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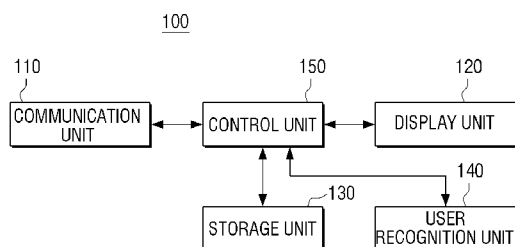
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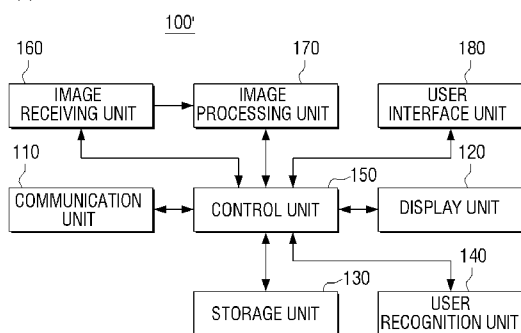
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(54) Title: DISPLAY APPARATUS, SERVER, CONTENT DELIVERY SYSTEM AND INFORMATION PROVIDING METHOD THEREOF

(a)



(b)



(57) Abstract: A display apparatus is provided. The display apparatus includes a display unit, a communication unit which communicates with a user terminal apparatus, a user recognition unit which generates user identification information regarding a user of the display apparatus, and a control unit which, once predetermined information is received, determines a subject to receive the information based on the user identification information and sharing setting information for each user, and displays the received information on the display unit or transmits the received information to the user terminal apparatus based on the determination result.

## Description

### **Title of Invention: DISPLAY APPARATUS, SERVER, CONTENT DELIVERY SYSTEM AND INFORMATION PROVIDING METHOD THEREOF**

#### **Technical Field**

- [1] Aspects of the present invention relate to a display apparatus, a server, content delivery system and an information providing method thereof, and more particularly, to a display apparatus which provides information received from outside, a server, and an information providing method.

#### **Background Art**

- [2] Modern portable consumer and industrial electronics, especially client devices such as navigation systems, cellular phones, portable digital assistants, and combination devices, are providing increasing levels of functionality to support modern life including personalized content services. Research and development in the existing technologies can take a myriad of different directions.
- [3] As users become more empowered with the growth of personalized content service devices, new and old paradigms begin to take advantage of this new device space. There are many technological solutions to take advantage of this new device location opportunity. One existing approach is to evaluate user profile and location information to provide personalized content through a mobile device such as a cell phone, a smart phone, or a personal digital assistant.
- [4] Personalized content services allow users to create, transfer, store, and/or consume information in order for users to create, transfer, store, and consume in the “real world.” One such use of personalized content services is to efficiently transfer or guide users to the desired product or service.
- [5] Content delivery system and personalized content services enabled systems have been incorporated in automobiles, notebooks, handheld devices, and other portable products. Today, these systems aid users by incorporating available, real-time relevant information, such as advertisement, entertainment, local businesses, or other points of interest (POI).
- [6] However, a content delivery system with a content sharing mechanism has become a paramount concern for the consumer. The inability decreases the benefit of using the tool.
- [7] Thus, a need still remains for a content delivery system with a content sharing mechanism. In view of the ever-increasing commercial competitive pressures, along with growing consumer expectations and the diminishing opportunities for meaningful

product differentiation in the marketplace, it is critical that answers be found for these problems. Additionally, the need to reduce costs, improve efficiencies and performance, and meet competitive pressures adds an even greater urgency to the critical necessity for finding answers to these problems.

- [8] Solutions to these problems have been long sought but prior developments have not taught or suggested any solutions and, thus, solutions to these problems have long eluded those skilled in the art.

## **Disclosure of Invention**

### **Technical Problem**

- [9] An aspect of the present invention relates to a display apparatus which provides received information to an appropriate device based on predetermined sharing setting information, a server, content delivery system and an information providing method thereof.

### **Solution to Problem**

- [10] The present invention provides a method of operation of a content delivery system including: detecting a person's presence for identifying a portable device; determining an audience type based on the person's presence for determining a content type presentable on a public device; and distributing a display content based on the audience type for displaying on the portable device, the public device, or a combination thereof.
- [11] The present invention provides a content delivery system, including: a detector module for detecting a person's presence for identifying a portable device; an audience module, coupled to the detector module, for determining an audience type based on the person's presence for determining a content type presentable on a public device; and a distribution module, coupled to the audience module, for distributing a display content based on the audience type for displaying on the portable device, the public device, or a combination thereof.
- [12] Certain embodiments of the invention have other steps or elements in addition to or in place of those mentioned above. The steps or elements will become apparent to those skilled in the art from a reading of the following detailed description when taken with reference to the accompanying drawings.
- [13] A display apparatus, according to an exemplary embodiment, includes a display unit, a communication unit which communicates with a user terminal apparatus, a user recognition unit which generates user identification information regarding a user of the display apparatus, and a control unit which, once predetermined information is received, determines a subject to receive the information based on the user identification information and sharing setting information for each user, and displays the received information on the display unit or transmits the received information to the

user terminal apparatus based on the determination result.

- [14] The apparatus may further include a storage unit, and the sharing setting information for each user may refer to information in which whether to share information is set according to information type with respect to each of a plurality of users, and the sharing setting information may be stored in the storage unit or received from outside.
- [15] The user recognition unit may generate the user identification information based on an image captured through an image capturing unit, or generate the user identification information based on terminal identification information and finger printing information received from the user terminal apparatus.
- [16] The control unit may display the received information on the display unit if the received information is set to be shared with respect to a user of the user terminal apparatus, and transmit the received information to the user terminal apparatus if the received information is set as private with respect to a user of the user terminal apparatus.
- [17] The control unit may control to display a message informing that the predetermined information to be transmitted to the user terminal apparatus is received if it is not possible to communicate with the user terminal apparatus.
- [18] The display apparatus may be a sharing device which is used by a plurality of users, and the user terminal apparatus may be a personal device owned by a personal user.
- [19] A server, according to an exemplary embodiment, includes a communication unit which performs communication with a display apparatus and at least one user terminal apparatus, a storage unit which stores sharing setting information for each user, and a control unit which, once predetermined information is received, determines a subject to receive the information based on user identification information regarding a user of the display apparatus and the sharing setting information received from the display apparatus, and displays the received information on the display unit or transmits the received information to the at least one user terminal apparatus based on the determination result.
- [20] The sharing setting information for each user may refer to information in which whether to share information is set according to information type with respect to each of a plurality of users.
- [21] The control unit may control to transmit to the display apparatus a message informing that the predetermined information to be transmitted to the user terminal apparatus is received if it is not possible to communicate with the user terminal apparatus.
- [22] The display apparatus may be a sharing device which is used by a plurality of users, and the user terminal apparatus may be a personal device owned by a personal user.
- [23] The present invention provides a method of operation of a content delivery system

including: detecting a person's presence for identifying a portable device; determining an audience type based on the person's presence for determining a content type presentable on a public device; and distributing a display content based on the audience type for displaying on the portable device, the public device, or a combination thereof.

- [24] The present invention provides a content delivery system, including: a detector module for detecting a person's presence for identifying a portable device; an audience module, coupled to the detector module, for determining an audience type based on the person's presence for determining a content type presentable on a public device; and a distribution module, coupled to the audience module, for distributing a display content based on the audience type for displaying on the portable device, the public device, or a combination thereof.
- [25] The distribution module may distribute a public content based on the audience type for displaying on the public device.
- [26] The distribution module may distribute a private content based on the audience type for displaying on the portable device.
- [27] The system further may comprise a display module, coupled to the distribution module, for displaying the display content on the portable device different from the content displayed on the public device.
- [28] The system further may comprise a setting module, coupled to the detector module, for generating a privacy setting for differentiating the display content displayed on the portable device from the display content displayed on the public device.
- [29] The distribution module may distribute the display content based on the audience type and the content type for displaying on the portable device, the public device, or a combination thereof.
- [30] The distribution module may distribute the display content based on a plurality of the audience type for displaying the display content different for each of a plurality of the portable device.
- [31] The system further may comprise a setting module, coupled to the detector module, for generating a privacy setting for grouping a plurality of the audience type permitted for displaying the display content.
- [32] The distribution module may generate a notification based on the audience type for displaying the notification on the portable device, the public device, or a combination thereof.
- [33] The detector module may detect the person's presence within a detection zone and the distribution module distribute the display content based on the person's presence for displaying the display content different from the person's presence outside of the detection zone.
- [34] Certain embodiments of the invention have other steps or elements in addition to or

in place of those mentioned above. The steps or elements will become apparent to those skilled in the art from a reading of the following detailed description when taken with reference to the accompanying drawings.

### **Advantageous Effects of Invention**

- [35] According to the various exemplary embodiments, depending on properties of received information, the corresponding information is provided to a sharing device or a personal device and thus, user convenience is improved.

### **Brief Description of Drawings**

- [36] These and/or other aspects and advantages of the invention will become apparent and more readily appreciated from the following description of the embodiments, taken in conjunction with the accompanying drawings, of which:
- [37] FIGS. 1 and 2 are views to explain an example of realizing an information providing system according to various exemplary embodiments;
- [38] FIG. 3 is a view to explain an operation according to an exemplary embodiment of the information providing system illustrated in FIG. 1;
- [39] FIG. 4 is a block diagram illustrating configuration of a display apparatus according to an exemplary embodiment;
- [40] FIG. 5 is a view to explain an operation according to an exemplary embodiment of the information providing system illustrated in FIG. 2;
- [41] FIG. 6 is a block diagram illustrating configuration of a server according to an exemplary embodiment illustrated in FIG. 5;
- [42] FIG. 7 is a block diagram illustrating configuration of a user terminal apparatus according to an exemplary embodiment;
- [43] FIG. 8 is a view illustrating format of sharing setting information according to an exemplary embodiment;
- [44] FIG. 9 is a view to explain an information providing service method according to an exemplary embodiment;
- [45] FIGS. 10 to 12 are views to explain an information providing method according to various exemplary embodiments;
- [46] FIG. 13 is a view to explain detailed configuration of a control unit according to an exemplary embodiment;
- [47] FIG. 14 is a view illustrating software structure of a storage unit to support an operation of a control unit according to the above-described various exemplary embodiments;
- [48] FIG. 15 is a flowchart to explain an information providing method of a display apparatus according to an exemplary embodiment;
- [49] FIG. 16 is a flowchart to explain an information providing method of a display

- apparatus according to the exemplary embodiment illustrated in FIG. 15 in detail; and
- [50] FIG. 17 is a flowchart to explain an information providing method of a server according to another exemplary embodiment.
- [51] FIG. 18 is a content delivery system with content sharing mechanism in an embodiment of the present invention.
- [52] FIG. 19 is a first example of a distribution of a display content by the content delivery system.
- [53] FIG. 20 is a second example of the distribution of the display content by the content delivery system.
- [54] FIG. 21 is a third example of the distribution of the display content by the content delivery system.
- [55] FIG. 22 is a fourth example of the distribution of the display content by the content delivery system.
- [56] FIG. 23 is an exemplary block diagram of the content delivery system.
- [57] FIG. 24 is a control flow of the content delivery system.
- [58] FIG. 25 is a flow chart of a method of operation of the content delivery system in a further embodiment of the present invention.

### **Best Mode for Carrying out the Invention**

- [59] -

### **Mode for the Invention**

- [60] The following embodiments are described in sufficient detail to enable those skilled in the art to make and use the invention. It is to be understood that other embodiments would be evident based on the present disclosure, and that system, process, or mechanical changes may be made without departing from the scope of the present invention.
- [61] In the following description, numerous specific details are given to provide a thorough understanding of the invention. However, it will be apparent that the invention may be practiced without these specific details. In order to avoid obscuring the present invention, some well-known circuits, system configurations, and process steps are not disclosed in detail.
- [62] The drawings showing embodiments of the system are semi-diagrammatic and not to scale and, particularly, some of the dimensions are for the clarity of presentation and are shown exaggerated in the drawing FIGs. Similarly, although the views in the drawings for ease of description generally show similar orientations, this depiction in the FIGs. is arbitrary for the most part. Generally, the invention can be operated in any orientation. The embodiments have been numbered first embodiment, second embodiment, etc. as a matter of descriptive convenience and are not intended to have any

other significance or provide limitations for the present invention. Where multiple embodiments are disclosed and described having some features in common, for clarity and ease of illustration, description, and comprehension thereof, similar and like features one to another will ordinarily be described with similar reference numerals.

[63] The term “relevant information” referred to herein includes the navigation information described as well as information relating to points of interest to the user, such as local business, hours of businesses, types of businesses, advertised specials, traffic information, maps, local events, and nearby community or personal information.

[64] The term “module” referred to herein can include software, hardware, or a combination thereof in the present invention in accordance with the context in which the term is used. For example, the software can be machine code, firmware, embedded code, and application software. Also for example, the hardware can be circuitry, processor, computer, integrated circuit, integrated circuit cores, a pressure sensor, an inertial sensor, a microelectromechanical system (MEMS), passive devices, or a combination thereof.

[65] FIGS. 1 and 2 are views to explain an example of realizing an information providing system according to various exemplary embodiments.

[66] According to various exemplary embodiments, an information providing system may comprise a server, a user terminal apparatus, a display apparatus, etc. which will be explained below, respectively.

[67] The First Exemplary Embodiment (display apparatus and user terminal apparatus)

[68] As illustrated in FIG. 1, the information providing system according to an exemplary embodiment may comprise a display apparatus 100, a user terminal apparatus 200, and a service providing server 10.

[69] The display apparatus 100 is a sharing device which can be used by a plurality of users simultaneously and may be realized as digital television, PC, or notebook PC.

[70] If a plurality of users or user groups are logged into the display apparatus 100, the display apparatus 100 may provide an information providing service corresponding to each account.

[71] Specifically, a user may be provided with various services through a corresponding account by inputting user information (for example, user ID and pin number) through the display apparatus 100 or by logging into the display apparatus 100 through the user terminal apparatus 200. Herein, the account may be an individual account provided by each individual service providing server, or an integrated account through which a user may log into a plurality of different service providing servers integrally. In addition, a plurality of users or user groups may be set manually, through, say, a user input, but may be set automatically with respect to a corresponding system. For example, a user group which is set as a specific group in a specific SNS server may be automatically



set as a user group in an information providing system according to an exemplary embodiment.

- [72] Herein, the service providing server may be realized as various information providing servers. For example the service providing server may be realized as a SNS server, but is not limited thereto. That is, the service providing server may be realized as an information providing server which provides various information such as whether information, stock information, and real estate information. The SNS service refers to an on-line platform which creates and strengthens social network by allowing free communication, information sharing, and network building between users. Further description regarding the SNS service will be omitted.
- [73] Meanwhile, the information providing service according to an exemplary embodiment may be provided through an application stored in the display apparatus 100. That is, the information providing service according to an exemplary embodiment may be realized in the form of application which is software directly used by a user on OS. In addition, the application may be realized in the form of an icon interface on the screen of the display apparatus 100, but is not limited thereto.
- [74] That is, the above-described login window may be provided as a user operates an application stored in the display apparatus 100, or if a user is already logged in, a corresponding service may be provided simply by operating an application. In this case, the user needs to download the corresponding application in advance and install it in the display apparatus 100, or to log into the display apparatus 100 in advance through the installed application. Herein, the application may be realized in various ways, for example, it may be realized in the form of messaging application delivering various messages.
- [75] The user terminal apparatus 200 may communicate with the display apparatus 100 to receive information provided to the display apparatus 100, and may be realized as a mobile phone like a smart phone or a wireless terminal such as a tablet, Personal Digital Assistant (PDA), etc.
- [76] Specifically, the display apparatus 100 and the user terminal apparatus 200 may be interlocked using various communication methods such as BT(BlueTooth), wifi, PAN, LAN, WAN, Wired I/O, NFC Interface, RFID Tag, IR Interface, USB(Universal Serial Bus). For example, if a corresponding application is operated in the display apparatus 100, surrounding apparatuses are searched using Digital Living Network Alliance (DLNA) technology, and if an apparatus to be interlocked is selected from among the searched apparatuses, the operation of pairing may be performed to be connected. Alternatively, if an apparatus to be connected is pre-registered in the display apparatus 100, the operation of pairing may be performed simply through the searching operation. In addition, the operation of pairing may be performed using other commu-

nication methods such as BT(BlueTooth), NFC Interface, etc., detailed description regarding them will be omitted. Further, it is obvious to those skilled in the related art that the display apparatus 100 and the user terminal apparatus 200 may be connected through other communication methods such as by forming a network communication channel than the pairing operation.

[77] Meanwhile, if information is received from outside (for example, from the above-described service providing server 10), the display apparatus 100 may display corresponding information directly with reference to predetermined sharing setting information or transmit the corresponding information to the user terminal apparatus 200. Herein, the sharing setting information indicates whether information sharing is allowed according to type of information with respect to each of a plurality of users, and may be set as “private” or “public”.

[78] That is, if received information is information regarding a predetermined user and it is set as “public” with respect to the corresponding user, the corresponding information is displayed on the display apparatus 100, and if the received information is set as “private”, the corresponding information may be transmitted to the user terminal apparatus 200 of the corresponding user. Detailed description regarding this will be explained later.

[79]

[80] The Second Exemplary Embodiment (display apparatus and user terminal apparatus)

[81] As illustrated in FIG. 2, the information providing system according to another exemplary embodiment may comprise the display apparatus 100, the user terminal apparatus 200, and a server 300. Among the components in FIG. 2, the components which are already illustrated in FIG. 1 will not be explained again.

[82] The server 300 may be configured to provide an information providing service according to an exemplary embodiment. Specifically, the server 300 stores/manages sharing setting information for each user regarding various information types, and once information is received from outside, may provide the received information to at least one of the display apparatus 100 and the user terminal apparatus 200 in accordance with the stored sharing setting information.

[83] For example, the server 300 stores sharing setting information set according to each information time with respect to user A, user B, and user C, respectively, and if “private” message regarding user A is received, may transmit the corresponding message to a terminal of user A.

[84] In “public” message regarding user B is received, the server 300 may display the corresponding message on the display apparatus 100.

[85] That is, the server 300 may be configured to perform a function of the display apparatus 100 in the first exemplary embodiment.

- [86] Meanwhile, the server 300 may be realized as a cloud server using a cloud computing technology. The cloud computing will be explained briefly for better understanding of the present invention. The cloud computing refers to a cloud-based computing technology, for example, a web-based software service which brings up and a program in a utility data server on Internet to a computer or a mobile phone whenever its necessary and uses the program on the computer of the mobile phone.
- [87] The server 300 may be configured as an external server or a server embedded in an apparatus according to its physical embodiment form.
- [88] In this case, the display apparatus 100 and the user terminal apparatus 200 may be configured to display various information provided by the server 300.
- [89] Meanwhile, in the above exemplary embodiment, the exemplary embodiment according to FIG. 1 and FIG. 2 are explained as separate cases from each other, but this is only an example. It is obvious to those skilled in the related art that the corresponding exemplary embodiments may be configured in combination of the embodiments in part or as a whole.
- [90] FIG. 3 is a view to explain an operation according to an exemplary embodiment of the information providing system illustrated in FIG. 1.
- [91] According to FIG. 3, first of all, the display apparatus 100 may be connected to the user terminal apparatus 200 (S310). For example, if an application stored in the display apparatus 100 is operated, surrounding apparatuses are searched using a DLNA technology, and the pre-registered user terminal apparatus 200 is searched, an pairing operation may be performed with the corresponding user terminal apparatus 200. In addition, the pairing operation with the display apparatus 100 may be performed in the same way by operating an application stored in the user terminal apparatus 200.
- [92] Subsequently, the display apparatus 100 receives information from the external service providing server 10 (S320). Herein, the service providing server 10 may be a SNS server or various information providing servers as described above. For example, the display apparatus 100 may receive a message regarding user 1 from a SNS server. In this case, information regarding a plurality of users may be pre-registered in the display apparatus 100.
- [93] The display apparatus 100 generates user identification information (S330). Herein, the user identification information may identification information regarding a user of the display apparatus 100, for example, a viewer who watches a screen provided by the display apparatus 100.
- [94] Subsequently, the display apparatus 100 determines a subject to receive information based on the user identification information generated in step S330 and sharing setting information (S340). Herein, the sharing setting information may be pre-stored in the display apparatus 100, or may be received from outside (for example, the service

providing server 10 or other external servers) or the user terminal apparatus 200.

