical or magnetic signals capable of being stored, transferred, combined, compared, and otherwise manipulated. The instrumentality may operate to process, compute, calculate, determine, display, and/or conduct other activities correlated to processes of a machine such as a computer system, or similar electronic computing device, that manipulates and transforms data represented as physical (electronic) quantities within the computer system's registers and memories into other data similarly represented as physical quantities within the computer system memories or registers or other such information storage, transmission or display devices. The instrumentality may provide personalized capabilities, provide a pathway to other content, or combinations thereof. The instrumentality may use distributed applications, different numbers and types of software based components that couple two or more applications to enable data transfer between the applications, hardware to provide services from a number of different sources, and may be realized on a variety of platforms such as servers and content management systems. The instrumentality may include or provide access to subroutine code, code libraries, application program interfaces such as interpreters utilizing Java EE™, Simple Direct-Media Layer™ (SDL) and DirectX™, combinations thereof, or other such electronic based functionalities.

Group Coordinator **105** may access information sources **115** using interconnection communication facilities **120**. Information sources **115** may include a wide variety of sources that provide informational content in various formats. Information sources **115** may include informational content in an open format without restrictions on what entities may access the informational content. Information sources **115** may include informational content in an open format requiring registration by the entities to the informational content without further restrictions. Information sources **115** may include informational content accessible based on a subscription to the informational content. Information sources **115** may include informational content accessible under a privacy condition administered by the corresponding information sources **115**.

Informational content may include, but is not limited to, photographs, documents, music, video, audio transmissions, e-mail, messages, telephonic communications, personalized data, computational data, operational data, and combinations thereof. Personalized data may include, but is not limited to, an individual's personal calendar entries, notes, contacts (names, addresses, phone numbers, e-mail address, etc.), memos, and other data personal to an individual. The informational content may be provided in a variety of electronic formats. Such electronic formats may include file formats having extensions that include, but are not limited to, doc, dot, wpd, txt, xls, pdf, ppt, jpg, jpeg, png, bmp, gif, html, htm, zip, tif, tiff, wmf, mp3, and wav.

Interconnection communications facilities **120** may include one or more communication networks that allow transfer of data among group coordinator **105**, group **110** of mobile wireless devices, information sources **115**, and other communication entities accessible in conjunction with interconnection communications facilities **120**. Interconnection communications facilities **120** may be configured as a local area network, a wide area network, or combinations thereof. In addition, interconnection communications facilities **120** may be configured to include a private network. Interconnection communications facilities **120** may be realized using one or more transmission media. Such transmission media may include one or more of fiber optics, wired pairs, cable, or wireless media. In an embodiment, group coordinator **105** and members of the group **110** of wireless devices may communicate directly without using interconnection communication facilities **120**. Interconnection communications facilities **120** allow communication between group coordinator **105** and members of group **110** in a wireless infrastructure that includes mobile wireless devices that do not share a common criterion or a common set of criteria with the group coordinator **105** and members of group **110**, but use the same wireless infrastructure or at least portions of the same wireless infrastructure.

In an embodiment, group coordinator **105** and group **110** of mobile wireless devices have an intrinsic relationship such that group coordinator **105** operates in large part based on the intrinsic relationship with group **110**. The intrinsic relationship may be used to define a share group. A share group is two or more entities that share information in which the entities have a trusted relationship. The trusted relationship may be directed to and held by one of the entities of the group. Group coordinator **105** may be realized as software for integration into a machine that provides simplified operation of the machine around the core of group **110**. Group **110** may be defined by a set of people having a common relationship implementable in group coordinator **105**. The set of people

may range from one to thousands. For group **110** of mobile wireless devices, the intrinsic relationship may be generated by a common use of group coordinator **105** in which group coordinator **105** shares information among the members of group based on a unique identifier of a user group **110** being a user of group coordinator **105**. The relationship may be initiated by installing unique identifiers of each member in a storage medium of group coordinator **105** to create a share group.

In an embodiment, communications between a mobile wireless device of group **110** and group coordinator **105** may be conducted over a secure communication channel. The secure communication channel may be correlated to the unique identification that establishes the group relationship of the wireless mobile device to the share group of group coordinator **105**. In some embodiments, group coordinator **105** may be realized as group software installable on an existing machine having a controller, such as one or more processors, and machine-readable medium to store the instructions of the group software. In some embodiments, group coordinator **105** may be realized as a system having hardware and software to execute the functions for the share group defined by group coordinator **105** and group **110** of mobile wireless devices. In various embodiments, a simplified user interface (UI) may be provided to execute and operate the group software of group coordinator **105**.

FIG. **2**A illustrates features of an embodiment of an architecture for a wireless system including a wireless server **205**. A wireless server is a server configuration that communicates with an entity over a channel established by the entities in a wireless network. Multiple wireless servers may be located at various nodes in a wireless network. Multiple wireless servers may be located at a single node in a communications network. A wireless server may be used to implement services from a network provider. A network provider provides a user with access to a communication network and typically provides access to information services associated with the provided access to a communication network. Wireless server **205** may be associated with multiple network providers dependent upon the network provider services to which the registered users of wireless server **205** have entered agreements. Wireless server **205** may be in a client-server relationships with a variety of systems and devices, including mobile wireless clients **210** and web-based clients **215**. Wireless server **205** can be arranged as a group coordinator with respect to mobile wireless clients **210**. In an embodiment, wireless server **205** serves as a staging area for the dissemination of informational content to one or more mobile wireless clients of a share group of wireless server **205**. Wireless server **205** may communicate with the mobile wireless clients over a wireless channel that is secured. The secure channel may be provided using encrypted data for security. In an embodiment, the data may be encrypted using the advanced encryption standard (AES).

In various embodiments, wireless server **205** may be configured as a set of inter-operative instructions that when processed using a controller, such as a processor, cause performance of functions correlated to interaction within one or more of the wireless clients **210** and/or one or more of the web-based clients **215**. Wireless server **205** may have one or more functional sections such as a controller **222**, a router **224**, a dispatcher **226**, a database **228**, a mobile data system (MDS) **230**, an attachment service **232**, a policy service **234**, a synchronization service **236**, a messaging agent **238**, and an e-mail proxy service **240**. E-mail proxy service **240** provides a mechanism for wireless server **205** to access a group **241** of mail accounts external to wireless server **205**. Group **241** includes two or more mail accounts such as an internet message access protocol (IMAP) mail account **243**, a post office protocol (POP) system account **245**, a google mail account **247**, or other mail accounts **249**.

In an embodiment, wireless server **205** includes a share agent **207** configured to control dissemination of information from wireless server **205** to mobile wireless clients **210** or other entities on a shared basis responsive to a determination of a privacy state of the information. Share agent **207** may control one or more of database **228**, mobile data system **230**, attachment service **232**, policy service **234**, synchronization service **236**, messaging agent **238**, and e-mail proxy service **240**. Share agent **207** may be distributed among mobile data system **230**, attachment service **232**, policy service **234**, synchronization service **236**, messaging agent **238**, and e-mail proxy service **240** or structured within one of these wireless server instrumentalities.

Wireless server **205** and mobile wireless clients **210** may operate as a share group having secured communication and secured sharing by means of wireless server **205**. Wireless server **205** includes a list of identifiers that uniquely identifies each of the mobile wireless clients **210** as belonging to a user that is also a user of wireless server **205**. Establishing the unique identifiers in wireless server **205** and each corresponding mobile wireless clients **210** may define the trust relationship for the share group. The identities of each of the mobile wireless clients may be correlated to its secure remote password (SRP) key. The SRP key may be used for authentication when connecting to a wireless network. The SRP key provides a unique identifier for wireless server **205** and may also indicate usage of a secure channel. The SRP keys may be used for registering the wireless server **205** and determining that wireless server **205** has a unique relationship with a wireless client to communicate with a network infrastructure. SRP key also allows an identification of a wireless client with wireless server **205** over a direct plug-in channel or an unsecured Wi-Fi channel. A SRP key can be implemented in any acceptable manner depending on the security needs of the situation. The implementation may range from simple combinations, such as the current date and time, to the use of complex cryptographic algorithms. Simple implementations may be used in environments that are very benign with respect to security. When security concerns are high, complex cryptographic algorithms may be used. Various combinations of security measures may be implemented with the SRP key.

The share group may have several levels for a privacy state. The privacy state may include, but is not limited to, a status as being owned by one user associated with one of mobile wireless clients **210**, a status as being shared among two or more of mobile wireless clients **210** but less than all the mobile wireless clients **210**, a status as being shared among all of mobile wireless clients **210**, and a status as being shared or accessible by entities outside the group of mobile wireless clients **210** in addition to being shared among all of mobile wireless clients **210**. A status as being shared or accessible by entities outside the group of mobile wireless clients **210** may include specified entities permitted accessibility.

The share agent of wireless server **205** may be operable to make informational content available to mobile wireless clients **210**. Such informational content may include one or more of audio, video, text, or combinations thereof. An agent is a software entity, which is a set of instructions executable by a machine, capable of acting with a certain degree of autonomy in order to accomplish tasks on behalf of its user machine. An agent is typically defined in terms of its behavior and may execute its function based on the criteria contained within its instruction set. Agent code typically runs continu-

ously to perform one or more activities based on its instructions without being executed directly on demand. Capabilities associated with agents include, but are not limited to, task selection, prioritization, goal-directed behaviour, decision-making without human intervention, engagement of other components through a form of communication and coordination. Agents typically analyze the context of activity in which they operate and react to it appropriately. The share agent can activate and execute its functionality based on an occurrence of an event or a setting in wireless server **205**. For example, reception of a specified type of data in wireless server **205** may initiate activity of the share agent to disseminate the data based on stored criteria. Another example includes the selection of a feature by a user of wireless server **205** that results in a change in setting that is one of the events to initiate activity by the share agent.

Wireless server **205** may be realized in various configurations. Wireless server **205** may be configured in a hardware configuration including machine readable medium having machine-executable instructions to execute functions to communicatively operate wireless server **205** with mobile wireless clients **210**. Such a hardware configuration may include an integrated structure arranged in a manner similar to a desktop computer. Other hardware configurations may be used for wireless server **205**. Wireless server **205** may be configured as group software that may be installed on machine. In an embodiment, wireless server **205** is configured on a personal computer to wirelessly provide private information, information generated on the personal computer, and shared information to one or more of mobile wireless clients **210**. A system incorporating wireless server **205** may operate as a group-oriented system having limited administration associated with the operation of wireless server **205**. The system may include a user interface to administer wireless server **205** based on a set of administration parameters, where the set is managed by instruction-generated wizards and lists. A wizard is set of executed instructions that query a user for input to direct the user through steps to complete a task.

The various features of wireless server **205**, some of which are illustrated in FIG. **2**, may be realized in hardware, software, and/or combinations thereof. The features may be configured to run as agents for wireless server **205**. In various embodiments, several features may be incorporated in a single agent to operate these features.

Controller **222** may be used to manage database **228**, router **224**, and dispatcher **226** and to regulate operation of MDS services **230**, attachment services **232**, policy service **234**, messaging agent **238**, synchronization service **236**. Router **224** is used to route communications to an entity. Router **224** is operable to control communication to a mobile wireless client selected from the mobile wireless clients **210**. Such communication may be provided in a format selected from an e-mail message, an instant messaging communication, a page message, a text communication, a telephonic call, or other format. Dispatcher **226** may be used to control the implementations of services on wireless server **205**. Based on an acquired license to use wireless server **205** or particular services in wireless server **205**, dispatcher **226** may synchronize access to the services based on a time period for the license and the time at which the license was acquired.

Information maintained, processed, and transferred may be stored in database **228**. Database **228** may be configured as a distributed database within wireless server **205**. Database **228** may be queried and operated using structured query language (SQL). Other query and store mechanisms may be implemented. Database **228** may include information stored in memory external to wireless server **205** that is accessible when applying SQL. Database **228** may include information associated with users of mobile wireless clients **205** including a user identification for each mobile wireless client. Each user identification may be correlated to a wireless service account of the user. Database **228** may be structured such that tables include a correspondence between informational content and folders associated with the content, a privacy status for the informational content, and a correspondence between the privacy status and authorized users of the content. The informational content may include, but is not limited to, calendar data, an address book, a message board, a task monitor, photograph data, music data, video data, text data, user settings, preferences, usage data, or combinations thereof.

MDS **230** may operate with share agent **207** to control dissemination of information from database **228** on a shared basis responsive to a determination of a privacy state of the information. The information may include content of one or more of an interactive calendar, an address book, a message board, a task monitor, or other informational content. MDS **230** may include a resource agent configured to make informational content that is collected from sources external to the system available to mobile wireless clients **210**. In an embodiment, MDS **230** may operate with a video agent configured to access a video programming source external to wireless server **205** and to make available video content from the video programming source to each of mobile wireless clients **210** that are authorized to access the video content. The video content may be routed through wireless server **205**. Wireless server **205** may include a folder associated with the storage of the video content in memory accessible by wireless server **205**. Alternatively, wireless server **205** may set up a path for direct transfer of the video content from the video programming source to each authorized mobile wireless clients **210**. Wireless server **205** may include an interface to access the video programming source via a wired network, a fiber network, and a wireless network.