Specifically, the display apparatus 100 determines whether to display received information or transmit the received information to the user terminal apparatus 200 based on identification information of a user who is watching the display apparatus 100 and sharing setting information regarding the received information.

[95] The display apparatus 100 may display received information (S350) or provide it to the user terminal apparatus 200 (S360) based on the determination result in step S340.

[96] FIG. 4 is a block diagram illustrating configuration of a display apparatus according to an exemplary embodiment.

[97] According to FIG. 4A, the display apparatus 110 comprises a communication unit 110, a display unit 120, a storage unit 130, a user recognition unit 140, and a control unit 150.

[98] The display apparatus 100 according to an exemplary embodiment may be realized as a sharing device capable of information sharing between a plurality of users, such as television, PC, notebook PC, etc.

[99] The communication unit 110 may perform communication with at least one user terminal apparatus 200. Specifically, the communication unit 110 may communication with the user terminal apparatus 200 using various communication methods such as Internet, LAN, WI-FI(Wireless Fiedlity), Ethernet, TCP/IP, IPX, FireWire, IEEE 1394, iLink, CDMA, TDMA, HDMI-CEC(High Definition Multimedia Interface), Wireless HDMI-CEC, RF(Radio Frequency), TCP/IP(Transmission Control Protocol/Internet Protocol), HTTP(HyperText Transfer Protocol), HTTPS(Hypertext Transfer Protocol over Secure Socket Layer), SOAP(Simple Object Access Protocol), XML-RPC (XML Remote Procedure Call), NFC(Near Field Communication), BT(BlueTooth), etc.

[100] Specifically, the communication unit 110 may transmit received information to the user terminal apparatus 200 under the control of the control unit 150.

[101] The display unit 120 may provide various display screens through the display apparatus 100.

[102] In particular, the display unit 120 may display information received from various external servers such as an SNS server, an information providing server, etc.

[103] Herein, the display unit 120 may be realized as one of liquid crystal display, (thin film transistor-liquid crystal display, organic light-emitting diode, flexible display, and 3D display.

[104] In some cases, the display unit 120 may be configured to be in a touch screen form having an inter-layered structure with a touch pad. In addition, the touch screen may be configured to detect not only the location and the size of a touch input but also the pressure of the touch input.

[105] Further, in some cases, the display unit 120 may display an object indicating a corre-

sponding information service providing service mode. For example, an icon in a specific form may be displayed, or a message informing a corresponding mode may be displayed.

- [106] The storage unit 130 is a storage medium where various programs necessary to operate the display apparatus 100 are stored, and may be realized as a memory, Hard Disk Drive (HDD), etc. For example, the storage unit 130 may comprise ROM to store a program to perform an operation of the control unit 150 and RAM to temporarily store data for performing an operation of the control unit 150. In addition, the storage unit 130 may further comprise Electrically Erasable and Programmable ROM (EEPROM) to store various reference data.
- [107] In particular, the storage unit 130 may store sharing setting information for each type of information received from various external servers such as an SNS server, an information providing server, etc.
- [108] Herein, the type of information may relate not only to the properties of information itself but also to the type of server providing the information.
- [109] In addition, the sharing setting information may be set for each user registered in the display apparatus 100. For example, if user 1 and user 2 are registered in the display apparatus 100, the user 1 may have sharing setting information in which information received from the first SNS server is set as “private” and information received from the second SNS server is set as “public”, and the user 2 may have sharing setting information in which information received from the first SNS server is set as “public” and information received from the second SNS server is set as “private”. In addition, weather information may be as “public” and stock information may be set as “private” with respect to the user 1, and both weather information and stock information may be set as “public” with respect to the user 2.
- [110] Meanwhile, the above-described sharing setting information may be input directly through the display apparatus 100, but may also be received from an external server. In this case, periodically-updated-information may be received from an external server.
- [111] The user recognition unit 140 generates user identification information regarding a user of the display apparatus 100.
- [112] In particular, the user recognition unit 140 may generate user identification information based on an image captured through an image capturing unit or based on at least one of terminal identification information and finger printing recognition information received from the user terminal apparatus 200 performing communication through the communication unit 110.
- [113] Specifically, the user recognition unit 140 may comprise an image capturing unit performing an image capturing function. In this case, the user identification information may be information generated based on an image captured through the

image capturing unit. For example, the surrounding area of the display apparatus 100 may be captured, and user identification information to identify a user who is watching the display apparatus 100 may be generated by recognizing the face of the user in the captured image.

- [114] Alternatively, the user recognition unit 140 may receive terminal identification information from the user terminal apparatus 200 performing communication through the communication unit 110 and generate user identification information based on the received identification information. In this case, it can be assumed that the user terminal apparatus 200 represents a user.
- [115] Alternatively, the user recognition unit 140 may receive finger printing recognition information from the user terminal apparatus 200 and generate user identification information based on the received finger printing recognition information. In this case, the user terminal apparatus 200 may be configured to recognize finger printing of a user.
- [116] The control unit 150 controls overall operations of the display apparatus 100.
- [117] In particular, the control unit 150 may display received information on the display unit 120 or transmit the received information to the user terminal apparatus 200 based on sharing setting information stored in the storage unit 130 and user identification information generated by the user recognition unit 140.
- [118] Specifically, if received stock information is set as “private” with respect to the user 1, the corresponding information may not be displayed on the display unit 120 and instead, transmitted to a user terminal apparatus of the user 1. Alternatively, if received weather information is set as “public” with respect to the user 1, the corresponding information may be displayed on the screen.
- [119] In addition, if it is determined that received information is information to be transmitted to the user terminal apparatus 200 but it is impossible to communicate with the user terminal apparatus 200, the control unit 150 may display a message informing the received message on the display unit 120. For example, if received stock information is set as “private” with respect to the user 1, but it is impossible to communicate with a user terminal apparatus of the user 1, an alarm message such as “a message for the user 1 has arrived” may be displayed on the display unit 120.
- [120] FIGS. 4B is a block diagram illustrating detailed configuration of a display apparatus illustrated in FIG. 4A.
- [121] According to FIG. 4B, the display apparatus 100' comprises the communication unit 110, the display unit 120, the storage unit 130, the user recognition unit 140, the control unit 150, an image receiving unit 160, an image processing unit 170, and a user interface unit 180. In FIG. 4B, the display apparatus 100 illustrated in FIG. 4A is realized as a digital television. Among the components illustrated in FIG. 4B, those

overlapped with the components illustrated in FIG. 4A will not be explained in detail.

[122] The image receiving unit 160 receives broadcast contents via an antenna or cable, or receives image contents from an external apparatus or an external communication network.

[123] Specifically, the image receiving unit 160 may receive various contents via network or air. Herein, the contents may be various types of contents such as pre-produced contents like VOD contents, broadcast contents, etc.

[124] In this case, the image receiving unit 160 may be realized in various forms. For example, if the image processing unit 100 is realized as a television or a set-top box, the communication interface unit 110 may be realized as a tuner, an external input port, a network communication module, etc.

[125] The image processing unit 170 processes various signals received through the image receiving unit 160. Accordingly, the image processing unit 170 may include signal processing components such as a de-modulator, a decoder, an A/D converter, scaler, etc.

[126] The user interface unit 180 receives various user signals.

[127] Herein, the user interface unit 180 may be realized in various forms depending on apparatus type of the image processing apparatus 100. For example, if the display apparatus 100 is realized as a digital television, the user interface unit 140 may be realized as a remote control receiving unit which receives a remote control signal.

[128] In addition, the user interface unit 180 may be configured to be in a touch screen form in which an input panel including a plurality of keys or a display and a touch pad forms an inter-layered structure. Meanwhile, if the user interface unit 180 is configured to be in a touch screen form in which a display and a touch pad have an inter-layered structure, the user interface unit 180 may be used as the display unit 120.

[129] In addition, the display apparatus 100 may further comprise a UI processing unit (not shown).

[130] The UI processing unit (not shown) generates various UI components which are displayed to be overlapped with an image output on the display unit 120 under the control of the control unit 150. Herein, the UI processing unit (not shown) may generate 2D UI components or 3D UI components.

[131] In addition, the UI processing unit (not shown) may perform operations such as 2D/3D conversion, adjustment of transparency, color, size, shape, and location, highlighting, animation effect, etc.

[132] FIG. 5 is a view to explain an operation according to an exemplary embodiment of the information providing system illustrated in FIG. 2.

[133] According to FIG. 5, the display apparatus 100 and the user terminal apparatus 200 may be connected with each other (S510). For example, the corresponding operation

may be performed when an application stored in the display apparatus 100 is operated or a related menu is activated.

[134] Subsequently, the server 300 receives information from the external service providing server 10 (S520). Herein, the service providing server may be an SNS server, various information providing server, etc., as described above.

[135] In addition, the server 300 requests user identification information from the display apparatus 100 (S530).

[136] In this case, the display apparatus 100 generates user identification information (S540). Herein, the user identification information may be identification information regarding a user of the display apparatus 100, that is, a viewer who is watching a screen provided by the display apparatus 100.

[137] Subsequently, if the server 300 receives user identification information from the display apparatus 100 (S550), the server 300 determines a subject to receive information based on the received user identification information and pre-stored sharing setting information (S560). Specifically, the server 300 may determine whether to provide the received information to the display apparatus 100 or to the user terminal apparatus 200 based on identification information regarding a user of the display apparatus 100 and sharing setting information regarding the received information. However, the sharing setting information is not necessarily stored in the server and instead, it may be received from outside, such as from the display apparatus 100, the user terminal apparatus 200, and the service providing server 10.

[138] The server 300 may provide received information to the display apparatus 100 or to the user terminal apparatus 200 according to the determination result in step S340.

[139] FIG. 6 is a block diagram illustrating configuration of a server according to an exemplary embodiment illustrated in FIG. 5.

[140] According to FIG. 6, the server 300 comprises the communication unit 310, the storage unit 320, and the control unit 330.

[141] The server 300 may be realized as a cloud server using a cloud computing technology as described above.

[142] The communication unit 310 communicates with the display apparatus 100 and the user terminal apparatus 200. Herein, the display apparatus 100 is a sharing device which can be used by a plurality of users simultaneously, such as a digital television, PC, etc., and the user terminal apparatus 200 may be realized as a personal device owned by an individual user, such as a mobile phone, a tablet PC, PDA, etc.

[143] Specifically, the communication unit 310 may transmit information received from an external server to at least one of the display apparatus 100 and the user terminal apparatus 200 under the control of the control unit 330. Herein, the external server may be various servers such as an SNS server and an information providing server as



described above.

- [144] In addition, the communication unit 310 may receive user identification information of a user using the display apparatus 100 from the display apparatus 100.
- [145] The storage unit 320 stores various data and programs necessary for operations of the server 300.
- [146] In particular, the storage unit 320 may store sharing setting information according to type of various information which can be received from various external servers such as an SNS server, an information providing server, etc. Herein, the type of the properties of information itself but also to the type of server providing the information.
- [147] In addition, the sharing setting information may be set for each user registered in the display apparatus 100. Such sharing setting information may be received from the display apparatus 100 or the user terminal apparatus 200.
- [148] The control unit 330 controls overall operations of the server 300.
- [149] In particular, if predetermined information is received from an external server, the control unit 330 may provide the predetermined information to at least one of the display apparatus 100 and the user terminal apparatus 200 according to the sharing setting information stored in the storage unit 320.
- [150] Specifically, if predetermined information is received from an external server, the control unit 330 may request identification information regarding a user who is watching the display apparatus 100 from the display apparatus 100. The control unit 330 may determine a subject to receive information based on the sharing setting information stored in the storage unit 320 and the user identification information received from the display apparatus 100. The exemplary embodiment regarding this is the same as that of FIG. 4 explained above and thus, detailed description will be omitted.
- [151] In addition, if the control unit 330 determines that received information should be transmitted to the user terminal apparatus 200, but it is impossible to communicate with the user terminal apparatus 200, the control unit 330 may transmit a notification message informing that predetermined information has been received.
- [152] FIG. 7 is a block diagram illustrating configuration of a user terminal apparatus according to an exemplary embodiment.
- [153] According to FIG. 7, the user terminal apparatus 200 may comprise a communication unit 210, a display unit 220, a storage unit 230, a user interface unit 240, a UI processing unit 250, and a control unit 260.
- [154] The user terminal apparatus 100 may be realized as a personal device owned by an individual user, such as a mobile phone like a smart phone or a PDA(Personal Digital Assistants), PMP(Portable Multimedia Player), tablet PC, etc.
- [155] The communication unit 210 may communicate with the display apparatus 200 or the

server 300.

[156] Specifically, the communication unit 210 may transmit information received from outside to the display apparatus 200 or the server 300 under the control of the control unit 260.

[157] The display unit 220 may provide various display screens which can be provided through the user terminal apparatus 200.

[158]

[159] In particular, the display unit 220 may display information received from the display apparatus 200 or the server 300.

[160] Herein, the display unit 220 may be realized as at least one of liquid crystal display, thin film transistor-liquid crystal display, organic light-emitting diode, flexible display, and 3D display. In some cases, the display unit 220 may be configured to be in a touch screen form having an inter-layered structure with a touch pad. In addition, the touch pad may be configured to detect not only the location and the size of a touch input but also the pressure of the touch input. In this case, the display unit 220 may also perform a function of the user interface unit 240 which will be explained later.

[161] The storage unit 230 is a storage medium storing various data and programs necessary to operate the user terminal apparatus 100, and may be realized as a memory, HDD, etc.

[162] In particular, the storage unit 230 may store an application or a program to receive an information providing service according to an exemplary embodiment.

[163] The user interface unit 240 receives various user signals.

[164] Herein, the user interface unit 240 may be realized in various forms according to the apparatus type of the user terminal apparatus 100. For example, the user interface unit 240 may be realized as an input panel including a plurality of keys or as a touch screen in which a display and a touch pad forms an inter-layered structure.

[165] The UI processing unit 250 generates and provides various UI components to the display unit 220 under the control of the control unit 260.

[166] Specifically, the UI processing unit 250 may generate and provide a UI screen to select a mode for receiving an information providing service or a normal mode according to an exemplary embodiment.

[167] In addition, if a corresponding mode is provided in an application form, the UI processing unit 250 may process and provide the application in an icon form.

[168] The control unit 260 controls overall operations of the user terminal apparatus 200.

[169] In particular, if a mode to receive an information providing service according to an exemplary embodiment is selected through a UI screen provided through the UI processing unit 250, the control unit 260 may control to display information received from the display apparatus 100 or the server according to the corresponding mode. In

this case, the mode selection may be performed in various ways, such as operation of application and selection of menu.

[170] If a corresponding mode is selected, the control unit 260 may also control to transmit terminal identification information to the display apparatus 100 or the server 300.

[171] In addition, if a corresponding mode is selected, the control unit 260 may control to provide a user finger printing recognition mode and transmit finger printing recognition information to the display apparatus 100 or the server 300.

[172] FIG. 8 is a view illustrating format of sharing setting information according to an exemplary embodiment.

[173] As illustrated in FIG. 8, sharing setting information may be information in which information is set as "private" or "public" according to user type and each information type.

[174] For example, "weather" and "stock" information may be set as "public" and "SNS 1" and "SNS 2" information may be set as "private" with respect to the user 1.

[175] On the other hand, "weather" and "message" information may be set as "public" and "stock", "SNS 1" and "SNS 2" information may be set as "private" with respect to the user 2.

[176] FIG. 9 is a view to explain an information providing service method according to an exemplary embodiment.

[177] As illustrated in FIG. 9A, the information providing service according to an exemplary embodiment may be provided through an application stored in the display apparatus 100.

[178] Specifically, if a user executes an application provided on the screen of the display apparatus 100, the display apparatus 100 may search a user terminal apparatus within a predetermined distance range and perform pairing with the searched user terminal apparatus.

[179] In addition, as illustrated in FIG. 9B, the information providing service according to an exemplary embodiment may be provided through an application stored in the user terminal apparatus 200.

[180] Specifically, if a user executes an application provided on the screen of the user terminal apparatus 200, the user terminal apparatus 200 may search a surrounding apparatus within a predetermined distance range and perform pairing with the selected apparatus from among surround apparatuses.

[181] However, this is only an example, and if an application is operated in at least one of the display apparatus 100 and the user terminal apparatus 200, the display apparatus 100 may perform pairing with a pre-registered user terminal apparatus or the user terminal apparatus 200 may perform pairing with a pre-registered display apparatus.

[182] FIGS. 10 to 12 are views to explain an information providing method according to

various exemplary embodiments.

- [183] The exemplary embodiments illustrated in FIGS. 10 to 12 are based on premise that each user is logged into the display apparatus 100, and the login may be performed through a login screen provided through the display apparatus 100 or through pairing between the user terminal apparatuses 200-1, 200-2 and the display apparatus 100. However, this is only an example, and the login may be performed in various ways.
- [184] As illustrated in FIG. 10, it is assumed that only the user 1 is watching the display apparatus 100 and the user terminal apparatus 200-1 of the user 1 is connected to the display apparatus 100.
- [185] If the display apparatus 100 receives a message regarding the user 1, the display apparatus 100 may display the received information 30 on a screen regardless of whether sharing of the received information 30 is set or not even though the user terminal apparatus 200-1 is connected to the display apparatus 100.
- [186] As illustrated in FIG. 11, it is assumed that the user 1 and the user 2 are watching the display apparatus 100, and the user terminal apparatuses 200-1, 200-2 of each user are connected to the display apparatus 100.
- [187] If the display apparatus 100 receives a message regarding the user 1, the display apparatus 100 checks sharing setting information of the received information, and if the received information is set as "private", the display apparatus 100 may not display the corresponding information and instead, transmit the corresponding information to the user terminal apparatus 200-1 of the user 1.
- [188] As illustrated in FIG. 12, it is assumed that the user 1 and the user 2 are watching the display apparatus 100, and a user terminal apparatus of each user is not connected to the display apparatus 100.
- [189] If the display apparatus 100 receives a message regarding the user 1, the display apparatus 100 checks sharing setting information of the received information, and if the received information is set as "private", the display apparatus 100 may display a message informing that the corresponding information has been received.
- [190] FIG. 13 is a view to explain detailed configuration of the control unit 150 according to an exemplary embodiment. The detailed configuration of the control unit 150 which will be explained later may be similarly applied to other control units 260, 330.
- [191] According to FIG. 13, the control unit 150 comprises a system memory, a main CPU 152, an image processor 153, a network interface 154, a storage interface 155, a first to a nth interface 156-1~156-n, an audio processing unit 157, and a system bus 158.
- [192] The system memory 151, the main CPU 152, the image processor 153, the network interface 154, the storage interface 155, the first to the nth interface 156-1~156-n, and the audio processing unit 157 are connected to each other through the system bus 158 and may transmit/receive various data or signals.

- [193] The first to the nth interface 156-1~156-n support interfacing between various components including the display unit 110 and each component within the control unit 150. In addition, at least one of the first to the nth interface 156-1~156-n may be realized as an input interface which receives various signals from an external apparatus which is connected through an external input port 1 to n.
- [194] The system memory 151 comprises ROM 151-1 and RAM 151-2. The ROM 151-1 stores a command set, etc. which is necessary to perform system booting. If power is supplied as a turn-on command is input, the main CPU 152 performs system booting by copying O/S stored in the storage unit 130 in the RAM 151-2 and executing the O/S in accordance with a command stored in the ROM 151-1. Once the booting operation is completed, the main CPU 152 performs various operations by copying various application programs stored in the storage unit 130 in the RAM 151-2 and executing the application programs copied in the RAM 151-2.
- [195] As described above, the main CPU 152 may perform various operations according to execution of an application program stored in the storage unit 130.
- [196] The storage interface 155 is connected to the storage unit 130 and transmits/receives various programs, contents, and data.
- [197] For example, if predetermined information is received from outside, the main CPU 152 may access the storage unit 130 through the storage interface 155, read out stored sharing setting information, and determine a subject to receive information using the sharing setting information.
- [198] The image processing unit 153 may comprise a decoder, a renderer, a scaler, etc. Accordingly, stored contents are decoded, the decoded content data is rendered to compose a frame, and the size of the composed frame is scaled to fit the screen size of the display unit 120. The image processing unit 153 provides and displays the processed frame on the display unit 120.
- [199] In addition, the audio processing unit 157 refers to a component which processes audio data and provides it to an audio output means such as a speaker 180. The audio processing unit 157 may decode audio data stored in the storage unit 130 or audio data received from outside, perform noise-filtering, and perform audio signal processing such as amplifying it to an appropriate decibel. In the above exemplary embodiment, if reproduced contents are video contents, the audio processing unit 157 may process audio data de-multiplexed from the video contents and provide it to the speaker 180 so as to output the audio data by being synchronized with the image processing unit 153. For example, the audio processing unit 157 may perform audio signal processing so that an alarm notification according to various exemplary embodiments may be provided in the form of voice notification.
- [200] The network interface 154 is a portion which is connected to external apparatuses via

network. For instance, if an application for providing an information providing service according to an exemplary embodiment is operated, the main CPU 152 may perform communication with the user terminal apparatus 200 through the network interface 154.

- [201] Meanwhile, the operation of the above-mentioned control unit 150 may be realized by executing various programs stored in the storage unit 130.
- [202] FIG. 14 is a view illustrating software structure of the storage unit 130 to support an operation of the control unit 140 according to the above-described various exemplary embodiments. According to FIG. 14, the storage unit 130 comprises a base module 1410, a device management module 1420, a communication module 1430, a presentation module 1440, a web browser module 1450, and a service module 1460.
- [203] The base module 1410 refers to a basic module which processes a signal transmitted from each hardware included in the display apparatus 100 and transmits it to a upper layer module.
- [204] The base module 1410 includes a storage module 1411, a location-based module 1412, a security module 1413, a network module 1414, etc.
- [205] The storage module 1411 refers to a program module which manages database and registry. The location-based module 1412 refers to a program module which is interlocked with hardware such as a GPS chip and supports a location-based service. The security module 1413 refers to a program module which supports certification, permission, security storage regarding hardware, etc., and the network module 1414 refers to a module to support network connection and comprises a DNET module, a UPnP module, etc. For example, network connection may be performed with the external server 10 and the user terminal apparatus 200 through the network module 3814.
- [206] The device management module 1420 refers to a module to manage and user an external input and information regarding an external device. The device management module 1420 may comprise a sensing module 1421, a device information management module 1422, a remote control module 1423, etc. For example, information regarding the user terminal apparatus 20 may be managed through the device management module 1420.
- [207] The sensing module 1421 refers to a module which analyzes various sensor data. For example, the sensing module 1421 may comprise a face recognition module, a voice recognition module, a motion recognition module, an NFC recognition module, etc. for example, if a message targeting a specific user is received from outside, a face of the user using the display apparatus 100 may be recognized by operating the face recognition module.
- [208] The device information management module 1422 refers to a module which provides

information regarding various devices, and the remote control module 1423 refers to a program module which remotely controls surrounding devices such as telephone, television, printer, camera, air conditioner, etc.

- [209] The communication module 1430 refers to a module to perform communication module with outside. The communication module 1430 may comprise a messaging module 1431 such as a message program, an SMS (Short Message Service) & MMS (Multimedia Message Service) program, an e-mail program, etc. and a telephone module 1432 such as a Call Info Aggregator program module, a VoIP module, etc. For example, predetermined message may be received from outside using the communication module 1430.
- [210] The presentation module 1440 refers to a module to compose a display screen. The presentation module 1440 comprises a multimedia module 1441 to reproduce and output multimedia contents and a UI & graphic module 1442 to perform UI and graphic processing. The multimedia module 1441 may comprise a player module, a camcorder module, a sound processing module, etc. Accordingly, the operation of reproducing various multimedia contents and generating and reproducing screen and sound is performed. The UI & graphic module 1442 may comprise an image compositor module 1442-1 which combines images, a coordinate combination module 1442-2 which combines and generates a coordinates on a screen for displaying an image, an X11 module 1442-3 which receives various events from hardware, a 2D/3D UI toolkit 1442-4 which provides a tool for composing a UI in 2D or 3D form. For example, a screen for displaying a message received through the presentation module 1440 may be composed.
- [211] The web browser module 1450 refers to module which accesses a web server by performing web browsing. The web browser module 1450 may comprise various modules such as a web view module to compose a web page, a download agent module to perform downloading, a bookmark module, a webkit module, etc.
- [212] In addition, the service module 1460 refers to an application module to provide various services. For example, the service module 1460 may comprise various modules such as a navigation service module providing information regarding map, current location, landmark, path, etc., a game module, an advertisement application module, etc.
- [213] The main CPU 152 of the control unit 150 accesses the storage unit 130 through the storage interface 155, copies various modules stored in the storage unit 130 in the RAM 151-2, and performs operations according to the copied module.
- [214] For instance, in the case of Graphic User Interface (GUI) display operation, the main CPU 152 composes a GUI screen by using the image compositor module 1442-1 in the presentation module 1440. Subsequently, the display location of the GUI screen is de-

terminated using the coordinate combination module 1442-2 and the display unit 120 is controlled to display the GUI screen on the determined location.

- [215] Alternatively, if a user manipulation corresponding to the operation of receiving a message is performed, the main CPU 152 receives a message stored in a user account by executing the messaging module 1441 after accessing a message management server. Subsequently, the main CPU 152 composes a screen corresponding to the received message using the presentation module 1440 and displays the screen on the display unit 120.
- [216] In addition, in the case of performing telephone communication, the main CPU 152 may operate the telephone module 1432.
- [217] As described above, programs in various structures may be stored in the storage unit 130, and the control unit 140 may perform operations according to various exemplary embodiments using the various programs stored in the storage unit 130.
- [218] FIG. 15 is a flowchart to explain an information providing method of a display apparatus according to an exemplary embodiment.
- [219] According to the information providing method illustrated in FIG. 15, the display apparatus 100 communicates with the user terminal apparatus 200 (S1505).
- [220] Subsequently, if information is received from an external server (S1510), user identification information regarding a user of the display apparatus 100 is generated (S1515). Herein, the user identification information may be generated in various ways such as by recognizing a face, receiving finger printing recognition information, receiving terminal identification information, etc. As these methods have been already explained above, further description will not be provided.
- [221] Subsequently, the display apparatus 100 determines a subject to receive information based on user identification information generated in step S1515 and sharing setting information (S1520). Herein, the sharing setting information may be pre-stored in the display apparatus 100, and may be received from outside in some cases. For example, the sharing setting information stored in the user terminal apparatus 200 may be transmitted to the display apparatus 100 at a time when communication between the display apparatus 100 and the user terminal apparatus 200 is performed.
- [222] Subsequently, received information may be displayed or transmitted to the user terminal apparatus according to the determination result in step S1520 (S1525).
- [223] FIG. 16 is a flowchart to explain an information providing method of a display apparatus according to the exemplary embodiment illustrated in FIG. 15 in detail.
- [224] According to the information providing method illustrated in FIG. 16, the display apparatus 100 performs communication with the first and the second terminal apparatuses 200-1, 200-2.
- [225] Once information is received from an external server (S1610), it is determined



whether the received information belongs to the user 1 or not (S1615).

[226] If it is determined that the received information belongs to the user 1 in step S1615 (S1615:Y), it is determined whether the received information is set as “private” or not (S1620).

[227] If it is determined that the received information is set as “private” in step S1620 (S1620:Y), the received information is transmitted to the first user terminal, which is the terminal of the user 1 (S1625).

[228] Alternatively, if it is determined that the received information is not set as “private” in step S1620 (S1620:N), that is, if it is determined that the received information is set as “public”, the received information is displayed (S1630).

[229] Meanwhile, if it is determined that the received information does not belong to the user 1 in step S1615 (S1615:N), it is determined whether the received information belongs to the user 2 (S1635).

[230] If it is determined that the received information belongs to the user 2 in step S1635 (S1635:Y), it is determined whether the received information is set as “private” or not (S1640).

[231] If it is determined that the received information is set as “private” in step S1640 (S1640:Y), the received information is transmitted to the second user terminal, which is the terminal of the user 2 (S1645).

[232] Alternatively, if it is determined that the received information is not set as “private” in step S1640 (S1640:N), that is, if it is determined that the received information is set as “public”, the received information is displayed (S1650).

[233] Meanwhile, if it is determined that the received information does not belong to the user 2 in step S1635 (S1635:N), a message informing that the corresponding information has been received is displayed (S1655). That is, if it is determined that the received information relates to a user whose terminal is not connected to the display apparatus 100, a notification message informing the corresponding user that the information has been received may be displayed on the display apparatus 100 which is a sharing device.

[234] FIG. 17 is a flowchart to explain an information providing method of a server according to another exemplary embodiment.

[235] According to the information providing method illustrated in FIG. 17, the server 300 performs communication with the display apparatus 100 and the user terminal apparatus 200 (S1705).

[236] Subsequently, once information is received from an external server (S1710), user identification information regarding a user of the display apparatus 100 is requested and received from the display apparatus 100 (S1715). Herein, the user identification information may be generated in various ways such as by recognizing a face, receiving

finger printing recognition information, receiving terminal identification information, etc. As these methods have been already explained above, further description will not be provided.

[237] Subsequently, the server 300 determines a subject to receive information based on user identification information received in step S1715 and sharing setting information (S1720). Herein, the sharing setting information may be pre-stored in the server 300, and may be received from outside in some cases. For example, the sharing setting information may be transmitted from the display apparatus 100 or the user terminal apparatus 200 at a time when communication with at least one of the display apparatus 100 and the user terminal apparatus 200 is performed.

[238] Subsequently, received information may be displayed or transmitted to the user terminal apparatus according to the determination result in step S1720 (S1725).

[239] The Third Exemplary Embodiment

[240] Referring now to FIG. 18, therein is shown a content delivery system 100 with content sharing mechanism in an embodiment of the present invention. The content delivery system 100 includes a first device 102, such as a client or a server, connected to a second device 106, such as a client or server, with a communication path 104, such as a wireless or wired network. The content delivery system 100 can also include a third device 108 connected to the second device 106 with the communication path 104. The third device 108 can be a client or server.

[241] For example, the first device 102 and the third device 108 can be of any of a variety of mobile devices, such as a cellular phone, personal digital assistant, a notebook computer, automotive telematic content delivery system, or other multi-functional mobile communication or entertainment device. The first device 102 and the third device 108 can be a standalone device, or can be incorporated with a vehicle, for example a car, truck, bus, or train. The first device 102 and the third device 108 can couple to the communication path 104 to communicate with the second device 106.

[242] For illustrative purposes, the content delivery system 100 is described with the first device 102 and the third device 108 as a mobile computing device, although it is understood that the first device 102 and the third device 108 can be different types of computing devices. For example, the first device 102 and the third device 108 can also be a non-mobile computing device, such as a server, a server farm, or a desktop computer. For further example, the third device 108 can be a non-mobile computing device, such as a desktop computer, a large format display (LFD), a television (TV) or a computer terminal.

[243] The second device 106 can be any of a variety of centralized or decentralized computing devices. For example, the second device 106 can be a computer, grid computing resources, a virtualized computer resource, cloud computing resource,

routers, switches, peer-to-peer distributed computing devices, or a combination thereof.

- [244] The second device 106 can be centralized in a single computer room, distributed across different rooms, distributed across different geographical locations, embedded within a telecommunications network. The second device 106 can have a means for coupling with the communication path 104 to communicate with the first device 102 and the third device 108. The second device 106 can also be a client type device as described for the first device 102.
- [245] In another example, the first device 102 and the third device 108 can be a particularized machine, such as a mainframe, a server, a cluster server, rack mounted server, or a blade server, or as more specific examples, an IBM System z10 (TM) Business Class mainframe or a HP ProLiant ML (TM) server. Yet another example, the second device 106 can be a particularized machine, such as a portable computing device, a thin client, a notebook, a netbook, a smartphone, personal digital assistant, or a cellular phone, and as specific examples, an Apple iPhone (TM), Palm Centro (TM), Samsung Galaxy (TM), or Moto Q Global (TM).
- [246] For illustrative purposes, the content delivery system 100 is described with the second device 106 as a non-mobile computing device, although it is understood that the second device 106 can be different types of computing devices. For example, the second device 106 can also be a mobile computing device, such as notebook computer, another client device, or a different type of client device. The second device 106 can be a standalone device, or can be incorporated with a vehicle, for example a car, truck, bus, or train.
- [247] Also for illustrative purposes, the content delivery system 100 is shown with the second device 106, the third device 108 and the first device 102 as end points of the communication path 104, although it is understood that the content delivery system 100 can have a different partition between the first device 102, the third device 108, the second device 106, and the communication path 104. For example, the first device 102, the second device 106, or a combination thereof can also function as part of the communication path 104.
- [248] The communication path 104 can be a variety of networks. For example, the communication path 104 can include wireless communication, wired communication, optical, ultrasonic, or the combination thereof. Satellite communication, cellular communication, Bluetooth, Infrared Data Association standard (IrDA), near field communication (NFC), wireless fidelity (WiFi), and worldwide interoperability for microwave access (WiMAX) are examples of wireless communication that can be included in the communication path 104. Ethernet, digital subscriber line (DSL), fiber to the home (FTTH), and plain old telephone service (POTS) are examples of wired commu-

nication that can be included in the communication path 104.

[249] Further, the communication path 104 can traverse a number of network topologies and distances. For example, the communication path 104 can include direct connection, personal area network (PAN), local area network (LAN), metropolitan area network (MAN), wide area network (WAN) or any combination thereof.

[250] Referring now to FIG. 19, therein is shown a first example of a distribution of a display content 202 by the content delivery system 100. For example, the content delivery system 100 can determine the display content 202 distributable and presentable on a public device 204, a portable device 206, or a combination thereof.

[251] The portable device 206 is defined as a personal device that permits a private viewing of the display content 202. For example, the portable device 206 can include the first device 102 of FIG. 18. For brevity and clarity, the discussion of the present invention will focus on the content delivery system 100 generating the display content 202 specific to the user to the portable device 206. The private viewing can represent the viewing of the display content 202 only for the eyes of the user of the portable device 206.

[252] The public device 204 is defined as a device that permits the viewing of the display content 202 available for all persons or the public. For example, the public device 204 can include the third device 108 of FIG. 18. For brevity and clarity, the discussion of the present invention will focus on the content delivery system 100 generating the display content 202 that can be shared with the public to the public device 204.

[253] For specific example, the display content 202 can include information that is presentable on the public device 204, the portable device 206, or a combination thereof. More specifically, the display content 202 can include a TV program, a notification 208, digital pictures, instant messaging chats, social networking site (SNS) messages, or a combination thereof. For further example, the notification 208 can represent an alert that the user of the first device 102 had received an instant messaging, an email, SNS message, or a combination thereof.

[254] The display content 202 can include a private content 210 and a public content 212. The private content 210 is defined as a content generated for the private viewing. The public content 212 is defined as the information made viewable and available to all people. For example, the private content 210 can include instant messaging chats and personal email. For another example, the public content 212 can include TV program aired on cable network. For further example, the notification 208 can replace the private content 210 for displaying on the public device 204 to avoid sharing the private content 210 to the public.

[255] For specific example, the content delivery system 100 can present the display content 202 on the public device 204 to share the display content 202 to people in the vicinity

of the public device 204. For further example, the public content 212 can represent the TV program. The public device 204 can display the TV program to viewers in the vicinity of the public device 204.

- [256] For another example, the user of the portable device 206 can register the portable device 206 to the content delivery system 100 to establish communication with the public device 204 via the communication path 104 of FIG. 18. For specific example, the portable device 206 can share the public content 212 received, generated, or a combination thereof by the portable device 206 to the public device 204. For different example, the public device 204 can share the public content 212 received, generated, or a combination thereof by the public device 204 to the portable device 206.
- [257] The content delivery system 100 can distribute the display content 202 based on a privacy setting 214, which is defined as a restriction placed for sharing the display content 202. The privacy setting 214 can be generated by the content delivery system 100 or set by the user. For example, the content delivery system 100 can generate the privacy setting 214 to share the public content 212 representing the weather information to the public device 204. For another example, the user of the portable device 206 can set the privacy setting 214 to restrict the sharing of the public content 212 representing a movie with profanity to the portable device 206.
- [258] The portable device 206 or the public device 204 can include a capturing sensor 216. For example, the capturing sensor 216 can detect a person's presence 218. The person's presence 218 is defined as the existence of a person. For example, the person's presence 218 can include the presence of the user of the portable device 206. For another example, the person's presence can include the presence of the person without the portable device 206. The capturing sensor 216 can also perform facial recognition of the user of the portable device 206.
- [259] The capturing sensor 216 can include a digital still or video camera for facial recognition, a digital scanner for finger print detection, or a combination thereof. For brevity and clarity, the discussion of the capturing sensor 216 will focus on the public device 204 with the capturing sensor 216 detecting the person's presence 218.
- [260] The capturing sensor 216 can detect the person's presence 218 within a detection zone 220. The detection zone 220 is defined as an area surrounding the portable device 206, the public device 204, or a combination thereof where the capturing sensor 216 can detect the person's presence 218. For example, the detection zone 220 can represent the five square meters in front of the public device 204. Details regarding the detection zone 220 will be discussed later.
- [261] The content delivery system 100 can distribute the display content 202 based on an audience type 222. The audience type 222 is defined as a categorization of the person detected by the capturing sensor 216. For example, the audience type 222 can include a

friend of the user of the portable device 206. For another example, the user of the portable device 206 can set up a permission group based on the privacy setting 214 to permit the sharing of the display content 202 with the permission group. The group can represent a plurality of the person. The audience type 222 can represent the people in the permission group who were permitted to see the display content 202 shared.

[262] For different example, the audience type 222 can include the categorization of the person based on the privacy setting 214 restricting who can receive the display content 202 distributed by the content delivery system 100. For example, the person who is not registered can represent the audience type 222 of an unregistered user as oppose to a registered user. For different example, the audience type 222 can include the “friend” category of the user of the portable device 206. Details regarding the distribution of the display content 202 based on the audience type 222 will be discussed later.

[263] The content delivery system 100 can distribute the display content 202 based on a content type 224. The content type 224 is defined as a categorization of the display content 202. For example, the content type 224 can be categorized based on the Motion Picture Association of America (MPAA) film rating system. More specifically, the MPAA film rating can include “Parental Guidance Suggested” (PG) or “No One 17 and Under Admitted” (NC-17). For another example, the content type 224 can be categorized as educational, entertainment, or a combination thereof. For different example, the content type 224 can be categorized as the public content 212 or the private content 210.

[264] FIG. 19 can illustrate the distribution of the display content 202 by the content delivery system 100. More specifically, the public device 204 with the capturing sensor 216 can detect a plurality of the person’s presence 218. More specifically, the content delivery system 100 can determine the audience type 222 of each people detected within the detection zone 220. The audience type 222 can include the user of the portable device 206 and the mother of the user, who can represent the unregistered user.