MDS **230** may coordinate retrieval and display of information content with attachment service **232**. Attachment service **232** may manage a browser internal to wireless server **205** to browser media files stored on the wireless server. The browser may be controlled through a user interface incorporated in wireless service **205** or under direction of a browser in one of the mobile wireless clients **210**. The browser can be used to select a media file by a user of the wireless server **205** or one of the mobile wireless clients **210**. A transfer agent may used to send a selected media file to the mobile wireless client corresponding to the browse activity. The transfer may be performed in responsive to reception of a selection indicator from the associated mobile wireless client. When conducting the browsing activity on behave of a mobile wireless client, wireless server **205** may provide to the associated mobile wireless client a representation of each of the media files accessed in the browse activity to provide a basis for the selection of one or more of the media files. The representation of each of the media files may be implemented as a thumbnail of each of the media files.

Policy service **234** may be configured as a flow control agent responsive to a communication policy to limit the flow of information with each of mobile wireless clients **210**. Such an agent may be referred to as a server policy agent, SPA. The communication policy includes a set of rules to regulate use of voice communication services on the plurality of mobile wireless clients. The communication policies may also include operational instructions to regulate use of a network external to the system. For example, the communication policy may regulate the flow of information from each of

mobile wireless clients **210** to entities on the Internet. Such communication policies may be arranged as a set of policies, where a policy in the set may be applied to one or more of the mobile wireless clients **210**. The policies may regulate flow of e-mail messages, instant messaging communications, page messages, text communications, and/or telephonic calls.

Synchronization service **236** includes a sync engine to automatically copy information to each of mobile wireless clients **210** authorized to access the information. In an embodiment, the information can be automatically transferred upon the allocation of the information to a shared folder controlled by database **228**. The shared folder may be categorization by its type of content and by the identification of entities that are allowed to access the content. The authorized entities may be one or more of mobile wireless clients **210** and may optionally include other authorized entities. In an embodiment, wireless server **205** is operable to automatically provide data, via synchronization service **236**, to a wireless server external to the system upon the data being transferred to shared folder, where the identified shared folder is correlated to a user identification associated with at least one of mobile wireless clients **210**. The data may include, but is not limited to personal calendar data, photograph data, music data, video data, text data, or combinations thereof.

Messaging agent **238** includes an e-mail agent to support e-mail services for mobile wireless clients **210** correlated to the user identifications. The e-mail services include coordinating the sending and receiving of e-mail from each e-mail domain corresponding to the user identifications. With wireless server **205** configuration in a group-oriented arrangement, all emails associated with mobile wireless clients **210** may be controlled using messaging agent **238**. Operation of messaging agent **238** may be coordinated with e-mail proxy service **240** to collect e-mails from group **241** of mail domains external to the wireless server **205**, where each collected e-mail has an addressee corresponding to a user identification that is one of the group users of wireless server **205**. E-mails may be collected using protocols under which the host e-mail domains operate. Such protocols may be standard protocols or proprietary protocols. Proprietary protocols may be used by private e-mail domains. Messaging agent **238** and/or e-mail proxy **240** may be configured to route an e-mail message corresponding to one or more of mobile wireless clients without processing through e-mail domains identified in the e-mail message. After routing the e-mail to the corresponding mobile wireless clients, the e-mail message may be processed through the identified one or more e-mail domains. The processing may be logged such that activity from the e-mail domain regarding the pre-processed e-mail message can be ignored.

In an embodiment, wireless server **205** may coordinate back-up procedures with one or more of mobile wireless clients **210**. Wireless server **205** can store configuration data within memory internal to wireless server **205**, where the configuration data provides information to configure and/or operate wireless server **205**. To provide a back-up to restore configuration of wireless server **205**, wireless server **205** can automatically provide the configuration data to one or more of mobile wireless clients **210**. With the configuration data stored on more than one of mobile wireless clients **210**, a reconfiguration policy may be used to restore the configuration to wireless server **210**. The reconfiguration policy may address various features for supplying wireless server **210** with its configuration data, which may include a sequencing procedure to provide the configuration data and/or a hierarchy identifying which of mobile wireless clients **210** controls the re-supplying of configuration data. The mobile wireless client **210** operating as a back-up for wireless server **205** may be a hand-held mobile wireless client or a client arranged as a wireless portable computer. The back-up procedure may be correlated to the user identification of the mobile wireless client that specifies that the mobile wireless client belongs to the share group of wireless server **205**. In an embodiment, an external server may be used to store the configuration data, where the external server is correlated to one or more of the share group of wireless server **205**. For a system in which wireless server is incorporated as a segment of the system, configuration data for the system, in addition to configuration data of wireless server **205**, may be automatically stored in the share group of wireless server **205** or an external system correlated to at least one client in the share group of wireless server **205**.

In an embodiment, a machine-readable medium stores instructions, which, when performed by a machine, cause the machine to operate as a wireless server. As a wireless server, the instructions cause the machine to communicate with a plurality of mobile wireless clients, to manage information in a database for the wireless server including storing information associated with users of the mobile wireless clients, and to control dissemination of information from the database on a shared basis responsive to a determination of a privacy state of the information. The information associated with the users may include a unique user identification for each mobile wireless client. With the unique identification established only in the wireless server and each corresponding mobile wireless client, the wireless server and the mobile wireless clients define a trusted share group. In an embodiment, the managed information may include content of one or more of an interactive calendar, an address book, a message board, a task monitor, photograph data, music data, video data, text data, or combinations thereof.

In an embodiment, the instructions to operate as a wireless server may include one or more instructions to control communication to a mobile wireless client of a share group. The control of communication can include controlling the format of the communication, allowing communications in a format selected from an e-mail message, an instant messaging communication, a page message, a text communication, or a telephonic call. In an embodiment, the instructions to operate as a wireless server may include one or more instructions to control policies governing the flow of information from the members of the share group.

In an embodiment, instructions for operating as a wireless server include instructions to collect, in the wireless server, e-mails from one or more mail domains external to the wireless server, and to support e-mail services of the mobile wireless clients correlated to user identifications each collected e-mail corresponding to a user identification. The instructions may include one or more instructions to route an e-mail message between the one or more mobile wireless clients without processing through e-mail domains identified in the e-mail message.

In an embodiment, instructions for operating as a wireless server may include one or more instructions to make informational content, collected from sources external to the system, available to the mobile wireless clients. To make information available to the mobile wireless, one or more instructions provide for the information to be automatically copied from the wireless server to each mobile wireless client authorized to access the information. The type of information accessible by a mobile wireless client may be provided by one or more instructions to send, to the mobile wireless client, a representation of each media file stored on the wireless server for which the mobile wireless client is authorized to access.

The representation may be made by use of thumbnails of each media file. In an embodiment, instructions to operate the wireless server may include one or more instructions to access a video programming source external to the system and to make available video content from the video programming source to each mobile wireless client authorized to access the video content. The video content may be routed through the machine on which the wireless server instructions reside. In an embodiment, instructions to operate the wireless server may include one or more instructions to automatically provide data in an identified shared folder associated with the wireless server to an external server. The identified shared folder may be correlated to a user identification associated with at least one of the mobile wireless clients.

In an embodiment, the instructions to operate as a wireless server may include one or more instructions to store configuration data specifying a configuration of the wireless server and to automatically provide the configuration data to an external wireless device based on occurrence of a specified event. The external wireless device correlated to a user identification associated with at least one of the mobile wireless clients. One or more instructions may provide for the retrieval of the configuration data from the appropriate mobile wireless client. In addition, various functions for a wireless server as described herein with respect to FIGS. **1** and **2** may be implemented as instructions on a machine readable medium. The various instructions may include establishing secure communications and secure sharing in which the wireless server uses a secure form of identification for each mobile wireless client.

FIG. **2**B depicts an embodiment of a wireless architecture in which a relationship between mobile wireless clients and multiple wireless servers is illustrated. Wireless server **205-1** provides wireless services, similar to those services discussed with respect to wireless server **205** of FIG. **2**A, to the group of mobile wireless clients **210-1**, **210-2** . . . **210**-N as a primary wireless server for the group. Members of the group may individually belong to another group associated with another wireless server, in which such a wireless server is secondary wireless server. For example, wireless servers **205-2**, **205-3**, and **205-4** are configured to groups **207**, **208**, and **209**, respectively. Group **207** includes mobile wireless clients **211-1**, **211-2**, and **211-3**. Group **208** includes mobile wireless clients **212-1**, **212-2**, **212-3**, and **212-4**. Group **209** includes mobile wireless clients **213-1** and **213-2**. Mobile wireless client **210**-N may also belong to group **207** in which case wireless server **205-2** is a secondary wireless server for mobile wireless client **210**-N. Mobile wireless client **210-2** may also belong to group **208** in which case wireless server **205-3** is a secondary wireless server for mobile wireless client **210-2**. Mobile wireless client **210-1** may also belong to group **209** in which case wireless server **205-4** is a secondary wireless server for mobile wireless client **210-1**. In an embodiment, a mobile wireless client is assigned to a primary wireless server as a group member and is assigned, as a group member, to multiple secondary wireless servers.

In an embodiment, the functioning of a mobile wireless client with a primary wireless server and with one or more secondary wireless servers can be controlled by the policies of the wireless servers, where the policies of the primary wireless server dominate the policies of the secondary wireless servers. The assignment of a primary wireless server may include a negotiation in which the user of the mobile wireless client agrees to make a specific wireless server its primary wireless server in return for assignment to the group of the specific wireless server. Such negotiation may result in termination of some service features provided by the wireless servers upon the identification of these wireless servers as being secondary. Due to conflicts between wireless servers, a mobile wireless client may be limited in the number of secondary wireless server groups to which it belongs.

FIG. **3** illustrates features of an embodiment of a mobile wireless device **310**, also called herein a user equipment or UE, operable with more than one server or registrable with more than one network provider, or a combination of servers and providers. A UE that can be registered with more than one server or network provider can be called a multiple-mode wireless device, a multiple-mode wireless client, and/or a multiple-mode UE. Alternatively, a UE that has the ability to be registered with, and may be simultaneously connected to, multiple servers, server networks, and/or providers may also be called a multi-register or multi-connect UE.

Mobile wireless device **310** may be used as a client in architectures as depicted in FIGS. **1** and **2**. Mobile wireless device **310** includes a controller **322**, a memory **328** communicatively coupled to controller **322**, and a management system **320** operable with controller **322**. Memory **328** may include a secure digital (SD) card. Memory **328** may be directly coupled to controller **322** and coupled by an internal communication bus. Controller **322** may be realized as one or more processors. Management system **320** is configured to manage mobile wireless device **310** operable as a multiple-mode wireless client with respect to each of a plurality of wireless servers. Mobile wireless device **310** is configured to share information among the wireless servers, where the sharing of information is based on user identifications common to the mobile wireless device and the plurality of wireless servers. The shared information may include user-generated data as well as information acquired from sources other than the mobile wireless device **310** and the wireless servers. In an embodiment, mobile wireless device **310** may be a member of a share group of each of the wireless servers.

Mobile wireless device **310** may be arranged as a simple communication device or a communication device with a significant number of features beyond voice communication. With controller **322**, memory **328**, and management system **320** providing an underlying foundation, mobile wireless device **310** may include a speaker **330**, a display **331**, a keyboard **333**, presentation controls **335**, a power interface **337**, or combinations thereof. Presentation controls **335** may include controls to direct visual presentations on display, controls to adjust the volume for speaker **330**, and controls operable by a user to enhance the audio, visual use, and management of the mobile wireless device **310**. Mobile wireless device **310** may include a camera **339**, an ear interface **341** for earphones, a USB interface **343**, other interfaces **345**, or other user accessible options. A graphical user interface for display **331** may provide for the display of icons **337** to provide a shorthand presentation to the user. Mobile wireless device **310** may include other capabilities not directly visual to a user such as Bluetooth capabilities, access to a Wi-Fi network, and various other capabilities. Mobile wireless device **310** may be structured as a hand-held mobile wireless device, as a portable wireless computer, or as a combination of both.

In an embodiment, mobile wireless device **310** is configured as a member of a share group with at least one wireless server. Management system **320** operates to manage and regulate activity of mobile wireless device **310** with the share group. Management system **320** may include an e-mail agent **321**, a policy agent **323**, a sync agent **325**, a browse agent **327**, and a positioning system **329**. E-mail agent **321** manages the receiving and sending of e-mails for mobile wireless device and is configured to manage its e-mail through at least one of

the wireless servers. The transfer of e-mails via one of the wireless servers may be conducted using a secure channel with the wireless server. The secure channel may be correlated to a unique identifier of the mobile wireless device **310** that is also maintained by the wireless server defining a group relationship between the two entities.

Policy agent **323** controls the flow of information and conduct of interaction with wireless servers based on a set or rules or instructions. Such an agent in the mobile wireless device may be referred to as a UE policy agent, UEPA. Though mobile wireless device **310** may be registered in an information and control sharing mode with one or more wireless servers, mobile wireless device **310** and each of these wireless servers have their own individual policy agents. A UEPA is a separate entity from a SPA. In an embodiment, the policy for information flow in mobile wireless device **310** may be based on identification of a wireless server as being part of a share group to which mobile wireless device **310** is a member. If mobile wireless device **310** is a client to multiple wireless servers to which it is in a share group with each wireless server, policy agent **323** determines the controlling instructions for operating among and individually with the multiple wireless servers. Various criteria may be applied by policy agent **323**. One set of criteria may depend on the wireless service to which the user of mobile wireless device **310** subscribes. Another set of criteria may depend on the group relationship of each of the wireless servers. A share relationship with a wireless server may involve confidential information that may limit the manner in which mobile wireless device **310** operates on and controls the flow of data among the share groups to which it belongs. Policy agent **323** may include a policy to select one of the wireless servers as a dominant wireless server with respect to the other wireless servers. With a dominant or primary wireless server identified, the set of rules may be prioritized according to the selection of dominant wireless server.

Positioning system **329** may be used in conjunction with policy agent **323** to establish a policy to use based on relative position of mobile wireless device **310**, if there no overriding rule to select a primary wireless server. Positioning system **329** can be used to determine a position of the mobile wireless device with respect to each of the wireless servers. Based on this relative position, a wireless server deemed to be closest to mobile wireless device **310** may be selected as the primary wireless server. Positioning system **329** may include use of a global positioning system (GPS) within mobile wireless device **310**. In an embodiment, management system **325** may use positioning system **329** to determine that mobile wireless device **310** is within a local area network of only one of the wireless servers. The local area network may be a Wi-Fi network. Determination of the closest wireless server in a local area network such as a Wi-Fi network may use a determination of signal strength associated with each of the wireless servers. In an embodiment, a secure control channel from the mobile wireless device **310** to a wireless server may be used to determine if the mobile wireless device is within a Wi-Fi network associated with the wireless server.

Sync agent **325** may be used to automatically interact with a wireless server identified as being a member of a share group for mobile wireless device **310**. Upon receiving a communication from the wireless server that the wireless server has information associated with an identifier correlated to the mobile wireless device **310**, sync agent **325** can automatically store the information in memory **328** upon download from the wireless server. Sync agent **325** may also update a table to identify the downloaded information relative to an assigned folder, the source of the information, and/or a privacy status of the information. Sync agent **325** may also upload information to a wireless server based on the relative status of the wireless server with respect to the information. With the assignment of the information to a folder, sync agent **325** agent automatically uploads the information wireless servers identified in mobile wireless device **310** as authorized to automatically receive the information. The transfer from mobile wireless device **310** to one or more wireless servers in response to the sync agent **325** may be conducted over a secure channel established by mobile wireless device **310**. The information that may be automatically includes, but is not limited to, personal calendar content, photographic content, music content, video content, text content, or combinations thereof.

Browse agent **327** provides a capability to browse folders within mobile wireless device **310** to select files within mobile wireless device **310** to view content on display **331** or hear content via speaker **330** or other appropriate hearing device. Browse agent **327** may provide a capability to browse folders within wireless servers to which mobile wireless device **310** is in a sharing relationship. Browse agent **327** may control the generation of commands from mobile wireless device **310** to a wireless server to browse folders on the wireless server to which mobile wireless device **310** is authorized access. Such commands include selection of informational content to be downloaded from the wireless server to mobile wireless device **310**. In an embodiment, mobile wireless device **310** receives thumbnail content representative of the files being browsed in the wireless server. Downloading information content from the wireless server to mobile wireless device **310** may be conducted in response to selection of the thumbnail via a graphical user interface on mobile wireless device **310**. The downloaded informational content may include personal calendar data, photograph data, music data, video data, text data, or combinations thereof. Sync agent **325** may be used in conjunction with to transfer a file from the wireless server to mobile wireless device **310** in response to the selection activity of browse agent **327**. The transfer of informational content from a wireless server to mobile wireless device **310** may be conducted over a secure channel established by mobile wireless device **310**.

In an embodiment, mobile wireless device **310** may operate in conjunction with a wireless server to act as a backup for the wireless server. Memory **328** may be used to store configuration data for the wireless server. On a schedule basis or on an event driven basis, mobile wireless device **310** receives configuration data from the wireless server. The configuration data can be received as data which overwrites the configuration data in memory **328**. The configuration data can be received as a delta or change of configuration in which the changed data which overwrites the corresponding portion of configuration data in memory **328**. Upon request by the wireless server, the configuration data may be uploaded to the wireless server.

In an embodiment, a machine-readable medium stores instructions, which, when performed by a mobile wireless device, cause the mobile wireless device to operate as a client of multiple wireless servers. The mobile wireless device may be a hand-held wireless device. The mobile wireless device may be a portable wireless computer. In an embodiment, the instructions cause the mobile wireless device to operate as a multiple-mode wireless client to each of the wireless servers and to share information with the wireless servers. The information can be shared based on a user identification common to the mobile wireless device and the wireless server. The instructions may effectively configure the mobile wireless device in multiple share groups, one for each wireless server in a share relationship with the mobile wireless device. User

identification information may be used on to establish secure communication and a secured sharing between the mobile wireless device and a wireless server on a share group arrangement. The shared information may include user-generated data.

In an embodiment, instructions to operate the mobile wireless device as a multiple-mode wireless client may include instructions to regulate functions of the mobile wireless according to a stored policy. The policy may depend on which of the wireless servers is taken to be the primary or dominant wireless server with respect to the other wireless servers. In an embodiment, the primary wireless server may be selected through application of instructions to determine the position of the mobile wireless device with respect to the other wireless servers. The instructions for determining positioning may be employed with a GPS system within the mobile wireless device. The instructions may direct the determination that the mobile wireless device is within a local area network of one of the wireless servers. The local area network may be a Wi-Fi network. One or more instructions may be employed to use a secure control channel to determine if the mobile wireless device is within the Wi-Fi network.

In an embodiment, instructions to operate the mobile wireless device as a multiple-mode wireless client may include instructions to control the flow of information. The instructions for regulating information flow may include, but are not limited to, instructions to manage reception and transmission of e-mails through at least one wireless server in a share group with the mobile wireless device, to share calendar content associated with the user identification, to apply a browser in the mobile wireless device to browse files on a wireless server in a share group with the mobile wireless device, to sync the flow of informational content into the mobile wireless from a wireless server in a share group with the mobile wireless device, to sync the flow of informational content from the mobile wireless to a wireless server in a share group with the mobile wireless device. The informational content may include, but is not limited to, calendar data, photograph data, music data, video data, text data, or combinations thereof.

In an embodiment, instructions to operate the mobile wireless device as a multiple-mode wireless client may include instructions to work in a back-up procedure in conjunction with one of more of the wireless servers. The instructions may direct the mobile wireless to automatically store configuration data from a wireless server and a log a record of the data storage and its associated wireless server. The configuration data may provide information to a system to establish the system as a wireless server. The instructions may direct the mobile wireless device to transmit the configuration data to the appropriate wireless server upon request by the wireless server.

In addition, various functions for a mobile wireless device as described herein with respect to FIGS. **1**, **2**, and **3** may be implemented as instructions on a machine readable medium in the mobile wireless device. The various instructions may include establishing secure communications and secure sharing with wireless servers using a secure form of identification associated with the mobile wireless device being in different share groups with the wireless servers.

FIG. **4** shows features of an embodiment of a method to establish wireless server capabilities on an electronic system to provide a staging area of wireless communication on the electronic system. At **410**, storage of data on a mobile wireless device is controlled. The data may include instructions to install a software program on an electronic system to provide the electronic system with the functionality of a wireless server. The install instructions may include instructions to install the software in stages based on responses received from the electronic system during sequencing of the installation. The install instructions may be organized with instructions to initiate the installation from the mobile wireless device with completion of the installation performed over a network such as the Internet. The install instructions may be organized with instructions to initiate the installation from the mobile wireless device with completion of the installation performed by downloading at least a minimal portion of the program to operate the electronic system as a wireless server. The mobile wireless device may provide a complete version of the wireless service software in a download process. The mobile wireless device may be provisioned with one or more of the installation procedure options at factory manufacture or other process points prior to providing the mobile wireless device commercially. The mobile wireless device provisioned with the wireless server installation capabilities may be a hand-held wireless device. The mobile wireless device provisioned with the wireless server installation capabilities may be a portable wireless device.

At **420**, at least a portion of the data from the wireless mobile device is downloaded to the electronic system. The download to establish the wireless server functionality may begin with the connection of the mobile wireless device to the electronic system using a physical coupling medium connectable to an interface on the mobile wireless device and connectable to a compatible interface on the electronic system. The interfaces on the mobile wireless device and the electronic system may both be USB interfaces. Other mediums may be used to physically connect the mobile wireless device and the electronic system including, but not limited to, a fiber optic medium and other cable media. The compatibility of interfaces of the electronic system and the mobile wireless device may be realized with a converter that provides coupling of two different types of interfaces. The directing of the installation may be provided using a graphical user interface on a display of the mobile wireless device. The directing of the installation may be provided using a graphical user interface on a display of the electronic system. The directing of the installation may be provided using a graphical user interface on a display of the electronic system after initial install execution is directed from a graphical user interface on a display of the mobile wireless device.

After initial transfer of instructions, a sequence of instructions is provided on a display of the electronic system to direct a user through the installation process. The sequencing may be conducted using a wizard installer. In an embodiment, the installment is provided in an automatic fashion in which there is limited input by the user. The user may be asked to accept or decline a licensing agreement. A response representing a decline may result in termination of the installation of the wireless server software. The termination may result in a termination of a further download of the software. If the software has been downloaded, the termination may result in terminating the installation of the software as an executable entity. Install instructions may include provisions to protect the downloaded software from being executably installed without the transmission of acceptance of the licensing agreement. A response representing an acceptance results in further processing of the installation of the wireless server software. The further processing may include downloading further data from the mobile wireless device and completing the installation. The further processing may include downloading further data from the Internet, or equivalent network, and completing the installation. Additional user supplied information collected in the installation procedure may include name, e-mail address, and country. The user may be queried to supply one's

secure remote password (SRP) key. Alternatively, one or more of these personal data items may be automatically downloaded from the wireless mobile device in the installation process.

With the wireless server being installed on the electronic system to serve as a group coordinator for the wireless mobile device that initiated the install process, the SRP key can be automatically downloaded from its associated mobile wireless device. Alternatively, the SRP key can be assessed in a secure process with another system. The downloading of mobile wireless device, user, and security information may be conducted with the physical connection of the mobile wireless device and the electronic system. The downloaded SRP may be controlled by instructions in the mobile wireless device or with instructions downloaded from the mobile wireless device to provide interactive processing of the SRP download and storage on the electronic device. In addition, the name, e-mail address, and country information may also be automatically installed from the associated mobile wireless device. The addition of other mobile wireless devices, to the group of the installed wireless server and initiating mobile wireless, to form a larger trusted share group may be conducted and directed through the installed wireless server. Wi-Fi capability of the installed wireless server may be used to add mobile wireless devices to the share group to the installed wireless server.

Updates to the wireless server may be automatically performed through network connections of the electronic system that incorporates the installed wireless server or through the installing mobile wireless device or other authorized mobile wireless device of a share group of the wireless server. Updates may be provided on the wireless server such that a user may direct when the updates occur including allowing automatic updates. Periodic re-licensing may be implemented in which a decline of the license is followed by automatic shutdown of the wireless server. In addition, refusal of automatic updating of the wireless server may be followed by automatic shutdown of the wireless server. The shutdown event may be based on whether the automatic updates are of a critical nature above some threshold level.

The installed software program includes a set of machine executable executions operable for storage on the electronic system such that a controller of the electronic system can execute the instructions to operate the electronic system as a wireless server in addition to the functions operable by the electronic system. The controller on the electronic system may be realized as one or more processors. The installed wireless server may include the configuration and functionality of the wireless servers discussed with respect to FIGS. **1-3**. The installing wireless mobile device may include the configuration and functionality of the mobile wireless device discussed with respect to FIG. **3**. The installed wireless service may be arranged as a group coordinator that provides a staging area for the sharing of information with mobile wireless devices whose SRP information stored in the wireless server defines the mobile wireless device as a trusted group member. The operable agents of the wireless server may include all the functionality of the agents and services discussed with respect to FIG. **2**, though the agents may be combined or structured in different arrangements of instructions.

FIG. **5** shows features of an embodiment of a method for synchronizing (syncing) wireless entities based on a share basis. Information acquired in wireless entities may be synced among the wireless entities based on a privacy status and verification of identities corresponding to the privacy status. The information undergoing a sync process includes, but is not limited to, personal calendar data, photograph data, music data, video data, messaging data, and combinations thereof. The wireless entities may include a wireless server and a set of mobile wireless clients of the wireless server that together form a share group. In an embodiment, a mobile wireless client of the group is configured to browse files in the wireless server. In an embodiment, the wireless server is configured to provide views of its file content to a mobile wireless client of the group authorized to view the file content of the wireless server.

At **510**, a privacy status of information acquired, and at least partially stored, is determined. The privacy status may be determined before and/or during the partial storage of the information. In an embodiment, information is acquired in a wireless server that is a member of a share group including one or more wireless mobile devices that are wireless clients of the wireless server. The wireless server initials and directs a sync process for the acquired information. Using a graphical user interface, a user of the wireless server can assign attributes to the acquired information that generate a privacy status for the information. The information can be flagged to be private to the wireless server. The information can be flagged to be private to a user correlated to one of the wireless mobile devices of the group. The information can be flagged to be shared by several users but not all of the users correlated to the group, which is a form of a limited private status, where each of the several users is correlated to one of the wireless mobile devices of the group. The information can be flagged to be shared by all members of the group, where each of the members is correlated to one of the wireless mobile devices of the group. The information can be flagged to be shared by all members of the group and by entities external to the group. The correlation to a wireless mobile device of the group may be realized as a mapping in the wireless server of a SRP key and user name to a wireless mobile device. The flagging of attributes by the wireless server may be conducted by assigning the information to a folder and associating, in one or more tables, the identity of the information, privacy indicators, and names or other ids of users having the privacy status. Other procedures may be used to provide a privacy status of information with mobile wireless devices. Alternatively, the information may have a predetermined privacy status with identified authorized users such that on reception of the information the wireless server automatically assigns the information to its predetermined folder. The predetermined privacy status may be based on the type of information or a specific identity of the information acquired.