[265] The privacy setting 214 for the user of the portable device 206 can restrict the sharing of the private content 210, the message from the social networking site, such as Facebook (TM), to the public device 204 when the unregistered user is detected. The public device 204 can instead display the notification 208 on the public device 204 to notify the user of the portable device 206 that he or she had received the message from Facebook (TM).

[266] Further, only the user of the portable device 206 can see the private content 210 on the portable device 206. The unregistered user, instead, can only see the notification 208 displayed on the public device 204.

[267] An activity history 226 can represent a user’s activity record of using the services

provided by the content delivery system 100. For example, the activity history 226 can indicate that the user had shared the SNS message to other users within the detection zone 220 in the past. The activity history 226 can include a time information 228. The time information 228 can represent the time of the day, week, year, or a combination thereof when the user had used the services provided by the content delivery system 100.

- [268] Referring now to FIG. 20, therein is shown a second example of the distribution of the display content 202 by the content delivery system 100. For example, the content delivery system 100 can display the private content 210 on the public device 204. More specifically, the privacy setting 214 of FIG. 19 can indicate that the portable device 206 can share all of the display content 202 to the public device 204 if only the person's presence 218 representing the user of the portable device 206 is detected by the capturing sensor 216 within the detection zone 220. Subsequently, the public device 204 can display the private content 210 on the public device 204.
- [269] The display content 202 can include a content overlay 302. For example, the content overlay 302 can represent an advertisement overlaid on the private content 210, the public content 212 of FIG. 19, or a combination thereof. For specific example, the content overlay 302 can include an overlay advertising. The overlay advertising can include a video advertisement, a hypervideo, a contextual link, clickable graphic, text, or a combination thereof related to the display content 202.
- [270] For further example, the private content 210 displayed on the public device 204 can include an advertisement related to discount price for a movie ticket at a local theater. The content overlay 302 representing the advertisement of the discount price can be overlaid on the private content 210 to be displayed on the public device 204.
- [271] For further example, the content overlay 302 can represent information based on an overlay preference 304. For example, the overlay preference 304 can represent a choice whether to include the content overlay 302 or not with the display content 202. For different example, the overlay preference 304 can represent a type of information interested by the user of the content delivery system 100 to be displayed on the public device 204, the portable device 206, or a combination thereof. More specifically, in this example, the overlay preference 304 of the user can represent an interest in receiving information related to discount price. As a result, the content delivery system 100 can display the content overlay 302 that represents the advertisement for discount price for a movie theater.
- [272] The display content 202 can include a provider information 306. For example, the provider information 306 can represent information regarding a source of the display content 202. For specific example, Facebook (TM) can represent the provider information 306 for the SNS message.

- [273] The display content 202 can include a sender information 308. For example, the sender information 308 can represent information regarding the person, the entity, or a combination thereof who had transmitted the display content 202. For specific example, Mary, a Facebook (TM) user, can represent the sender of the SNS message. Thus, the sender information 308 can represent Mary.
- [274] The display content 202 can include a content keyword 310. For example, the content keyword 310 can represent a word, a phrase, or a combination thereof registered in the privacy setting 214. For specific example, the user can register the word "movie" as the content keyword 310 to the privacy setting 214.
- [275] Referring now to FIG. 21, therein is shown a third example of the distribution of the display content 202 by the content delivery system 100. For example, the privacy setting 214 of FIG. 19 can be configured on the public device 204. More specifically, the privacy setting 214 can restrict a subcontent 402 that is displayable on the portable device 206.
- [276] The subcontent 402 is defined as a portion of the display content 202. For example, the display content 202 can represent a hybrid that includes the private content 210 of FIG. 19 and the public content 212 of FIG. 19. For specific example, the display content 202 can represent "Weather in San Francisco, California is rain. I'll still see you in San Francisco at 3PM!" The privacy setting 214 can indicate that the private content 210 can display the private content 210 only on the portable device 206 and not on the public device 204. Further, the public content 212 can display on the public content 212.
- [277] Subsequently, the content delivery system 100 can partition the display content 202 to generate a plurality of the subcontent 402 that includes a private portion and the public portion of the display content 202. The private portion of the subcontent 402 can represent "I'll still see you in San Francisco at 3PM. The public portion of the subcontent 402 can represent "Weather in San Francisco, California is rain." Further, the subcontent 402 representing the private portion can be displayed on the portable device 206 and not on the public device 204. And the subcontent 402 representing the public portion can be displayed on the public device 204.
- [278] For another example, a parent of the user of the portable device 206 can restrict the display content 202 with violence to be displayable on the portable device 206. The content delivery system 100 can distribute the display content 202 to only share the subcontent 402 without the violence to the portable device 206.
- [279] For further example, the public device 204 can receive two sets of the display content 202 that is the same. More specifically, one of the display content 202 can be the original and the other of the display content 202 can be the variation. The original can include the violence and the variation can edit out the violence. The content delivery



system 100 can distribute the display content 202 based on the privacy setting 214 to display which version of the display content 202 on the portable device 206.

[280] For further example, the public device 204 can be connected to a plurality of the portable device 206. The capturing sensor 216 can detect the plurality of the person's presence 218 within the detection zone 220. The privacy setting 214 can restrict the display of the subcontent 402 to the plurality of the portable device 206. For specific example, some of the subcontent 402 representing the private portion of the display content 202 can be displayed on some of the portable device 206 while not shown on the some other of the portable device 206.

[281] Referring now to FIG. 22, therein is shown a fourth example of the distribution of the display content 202 by the content delivery system 100. For example, the content delivery system 100 can share the display content 202 from the portable device 206 to the public device 204 based on meeting or exceeding a time threshold 502.

[282] The time threshold 502 is defined as a time limit placed on the person's presence 218 for being inside or outside of the detection zone 220. For example, the privacy setting 214 of FIG. 19 can limit the display of the display content 202 representing the private content 210, such as the SNS message, on the public device 204. If only the user of the portable device 206 is present within the detection zone 220, based on the privacy setting 214, the public device 204 can display the private content 210 on the public device 204.

[283] However, if the person's presence 218 of the user is no longer detectable within the detection zone 220, the content delivery system 100 can switch to the notification 208 for displaying on the public device 204. For example, a past geographic location of the user of the portable device 206 within the detection zone 220 can be illustrated with dotted lines. Further, the time threshold 502 can be 30 seconds. The content delivery system 100 can continue to display the notification 208 on the public device 204 for 30 seconds. After the 30 seconds, the content delivery system 100 can determine that the time period not detecting the person's presence 218 exceeded the time threshold 502. Subsequently, the content delivery system 100 can disconnect the portable device 206 to stop sharing the display content 202.

[284] For another example, the content delivery system 100 can display the private content 210 after the person's presence 218, representing only the user, within the detection zone 220 met or exceeded the time threshold 502. More specifically, the content delivery system 100 can track whether the person's presence 218 other than the user will also be detectable within the time threshold 502.

[285] If after the time threshold 502, the person's presence 218 detected within the detection zone 220 is that of the user of the portable device 206, the content delivery system 100 can display the private content 210 on the public device 204. The time

threshold 502 can be used by the content delivery system 100 to avoid inadvertent display of the private content 210 to confirm the non-presence of other people within the detection zone 220.

[286] Referring now to FIG. 23, therein is an exemplary block diagram of the content delivery system 100. The content delivery system 100 can include the first device 102, the third device 108, the communication path 104, and the second device 106.

[287] The first device 102 or the third device 108 can communicate with the second device 106 over the communication path 104. The first device 102 can send information in a first device transmission 608 over the communication path 104 to the second device 106. The second device 106 can send information in a second device transmission 610 over the communication path 104 to the first device 102.

[288] For illustrative purposes, the content delivery system 100 is shown with the first device 102 or the third device 108 as a client device, although it is understood that the content delivery system 100 can have the first device 102 or the third device 108 as a different type of device. For example, the first device 102 or the third device 108 can be a server.

[289] Also for illustrative purposes, the content delivery system 100 is shown with the second device 106 as a server, although it is understood that the content delivery system 100 can have the second device 106 as a different type of device. For example, the second device 106 can be a client device.

[290] For brevity of description in this embodiment of the present invention, the first device 102 and the third device 108 will be described as a client device and the second device 106 will be described as a server device. The present invention is not limited to this selection for the type of devices. The selection is an example of the present invention.

[291] The first device 102 can include a first control unit 612, a first storage unit 614, a first communication unit 616, a first user interface 618, and a location unit 620. The first control unit 612 can include a first control interface 622. The first control unit 612 can execute a first software 626 to provide the intelligence of the content delivery system 100. The first control unit 612 can be implemented in a number of different manners. For example, the first control unit 612 can be a processor, an embedded processor, a microprocessor, a hardware control logic, a hardware finite state machine (FSM), a digital signal processor (DSP), or a combination thereof. The first control interface 622 can be used for communication between the first control unit 612 and other functional units in the first device 102. The first control interface 622 can also be used for communication that is external to the first device 102.

[292] The first control interface 622 can receive information from the other functional units or from external sources, or can transmit information to the other functional units or to

external destinations. The external sources and the external destinations refer to sources and destinations physically separate to the first device 102.

- [293] The first control interface 622 can be implemented in different ways and can include different implementations depending on which functional units or external units are being interfaced with the first control interface 622. For example, the first control interface 622 can be implemented with a pressure sensor, an inertial sensor, a micro-electromechanical system (MEMS), optical circuitry, waveguides, wireless circuitry, wireline circuitry, or a combination thereof.
- [294] The location unit 620 can generate location information, current heading, and current speed of the first device 102, as examples. The location unit 620 can be implemented in many ways. For example, the location unit 620 can function as at least a part of a global positioning system (GPS), an inertial navigation system, a cellular-tower location system, a pressure location system, or any combination thereof.
- [295] The location unit 620 can include a location interface 632. The location interface 632 can be used for communication between the location unit 620 and other functional units in the first device 102. The location interface 632 can also be used for communication that is external to the first device 102.
- [296] The location interface 632 can receive information from the other functional units or from external sources, or can transmit information to the other functional units or to external destinations. The external sources and the external destinations refer to sources and destinations physically separate to the first device 102.
- [297] The location interface 632 can include different implementations depending on which functional units or external units are being interfaced with the location unit 620. The location interface 632 can be implemented with technologies and techniques similar to the implementation of the first control interface 622.
- [298] The first storage unit 614 can store the first software 626. The first storage unit 614 can also store the relevant information, such as advertisements, points of interest (POI), navigation routing entries, or any combination thereof.
- [299] The first storage unit 614 can be a volatile memory, a nonvolatile memory, an internal memory, an external memory, or a combination thereof. For example, the first storage unit 614 can be a nonvolatile storage such as non-volatile random access memory (NVRAM), Flash memory, disk storage, or a volatile storage such as static random access memory (SRAM).
- [300] The first storage unit 614 can include a first storage interface 624. The first storage interface 624 can be used for communication between the location unit 620 and other functional units in the first device 102. The first storage interface 624 can also be used for communication that is external to the first device 102.
- [301] The first storage interface 624 can receive information from the other functional units

or from external sources, or can transmit information to the other functional units or to external destinations. The external sources and the external destinations refer to sources and destinations physically separate to the first device 102.

- [302] The first storage interface 624 can include different implementations depending on which functional units or external units are being interfaced with the first storage unit 614. The first storage interface 624 can be implemented with technologies and techniques similar to the implementation of the first control interface 622.
- [303] The first communication unit 616 can enable external communication to and from the first device 102. For example, the first communication unit 616 can permit the first device 102 to communicate with the second device 106 of FIG. 18, an attachment, such as a peripheral device or a computer desktop, and the communication path 104.
- [304] The first communication unit 616 can also function as a communication hub allowing the first device 102 to function as part of the communication path 104 and not limited to be an end point or terminal unit to the communication path 104. The first communication unit 616 can include active and passive components, such as microelectronics or an antenna, for interaction with the communication path 104.
- [305] The first communication unit 616 can include a first communication interface 628. The first communication interface 628 can be used for communication between the first communication unit 616 and other functional units in the first device 102. The first communication interface 628 can receive information from the other functional units or can transmit information to the other functional units.
- [306] The first communication interface 628 can include different implementations depending on which functional units are being interfaced with the first communication unit 616. The first communication interface 628 can be implemented with technologies and techniques similar to the implementation of the first control interface 622.
- [307] The first user interface 618 allows a user (not shown) to interface and interact with the first device 102. The first user interface 618 can include an input device and an output device. Examples of the input device of the first user interface 618 can include a keypad, a touchpad, soft-keys, a keyboard, a microphone, or any combination thereof to provide data and communication inputs.
- [308] The first user interface 618 can include a first display interface 630. The first display interface 630 can include a display, a projector, a video screen, a speaker, or any combination thereof.
- [309] The first control unit 612 can operate the first user interface 618 to display information generated by the content delivery system 100. The first control unit 612 can also execute the first software 626 for the other functions of the content delivery system 100, including receiving location information from the location unit 620. The first control unit 612 can further execute the first software 626 for interaction with the

communication path 104 via the first communication unit 616.

- [310] The second device 106 can be optimized for implementing the present invention in a multiple device embodiment with the first device 102. The second device 106 can provide the additional or higher performance processing power compared to the first device 102. The second device 106 can include a second control unit 634, a second communication unit 636, and a second user interface 638.
- [311] The second user interface 638 allows a user (not shown) to interface and interact with the second device 106. The second user interface 638 can include an input device and an output device. Examples of the input device of the second user interface 638 can include a keypad, a touchpad, soft-keys, a keyboard, a microphone, or any combination thereof to provide data and communication inputs. Examples of the output device of the second user interface 638 can include a second display interface 640. The second display interface 640 can include a display, a projector, a video screen, a speaker, or any combination thereof.
- [312] The second control unit 634 can execute a second software 642 to provide the intelligence of the second device 106 of the content delivery system 100. The second software 642 can operate in conjunction with the first software 626. The second control unit 634 can provide additional performance compared to the first control unit 612 .
- [313] The second control unit 634 can operate the second user interface 638 to display information. The second control unit 634 can also execute the second software 642 for the other functions of the content delivery system 100, including operating the second communication unit 636 to communicate with the first device 102 over the communication path 104.
- [314] The second control unit 634 can be implemented in a number of different manners. For example, the second control unit 634 can be a processor, an embedded processor, a microprocessor, a hardware control logic, a hardware finite state machine (FSM), a digital signal processor (DSP), or a combination thereof.
- [315] The second control unit 634 can include a second control interface 644. The second control interface 644 can be used for communication between the second control unit 634 and other functional units in the second device 106. The second control interface 644 can also be used for communication that is external to the second device 106.
- [316] The second control interface 644 can receive information from the other functional units or from external sources, or can transmit information to the other functional units or to external destinations. The external sources and the external destinations refer to sources and destinations physically separate to the second device 106.
- [317] The second control interface 644 can be implemented in different ways and can include different implementations depending on which functional units or external units are being interfaced with the second control interface 644. For example, the

second control interface 644 can be implemented with a pressure sensor, an inertial sensor, a microelectromechanical system (MEMS), optical circuitry, waveguides, wireless circuitry, wireline circuitry, or a combination thereof.

[318] A second storage unit 646 can store the second software 642. The second storage unit 646 can also store the relevant information, such as advertisements, points of interest (POI), navigation routing entries, or any combination thereof. The second storage unit 646 can be sized to provide the additional storage capacity to supplement the first storage unit 614.

[319] For illustrative purposes, the second storage unit 646 is shown as a single element, although it is understood that the second storage unit 646 can be a distribution of storage elements. Also for illustrative purposes, the content delivery system 100 is shown with the second storage unit 646 as a single hierarchy storage system, although it is understood that the content delivery system 100 can have the second storage unit 646 in a different configuration. For example, the second storage unit 646 can be formed with different storage technologies forming a memory hierarchal system including different levels of caching, main memory, rotating media, or off-line storage.

[320] The second storage unit 646 can be a volatile memory, a nonvolatile memory, an internal memory, an external memory, or a combination thereof. For example, the second storage unit 646 can be a nonvolatile storage such as non-volatile random access memory (NVRAM), Flash memory, disk storage, or a volatile storage such as static random access memory (SRAM).

[321] The second storage unit 646 can include a second storage interface 648. The second storage interface 648 can be used for communication between the location unit 620 and other functional units in the second device 106. The second storage interface 648 can also be used for communication that is external to the second device 106.

[322] The second storage interface 648 can receive information from the other functional units or from external sources, or can transmit information to the other functional units or to external destinations. The external sources and the external destinations refer to sources and destinations physically separate to the second device 106.

[323] The second storage interface 648 can include different implementations depending on which functional units or external units are being interfaced with the second storage unit 646. The second storage interface 648 can be implemented with technologies and techniques similar to the implementation of the second control interface 644.

[324] The second communication unit 636 can enable external communication to and from the second device 106. For example, the second communication unit 636 can permit the second device 106 to communicate with the first device 102 over the communication path 104.

[325] The second communication unit 636 can also function as a communication hub

allowing the second device 106 to function as part of the communication path 104 and not limited to be an end point or terminal unit to the communication path 104. The second communication unit 636 can include active and passive components, such as microelectronics or an antenna, for interaction with the communication path 104.

[326] The second communication unit 636 can include a second communication interface 650. The second communication interface 650 can be used for communication between the second communication unit 636 and other functional units in the second device 106. The second communication interface 650 can receive information from the other functional units or can transmit information to the other functional units.

[327] The second communication interface 650 can include different implementations depending on which functional units are being interfaced with the second communication unit 636. The second communication interface 650 can be implemented with technologies and techniques similar to the implementation of the second control interface 644.

[328] The first communication unit 616 can couple with the communication path 104 to send information to the second device 106 in the first device transmission 608. The second device 106 can receive information in the second communication unit 636 from the first device transmission 608 of the communication path 104.

[329] The second communication unit 636 can couple with the communication path 104 to send information to the first device 102 in the second device transmission 610. The first device 102 can receive information in the first communication unit 616 from the second device transmission 610 of the communication path 104. The content delivery system 100 can be executed by the first control unit 612, the second control unit 634, or a combination thereof.

[330] For illustrative purposes, the second device 106 is shown with the partition having the second user interface 638, the second storage unit 646, the second control unit 634, and the second communication unit 636, although it is understood that the second device 106 can have a different partition. For example, the second software 642 can be partitioned differently such that some or all of its function can be in the second control unit 634 and the second communication unit 636. Also, the second device 106 can include other functional units not shown in FIG. 23 for clarity.

[331] The third device 108 can include a third control unit 652, a third storage unit 654, a third communication unit 656, a third user interface 658, and a location unit 660. The third control unit 652 can include a third control interface 662. The third control unit 652 can execute a third software 666 to provide the intelligence of the content delivery system 100. The third control unit 652 can be implemented in a number of different manners. For example, the third control unit 652 can be a processor, an embedded processor, a microprocessor, a hardware control logic, a hardware finite state machine

(FSM), a digital signal processor (DSP), or a combination thereof. The third control interface 662 can be used for communication between the third control unit 652 and other functional units in the third device 108. The third control interface 662 can also be used for communication that is external to the third device 108.

[332] The third control interface 662 can receive information from the other functional units or from external sources, or can transmit information to the other functional units or to external destinations. The external sources and the external destinations refer to sources and destinations physically separate to the third device 108.

[333] The third control interface 662 can be implemented in different ways and can include different implementations depending on which functional units or external units are being interfaced with the third control interface 662. For example, the third control interface 662 can be implemented with a pressure sensor, an inertial sensor, a micro-electromechanical system (MEMS), optical circuitry, waveguides, wireless circuitry, wireline circuitry, or a combination thereof.

[334] The location unit 660 can generate location information, current heading, and current speed of the third device 108, as examples. The location unit 660 can be implemented in many ways. For example, the location unit 660 can function as at least a part of a global positioning system (GPS), an inertial navigation system, a cellular-tower location system, a pressure location system, or any combination thereof.