In an embodiment, information is acquired in a mobile wireless device that is a member of a share group including a wireless server. The mobile wireless device may initiate and direct a sync process for the acquired information. The share group may include other mobile wireless devices. Using a graphical user interface on the mobile wireless device, a user of the mobile wireless device can assign attributes to the acquired information that generate a privacy status for the information. The information can be flagged to be private to a user correlated to the wireless mobile device acquiring the information. The information can be flagged to be shared by several users but not all of the users of the group, which is a form of a limited private status, where each of the several users is correlated to one of the wireless mobile devices of the group. The information can be flagged to be shared by all members of the group, each of the members correlated to one of the wireless mobile devices of the group. The information can be flagged to be shared by all members of the group and by entities external to the group. The correlation to a wireless mobile device of the group may be realized by viewing a list

of the group members stored on the mobile wireless device that acquires the information or viewing a list of the group members accessible from the wireless server. The flagging of attributes by the mobile wireless device may be conducted by assigning the information to a folder and associating, in one or more tables, the identity of the information, privacy indicators, and names or other ids of users having the privacy status. Other procedures may be used to provide a privacy status of information with other mobile wireless devices of the group. Alternatively, the information may have a predetermined privacy status with identified authorized users such that on reception of the information the mobile wireless device automatically assigns the information to its predetermined folder. The predetermined privacy status may be based on the type of information or a specific identity of the information acquired. In an embodiment, a mobile wireless device may acquire informational content and a wireless server, which shares a group status with the mobile wireless device, may establish the privacy status for the informational content.

At **520** data associated with the information is synced with wireless entities based on the privacy status and verification of identities corresponding to the privacy status. In an embodiment, when information acquired in a wireless server is moved to a sync folder, the wireless server automatically downloads the information to the mobile wireless devices that are identified in tables as being authorized to automatically receive the information. A sync folder is a folder whose contents are designated to undergo a sync process. These sync tables provide the privacy status and verification of the identities for automatic downloading. Sync folders may be created for each group member such that received information associated with the individual folders may be automatically downloaded to the associated group member. The download by the wireless server may be conducted based on the status of storage facilities on the target mobile wireless device. If the mobile wireless device does not have the appropriate storage medium, such as a SD card or other storage medium, or if the capacity of the storage medium of the mobile wireless device is insufficient, the download is not conducted and the mobile wireless device is notified of the lack of capacity.

A capacity limit may be set in the wireless server such that, if the size of the information to be downloaded is larger than the capacity limit, the wireless server will not send the information on a wireless channel. For file content over the capacity limit, the automatic download can be performed when the wireless server determines that a physical connection, such as a USB connection, has been established or that the mobile wireless device has accessed a Wi-Fi network of the wireless server. If such USB or Wi-Fi transport is lost during a transmission transaction, the transaction can be halted and restarted once the transport is reestablished. In addition, syncing of content can be regulated according to other status in the mobile wireless device or in the wireless server. For example, a content sync may be suspended if the battery capacity falls below a specified amount. In an embodiment, content sync may be suspended if the battery life falls below 20% of the full amount and may be resumed if the battery life exceeds 25% of the full amount.

The wireless server can download the information to a mobile wireless device via a Wi-Fi capability, a wired cable, a carrier-based network, or combinations thereof. A mobile wireless device can display the sync process from the wireless server on its screen as the sync process by the wireless server is being conducted. A mobile wireless device receiving the information may assign the information to one of its folder, where the folder may be a sync folder on the mobile wireless device. The mobile wireless device may store informational content received, in a sync process from a wireless server, in a secure digital memory in the mobile wireless device.

In an embodiment, a wireless server in a sync process with a mobile wireless device of its share group downloads a sync indicator to the mobile wireless device. The sync indicator represents that the wireless server has acquired information with the mobile wireless device identified as a share member. The identified information can be downloaded to the mobile wireless server at a later date. The wireless service may automatically download the indicator in response to the information being moved into a folder accessible by the wireless server. The folder may reside on a system external to the system in which the wireless server resides, where the wireless server is authorized to read the information from the external storage medium.

In an embodiment, information acquired in a mobile wireless device can be moved to a wireless server in a share group to which the mobile wireless device is a member. The mobile wireless device can be configured such that when information acquired in mobile wireless device is moved to a sync folder in the mobile wireless device, the mobile wireless device automatically uploads the information to the wireless server. Content in the mobile wireless device can be uploaded to and stored on the wireless server to provide a back-up of the content. The content is not limited to a particular type of content, but may be any content on the mobile wireless device. The mobile wireless device can upload the information to the wireless server via a Wi-Fi capability, a wired cable, a carrier-based network, or combinations thereof. In an embodiment, a mobile wireless device can monitor its operational status and adjust sync processing with a wireless server based on determined the status. For example, content syncing may be suspended if the battery capacity of the mobile wireless device falls below a specified amount. In an embodiment, content syncing may be suspended if the battery life falls below 20% of the full amount and may be resumed if the battery life exceeds 25% of the full amount.

FIG. **6** shows features of an embodiment of a method to browse a wireless server from a mobile wireless device. At **610**, a browser in a mobile wireless device is initiated to control browsing of a file directory of a wireless server. The mobile wireless and the wireless server belong to a common share group. A user of the mobile wireless device may view the files in the file directory of the wireless server through use of a graphical user interface of the mobile wireless device. At **620**, a signal is generated to the wireless server to select a file in the file directory of the wireless server. The mobile wireless device may generate a signal to the wireless server to indicate that the file is to be downloaded to memory in the mobile wireless device, that the file is to be sent as an e-mail attachment, or that the file is to be viewed using an attachment server of the wireless server. The mobile wireless device may browse informational content that includes, but is not limited to, personal calendar content, photograph content, music content, video content, messaging content, and combinations thereof. The browsing activity may include browsing files having a format indicator selected from, but not limited to, doc, xls, pdf, ppt, jpg, png, bmp, gif, mp3, and wav.

FIG. **7** shows features of an embodiment of a method to select and provide content from a wireless server to a mobile wireless device based on commands from the mobile wireless device. At **710**, a signal is received from a mobile wireless device, where the signal is a browser signal to browse a directory of a wireless server. The mobile wireless and the wireless server belong to a common share group. At **720**, files in the directory are browsed in response to browse commands

from the mobile wireless device. The browse commands may include a select command to select a file for use by the mobile wireless device.

At **730**, content of a file selected from the directory is provided to the mobile wireless device. The selected file may be sent from the wireless server to the mobile wireless device by downloading the file as data to be stored on the mobile wireless device, by sending the file as an e-mail attachment, or by providing viewing of the file using an attachment server of the wireless server. The browsed informational content may include, but is not limited to, personal calendar content, photograph content, music content, video content, messaging content, and combinations thereof. The browsed files may have a format indicator selected from, but not limited to, doc, xls, pdf, ppt, jpg, png, bmp, gif, mp3, and wav.

FIG. **8**A shows features of an embodiment of method including a mobile wireless device accessing and controlling an application executable on a wireless server. In various embodiments, the application may be different from an application to maintain and control a wireless communication link between the mobile wireless device and the wireless server. At **810**, an application executable on a wireless server is accessed from a mobile wireless device. The mobile wireless device has an authorization to access the application as a member of the share group of the wireless server. The authorization may be correlated to the SRP key of the mobile wireless device that is also stored on the wireless server. Various types of applications in the wireless server may be accessed by the mobile wireless device. For example, a data manipulation application that performs complex computations ("data crunching") that uses a large amount of memory may be accessed to run in a server rather than the mobile wireless device. The application may be reside in the wireless server. In an embodiment, the application is virtually resident on the wireless server. The virtual residency occurs with the application stored in another server that is accessible by the wireless server. In an embodiment, an application to control and/or monitor functions of a facility is accessed. The application may control and/or monitor, for a facility, one or more of a heating management, lighting management, water management, physical security, management of a web cam. An application to control and/or monitor functions of facilities different from the primary facility may be accessed.

In an embodiment, the mobile wireless device receives data regarding the application from the wireless service. The received data may be used to display a graphical user interface on the mobile wireless device, where the graphical user interface is operable to initiate commands for the application. Alternatively, data for a graphical user interface to control and/or manage an application may be stored in the mobile wireless device. The graphical user interface of the mobile wireless device may mirror the graphical user interface that the wireless server has to control and/or manage the application through user interaction. The graphical user interface of the mobile wireless device may have a reduced set of features in common with the graphical user interface of the wireless server to control and/or manage the application through user interaction. With the initiation of commands in the mobile wireless device, the underlying processing of the application, directed by the commands, is performed on the wireless server.

At **820**, a command is sent from the mobile wireless device to the wireless server to execute a feature of the application. The feature may be different from features to maintain and control a wireless communication link between the mobile wireless device and the wireless server. The mobile wireless device may receive a result of the execution of the feature in the wireless server. A computational result may be provided with a complete analysis including various graphs and flow charts. A result from a monitoring application may be provided with an operational status of a facility including a current value of the status, a history of the status, and a trending analysis of the status. For an application of a video cam, the result received in the mobile wireless device may be a video of activity monitored by the video cam. For example, a video of a storage facility may be provided to monitor the security of the storage facility. A video of a child's living areas may allow a parent to monitor activity of the child and the care provider of the child.

In an embodiment, a privacy status may be generated in the mobile wireless device and operatively attached to the results from executing the application in the wireless server. The privacy status may be transmitted to the wireless server to set accessibility of the results relative to other members of the share group and other entities that may access the wireless server.

FIG. **8**B shows features of an embodiment of method including a wireless server executing an application resident on the wireless server under the control of a set of commands from a mobile wireless client. In various embodiments, the application may be different from an application to maintain and control a wireless communication link between the mobile wireless device and the wireless server. The mobile wireless device and the wireless server are members of a common share group. At **910**, a signal is received in a wireless server from a mobile wireless client of the wireless server. The mobile wireless client is identified in the wireless server as a member of a share group of the wireless server and an authorized user of an application accessible by the wireless server. On receiving a signal corresponding to an application accessible by the wireless server, the wireless server may send data to the mobile wireless device to display a graphical user interface on the mobile wireless device.

At **920**, an application in the wireless server is executed in response to receiving the signal, where the execution is performed by the wireless server under the control of the mobile wireless client. The application may be different from an application to maintain and control a wireless communication link between the mobile wireless client and the wireless server. The application executed by the wireless server may be stored in the wireless server or stored in an external system accessible by the wireless server. The wireless server may execute a data manipulation application. The wireless server may execute an application to control and/or monitor functions of a facility. The operations for the facility that are controlled and/or monitored may include one or more of heating management, lighting management, water management, physical security, and management. Operational parameters of a facility different from the primary facility may be controlled and/or monitored via the execution of the application by the wireless server.

The result of the execution of the application may be transmitted to the mobile wireless device as a simple result or as a result accompanied by various levels of analysis and presentation.

A privacy status may be attached to the results in the wireless server. The privacy status can be provided by mobile wireless device that controls and/or directs the execution and/or processing of the application by the wireless server. The privacy status may be updated in a database of the wireless server relative the controlling mobile wireless client, other mobile wireless clients of the wireless server that are share members with the wireless server, and other entities that access the wireless server.

In various embodiments, the ability to run home control or home monitoring programs may be realized using the secure connection from a home wireless server to a UE. Various devices, such as but not limited to cameras, baby-sound-detection equipment, other baby monitors, personal devices, personal programs, and other personal monitoring devices can be coupled to a home-based wireless server that controls access to the UE through a network such as made available by a network provider. Similarly, this allows for the private monitoring of small businesses, including remote, secure access of inventory control figures, production figures, monitoring of stocking areas and warehouses for shrinkage control, making sure off-hours personnel at public counters are not being threatened, and similar situations amenable to monitoring solutions. The various devices may be configured to provide outputs that may be monitored by the UE through the home-based wireless server both securely as well as without use of a third party and/or without making the output publicly available such as being broadcast over an internet type facility. Such an arrangement allows an individual user of the UE and the wireless server to avoid being forced to use third party monitoring services to obtain such personal monitoring. In addition, such an arrangement allows an individual user to maintain privacy with respect to one's home, business, and personal life by not making the monitored output accessible over public internets. The secure monitoring of the home and/or business may be provided with the output from monitoring devices being providing as encrypted data.

FIG. **9** shows an embodiment of an arrangement of a home-based wireless server **970** coupled to home personal monitoring equipment **980** with the home-based wireless server **970** communicatively coupled with a mobile wireless client **850**. The various components of home personal monitoring equipment **980** may be distributed throughout a home. Each component may be configured to perform a different personal monitoring function. The home personal monitoring equipment **980** may include, but is not limited to, cameras, baby-sound-detection equipment, other baby monitors, personal devices, personal programs, and other personal monitoring devices. The components of home personal monitoring equipment **980** may be coupled to home wireless server via a direct connection or on a local area network. The direct connection or the local area network may be a wired connection, a wireless connection, or a combination of wired and wireless connections. The local area network may be a home Wi-Fi network, either secure or unsecure. Home-based wireless server **970** may be operatively coupled to UE **850** over network **860**. Network **860** may be any operable connection, including the use of private local networks and/or commercial providers. Home-based wireless server **970** may also be operatively coupled to other UEs associated with members of the home in which home-based wireless server **970** is located, where these other UEs are wireless clients registered with home-based wireless server **970**. Home-based wireless server **970**, UE **850**, and the other wireless clients of home-based wireless server **970** may be configured according to the various embodiments for wireless servers and multiple-mode mobile wireless devices discussed herein.

UE **850** may operate as discussed with respect to FIG. **8**A in which the application includes control and management of home-based monitoring equipment **980**. By controlling monitoring using UE **850**, an individual may monitor and control the home environment while travelling away from the home. Over the secure channel with home-based wireless server **970** locally coupled to monitoring equipment **980** located in the individual's home, the individual may maintain private control of the monitoring signals sent from the home.

Home-based wireless server **970** may operate as discussed with respect to FIG. **8**B in which the application includes control and management of home-based monitoring equipment **980**. Home-based wireless server **970** may accept control and command from UEs that are registered with home-based wireless server **970** or a subset of registered UEs, where the registration may include a correspondence between a given UE and the home. Under the control of UE **850**, home-based wireless server **970** provides signals to monitoring equipment **980** to obtain monitoring information. The monitoring information may include data, audio, video, pictures or combinations thereof. Home-based wireless server **970** locally coupled to monitoring equipment **980** located in the individual's home provides private control of the monitoring of the home and activities in the home. The secure channel provides a mechanism for the information obtained by home-based wireless server **970** to be provided to UE **850** under control of UE **850** at any anytime without use of a third party, which is not registered with home-based wireless server **970**, to manage the monitoring event. Similarly, FIG. **9** is equally applicable to small business applications as well as home-based applications. The differences will be in what is being monitored or what remote programs are being run. For example, a small business owner may want to monitor stock inventory, small production lines, storage areas, current retail sales activity, and counter areas using the same capabilities, types of monitors and devices, and having the same benefits as described above for the home owner.

Referring now to FIG. **10**A, there is illustrated an example system and method for using a mobile wireless client with more than one wireless server. According to one example embodiment, there is provided a first wireless server **1002** communicatively operable with a plurality of mobile wireless clients such as mobile wireless client **1004**. The first wireless server includes for example, as described herein elsewhere, configuration data associated with at least one, such as client **1004**, of the plurality of mobile wireless clients supported by the wireless server **1002**, and a database operable on the server and configured to store information associated with users of the mobile wireless clients including a user identification for each mobile wireless client. Wireless server **1002** further includes a program configured to control dissemination of information from the first database to one or more of the plurality of mobile wireless clients.

Wireless server **1002** further stores or maintains at least one policy **1006** that is associated with one of the mobile wireless clients, for example client **1004**. Policy **1006** may be used to govern permissible modes of operation of the client **1004**, and to establish various operating parameters, such as what type of Internet access is permitted with the wireless client or the type or duration of telephone calls that may be placed using the client **1004**. Other uses for policy **1006** further include allowing or disallowing users to of the mobile wireless client to enable or disable certain features of the client **1004**, such as password protected operation.

As illustrated in FIG. **10**B, policy **1006** may include various policy information including but not limited to the author **1022** of the policy, an identification **1024** of any servers authorized to update or modify the policy **1006** or individual permissions or settings of the policy (such as settings **1026**, **1028** and **1030**). The policy **1006** may further, for example, authorize **1026** the wireless client **1004** to work with other wireless servers, such as server **1010** of FIG. **10**A, to support wireless e-mail or calendaring and other server functions provided by the other server **1010**, as described herein. Policy **1006** may further specify one or more other policy settings **1028** to **1030**.

Wireless server **1002** further includes a policy service **1008** that allows a user of the wireless server **1002** to prescribe a policy **1006** for one or more mobile wireless clients, and in particular client **1004** in the example of FIG. **10**A. Service **1008** further provides that the policy **1006** may be downloaded to wireless client **1004**, if permitted. Such downloading may be directed or controlled by a policy download or modification program **1005** on the wireless client **1004**.

According to one example embodiment as illustrated in FIG. **10**C, a mobile wireless client **1004** may be initially loaded **1032**, for example at the factory or after being initialized, with an "initial" policy, such as a policy set by the factory. That policy may allow, for example, for it to be replaced with a user-prescribed policy that is loaded **1034** on the mobile wireless client **1004** for example from the first wireless server **1002**. This would typically be handled by the UE's UEPA. The policy loaded by the server **1002** may specify, for example, that no other wireless server such as server **1010**, may replace or modify, in whole or in part, the policy loaded by the server **1002**, thereby precluding the policy from being changed by any server other than server **1002**. Thus, any attempt **1036** to load another policy causes the mobile wireless client **1004** (or alternatively the server attempting to modify the policy) to check the policy currently loaded on the wireless client to determine if **1038** the policy may be changed or replaced. If it may be, the new policy or changes to the policy, such as individual settings, may be made **1040**. If the policy may not be changed by the server requesting to do so, the policy is prevented **1042** from being replaced or modified. Accordingly, in this respect, the policy establishes that one of the servers such as server **1002** is a primary server that controls all policy permissions and changes, and the other server **1010** is a secondary server that may not override policies set by the primary server **1002** unless permitted to do so by the policy set by server **1002**.

In an embodiment, wireless server **1002** includes a flag or field, stored on wireless server **1002**, that indicates if the UEPA on a registered UE, such as UE **1004**, can modify the policies of wireless server **1002** at UE **1004**. This flag or field may be referred to as a policy modify flag, or, if the context is clear, simply as a modify flag. In some embodiments the modify flag can be a single bit, having the values T or F (1 or 0). Alternatively, the modify flag may be more complex and be enabled to indicate under what conditions polices may be modified. One embodiment of a more complex modify flag includes the identity of other servers that are allowed to override the policy of this server, while other servers are not. Any combination of policies is possible, as defined by the servers' SPAs and the UE's UEPA, but some are more probable than others. For example, the SPA of wireless server **1002** may have a policy of logical truth where "T", or yes, defined to mean any UEPA configuration is allowed, which may be used in benign environments. Alternatively the SPA may have a policy of "F", or no, defined to mean that no modification of a policy may be made by the UEPA. In an embodiment, "F", or no, may also indicate that implementation of an arbitrary UEPA configuration is not allowed.

Thus, according to one embodiment, a first wireless server **1002**, such as a corporate or enterprise server, may establish a policy to be loaded on a wireless client **1004**, wherein that policy may allow the client **1004** to work with other wireless servers such as server **1010** that may be established for the family members or other small group associated with the user of the client **1004**. The authorizations may include permission for the server **1004** to synchronize with other e-mail services and domains, such as the user's private or non-business e-mail address, or provide other services such as calendaring between the users of the server **1010**.

Each wireless server, such as wireless servers **1002** and **1010** that operate with UE **1004**, has its own SPA, where UE **1004** is in a multiple registered mode with wireless servers **1002** and **1010**. The SPA of each server may have different policies for different UEs registered with the server even though these different UEs share information. To facilitate different sets of policies for different UEs, the SPA may be realized as a group of SPAs within the server with each SPA assigned to direct subsets of the different UEs. The subsets may consist of one UE.

In one configuration of an SPA, the SPA may have a policy that places no controls on UE **1004** such that any activity on connected UE **1004** is allowable. In some embodiments, there may be one or more servers that have no SPA (typically, already existing servers) which will often mean there will be no modify flag. Servers can provide a modify flag without a SPA, but these are currently expected to be a minority embodiment. In some embodiments, the UEPA may be set to recognize a server's or provider's identity and apply a preprogrammed set of modification rules in the UE, so no flag is needed. The UEPA of a UE connected to a server/provider with no modify flag and no preprogrammed modification rules can be provided with a default. The default action may be set by the UE provider, or may be selectable by the user in some embodiments. In one embodiment, when there is no modify flag and no preprogrammed set of modify rules corresponding to a server or provider, the UEPA is set to interpret the no-modify-flag condition as one of either "T" or "F". "T" means that the UEPA will either allow policy modifications to this server's/provider's policies, and, this server/provider will take lower precedence as compared to other servers/providers. "F" means that no policy modifications may be made to this server's/provider's policies, and, this server/provider takes higher precedence as compared to other servers/providers. In higher security environments, the default is expected to be "T", since a server/provider with no modify flag or preprogrammed modify rules will be interpreted as a higher-risk connection. Any server in a setting where security is more than nominal, which does not have a modify flag (and therefore probably no SPA), may not the primary server for the UE. That is, in high security environments, the primary or dominant server should always be current in software settings, should have an SPA, and should have a modify flag. If the user connects to a server having no modify flag (and typically no SPA), it may be assumed that it is a secondary server of unknown security (not trusted). In such a case, the UEPA, which assigns modify values, should use a default value of "T" for the modify value for the untrusted server, meaning that policies of the untrusted server are presumed modifiable in accordance with other, more trusted servers' policies.

In an embodiment, a UE, such as UE **1004**, is registered among multiple wireless servers, such as wireless servers **1002** and **1010**, though UE **1004** is not limited to registering with two wireless servers, where the UEPA of UE **1004** receives policy information from each of the SPAs of wireless servers **1002** and **1010**. The SPAs of multiple wireless servers, such as wireless servers **1002** and **1010**, may have a hierarchical order in terms of which SPA provides policies fully implemented by the UEPA. A hierarchy may be implemented as simple dominance in which one SPA's policies are implemented and policies of other SPAs are not used at all. For example, if the user of the UE is a registered member of a corporate server and a home-based wireless server in which the corporate server is designated as dominant and has a policy of not sharing information outside the registered mem-

bers of the corporate server, then a policy of assigning different sharing status for the UE with different members of the home-based server may not be implemented in the UE. Alternatively, the non-sharing information may be limited to information acquired through the corporation server such that a portion of the non-dominant servers policy to assign different sharing status may be implemented with respect to information acquired other than through the corporate server. Hierarchies may be implemented as subsets, that is, one SPA may be designated as dominant, and other SPA policies may be implemented or any portion of other SPA's policies may be implemented, where such polices or portions thereof are subsets of, or do not interfere with, the dominant SPA's policies. The implemented policies in a subset arrangement are logically consistent with each other. For example, if a dominant SPA limits international calls to a set of countries and a non-dominant SPA limits international calls to half of the same set of countries, the policy of the non-dominant SPA is a subset of the policy of the dominant SPA. Policies conflict if the policies are logically unresolvable. For example, unlimited minutes of use by the UE may be allowed by the SPA from a corporate server and limited minutes of use by the UE may be set by the SPA from a home-based server in which the policies are logically resolvable by associating two different accounts to the two different policies. For a situation in which members registered with a corporate server as a dominant server are not allowed to share any information through their UE, a policy that allows sharing from a non-dominant server would not be logically consistent with the policy of the dominant server.

In an embodiment, the UEPA may evaluate the policies provided by the SPAs of multiple servers by checking the modify flag controlled by each SPA of the multiple servers. Each SPA may send the status of its associated modify flag in response to a request from the UEPA, in establishing a connection with the UE, or during other policy establishing procedures with the UEPA. If the modify flag from a SPA is set to "no" or "F", then the policy cannot be modified and the UEPA must determine if the policies associated with this SPA can be made consistent with the information the UEPA has from the other SPAs to which the UE is also connected. For example, if the UE is logged into two servers that both have their modify flags set to "F" for the UE with one server designated as the dominant server, then the policies of the non-dominant server that are not consistent with the policies of the dominant server are ignored. If all policies of the non-dominant server conflict with those of the dominant server, the UEPA may direct a process for the UE user that would allow the UE user to re-evaluate the user's choice of servers to which the UE is registered. If no policies are set as dominant and SPA policies are received at a UEPA that conflict (logically unresolvable) with existing SPA policies, the default action of the UEPA may be to not allow the received policies and/or to hang up the connection being made with the UE that contains SPA policies not consistent with existing connections and/or registrations. If one server has its modify flag set to "T" for the UE and the other server has its modify flag set to "F", then the logical requirements of both servers can still be met, since the UEPA following the non-modifiable policies is allowed by both SPAs.

In an embodiment, a wireless server may be configured to have multiple groups of UEs registered as independent groups with the wireless server. In addition, a UE may register as a member of no group, one group, or a plurality of groups on the wireless server. The SPA may send multiple sets of policies to the UE, based on the groups to which the UE is registered with the server. The UEPA of the UE may resolve the different policies as discussed above. Alternatively, the SPA may resolve conflicts between policies of different groups and send a set of resolved policies to the UEPA for each group in which the UE is registered.

In an embodiment, a UEPA of a UE may be configured such that it presents a logical interface to each server to which the UE is connected such that the logical interface functions as if there is only one server connected. For such a configuration, the default status of the UEPA is to keep each connection independent such that there is no sharing of any information between servers and/or connection. However, the UEPA may direct the display of a split screen on the UE in which the multiple independent connections may be shown. Using the split screen, the UE user may manage the different connections. A UE registered and/or connected to a plurality of servers and/or providers may have a UEPA configured such that no sharing occurs between the servers. In an embodiment, the no sharing policy cannot be overridden by any SPA policy. For example, one server may be corporate server and another server may be a personal server, such as one located in a home, having a registered member that is a registered member of the corporate server. Information shared with members of the corporate server may not be allowed to be shared with members of the personal server. If a second member registered with the personal server is also registered with the corporate, information associated with the corporate server that is shared between the two members of both the corporate server and the personal server is provided through the logical interface associated with the corporate server. In an embodiment, a UEPA of a UE may have a policy that certain pre-defined groups or sets of servers and/or providers may provide SPA policies that will be used in operation between the designated groups, but no sharing will occur between that these groups and any other server and/or provider not in the pre-defined groups. Each of the pre-defined groups may be a group of one server.