[335] The location unit 660 can include a location interface 672. The location interface 672 can be used for communication between the location unit 660 and other functional units in the third device 108. The location interface 672 can also be used for communication that is external to the third device 108.

[336] The location interface 672 can receive information from the other functional units or from external sources, or can transmit information to the other functional units or to external destinations. The external sources and the external destinations refer to sources and destinations physically separate to the third device 108.

[337] The location interface 672 can include different implementations depending on which functional units or external units are being interfaced with the location unit 660. The location interface 672 can be implemented with technologies and techniques similar to the implementation of the third control interface 662.

[338] The third storage unit 654 can store the third software 666. The third storage unit 654 can also store the relevant information, such as advertisements, points of interest (POI), navigation routing entries, or any combination thereof.

[339] The third storage unit 654 can be a volatile memory, a nonvolatile memory, an internal memory, an external memory, or a combination thereof. For example, the third storage unit 654 can be a nonvolatile storage such as non-volatile random access memory (NVRAM), Flash memory, disk storage, or a volatile storage such as static



random access memory (SRAM).

- [340] The third storage unit 654 can include a third storage interface 664. The third storage interface 664 can be used for communication between the location unit 660 and other functional units in the third device 108. The third storage interface 664 can also be used for communication that is external to the third device 108.
- [341] The third storage interface 664 can receive information from the other functional units or from external sources, or can transmit information to the other functional units or to external destinations. The external sources and the external destinations refer to sources and destinations physically separate to the third device 108.
- [342] The third storage interface 664 can include different implementations depending on which functional units or external units are being interfaced with the third storage unit 654. The third storage interface 664 can be implemented with technologies and techniques similar to the implementation of the third control interface 662.
- [343] The third communication unit 656 can enable external communication to and from the third device 108. For example, the third communication unit 656 can permit the third device 108 to communicate with the second device 106 of FIG. 18, an attachment, such as a peripheral device or a computer desktop, and the communication path 104.
- [344] The third communication unit 656 can also function as a communication hub allowing the third device 108 to function as part of the communication path 104 and not limited to be an end point or terminal unit to the communication path 104. The third communication unit 656 can include active and passive components, such as microelectronics or an antenna, for interaction with the communication path 104.
- [345] The third communication unit 656 can include a third communication interface 668. The third communication interface 668 can be used for communication between the third communication unit 656 and other functional units in the third device 108. The third communication interface 668 can receive information from the other functional units or can transmit information to the other functional units.
- [346] The third communication interface 668 can include different implementations depending on which functional units are being interfaced with the third communication unit 656. The third communication interface 668 can be implemented with technologies and techniques similar to the implementation of the third control interface 662.
- [347] The third user interface 658 allows a user (not shown) to interface and interact with the third device 108. The third user interface 658 can include an input device and an output device. Examples of the input device of the third user interface 658 can include a keypad, a touchpad, soft-keys, a keyboard, a microphone, or any combination thereof to provide data and communication inputs.

- [348] The third user interface 658 can include a third display interface 670. The third display interface 670 can include a display, a projector, a video screen, a speaker, or any combination thereof.
- [349] The third control unit 652 can operate the third user interface 658 to display information generated by the content delivery system 100. The third control unit 652 can also execute the third software 666 for the other functions of the content delivery system 100, including receiving location information from the location unit 660. The third control unit 652 can further execute the third software 666 for interaction with the communication path 104 via the third communication unit 656.
- [350] A sensor unit 674 can detect the person's presence 218 of FIG. 19. For example, the sensor unit 674 can detect the person's presence within the detection zone 220 of FIG. 19. Examples of the sensor unit 674 can include a digital camera, video camera, thermal camera, night vision camera, infrared camera, x-ray camera, or the combination thereof. Further examples of the sensor unit 674 can include a facial recognition device, a finger print scanner, a retina scanner, a physiological monitoring device, light identifier, or a combination thereof. For specific example, the sensor unit 674 can include the capturing sensor 216 of FIG. 19.
- [351] Referring now to FIG. 24, therein is shown a control flow of the content delivery system 100. The content delivery system 100 can include a registration module 702. The registration module 702 registers the portable device 206 of FIG. 19 to be connected with the public device 204 of FIG. 19. For example, the registration module 702 can register the portable device 206 to connect with the public device 204 via the communication path 104 of FIG. 18.
- [352] The registration module 702 can register the portable device 206 in a number of ways. For example, the user of the portable device 206 can register the portable device 206 to share the display content 202 of FIG. 19 with the public device 204. For another example, a plurality of the user of the portable device 206 can register as a group to share the display content 202 with the public device 204.
- [353] The registration module 702 includes a setting module 704. The setting module 704 generates the privacy setting 214 of FIG. 19. The setting module 704 can generate the privacy setting 214 in a number of ways. For example, the setting module 704 can generate the privacy setting 214 for restricting the distribution of the private content 210 of FIG. 19 to the public device 204. For different example, the setting module 704 can generate the privacy setting 214 for restricting the distribution of the public content 212 of FIG. 19 to the portable device 206.
- [354] For another example, the setting module 704 can generate the privacy setting 214 based on the activity history 226 of FIG. 19. For specific example, the activity history 226 can include how the user had shared the display content 202 between the portable

device 206 and the public device 204. More specifically, the user can always share the public content 212, such as the weather report received by the portable device 206, to the public device 204 in the past. The setting module 704 can generate the privacy setting 214 for sharing the public content 212 that represents the weather report.

[355] For different example, the setting module 704 can generate the privacy setting 214 based on the time information 228 of FIG. 19. For specific example, the user of the portable device 206 can reject the display content 202 representing a horror movie from the public device 204 on Monday nights. The setting module 704 can generate the privacy setting 214 that rejects the sharing of horror movies on Monday nights between the portable device 206 and the public device 204.

[356] For another example, the setting module 704 can generate the privacy setting 214 based on the audience type 222 of FIG. 19 for restricting the distribution of the display content 202. More specifically, the audience type 222 can represent the “friends of the user of the portable device 206.” The activity history 226 of the user shows that user had shared the private content 210 with the audience type 222 of user’s friend but had not shared to those who were not user’s friends. As a result, the setting module 704 can generate the privacy setting 214 that allows the sharing of the private content 210 generated for the user only to other users with the audience type 222 of “friends of the user of the portable device 206.”

[357] For different example, the setting module 704 can generate the privacy setting 214 based on the number of the person’s presence 218 of FIG. 19 detected within the detection zone 220 of FIG. 19. For example, the setting module 704 can increase or decrease a level of security based on the number of person’s presence 218 detected. More specifically, the setting module 704 can generate the privacy setting 214 with a higher security as the number of the person’s presence 218 detected increased. For example, if on the user was detected within the detection zone 220, the setting module 704 can generate the privacy setting 214 that allows the distribution of the private content 210 to the public device 204. However, if the person’s presence 218 other than that of the user is detected, the setting module 704 can increase the security for distributing the display content 202 by generating the privacy setting 214 that shares the public content 212 to the public device 204 and the private content 210 to the portable device 206.

[358] For different example, the setting module 704 can configure the privacy setting 214 for grouping the plurality of the audience type 222 permitted from displaying the display content 202. The audience type 222 can represent “family member of the user of the portable device 206.” The privacy setting 214 can be set so that the display content 202 shared to the audience type 222 of user’s friend versus the audience type 222 of user’s family can differ. More specifically, the privacy setting 214 can set so

that the user's family member can only receive the public content 212.

- [359] For further example, the privacy setting 214 can be set to restrict the sharing of the subcontent 402 of FIG. 21. More specifically, the display content 202 can include the plurality of the subcontent 402. The plurality of the subcontent 402 can represent the private portion and the public portion. The setting module 704 can generate the privacy setting 214 to share the subcontent 402 with the private portion of the display content 202 to be shared only on the portable device 206 based on the user's past activity.
- [360] For different example, the setting module 704 can configure the privacy setting 214 to restrict the sharing of the display content 202 based on the provider information 306 of FIG. 20 of the display content 202. More specifically, the provider information 306 can represent Facebook (TM). The setting module 704 can configure the privacy setting 214 to restrict display of the display content 202 provided by Facebook (TM) only to the portable device 206.
- [361] The setting module 704 can generate the privacy setting 214 based on the overlay preference 304 of FIG. 20. The overlay preference 304 can indicate that the user is interested in having the content overlay 302 of FIG. 20 of automobile advertisement with the display content 202. The setting module 704 can generate the privacy setting 214 to require the overlay of the content overlay 302 of the automobile advertisement with the display content 202 generated for the user.
- [362] The content delivery system 100 can include a zone module 706, which can be coupled to the registration module 702. The zone module 706 generates the detection zone 220. For example, the zone module 706 can generate the detection zone 220 to be five square meter in front of the capturing sensor 216 of FIG. 19. For different example, the zone module 706 can generate the detection zone 220 to be a connectivity range for the communication path 104 representing the Bluetooth connection between the portable device 206 and the public device 204. For another example, the zone module 706 can generate the detection zone 220 to be the area where the capturing sensor 216 can establish the facial recognition. More specifically, the specification of the capturing sensor 216 can indicate that the capturing sensor 216 can recognize a person's face that is within ten meters from the capturing sensor 216.
- [363] The content delivery system 100 can include a detector module 708, which can be coupled to the zone module 706. The detector module 708 detects the person's presence 218 of FIG. 19. For example, the detector module 708 can detect the person's presence 218 for identifying the portable device 206.
- [364] The detector module 708 can detect the person's presence 218 in a number of ways. For example, the detector module 708 can detect the person's presence 218 via the capturing sensor 216. For specific example, the capturing sensor 216 can represent the digital camera that can perform facial recognition. The detector module 708 can detect

the person's presence 218 based on facial recognition if the user is within the detection zone 220.

[365] For different example, the capturing sensor 216 can represent the finger print scanner to detect the user's finger print from the key pads of the portable device 206. The detector module 708 can detect the person's presence 218 within the detection zone 220 based on detecting the user's finger print and the portable device 206 having to establish the Bluetooth connection with the public device 204. Further, by having the portable device 206 establish connection with the public device 204 via the communication path 104, the detector module 708 can identify the portable device 206 as the portable device 206 registered by the user to the content delivery system 100.

[366] The content delivery system 100 can include an audience module 710, which can be coupled to the detector module 708. The audience module 710 identifies the user of the portable device 206 and determines the audience type 222 of FIG. 19. For example, the audience module 710 can determine the audience type 222 based on the person's presence 218 for determining the content type 224 of FIG. 19 presentable on the public device 204.

[367] The audience module 710 includes an identification module 712. The identification module 712 identifies the user of the portable device 206. The identification module 712 can identify the user in a number of ways. For example, the identification module 712 can identify the user of the portable device 206 based on comparing the facial image captured by the capturing sensor 216 to the facial image stored in the second storage unit 646 of FIG. 23. Further, the identification module 712 can match the facial image to the registered identity of the user for the portable device 206.

[368] For different example, the identification module 712 can identify the user of the portable device 206 based on comparing the finger print information scanned by the capturing sensor 216 to the profiles of the finger prints stored within the first storage unit 614 of FIG. 23. As a result, the identification module 712 can identify the user of the portable device 206 within the detection zone 220. Further, the identification module 712 can match the finger print information to the registered identity of the user for the portable device 206.

[369] The audience module 710 includes a type module 714. The type module 714 determines the audience type 222 of the person's presence 218 within the detection zone 220. The type module 714 can determine the audience type 222 in a number of ways.

[370] For example, the type module 714 can determine the audience type 222 based on the privacy setting 214. The privacy setting 214 can include a category of users. For specific example, the privacy setting 214 can categorize the user who had registered the portable device 206 as the registered user. Further, the user of the portable device 206 can be identified based on facial recognition as discussed. Once the user's

presence is detected within the detection zone 220, the type module 714 can determine the audience type 222 of the user that is identified to be the registered user.

[371] In contrast, if another user is unregistered and his or her presence is detected within the detection zone 220, even if the identity of the another user is identified, the type module 714 can determine the audience type 222 of the another user to be the un-registered user. Further, if the identity of the another user is unidentifiable, the type module 714 can determine the audience type 222 of the another user to be the un-registered user.

[372] For different example, the type module 714 can determine the audience type 222 to be one person or numerous people. The type module 714 can determine the audience type 222 to be an audience of one if the capturing sensor 216 only detects one of the person's presence 218 within the detection zone 220. In contrast, the type module 714 can determine the audience type 222 to be a group of persons if the capturing sensor 216 detects the plurality of the person's presence 218 within the detection zone 220.

[373] The content delivery system 100 can include a content module 716, which can be coupled to the audience module 710. The content module 716 generates the display content 202 to be distributed to the portable device 206, the public device 204, or a combination thereof. The content module 716 can generate the display content 202 in a number of ways.

[374] The content module 716 includes a message module 718. The message module 718 generates the notification 208 of FIG. 19. For example, the message module 718 can generate the notification 208 based on the audience type 222 for notifying the portable device 206, the public device 204, or a combination thereof.

[375] For specific example, the portable device 206 can receive the private content 210, such as the SNS message. The audience type 222 determined within the detection zone 220 can include the registered user and the unregistered user. The privacy setting 214 can indicate that the SNS message will not be displayed on the public device 204. The message module 718 can generate the notification 208 for the public device 204 to display the notification 208 instead of the actual SNS message.

[376] The content module 716 includes a receiver module 720. The receiver module 720 can receive the display content 202 for distribution. For example, the receiver module 720 for the portable device 206 can receive the private content 210, such as the SNS message, from the social networking site via the first control interface 622 of FIG. 23. The content module 716 can generate the display content 202 based on the SNS message received by the receiver module 720 for distributing to the public device 204.

[377] For another example, the receiver module 720 for the public device 204 can receive the public content 212, the TV program. The TV program can include two variations: One can be the unedited version and the other can be the subcontent 402 of FIG. 21

with the profane language edited out. The content module 716 can generate the display content 202 based on the two variations of the TV program received by the receiver module 720 for distributing to the portable device 206.

[378] The content module 716 includes an overlay module 722. The overlay module 722 generates the content overlay 302 over the display content 202 for distributing to the portable device 206, the public device 204, or a combination thereof. The overlay module 722 can generate the content overlay 302 in a number of ways.

[379] For example, the display content 202 can represent “Cars,” an American animated film produced by Pixar Animation Studio (TM) (“Pixar”). The display content 202 can include information, such as the provider information 306, the sender information 308 of FIG. 20, the content type 224, or a combination thereof. The provider information 306 can represent Pixar and the sender information 308 can represent Miramax, an American movie distributor. Further, the content type 224 can represent animation. Based on the provider information 306 and the content type 224, the overlay module 722 can generate the content overlay 302 representing a video advertisement for another animated film by Pixar over the display content 202.

[380] For different example, the overlay module 722 can generate the content overlay 302 based on the audience type 222, the overlay preference 304, or a combination thereof. For specific example, the audience type 222 within the detection zone 220 can include the users with age 30 and age 15. The legal drinking age in the United States is over age of 21. The overlay preference 304 for the user who is 30 years old can represent advertisement related to alcohol. The overlay module 722 can generate the content overlay 302 based on the overlay preference 304 to overlay the advertisement for beer beverage over the private content 210 to be displayed to the portable device 206 for the 30 year old user. In contrast, the content overlay 302 representing the advertisement for beer beverage will not be generated for the portable device 206 for the 15 year old user or the public device 204.

[381] It has been discovered that the present invention can generate the display content 202 based on the audience type 222 to improve the security to limit the generation of the display content 202 that is unsuitable for certain users. The consideration of the audience type 222 can tailor the generation of the display content 202 with the content overlay 302 that is suitable for each audience in the detection zone 220. As a result, the user can rely on the content delivery system 100 to filter the generation of the display content 202 to eliminate the risk of sharing the display content 202 that is unsuitable to certain users.

[382] For different example, the overlay module 722 can generate the content overlay 302 based on the privacy setting 214. More specifically, the privacy setting 214 can indicate whether the content overlay 302 should be generated with the private content

210, the public content 212, or a combination thereof. For specific example, the privacy setting 214 can indicate that the content overlay 302 will be generated with the private content 210. The overlay module 722 can then consider what kind of the content overlay 302 should be generated with the private content 210. The overlay module 722 can consider the overlay preference 304 to determine the user's interest. As a result, continuing from the previous example, the overlay module 722 can generate the content overlay 302 representing a beer advertisement with the private content 210.

[383] The content module 716 includes a portion module 724. The portion module 724 generates the subcontent 402. For example, the portion module 724 can generate the plurality of the subcontent 402 for separating a hybrid content that can include the private content 210 and the public content 212.

[384] For specific example, the portion module 724 can generate the subcontent 402 based on the content keyword 310 of FIG. 20. More specifically, based on the content keyword 310, the portion module 724 can identify the portion of the display content 202 that can include the content type 224 of the private content 210 as oppose to the public content 212. For example, the portion module 724 can search for the content keyword 310 within the display content 202. The display content 202 can include the content keyword 310, such as "weather" or "rain," to indicate that the sentence within the display content 202 is related to weather.

[385] Further, the privacy setting 214 can be set so that the information related to weather is the public content 212. The portion module 724 can determine that the display content 202 with the content keyword 310 of "weather" is the public content 212 and not the private content 210. As a result, the portion module 724 can generate the display content 202 with the sentence of the weather information as the subcontent 402 for the public content 212.

[386] For different example, the portion module 724 can determine whether the subcontent 402 represents the private content 210 based on the sender information 308. More specifically, the private content 210, such as SNS message, can include the sender information 308, such as a name of the girlfriend. The privacy setting 214 can be set so that a message from a girlfriend can be categorized with the content type 224 of the private content 210.

[387] Further, the context keyword 310 with meeting information and the time information 228 can be set as the private content 210 in the privacy setting 214. If the context of the display content 202 includes the sender information 308 and a plurality of the content keyword 310, such as "meeting at 3PM," the portion module 724 can determine the subcontent 402 to be the private content 210. As a result, the portion module 724 can generate the display content 202 from the sender information 308 as



the subcontent 402 for the private content 210. Additionally, the portion module 724 can generate the display content 202 with the meeting information and the time information 228 as the subcontent 402 for the private content 210.

[388] The content delivery system 100 can include a distribution module 726, which can be coupled to the content module 716. The distribution module 726 distributes the display content 202. For example, the distribution module 726 can distribute the display content 202 based on the audience type 222 for displaying on the portable device 206, the public device 204, or a combination thereof.

[389] The distribution module 726 can distribute the display content 202 in a number of ways. For example, the distribution module 726 can distribute the display content 202 based on the privacy setting 214. The privacy setting 214 can indicate that the private content 210 can be distributed to the portable device 206 and not to the public device 204. The SNS message can represent the private content 210. The distribution module 726 can distribute the private content 210 only to the portable device 206. Further, the distribution module 726 can distribute the notification 208, instead of the private content 210, to the public device 204.

[390] For further example, the distribution module 726 can distribute the display content 202 based on the plurality of the audience type 222 for displaying the display content 202 different for each of the plurality of the portable device 206. More specifically, the privacy setting 214 can indicate that the private content 210 can be distributed to the audience type 222 of user's friend. In the plurality of the person's presence 218 detected, the plurality of the audience type 222 for the detected presence can include the user of the portable device 206, the user's friend, and the user's mother. The mother can be excluded from the audience type 222 of user's friend. The distribution module 726 can distribute the private content 210 to the portable device 206 of the user and the portable device 206 of the user's friend. However, based on the audience type 222, the distribution module 726 will not be triggered to distribute the private content 210 to the portable device 206 of the user's mother and the public device 204.

[391] It has been discovered that the present invention can distribute the display content 202 based on the audience type 222 to filter the distribution of the private content 210, the public content 212, or a combination thereof to improve privacy for sharing the display content 202. The distribution of the display content 202 based on the audience type 222 restricts the viewer who can see the private content 210. Further, the restriction limits the inadvertent sharing of the private content 210 to unwanted viewers. As a result, the user can rely on the content delivery system 100 to avoid sharing the display content 202 to unwanted viewers, thus, improving the security of the privacy of the user.