Referring now to FIG. **11**A, there is illustrated a first example embodiment of a system and method for routing e-mail messages with external domains directly between mobile wireless clients. As illustrated in FIG. **11**A, a first wireless server **1102** is communicatively operable with a plurality of mobile wireless clients **1104-1** and **1104-2**. In one example embodiment, the wireless server **1102** may include a database configured to store information associated with users of the mobile wireless clients including a user identification for each mobile wireless client **1104-1** and **1104-2**, and an e-mail agent **1110** including one or more e-mail proxies to collect or send e-mails from and to one or more external e-mail domains, managed by an external e-mail server **1108-1** and **1108-2**. According to one embodiment, these external domains may include e-mail domains such as Microsoft Hotmail®, and Google Gmail®. In another embodiment, the external e-mail domains may include corporate or other enterprise mail systems such as Microsoft Exchange®, IBM's Domino® and Novell's Group Wise®.

According to one embodiment, each e-mail corresponds to a user identification. An e-mail agent **1110** supports e-mail services of the mobile wireless clients **1104** correlated to the user identifications. The e-mail services include coordinating the sending and receiving of e-mail from each e-mail domain corresponding to the user identifications. The e-mail agent **1110** is further configured to include a direct routing function **1112** to route an e-mail message between the one or more mobile wireless clients without first processing the e-mail message through the external e-mail domain identified in the e-mail message. Accordingly, according to one example

embodiment, the e-mail message is delivered without first being processed by the external e-mail server.

Thus, as illustrated in FIG. **11**B, a method according to one example embodiment calls for an e-mail message to be sent **1122** from a first wireless client wherein the e-mail message is from a first user or entity associated with an external e-mail domain. The e-mail is addressed to a second user or entity also having an external e-mail domain the same as or different from the external e-mail domain of the first user or entity. The e-mail is received **1124** at the wireless server **1102**, for example into the e-mail agent **1110**, and the e-mail message is routed or sent directly **1126** to the second mobile wireless client **1104-2**, for example using the direct routing function **1112**, without first processing the e-mail message through the one or more external e-mail domains identified for the sender or recipient of the e-mail message. Accordingly, the e-mail message is likely more quickly delivered to the recipient as it is not required first to be sent to and routed through the external e-mail server(s) (for example **1108-1** and **1108-2**). In one alternate embodiment, the external e-mail servers are also updated **1128** so that the e-mail records in these servers appear to have sent or received the direct routed e-mail. Accordingly, the external e-mail servers stay synchronized with any e-mail routed directly by the wireless server **1102**. In one embodiment, the external e-mail servers are directed, for example by e-mail agent **1110**, to synchronize the e-mail after the e-mail is first routed. In another embodiment, the external servers may be instructed to synchronize the e-mail after or simultaneously with the direct routing of the message between mobile wireless clients.

According to one example embodiment, e-mail domains external to the wireless server **1102** may include an e-mail domain based on a post office protocol (POP), an e-mail domain based on an internet message access protocol (IMAP), e-mail domains based on POP and IMAP, or e-mail based on other server architectures such as Microsoft Exchange®, IBM's Domino® or Novell's Group Wise®.

According to still another example embodiment, the direct routing of e-mails may be applied to other electronic communications such as instant messaging wherein instead of the external e-mail servers and domains there are instant messaging servers and the direct routing routes the instant message directly between the mobile wireless clients as opposed to through the external domain.

FIG. **12** shows an embodiment of a method of administering mobile wireless clients. The wireless server provides a simplified user interface for administering mobile wireless clients. In one embodiment, the wireless server displays one or more administration scenarios for at least one of a plurality of mobile wireless clients. A user of the wireless server selects the administration scenario. The mobile wireless server automatically determines one or more administration parameters for a mobile wireless client in response to the selection of the one or more administration scenarios.

At **1210**, the mobile wireless server may present, to a user, one or more administration scenarios for a mobile device. The wireless server then receives, from the user, a selection of at least one of the administration scenarios. At **1220**, without interaction from the user, the wireless server identifies one or more administration parameters to implement the selected administration scenarios. The administration parameters are operable to configure the mobile device for the particular administration scenario.

The administration scenario includes conditions or desired changes to the wireless device that involves a change to the configuration data on the wireless device in order to implement the change. For example, administration scenarios include, but are not limited to setting a password, forgetting a password, misplacing a mobile device, losing a mobile device and managing modes for operation for the wireless device.

FIG. **13** shows an alternate embodiment of a method of administering mobile wireless clients. At **1310**, a wireless server receives a desired mode of operation for a mobile wireless client. At **1320**, wireless server may use the desired mode of operation to determine one or more administration parameters to configure the mobile wireless client for the desired mode of operation.

Modes of operation for the wireless device may include, but are not limited to, turning off a phone function, controlling web site access, restricting international phone calls, restricting phone calls to specified area codes, turning off Short Message Service (SMS) messages, turning off Multimedia Messaging Services (MMS), turning off Web browser use, blocking downloading of specified content (e.g. games), and logging or monitoring different types of usage on the mobile device.

In one embodiment, the wireless server may transmit administration parameters from the wireless server to the mobile wireless client and configure the mobile wireless client for the desired mode of operation using the administration parameters. The administration parameters may be determined without human intervention.

In one embodiment, either the wireless server or the mobile wireless client may display administration scenarios or modes of operation on a simplified user interface. The simplified user interface displays less than all of the administration parameters available for configuration of the wireless device. Instead the simplified user interface may display one or more administration scenarios or modes of operation rather than displaying the administration parameters. For example, if the administration scenario for authentication of users on the system involves requiring a password, the administration parameters used to implement the administration scenario may include the following:

Password required parameter (true/false)
Maximum Password Age parameter (number of days)
Maximum Password Length parameter (number of characters)
Password Pattern Checks
Prohibited Passwords.

Although in this example, five parameters are involved to implement an administration scenario of requiring a password, the simplified user interface may not display any of the administration parameters, or the user interface may display less than all of the administration parameters. Instead of displaying some or all of the administration parameters, the user interface may display high-level or abstract descriptions of the administration parameters used to implement a password policy. For example, the user interface may offer as a choice for a user the question "Do you need to change your password?" The question is an example of an administration scenario.

FIG. **14** illustrates a system **1400** that may be deployed within the architecture **100** and/or the architecture **200** (see FIGS. **1** and **2**). For example, a collaboration tool **1402** and an agent **1412** may be deployed within the wireless server **205** (see FIG. **2**). The informational content may be stored within an informational content management subsystem **1408** of a collaboration tool **1402**.

The informational content management subsystem **1408** may receive and/or provide information relating to informational content from a user through a web console user interface **1404** and/or from an external application through the

external interface **1406**. The external interface **1406** may use an API of an external application and/or a scrapping program to obtain the information.

The informational content management subsystem **1408** may utilize a synchronization table **1410** and the agent **1412** to provide informational content to and/or receive informational content from a wireless mobile device **1414**. The agent **1412** may enable communication between the wireless mobile device **1414** and the collaboration tool **1402**. The wireless device **1414** may be a member of the group **110** of wireless devices (see FIG. **1**).

The synchronization table **1410** may be capable of synchronizing the mobile wireless device **1414** with the wireless server **205**. The synchronization table **1410** may be retained on the wireless server **205**.

FIG. **15** illustrates an example informational content management subsystem **1408** that may be deployed in the system **1400** or in another system.

The informational content management subsystem **1408** may include an informational content access module **1502**, an informational content display module **1504**, an informational content provider module **1506**, an entry module **1508**, an identification module **1510**, a record module **1512**, an acknowledgement receiver module **1514**, a synchronization update module **1516**, a disassociation module **1518**, a distribution determination module **1520**, a synchronization access module **1522**, a delivery status determination module **1524**, a notification module **1526**, a content retainer update module **1528**, a synchronization modification module **1530**, a deletion module **1532**, and/or a content data modification module **1534**. Other modules may also be used.

The informational content access module **1502** accesses (e.g., receives) private informational content associated with a single user and/or shared informational content associated with the single user and at least one other user. The informational content may be received from the one or more information sources **115** (see FIG. **1**).

The informational content display module **1504** displays the private informational content and the shared informational content on a same user interface for the single user. The same user interface may include, by way of example, the web console user interface **1404** and/or a user interface on the wireless mobile device **1414**.

The informational content provider module **1506** delivers or transfers the shared informational content (e.g., received from of the one or more information sources **115**) and/or private informational content to the mobile wireless device **1414** associated with the user. The provided informational content may be capable of resynchronizing the mobile wireless device **1414**.

The entry module **1508** adds and/or removes an entry in a user configuration table for a user.

The identification module **1510** identifies private informational content and/or shared informational content associated with the user.

The record module **1512** adds a synchronization record for the shared informational content and/or the private informational content to a synchronization table and/or removes a synchronization record for the shared informational content and/or the private informational content from a synchronization table.

The acknowledgement receiver module **1514** receives an update acknowledgement from the mobile wireless device **1414**.

The synchronization update module **1516** updates the synchronization table based on the received update acknowledgement and/or provided informational content based on the privacy state.

The disassociation module **1518** disassociates a private content retainer (e.g. a folder or a content table) associated with a user.

The distribution determination module **1520** determines a distribution of the informational content to one or more mobile wireless devices **114** based on the privacy state of the informational content.

The synchronization access module **1522** accesses one or more synchronization records associated with informational content based on a distribution determination.

The delivery status determination module **1524** determines a delivery status of the informational content associated with the one or more synchronization records.

The notification module **1526** sends a notification regarding the informational content to a user and/or receives a notification to delete informational content (e.g., shared informational content).

The content retainer update module **1528** updates a content retainer (e.g., a folder or a content table) of the content type to include the informational content. The content retainer may be capable of tracking the privacy state of the informational content.

The synchronization modification module **1530** modifies a synchronization table for one or more users to reflect deletion of the shared informational content.

The deletion module **1532** provides a deletion request for the shared informational content to the mobile wireless device **1414** of a user and/or receives a deletion acknowledgement from the mobile wireless device **1414** of the user.

The content data modification module **1534** modifies a content data structure of the content type to remove the informational content.

FIG. **16** illustrates an example wireless mobile device **1414** that may be deployed in the system **1400** or in another system.

The wireless mobile device **1414** may include an informational content receiver module **1602**, a content data structure update module **1604**, an information display module **1606**, an acknowledgement provider module **1608**, a deletion request receiver module **1610**, and/or an omission module **1612**. Other modules may also be used.

The informational content receiver module **1602** receives informational content of a content type from the wireless server **205** (see FIG. **2**).

The content data structure update module **1604** updates a content data structure of the content type to include and/or remove the informational content.

The information display module **1606** displays information associated with the informational content on a user interface of the mobile wireless client **114**.

The acknowledgement provider module **1608** provides an update acknowledgement and/or a deletion acknowledgement to the wireless server **205**.

The deletion request receiver module **1610** receives a deletion request for shared informational content of a content type from the wireless server **205**.

The omission module **1612** omits the shared informational content from display of the information associated with the content data structure on a user interface.

FIG. **17** illustrates a user map **1700** according to an example embodiment. The user map **1700** may be deployed in the informational content management system **1408**, or otherwise deployed in the system **1400** or in another system.

The user map **1700** may maintain a mapping between a number of users and content retainers (e.g., folders or content tables) associated with the users. The content retainers may retain informational content received from a user or otherwise received.

A user may be associated with more than one content retainer. For example, the user may be associated with one or more private content retainers and/or one or more public content retainers. The content retainer may be identified with more than one user. For example, the content retainer may be associated with multiple users for a shared content retainer.

The user map **1700** may include a user identifier header **1702**, a content retainer identifier header **1704**, and/or a permission header **1706** and a number of mapping records **1708-1722**. Each of the mapping records **1708-1722** may include a field corresponding to a header. Other headers and/or records may also be used.

The user identifier header **1702** references a user identifier with which a particular user is associated to distinguish the user from other users. A particular user identifier may be included multiple times in the mapping records **1708-1722** to reflect that the particular user identifier is associated with multiple content retainers.

The content retainer identifier header **1704** references a content retainer identifier of a content retainer with which a particular user is associated. A particular content retainer identifier may be included multiple times in the mapping records **1708-1722** to reflect that a particular content retainer is associated with multiple users.

The permission header **1706** references the permission that users have with respect to content retainers. The permissions available may include, for example, read access, write access, modify access, and/or all access. The permission may enable an associated user to have certain access to informational content retained by the content retainer.

FIG. **18** illustrates content retainers **1800** according to an example embodiment. The content retainers **1800** may be deployed in the informational content management system **1408** or otherwise deployed in the system **1400** or in another system.

The content retainers **1800** may be in the form of a number of folders **1802-1810** that may each retain one or more appointments **1812-1820** or other informational content. The number of folders **1802-1810** is shown merely as an example, and a greater or lesser number of folders of the same and/or different content types may also be used. In an example embodiment, a folder of the folders **1802-1810** may only include a single content type of the informational content, and multiple folders may be used to represent more than one content type.

A shared informational content folder **1802** may include two shared informational content subfolders **1804**, **1806**. The two shared informational content subfolders **1804**, **1806** may inherit some of the properties (e.g., association of users with a particular folder) of the shared informational content folder **1802** on which it is based. The two shared informational content subfolders **1804**, **1806** may enable a user to be associated with only a subset of the appointments or other informational content of the parent shared informational content folder **1802**. A private folder **1814** may be subdivided into one or more subfolders **1810** for organizational or other purposes.

FIG. **19** illustrates content retainers **1900** according to an example embodiment. The content retainers **1900** may be deployed in the informational content management system **1408** or otherwise deployed in the system **1400** or in another system.