[392] For another example, the distribution module 726 can distribute the display content

202 based on the content type 224. The privacy setting 214 can indicate that the display content 202 with the content type 224 of violence and profanity will not be displayed on the public device 204. More specifically, the display content 202 with the content type 224 of violence and profanity can be distributed to the portable device 206. The distribution module 726 can distribute the display content 202 with the content type 224 of violence and profanity based on the privacy setting 214 only to the portable device 206.

[393] It has been discovered that the content delivery system 100 can distribute the display content 202 based on the content type 224 to filter the distribution of the private content 210, the public content 212, or a combination thereof to improve privacy for sharing the display content 202. The distribution of the display content 202 based on the content type 224 restricts the sharing of the display content 202 that is unsuitable for certain viewers. Further, the restriction limits the inadvertent sharing of the display content 202 that may be unsuitable to some viewers. As a result, the user can enhance the user experience of using the content delivery system 100 for sharing the display content 202 with others without the worry of inadvertent sharing of the display content 202 that is unsuitable.

[394] For different example, the distribution module 726 can distribute the display content 202 based on meeting or exceeding the time threshold 502 of FIG. 22. The privacy setting 214 can indicate that the time threshold 502 can be 30 seconds. Further, the privacy setting 214 can indicate that the private content 210 can be displayed on the public device 204 if the person's presence 218 of the user is within the detection zone 220.

[395] Additionally, the distribution module 726 can distribute the display content 202 based on the person's presence 218 for displaying the display content 202 different from the person's presence 218 outside of the detection zone 220. More specifically, the privacy setting 214 can indicate that if the user's presence is no longer detected within the detection zone 220, the notification 208 can be displayed instead of the private content 210. Or the notification 208 can be displayed on the public device if the connection between the portable device 206 and the public device 204 is lost. And if the time period for a non-detection of the user's presence meets or exceeds the time threshold 502, the distribution module 726 can stop distributing the notification 208 to the public device 204.

[396] For different example, the private content 210 can be displayed on the public device 204 after the time period of user's presence is detected within the detection zone 220 exceeds the time threshold 502. The privacy setting 214 can indicate that the switching of the display of the private content 210 from the portable device 206 to the public device 204 if the time period of the user's presence within the detection zone 220

meets or exceeds the time threshold 502. Based on the privacy setting 214 and the person's presence 218 of the user, the distribution module 726 can distribute the private content 210 to the public device 204.

[397] It has been discovered that the present invention can distribute the display content 202 based on the meeting or exceeding the time threshold 502 to filter the distribution of the private content 210, the public content 212, or a combination thereof to improve privacy for sharing the display content 202. The distribution of the display content 202 based on the time threshold 502 limits the sharing of the display content 202 if the user of the portable device 206 is not detected within the detection zone 220. The restriction limits the inadvertent sharing of the display content 202 to the public without the presence of the user. As a result, the consideration of the time threshold 502 improves the security to avoid inadvertent sharing of the display content 202 when the user is not present within the detection zone 220.

[398] For another example, the distribution module 726 can distribute the display content 202 based on the overlay preference 304 to the portable device 206, the public device 204, or a combination thereof. For specific example, the overlay preference 304 can indicate whether the user of the portable device 206 would like to have the content overlay 302 overlaid with the private content 210, the public content 212, or a combination thereof. Based on the overlay preference 304, the distribution module 726 can distribute the display content 202 with the content overlay 302 or not. As discussed above, the distribution module 726 can consider each of the factors above independently or in combination to determine whether to distribute the display content 202 to the portable device 206, the public device 204, or a combination thereof.

[399] It has been discovered that the present invention can distribute the display content 202 based on the overlay preference 304 to filter the distribution of the content overlay 302 along with the private content 210, the public content 212, or a combination thereof. The distribution of the display content 202 with the content overlay 302 based on the overlay preference 304 improves the tailoring of the display content 202 to suit the user's interest. As a result, the user can reliably receive the display content 202 most interested by the user.

[400] The content delivery system 100 can include a display module 728, which can be coupled to the distribution module 726. The display module 728 displays the display content 202 on the portable device 206, the public device 204, or a combination thereof. For example, the display module 728 can display the display content 202 on the portable device 206 different from the display content 202 displayed on the public device 204. For specific example, the display module 728 can display the notification 208 for the private content 210 on the public device 204. In contrast, the display module 728 can display the private content 210 on the portable device 206.

- [401] For another example, the display module 728 can display the display content 202 that is same on the portable device 206 and the public device 204. More specifically, the display module 728 can display the public content 212 both on the portable device 206 and the public device 204.
- [402] The physical transformation for entering the detection zone 220 results in movement in the physical world, such as people using the first device 102 of FIG. 23, the third device 108 of FIG. 23, or a combination thereof, based on the operation of the content delivery system 100. As the movement in the physical world occurs, the movement itself creates additional information that is converted back in to the person's presence 218, the audience type 222, the time threshold 502, the display content 202, or a combination thereof for the continued operation of the content delivery system 100 and to continue the movement in the physical world.
- [403] The first software 626 of FIG. 23 of the first device 102 of FIG. 23 can include the content delivery system 100. For example, the first software 626 can include the registration module 702, the zone module 706, the detector module 708, the audience module 710, the content module 716, the distribution module 726, and the display module 728.
- [404] The first control unit 612 of FIG. 23 can execute the first software 626 for the registration module 702 to generate the privacy setting 214. The first control unit 612 can execute the first software 626 for the zone module 706 generate the detection zone 220. The first control unit 612 can execute the first software 626 for the detector module 708 to detect the person's presence 218.
- [405] The first control unit 612 can execute the first software 626 for the audience module 710 to determine the audience type 222. The first control unit 612 can execute the first software 626 for the content module 716 to generate the display content 202. The first control unit 612 can execute the first software 626 for the distribution module 726 to distribute the display content 202. The first control unit 612 can execute the first software 626 for the display module 728 to display the display content 202.
- [406] The second software 642 of FIG. 23 of the second device 106 of FIG. 23 can include the content delivery system 100. For example, the second software 642 can include the registration module 702, the zone module 706, the detector module 708, the audience module 710, the content module 716, the distribution module 726, and the display module 728.
- [407] The second control unit 634 of FIG. 23 can execute the second software 642 for the registration module 702 to generate the privacy setting 214. The second control unit 634 can execute the second software 642 for the zone module 706 generate the detection zone 220.
- [408] The second control unit 634 can execute the second software 642 for the detector

module 708 to detect the person's presence 218. The second control unit 634 can execute the second software 642 for the audience module 710 to determine the audience type 222.

- [409] The second control unit 634 can execute the second software 642 for the content module 716 to generate the display content 202. The second control unit 634 can execute the second software 642 for the distribution module 726 to distribute the display content 202. The second control unit 634 can execute the second software 642 for the display module 728 to display the display content 202.
- [410] The content delivery system 100 can be partitioned between the first software 626 and the second software 642. For example, the second software 642 can include the zone module 706, the detector module 708, the audience module 710, the content module 716, and the distribution module 726. The second control unit 634 can execute modules partitioned on the second software 642 as previously described.
- [411] The first software 626 can include the registration module 702 and the display module 728. Based on the size of the first storage unit 614 of FIG. 23, the first software 626 can include additional modules of the content delivery system 100. The first control unit 612 can execute the modules partitioned on the first software 626 as previously described.
- [412] The first control unit 612 can operate the first communication unit 616 of FIG. 23 to send the privacy setting 214 to the second device 106. The first control unit 612 can operate the first software 626 to operate the location unit 620 of FIG. 23. The second communication unit 636 of FIG. 23 can send the display content 202 to the first device 102 through the communication path 104 of FIG. 23.
- [413] The content delivery system 100 describes the module functions or order as an example. The modules can be partitioned differently. For example, the distribution module 726 and the content module 716 can be combined. Each of the modules can operate individually and independently of the other modules.
- [414] Furthermore, data generated in one module can be used by another module without being directly coupled to each other. For example, the content module 716 can receive the privacy setting 214 from the registration module 702. The registration module 702, the zone module 706, the detector module 708, the audience module 710, the content module 716, the distribution module 726, and the display module 728 can be implemented in as hardware accelerators (not shown) within the first control unit 612 or the second control unit 634, or can be implemented in as hardware accelerators (not shown) in the first device 102 or the second device 106 outside of the first control unit 612 or the second control unit 634.
- [415] Referring now to FIG. 25, therein is shown a flow chart of a method 800 of operation of the content delivery system 100 of FIG. 18 in a further embodiment of the present

invention. The method 800 includes: detecting a person's presence for identifying a portable device in a block 802; determining an audience type based on the person's presence for determining a content type presentable on a public device in a block 804; and distributing a display content based on the audience type for displaying on the portable device, the public device, or a combination thereof in a block 806.

- [416] The resulting method, process, apparatus, device, product, and/or system is straightforward, cost-effective, uncomplicated, highly versatile, accurate, sensitive, and effective, and can be implemented by adapting known components for ready, efficient, and economical manufacturing, application, and utilization. Another important aspect of the present invention is that it valuably supports and services the historical trend of reducing costs, simplifying systems, and increasing performance. These and other valuable aspects of the present invention consequently further the state of the technology to at least the next level.
- [417] While the invention has been described in conjunction with a specific best mode, it is to be understood that many alternatives, modifications, and variations will be apparent to those skilled in the art in light of the foregoing description. Accordingly, it is intended to embrace all such alternatives, modifications, and variations that fall within the scope of the included claims. All matters hitherto set forth herein or shown in the accompanying drawings are to be interpreted in an illustrative and non-limiting sense.
- [418] As described above, according to various exemplary embodiments, user convenience may be provided.
- [419] Meanwhile, the above-described various exemplary embodiments may be realized simply by upgrading an existing display apparatus or software regarding a user terminal apparatus.
- [420] In addition, a non-transitory computer readable medium where a program for performing the controlling method of the present invention is performed sequentially is stored may be provided.
- [421] The non-transitory computer readable medium refers to a medium which stores data semi-permanently rather than storing data for a short time such as register, cache, and memory, and it is readable by an apparatus. Specifically, the above-mentioned various applications or programs may be stored and provided in non-transitory computer readable medium such as CD, DVD, hard disk, Blue-ray disk, USB, memory card, ROM, etc.
- [422] In the above-described block diagram illustrating a display apparatus, a user terminal apparatus, and a server, a bus is not shown. However, communication between each component in a user terminal apparatus, a display apparatus, and a server may be performed through a bus. In addition, each device may further include a processor

which performs the above-mentioned steps, such as CPU, microprocessor, etc.

[423] . Although a few embodiments of the present invention have been shown and described, it would be appreciated by those skilled in the art that changes may be made in this embodiment without departing from the principles and spirit of the invention, the scope of which is defined in the claims and their equivalents.

## Claims

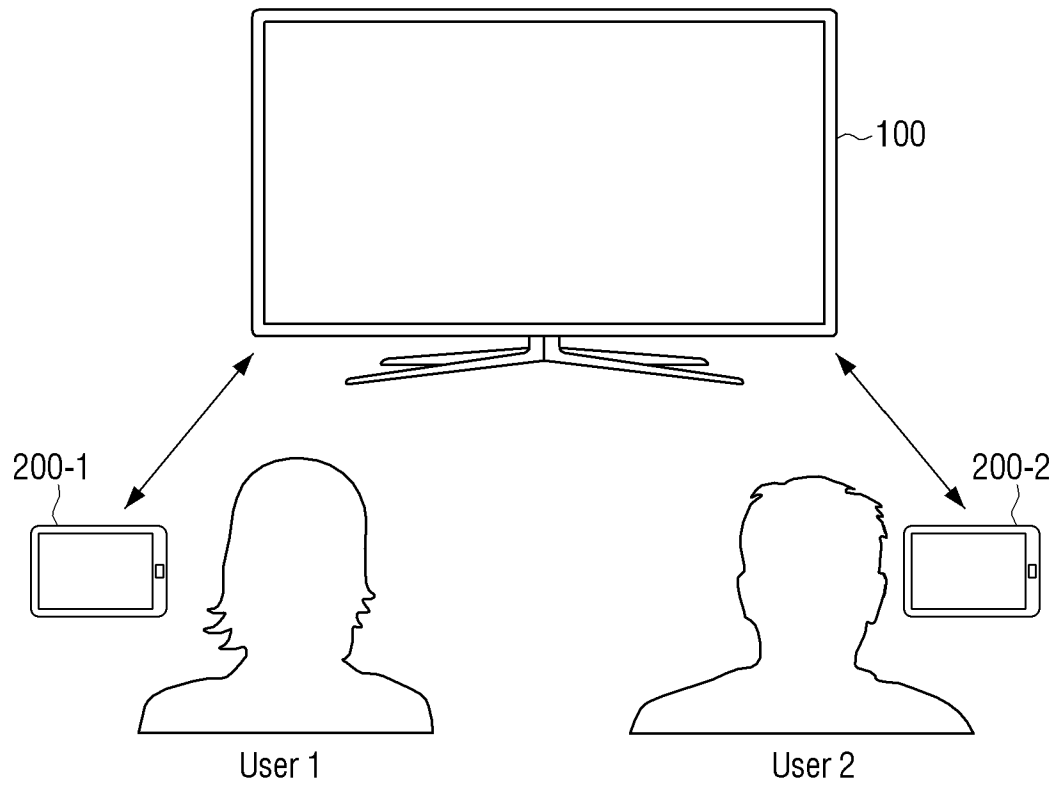
- [Claim 1] A display apparatus, comprising:  
a display unit;  
a communication unit which communicates with a user terminal apparatus;  
a user recognition unit which generates user identification information regarding a user of the display apparatus; and  
a control unit which, once predetermined information is received, determines a subject to receive the information based on the user identification information and sharing setting information for each user, and displays the received information on the display unit or transmits the received information to the user terminal apparatus based on the determination result.
- [Claim 2] The apparatus as claimed in claim 1, further comprising:  
a storage unit,  
wherein the sharing setting information for each user refers to information in which whether to share information is set according to information type with respect to each of a plurality of users,  
wherein the sharing setting information is stored in the storage unit or received from outside.
- [Claim 3] The apparatus as claimed in claim 1, wherein the user recognition unit generates the user identification information based on an image captured through an image capturing unit, or generates the user identification information based on terminal identification information and finger printing information received from the user terminal apparatus.
- [Claim 4] The apparatus as claimed in claim 1, wherein the control unit displays the received information on the display unit if the received information is set to be shared with respect to a user of the user terminal apparatus, and transmits the received information to the user terminal apparatus if the received information is set as private with respect to a user of the user terminal apparatus.
- [Claim 5] The apparatus as claimed in claim 4, wherein the control unit controls to display a message informing that the predetermined information to be transmitted to the user terminal apparatus is received if it is not possible to communicate with the user terminal apparatus.
- [Claim 6] The apparatus as claimed in claim 1, wherein the display apparatus is a sharing device which is used by a plurality of users, and the user



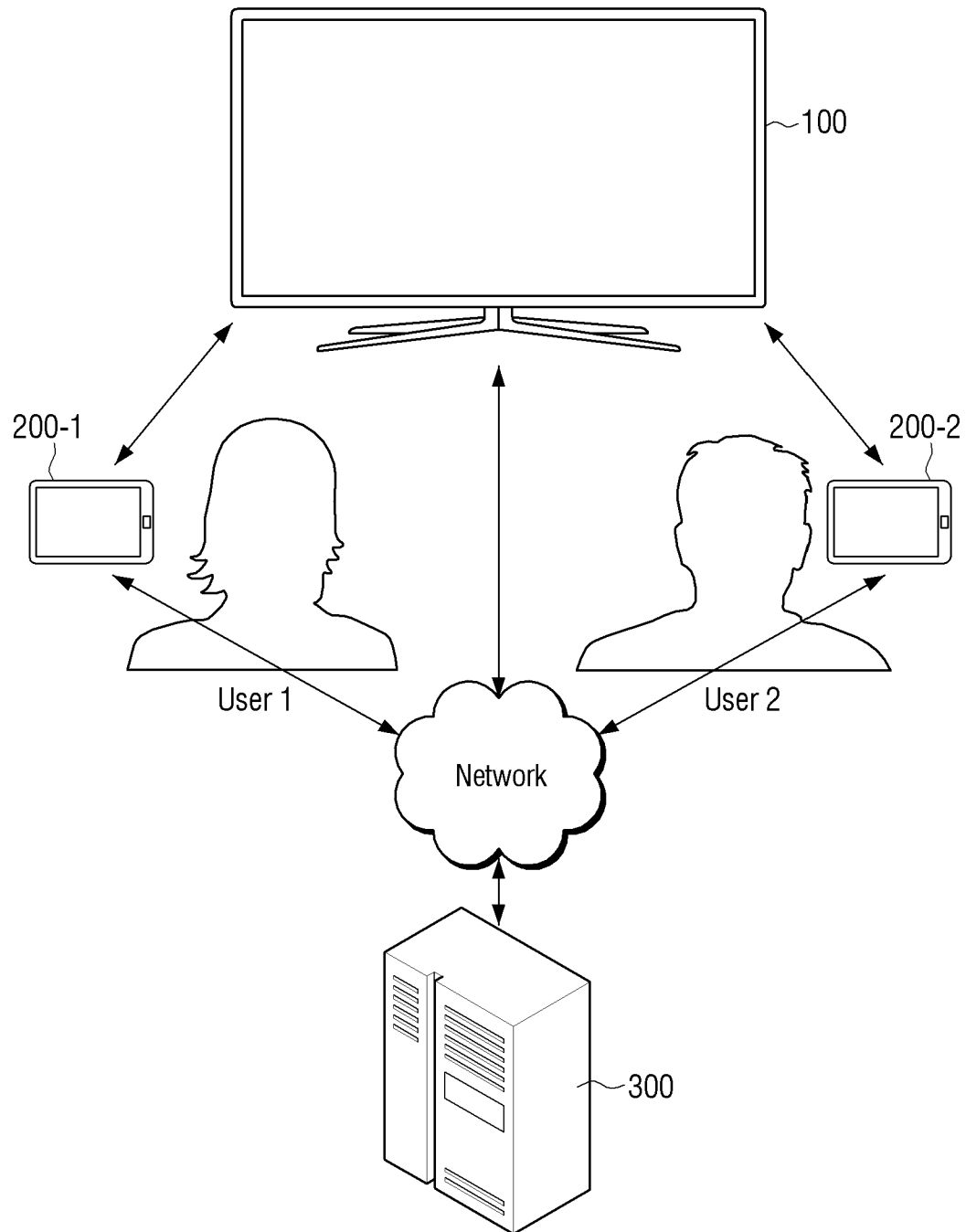
- terminal apparatus is a personal device owned by a personal user.
- [Claim 7] A server, comprising:  
a communication unit which performs communicate with a display apparatus and at least one user terminal apparatus;  
a storage unit which stores sharing setting information for each user;  
and  
a control unit which, once predetermined information is received, determines a subject to receive the information based on user identification information regarding a user of the display apparatus and the sharing setting information received from the display apparatus, and displays the received information on the display unit or transmits the received information to the at least one user terminal apparatus based on the determination result.
- [Claim 8] The server as claimed in claim 7, wherein the sharing setting information for each user refers to information in which whether to share information is set according to information type with respect to each of a plurality of users.
- [Claim 9] The server as claimed in claim 7, wherein the control unit controls to transmit to the display apparatus a message informing that the predetermined information to be transmitted to the user terminal apparatus is received if it is not possible to communicate with the user terminal apparatus.
- [Claim 10] The server as claimed in claim 7, wherein the display apparatus is a sharing device which is used by a plurality of users, and the user terminal apparatus is a personal device owned by a personal user.
- [Claim 11] A method of operation of a content delivery system comprising:  
detecting a person's presence for identifying a portable device;  
determining an audience type based on the person's presence for determining a content type presentable on a public device; and  
distributing a display content based on at least one the audience type and the content type for displaying on the portable device, the public device, or a combination thereof.
- [Claim 12] The method as claimed in claim 11, wherein distributing the display content includes distributing a public content based on the audience type for displaying on the public device.
- [Claim 13] The method as claimed in claim 11, wherein distributing the display content includes distributing a private content based on the audience type for displaying on the portable device.

- [Claim 14] The method as claimed in claim 11, further comprising displaying the display content on the portable device different from the display content displayed on the public device.
- [Claim 15] The method as claimed in claim 11, further comprising generating a privacy setting for differentiating the display content displayed on the portable device from the display content displayed on the public device.

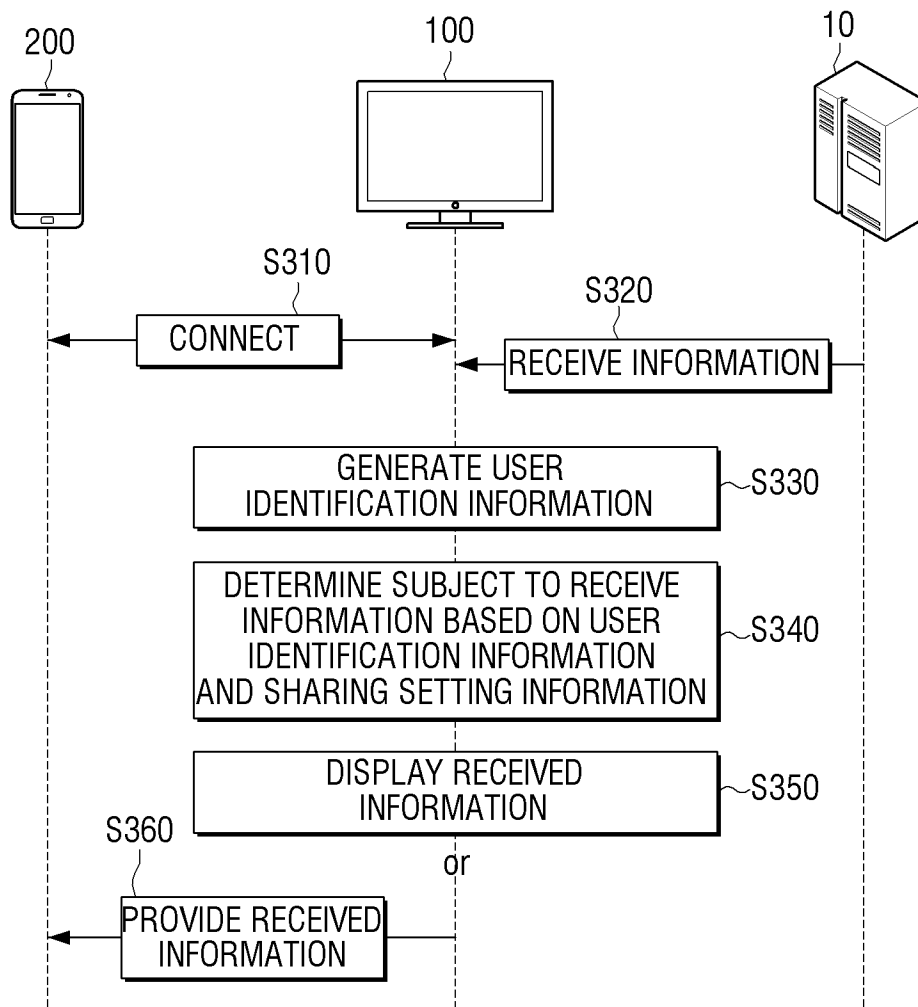
[Fig. 1]



[Fig. 2]

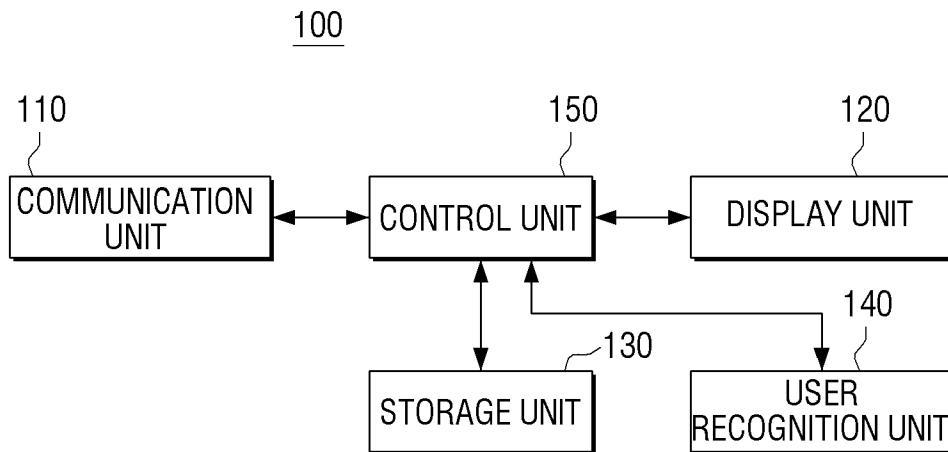


[Fig. 3]

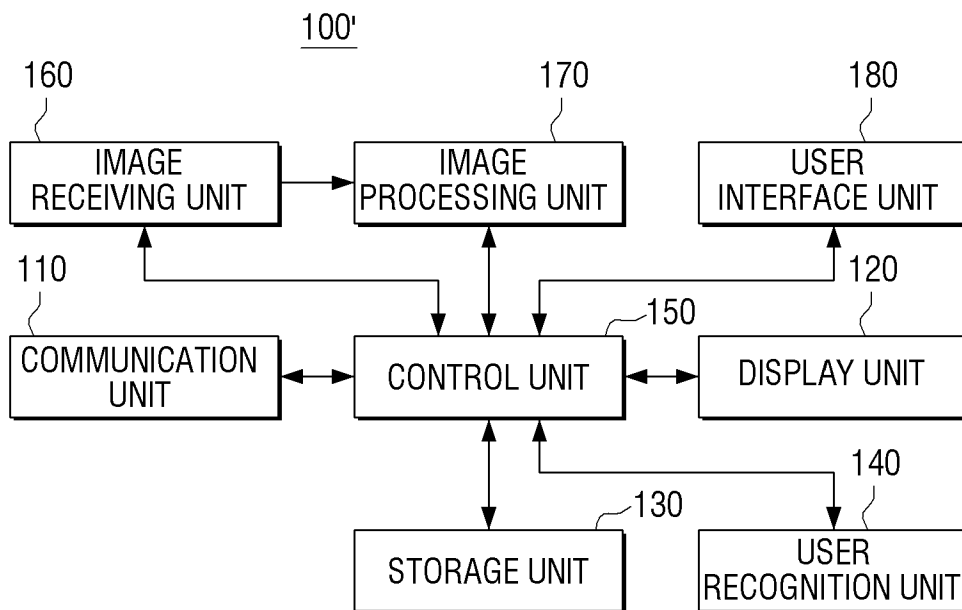


[Fig. 4]

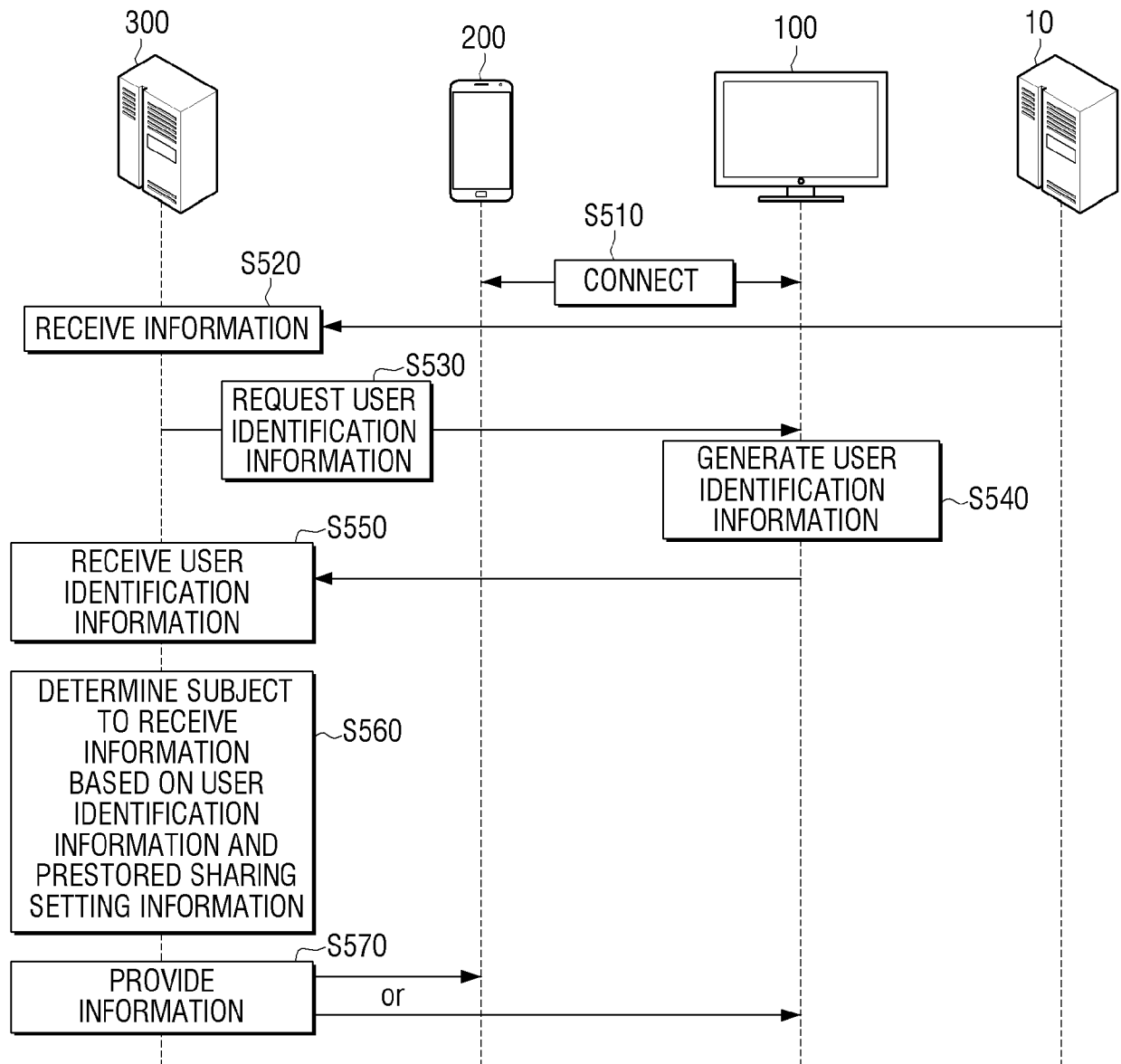
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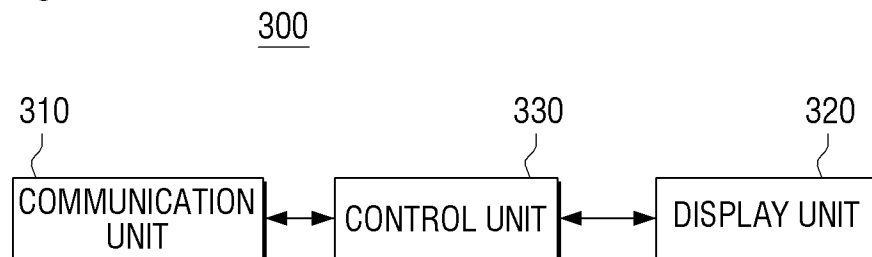
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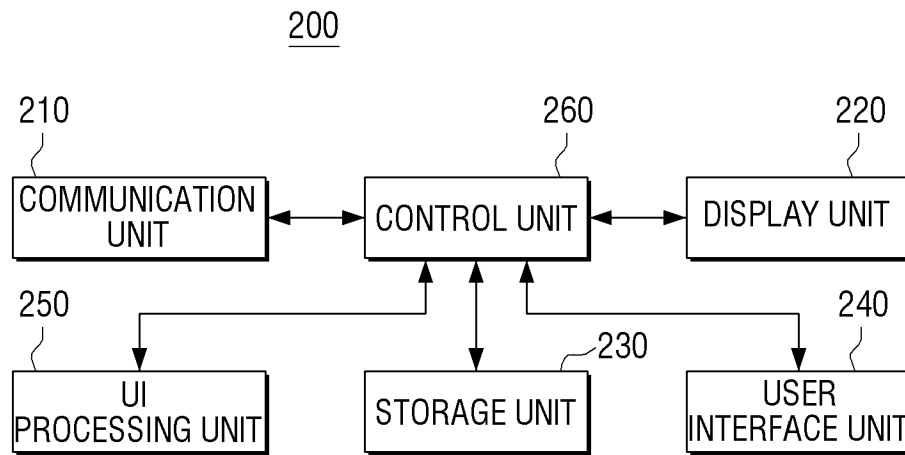
[Fig. 5]



[Fig. 6]



[Fig. 7]



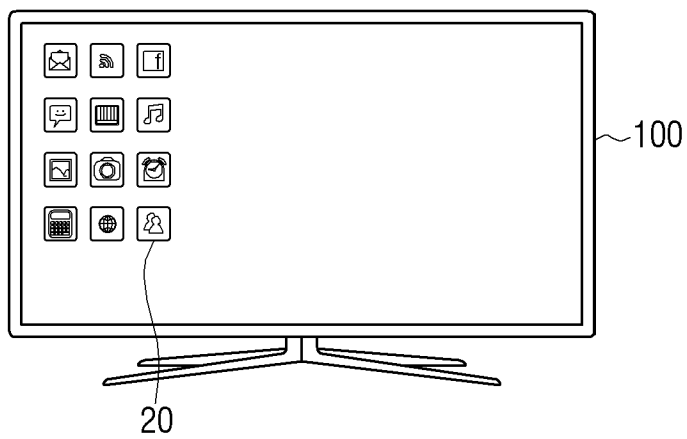
[Fig. 8]

User 1	Private	Public	User 2	Private	Public
Weather		○	Weather		○
Stock		○	Stock	○	
Message	○		Message		○
SNS 1	○		SNS 1	○	
SNS 2	○		SNS 2	○	

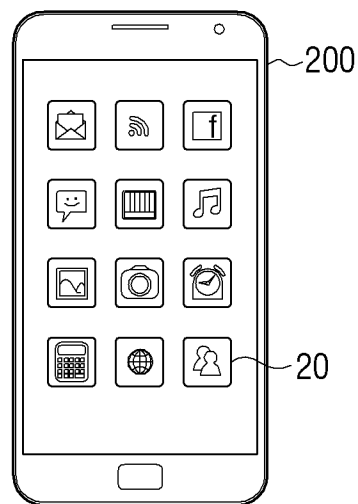


[Fig. 9]

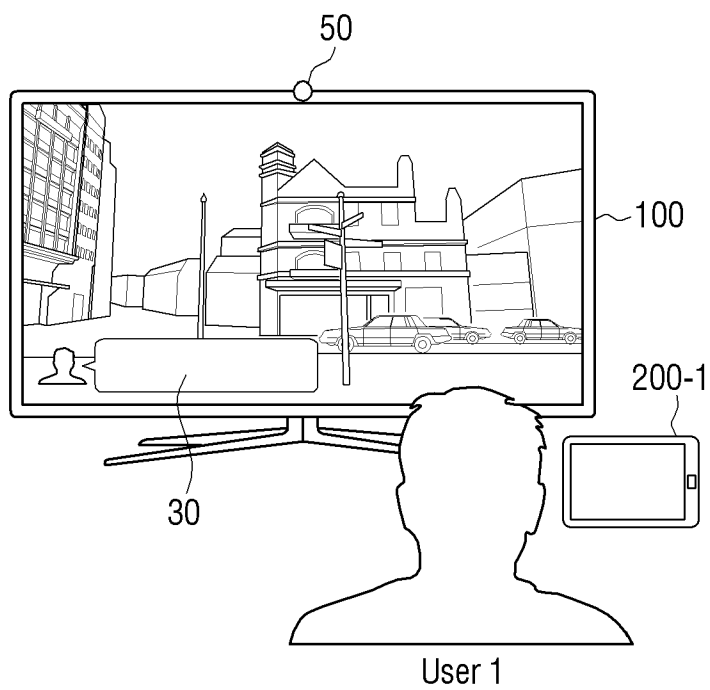
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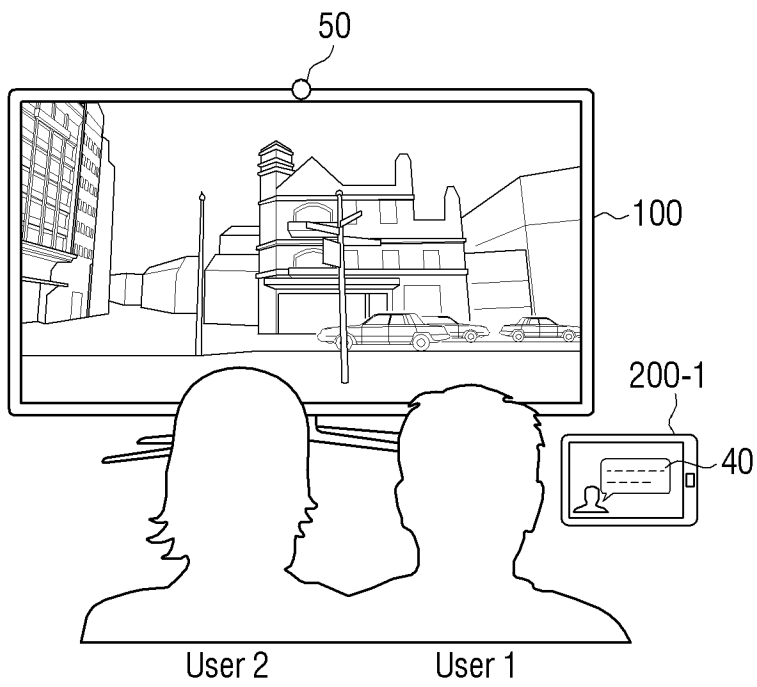
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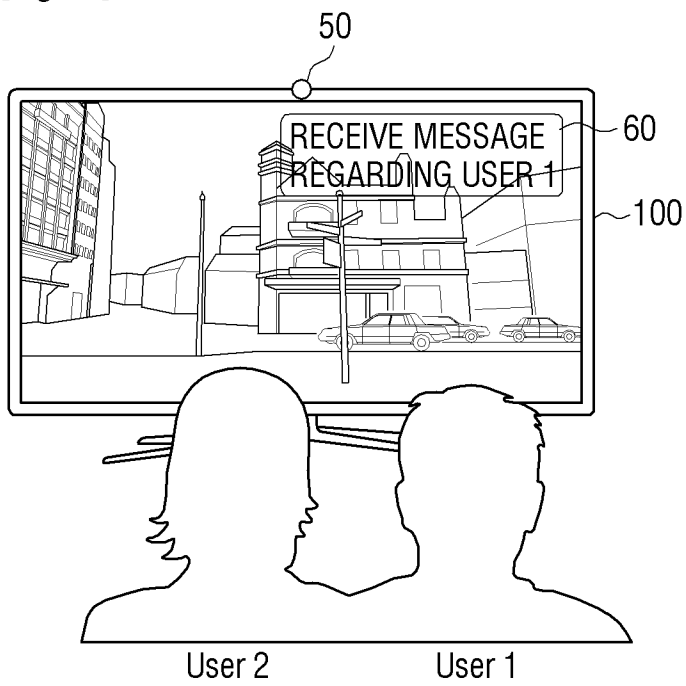
[Fig. 10]