The content retainers **1900** may be in the form of a number of content tables **1902**, **1904** that may each retain one or more appointments **1906.1-1906.*n***, **1908.1 -1908.*n*** or other informational content. The number of content tables **1902**, **1904** is shown merely as an example, and a greater or lesser number of folders of the same or different content types may also be used. In an example embodiment, a content table of the content tables **1902**, **1904** may only include a single content type of the informational content, and multiple content tables may be used to represent more than one content type.

FIG. **20** illustrates appointment data **2000** according to an example embodiment. The appointment data **2000** may be deployed as informational content in the informational content management system **1408** or otherwise deployed in the system **1400** or in another system. The appointment data **2000** may be used for a calendar or otherwise used.

The appointment data **2000** may include an entry identifier field **2002**, a date field **2004**, a subject field **2006**, a start time field **2008**, a duration field **2010**, a time zone field **2012**, a reminder time field **2014**, an event title field **2016**, an event body field **2018**, an event location field **202**, a content retainer identifier field **2022**, an owner identifier field **2024**, and/or a shared field **2026**. Other fields may also be used.

The entry identifier field **2002** stores a value (e.g., an index value) for the appointment data **2000** to distinguish particular appointment data **2000** (e.g., an appointment) from other informational content in the content retainer. For example, the content retainer may include a number of appointment data **2000** where each is identified by an entry identifier.

The date field **2004** stores a date on which an appointment occurs. The subject field **2006** stores a subject of the appointment. The start time field **2008** stores a start time of the appointment. The duration field **2010** stores duration of the appointment. The time zone field **2012** stores a time zone of the appointment. The reminder time field **2014** stores an optional time at which a reminder may be sent to one or more users associated with the appointment.

The event title field **2016** stores a title of the appointment. The event body field **2018** stores a body of the appointment. The event location field **202** stores an event location of the appointment. The content retainer identifier field **2022** identifies the content retainer associated with the informational content.

The owner identifier field **2024** identifiers a user identifier or a creator of the appointment. The shared field **2026** indicates whether the appointment is a shared appointment or a private appointment.

FIG. **21** illustrates memo data **2100** according to an example embodiment. The memo data **2100** may be deployed as informational content in the informational content management system **1408** or otherwise deployed in the system **1400** or in another system. The memo data **2100** may be used in a collection of memos or otherwise used.

The memo data **2100** may include an entry identifier field **2102**, an entry date field **2104**, a subject field **2106**, a memo title field **2108**, a memo body field **2120**, a content retainer identifier field **2112**, an owner identifier field **2114**, a shared field **2116**, and/or a completion field **2118**. Other fields may also be used.

The entry identifier field **2102** stores a value (e.g., an index value) for the informational content to distinguish particular memo data **2100** (e.g., a memo) from other informational content in the content retainer.

The entry date field **2104** stores a value of a date on which the memo was created. The subject field **2106** stores a subject of the memo. The memo title field **2108** stores a title of the memo. The memo body field **2120** stores a body of the memo.

The content retainer identifier field **2112** identifies the content retainer associated with the memo data **2100**. The owner identifier field **2114** identifiers a user identifier or a creator of the memo. The shared field **2116** indicates whether the memo is a shared memo or a private memo. The completion field **2118** indicates whether a task or other information described in the memo has been completed.

FIG. **22** illustrates address book data **2200** according to an example embodiment. The address book data **2200** may be deployed as informational content in the informational content management system **1408** or otherwise deployed in the system **1400** or in another system. The address book data **2200** may be used in an address book or otherwise used.

The address boon data **2200** may include an entry identifier field **2202**, a last modified data field **2204**, a full name field **2206**, a mailing address field **2208**, an e-mail address field **2210**, a phone number field **2212**, a fax number field **2214**, a notes field **2216**, a content retainer identifier field **2218**, an owner identifier field **2220**, and/or a shared field **2222**. Other fields may also be used.

The entry identifier field **2202** stores a value (e.g., an index value) for the address book data **2200** to distinguish particular address book data **2200** (e.g., an address book entry) from other informational content in the content retainer.

The last modified date field **2204** stores a value of a date on which the address book entry was last modified. The full name field **2206** stores a full name of a user for the address book entry. The mailing address field **2208** stores a mailing address for the address book entry. The e-mail address field **2210** stores an e-mail address for the address book entry. The phone number field **2212** stores a phone number for the address book entry. The fax number field **2214** stores a fax number for the address book entry. The notes field **2216** stores notes for the address book entry.

The content retainer identifier field **2218** identifies the content retainer associated with the address book entry. The owner identifier field **2220** identifiers a user identifier and/or a creator of the address book entry. The shared field **2222** indicates whether the address book entry is a shared address book entry or a private address book entry.

FIG. **23** illustrates an example recurrence table **2300** according to an example embodiment. The recurrence table **2300** may be deployed in the informational content management system **1408** or otherwise deployed in the system **1400** or in another system. The reoccurrence table **2300** may be associated with informational content (e.g., an appointment) to indicate multiple occurrences of the informational content (e.g., within a content retainer).

The recurrence table **2300** may include a number of headers **2304-2318** with associated fields **2320-2334** for each entry in the recurrence table **2300**. While the recurrence table **2300** is shown to include a single recurrence with the field **2320-2334**, a greater number of recurrences may be included in the recurrence table **2300**.

The fields **2320-2334** may include a recurrence identifier field **2320**, a recurrence interval field **2322**, a recurrence frequency field **2324**, a recurrence until field **2326**, a recurrence month field **2328**, a recurrence week start field **2330**, a recurrence day of week field **2332**, and/or a recurrence day of month field **2334**. Other fields may also be used.

The recurrence identifier field **2320** receives a value (e.g., an index value) for recurrence to distinguish a particular recurrence from other recurrences in the recurrence table **2300**.

The recurrence interval field **2322** receives a value indicating an interval between occurrences (e.g., of the appointment). The recurrence frequency field **2324** receives a value indicating frequency of the occurrence. The recurrence until field **2326** receives a value indicating a through date for the occurrences.

The recurrence month field **2328** receives a value indicating a month of the year for the occurrences. The recurrence week start field **2330** receives a value indicating a week of the year for the occurrences to start. The recurrence day of week field **2332** receives a value indicating a day of the week for the occurrences. The recurrence day of month field **2334** receives a value indicating a month of the year for the occurrences.

FIG. **24** illustrates an example synchronization table **1410** according to an example embodiment. The synchronization table **1410** may be deployed in the system **1400** or in another system.

The synchronization table **1410** may include a number of headers **2402-2418** with associated fields **2420-2336** for each entry in the synchronization table **1410**. The fields **2420-2336** may include a table identifier field **2420**, a synchronization identifier field **2422**, a user identifier field **2424**, a reference identifier field **2426**, a delivery status field **2428**, a content type field **2430**, a revision field **2432**, a sequence field **2434**, and/or a status field **2436**. Other headers and/or fields may also be used.

The table identifier field **2420** receives a value (e.g., an index value) to distinguish a particular synchronization record from another synchronization record in the synchronization table **1410**.

The synchronization identifier field **2422** receives a value indicating an entry identifier for informational content of a content type. The user identifier field **2424** receives a value indicating a user on the user map **1700** with whom the synchronization record is associated. The reference identifier field **2426** receives a reference value.

The delivery status field **2428** receives a value indicating a delivery status of the informational content to the mobile wireless device **1414**. For example, the value may be a "4" indicating that the associated informational content is new and is to be delivered to the wireless mobile device **1414**, a "8" indicating that that the associated informational content is updated and is to be delivered to the wireless mobile device **1414**, or a "16" indicating that the associated informational content is to be deleted from the mobile wireless device **1414**.

The content type field **2430** receives a value indicating the content type of the informational content. The revision field **2432** receives a value that may be used to resolve conflicting and/or concurrent updates on the mobile wireless device **1414**. The sequence field **2434** receives a value that may be used to resolve conflicting and/or concurrent updates on the mobile wireless device **1414**. The status field **2436** receives a value indicating the processing status of the informational content management subsystem **1402**.

FIG. **25** illustrates a content retainer table **2500** according to an example embodiment. The content retainer table **2500** may be deployed in the informational content management system **1408** or otherwise deployed in the system **1400** or in another system. The content retainer table **2500** may be associated with a content retainer (e.g., a folder or a content table) to identify a name and a content type for the associated content retainer.

The content retainer table **2500** may include a number of headers **2502-2506** and a number of records **2508-2516** with fields corresponding to the headers **2502-2506**. The headers **2502-2506** may include a content retainer identifier header **2502**, a content retainer name field **2504**, and/or a content type field **2506**. Other headers and/or fields may also be used.

A field associated with the content retainer identifier header **2502** receives a value (e.g., an index value) to distin-

guish a particular content retainer from another content retainer. A field associated with the content retainer name header **2504** receives a name of the content retainer. A field associated with the content type header **2506** receives a value indicating the content type of the content retainer.

FIG. **26** illustrates a user configuration table **2600** according to an example embodiment. The content retainer table **2600** may be deployed in the agent **1412** or otherwise deployed in the system **1400** or in another system. The user configuration table **2600** may associate a user with a particular mobile wireless device **1414**.

The user configuration table **2600** may include a number of headers **2602**, **2604** and a number of entries **2606-2620** with fields corresponding to the headers **2602**, **2604**. The headers **2602**, **2604** may include a user identifier header **2602** and/or a device identifier header **2604**. Other fields and/or headers may also be used.

A field associated with the user identifier header **2602** receives a value (e.g., an index value) to distinguish a particular user from another user. A field associated with the device identifier header **2604** receives a value (e.g., a unique value) indicating the wireless mobile device **1414** that is associated with a particular user.

FIG. **27** illustrates a method **2700** for presenting informational content according to an example embodiment. The method **2700** may be performed by the wireless mobile device **1414**, by the informational content management subsystem **1408**, or otherwise performed.

Private informational content associated with a single user is accessed at block **2702**. The private information content may be unavailable to other users beyond the single user. Shared informational content associated with the single user and at least one other user is accessed at block **2704**. The shared and/or private informational content may include, by way of example, calendar data, an address book, a message board, a task monitor, photograph data, music data, video data, text data, or a combination there. Other types of shared informational content may also be used.

The private informational content and the shared informational content are displayed on a same user interface for the single user at block **2706**. For example, the same user interface may be on the mobile wireless device **1414**.

FIG. **28** illustrates a method **2800** for synchronizing informational content according to an example embodiment. The method **2800** may be performed by the agent **1412**, the informational content management subsystem **1408**, or otherwise performed.

Shared informational content for a user is received from one or more information sources **115** at block **2802**. The information sources **115** may include, by way of an example the web console interface **1404**, a user interface of the mobile wireless device **1414**, and/or an external interface **1406**. Other information sources **115** may also be used.

The shared informational content may include calendar data, an address book, a message board, a task monitor, photograph data, music data, video data, text data, or a combination thereof. The shared informational content may include new informational content or modified informational content.

At block **2084**, the shared informational content received from of the one or more information sources **115** is delivered to the mobile wireless device **1414** associated with the user. The shared informational content may be delivered to a second mobile wireless device **1414** associated with a second user.

FIG. **29** illustrates a method **2900** for adding a user to the wireless server **205** according to an example embodiment. The method **2900** may be performed by the informational content management subsystem **1408** or otherwise performed.

An entry is added in the user configuration table **2006** for a user at block **2902**.

Private informational content associated with the user may be identified at block **2904**.

The synchronization record for the private informational content may be added to the synchronization table **1410** for the user at block **2906**.

The private informational content may be transferred to the mobile wireless device **1414** of the user at block **2908**.

Shared informational content associated with the user is identified at block **2910**.

A synchronization record for the shared informational content is added to the synchronization table **1410** for the user at block **2912**.

The shared informational content is transferred to the mobile wireless device **1414** of the user at block **2914**.

An update acknowledgement may be received from the mobile wireless device **1414** at block **2916**.

The synchronization table **1410** for the user may be updated based on the received update acknowledgement at block **2918**.

In an example embodiment, the operations performed at the blocks **2910**, **2912**, **2914** may occur before the operations performed at the blocks **2904**, **2906**, **2908**.

FIG. **30** illustrates a method **3000** for deleting a user from the wireless server **205** according to an example embodiment. The method **3000** may be performed by the informational content management subsystem **1408** or otherwise performed.

One or more synchronization records are removed from the synchronization table **1410** for a user at block **3002**.

An entry in the user configuration table **2600** is removed for the user at block **3004**. The user configuration table **2600** may include one or more entries. Each of the one or more entries may define an association between another user and the mobile wireless device **1414**.

A private content retainer associated with the user may be dissociated at block **3006**. The private content retainer may include a private folder or a private table. Other private content retainers may also be used.

FIG. **31** illustrates a method **3100** for informational content distribution according to an example embodiment. The method **3100** may be performed by the informational content management subsystem **1408**, the agent **1412**, or otherwise performed.

Informational content is accessed at block **3102**. The informational content may have a privacy state.

In an example embodiment, during the operations at block **3102** a modification request for the informational content may be received through a user interface (e.g., the web console user interface **1404**), the informational content may be modified in accordance with the modification request; and the one or more synchronization records associated with the informational content may be modified.

At block **3104**, a distribution of the informational content to one or more mobile wireless devices **1414** is determined based on the privacy state.

One or more synchronization records associated with informational content is accessed based on the distribution determination at block **3106**

A delivery status of the informational content associated with the one or more synchronization records is determined at block **3106**.

The informational content is transferred to the one or more mobile wireless devices **1414** based on the delivery status determination at block **3108**.

FIG. **32** illustrates a method **3200** for processing informational content according to an example embodiment. The method **3200** may be performed by the informational content management subsystem **1408**, the agent **1412**, or otherwise performed.

Informational content of a content type is received at block **3202**. The informational content may have a privacy state. The informational content may be received the mobile wireless device **1414**, a user interface on a different computing system, or otherwise received.

At block **3204**, the synchronization table **1410** identifying one or more users of mobile wireless clients **210** (see FIG. **2**) to be provided with the informational content is updated based on the privacy state of the informational content. The updating may include, by way of an example, adding an entry to the synchronization table **1410** for a user to be provided with the informational content and/or modifying an entry to the synchronization table **1410** for a user to be provided with the informational content.

In an example embodiment, a user of the mobile device **1414** may not receive the informational content when the informational content originated from the wireless mobile device **1414** of the user. Excluding a retransmission of the informational content from the originating wireless mobile device **1414** may reduce bandwidth and/or prevent unnecessary processing of data by the originating wireless mobile device **1414**.

A determination may be made at decision block **3206** whether to transfer the informational content. If a determination is made to transfer the informational content, the informational content may be transferred to the mobile wireless device **1414** of one or more users at block **3208**. The provided information may be capable of resynchronizing the mobile wireless device **1414**. If a determination is made at decision block **3206** not to transfer the informational content, the method **3200** may proceed to decision block **3210**.

At decision block **3210**, a determination may be made whether to send a notification. If a determination is made to send a notification, a notification regarding the informational content may be sent to one or more users. If a determination is made not to send a notification at decision block **3210**, the method **3200** may proceed to decision block **3214**.

A determination may be made at decision block **3214** whether to update a content retainer (e.g., a folder or a content table). If a determination is made to update the content retainer, a content retainer of the content type may be updated to include the informational content. The content retainer may be capable of tracking the privacy state of the informational content. If a determination is made not to update the content retainer at decision block **3214** or upon completion of the operations at block **3216**, the method **3200** may terminate.

In an example embodiment, updating the content table may include adding the informational content to a content table (e.g., the content table **1902**, **1904**) or modifying existing informational content of the content table. For example, modifying the existing informational content may include determining whether a user associated with received informational content is an owner of the existing informational content and modifying the existing informational content based on the determination.

In an example embodiment, the operations at decision blocks **3206**, **3210**, **3214**, may occur in any order and/or simultaneously.

FIG. **33** illustrates a method **3300** for processing informational content according to an example embodiment. The method **3300** may be performed by the wireless device **1414** or otherwise performed.

Informational content of a content type is received from the wireless server **205** at block **3302**. The informational content may include, by way of an example, a calendar item, a memo item, a contact item, a task item, a message board item, and/or an address book item. Other informational content may also be used.

A content data structure of the content type is updated to include the informational content at block **3304**. The content data structure may have the privacy state of the informational content. The content data structure may be a folder, a content table, or a different structure.

An update acknowledgement may be provided to the wireless server **205** at block **3306**.

Information associated with the informational content is displayed on a user interface of the mobile wireless client **1414** at block **3308**.

FIG. **34** illustrates a method **3400** for deleting shared informational content according to an example embodiment. The method **3100** may be performed by the informational content management subsystem **1408** or otherwise performed.

A notification to delete shared informational content of a content type is received at block **3402**. The shared informational content may be associated with a number of users.

At block **3404**, the synchronization table **1410** is modified for the users to reflect deletion of the shared informational content.

In an example embodiment, delivery status of a synchronization record of the synchronization table **1410** may be modified for the users to reflect deletion of the shared informational content.

A deletion request for the shared informational content is provided to the mobile wireless device **1414** of one or more users at block **3406**.

A deletion acknowledgement may be received from the mobile wireless device **1414** of the user at block **3408**.

A content data structure of the content type may be modified to remove the informational content at block **3410**.

FIG. **35** illustrates a method **3500** for deleting shared informational content according to an example embodiment. The method **3500** may be performed by the wireless device **1414** or otherwise performed.

At block **3502**, a deletion request for shared informational content of a content type from the wireless server **205** is received.

A content data structure of the content type is updated to remove the informational content at block **3504**.

A deletion acknowledgement may be provided to the wireless server **205** at block **3506**.

At block **3508**, the shared informational content may be omitted from display of the information associated with the content data structure on a user interface.

Various embodiments or combination of embodiments for apparatus and methods for a wireless server, as described herein, can be realized in hardware implementations, software implementations, and combinations of hardware and software implementations. These implementations may include a machine-readable medium having machine-executable instructions, such as a computer-readable medium having computer-executable instructions, for operating the wireless server in a group relationship with one or more mobile wireless clients such that information is disseminated among the group based on a privacy status associated with the information. The communications of the wireless server with the

group and sharing of information can be conducted on a secured basis. The machine-readable medium is not limited to any one type of medium.

Various embodiments or combination of embodiments for apparatus and methods for a mobile wireless device, as described herein, can be realized in hardware implementations, software implementations, and combinations of hardware and software implementations. These implementations may include a machine-readable medium having machine-executable instructions, such as a computer-readable medium having computer-executable instructions, for operating the mobile wireless device in a multiple-mode arrangement as a wireless client of multiple wireless servers. The mobile wireless device may be configured in a group relationship with the wireless servers such that the mobile wireless device information interact with the wireless servers to receive and send information based on a privacy status associated with the information. The communications of the mobile wireless device with each wireless server of an associated group can be conducted on a secured basis. The machine-readable medium is not limited to any one type of medium.

Although specific embodiments have been illustrated and described herein, it will be appreciated by those of ordinary skill in the art that any arrangement that is calculated to achieve the same purpose may be substituted for the specific embodiments shown. It is to be understood that the above description is intended to be illustrative, and not restrictive, and that the phraseology or terminology employed herein is for the purpose of description and not of limitation. Combinations of the above embodiments and other embodiments will be apparent to those of skill in the art upon studying the above description.

What is claimed is:

1. A method comprising:

rendering on a display of a wireless server, a graphical user interface to administer a mobile wireless device and to present a selectable desired mode of operation for the wireless device, the selectable desired mode of operation being presented as an abstract description of one or more administration parameters associated with the selectable desired mode of operation for configuring the mobile wireless device,

receiving, via the graphical user interface, a selected desired mode of operation for the mobile wireless device, the selected desired mode of operation correlated to one or more policies to control flow of information with respect to the mobile wireless device;

using the selected desired mode of operation to determine, without human intervention, one or more administration parameters to configure the mobile wireless device to implement a policy at the mobile wireless device; and

transmitting the one or more administration parameters from the wireless server to the mobile wireless device to implement the policy at the mobile wireless device based on the one or more administration parameters.

2. The method of claim **1** wherein the method includes establishing a secure communication channel with the mobile wireless device such that substantially all communications between the wireless server and the mobile wireless device are over the secure communication channel.

3. The method of claim **1** wherein the mobile wireless device is enabled to register with a plurality of separate wireless services and enabled to integrate a plurality of policies, at least one from each service with which the mobile wireless device is registered, such that a policy from a service that is designated as a primary service has override control over policies from other services.

4. The method of claim **1** wherein the transmitting the one or more administration parameters from the wireless server to the mobile wireless device causes the wireless device to be configured for the desired mode of operation using the administration parameters.

5. The method of claim **1** wherein the mode of operation comprises turning off a phone function.

6. The method of claim **1** wherein the mode of operation comprises controlling website access.

7. The method of claim **1** wherein the mode of operation comprises restricting international phone calls.

8. The method of claim **1** wherein the mode of operation comprises restricting phone calls to specified area codes.

9. The method of claim **1** wherein the mode of operation comprises turning off SMS.

10. The method of claim **1** wherein the mode of operation comprises turning off MMS.

11. The method of claim **1** wherein the mode of operation comprises turning off browser use.

12. The method of claim **1** wherein the mode of operation comprises blocking downloading of specified content.

13. The method of claim **12** wherein the specified content comprises games.

14. The method of claim **1** wherein the mode of operation comprises maintaining usage data for one or more mobile devices.

15. The method of claim **14** wherein the usage data comprises information about phone calls.

16. The method of claim **15** wherein usage data comprises information about web sites.

17. A wireless server comprising:

a processor;

a memory;

an interface operable in connection with the processor and the memory, and configured to communicatively operate with a plurality of mobile wireless clients;

a plurality of parameters selectable to configure the wireless clients; and at least one computer program operable in connection with the processor and the memory, and configured to set one or more of the parameters wherein the computer program is operable to:

render on a display of the wireless server, a graphical user interface to administer the plurality of wireless clients and to present a selectable desired mode of operation for one of the wireless clients, the selectable desired mode of operation being presented as an abstract description of one or

more administration parameters associated with the selectable desired mode of operation for configuring the mobile wireless device;

receive a selection of a desired mode of operation for one or more of the wireless clients, the desired mode of operation correlated to one or more policies to control flow of information with respect to the one or more of the wireless clients;

use the desired mode of operation to select, without human intervention, the one or more of the administration parameters to configure the mobile wireless device to implement a policy at the one or more wireless clients; and

transmit the selected one or more parameters from the wireless server to the one or more wireless clients to implement the policy at the one or more wireless clients based on the one or more parameters.

18. The wireless server of claim **17** wherein the wireless server is operable to establish a secure communication channel with each of the plurality of wireless clients such that

substantially all communications between the wireless server and each wireless client is over the respective secure communication channel for each wireless client.

19. The wireless server of claim **17** wherein each wireless client is enabled to register with a plurality of separate wireless services and enabled to integrate a plurality of policies, at least one from each service with which the wireless client is registered, such that a policy from a service that is designated as a primary service has override control over policies from other services.

20. The wireless server of claim of **17** wherein the desired mode of operation represents less than all of the one or more of the plurality of parameters.

21. The wireless server of claim **17** wherein the desired mode of operation includes one or more of turning off a phone function, controlling web site access, restricting international phone calls, or restricting phone calls to specified area codes.

22. The wireless server of claim **17**, wherein the desired mode of operation includes one or more of turning off SMS, turning off MMS, turning off browser use, or downloading of specified content.

23. A non-transitory machine-readable medium that stores instructions, which, when performed by a machine, cause the machine to perform a method comprising:

rendering on a display of a wireless server, a graphical user interface to administer a mobile wireless device and to present a selectable desired mode of operation for the mobile wireless device, the selectable desired mode of operation being as an abstract description of one or more administration parameters associated with the selectable desired mode of operation for configuring the mobile wireless device,

receiving, via the graphical user interface displayed on the wireless server, a selected desired mode of operation for the mobile wireless device, the selected desired mode of operation correlated to one or more policies to control flow of information with respect to the mobile wireless device;

using the selected desired mode of operation to determine, without human intervention, the one or more administration parameters to configure the wireless device to implement a policy at the mobile wireless device; and

transmitting the one or more administration parameters from the wireless server to the mobile wireless device to implement the policy based on the one or more administration parameters.

24. The non-transitory machine-readable medium of claim **23** wherein the instructions include one or more instructions to establish a secure communication channel with the mobile wireless device such that substantially all communications between the wireless server and the mobile wireless device are over the secure communication channel.

25. The non-transitory machine-readable medium of claim **23** wherein the mobile wireless device is enabled to register with a plurality of separate wireless services and enabled to integrate a plurality of policies, at least one from each service with which the mobile wireless device is registered, such that a policy from a service that is designated as a primary service has override control over policies from other services.

26. The non-transitory machine-readable medium of claim **23** wherein the instructions include instructions to configure the mobile wireless device for the desired mode of operation using the administration parameters.

27. A mobile wireless device comprising:

a processor;

a memory;

an interface operable in connection with the processor and the memory, and configured to communicatively operate with a wireless server as a mobile wireless client, the wireless server operable with a plurality of mobile wireless clients;

a plurality of administration parameters selectable to configure one or more of the plurality of the mobile wireless clients;

at least one computer program operable in connection with the processor and the memory, and configured to set one or more of the administration parameters and operable to:

render on a display of the mobile wireless device, a graphical user interface to administer one or more of the plurality of mobile wireless clients and to present a selectable desired mode of operation for one or more of the plurality of mobile wireless clients, the selectable desired mode of operation being presented as an abstract description of the one or more parameters associated with the selectable desired mode of operation for configuring the mobile wireless device;

receive a selection of a desired mode of operation for one or more of the plurality of mobile wireless clients, the desired mode of operation correlated to one or more policies to control flow of information with respect to the plurality of mobile wireless clients; and

transmit the desired mode of operation to the wireless server to select, without human intervention, the one or more administration parameters to implement a policy at one or more of the plurality of mobile wireless clients based on the one or more administration parameters.

28. The mobile wireless device of claim **27** wherein the mobile wireless device is operable to establish a secure communication channel with the wireless server such that substantially all communications between the mobile wireless device and the wireless server is over the secure communication channel.

29. The mobile wireless device of claim **27** wherein the mobile wireless device is enabled to register with a plurality of separate wireless services and enabled to integrate a plurality of policies, at least one from each service with which the mobile wireless device is registered, such that a policy from a service that is designated as a primary service has override control over policies from other services.

30. The mobile wireless device of claim **27** wherein the desired mode of operation includes one or more of turning off a phone function, controlling web site access, restricting international phone calls, or restricting phone calls to specified area codes.

31. The mobile wireless device of claim **27**, wherein the desired mode of operation includes one or more of turning off SMS, turning off MMS, turning off browser use, or downloading of specified content.

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