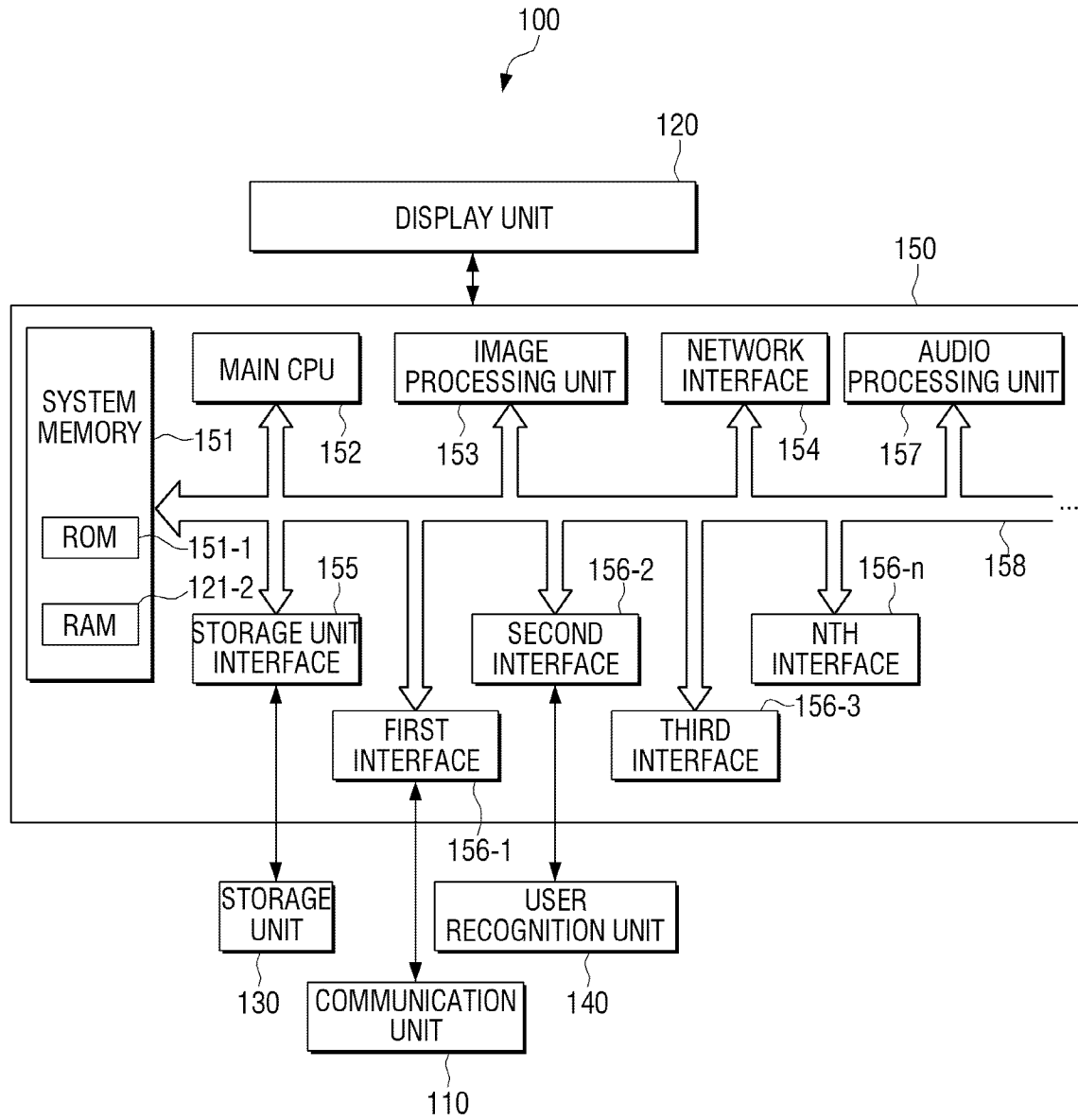
[Fig. 11]



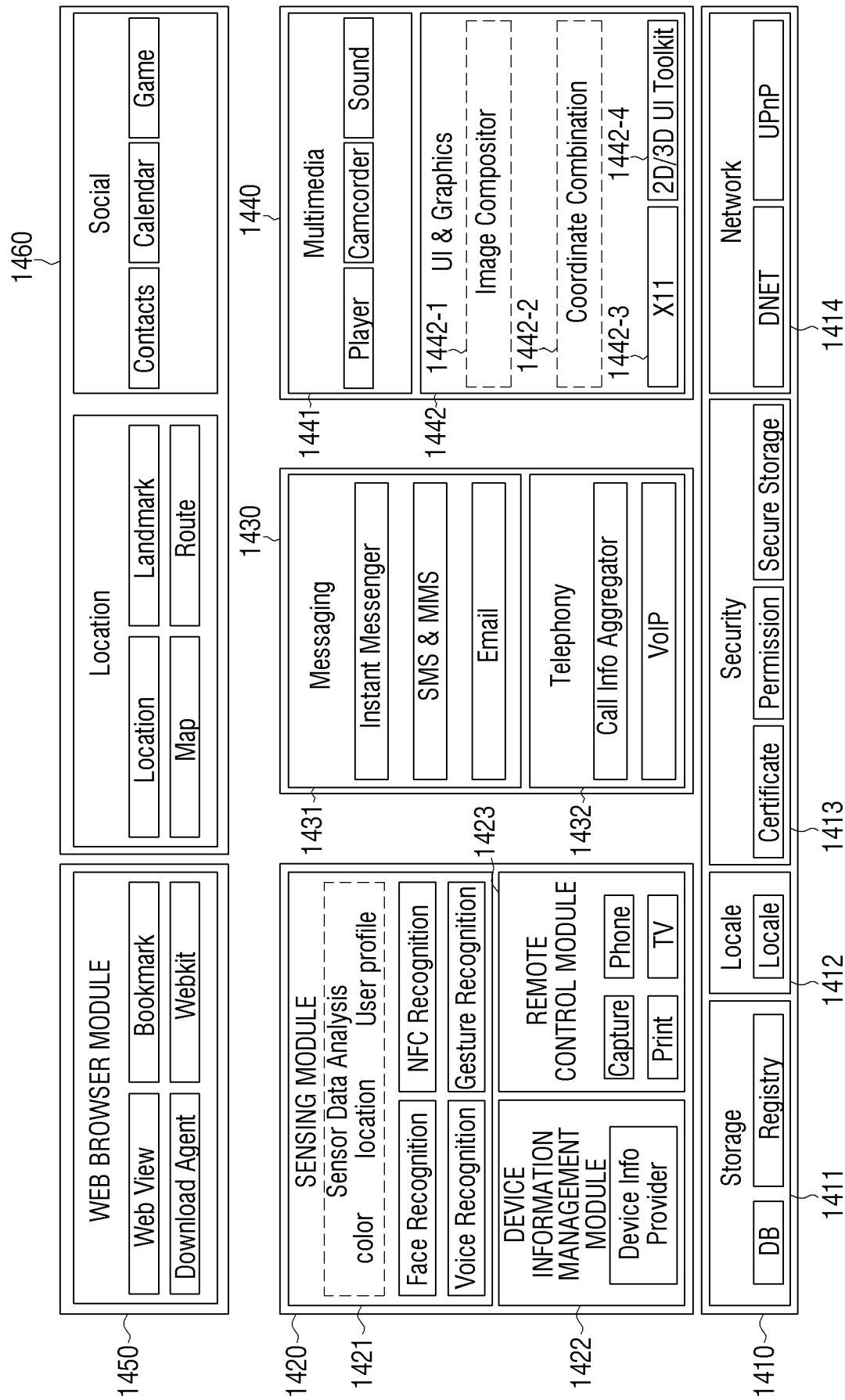
[Fig. 12]



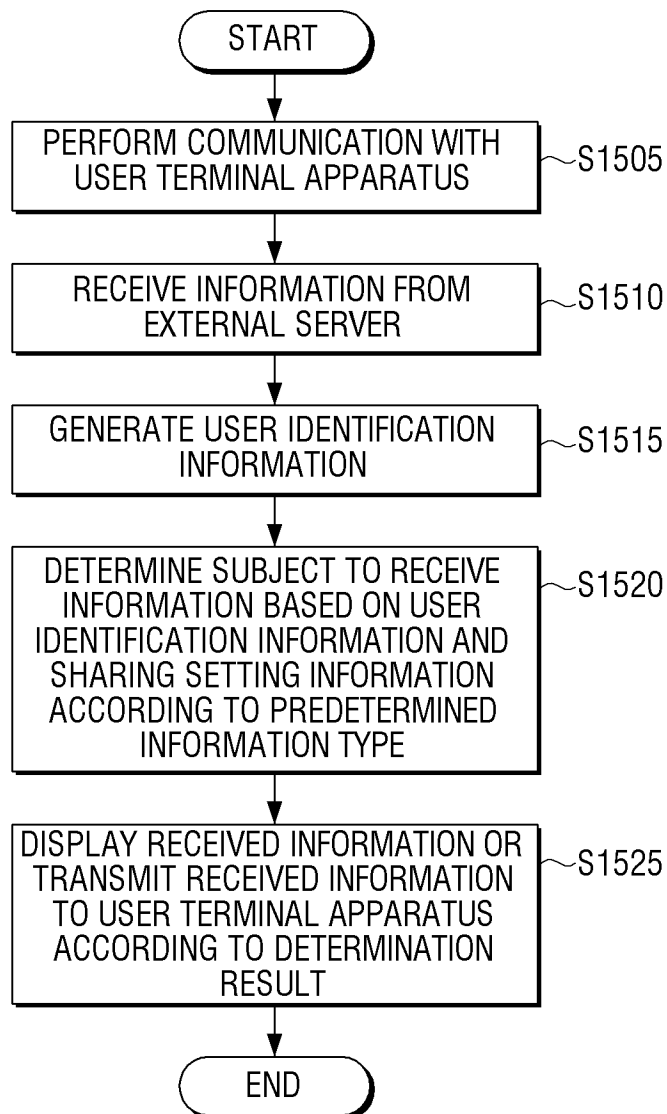
[Fig. 13]



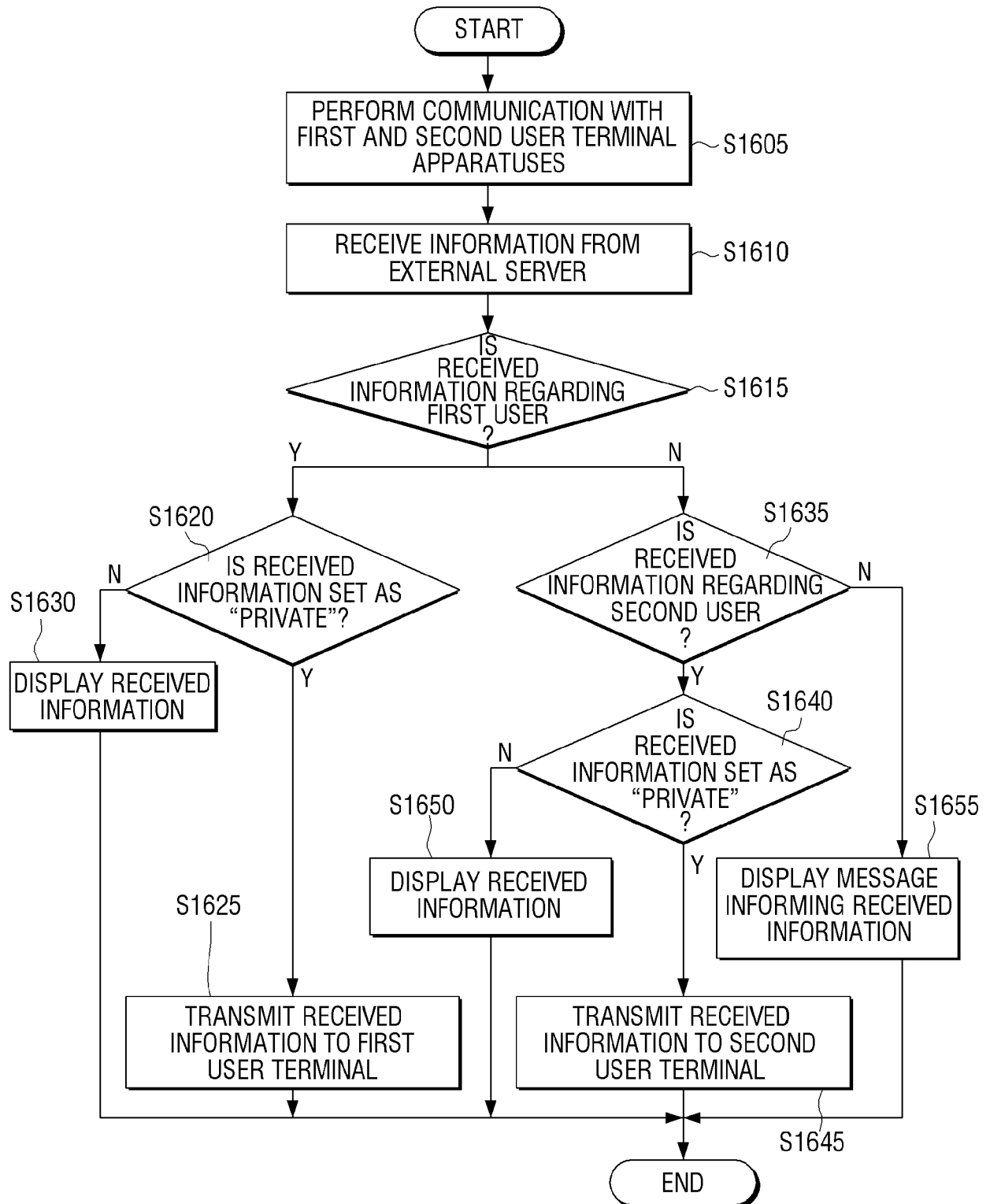
[Fig. 14]



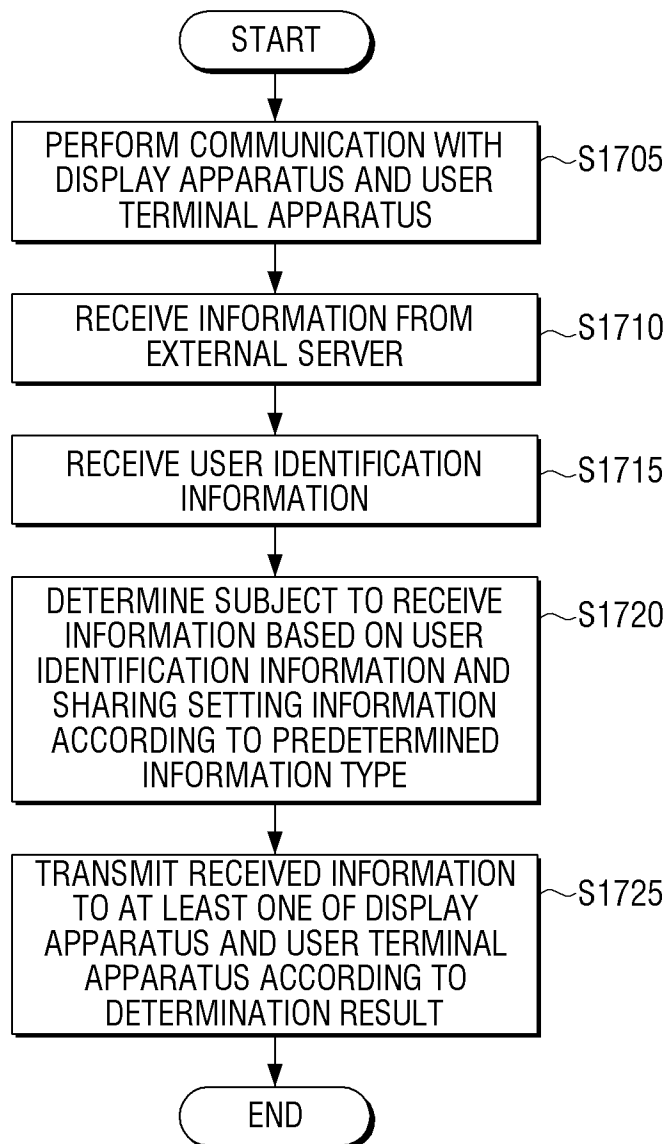
[Fig. 15]



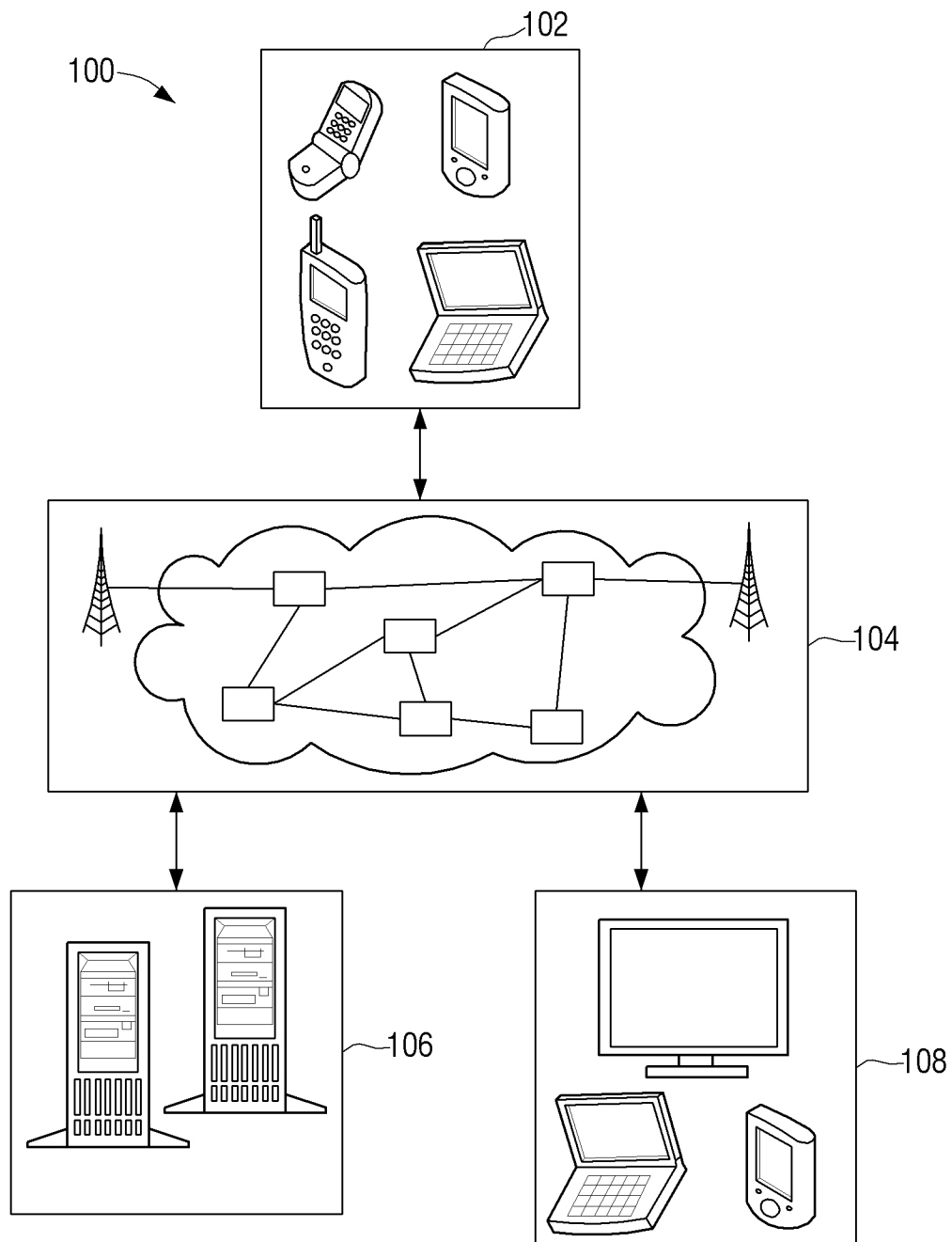
[Fig. 16]



[Fig. 17]

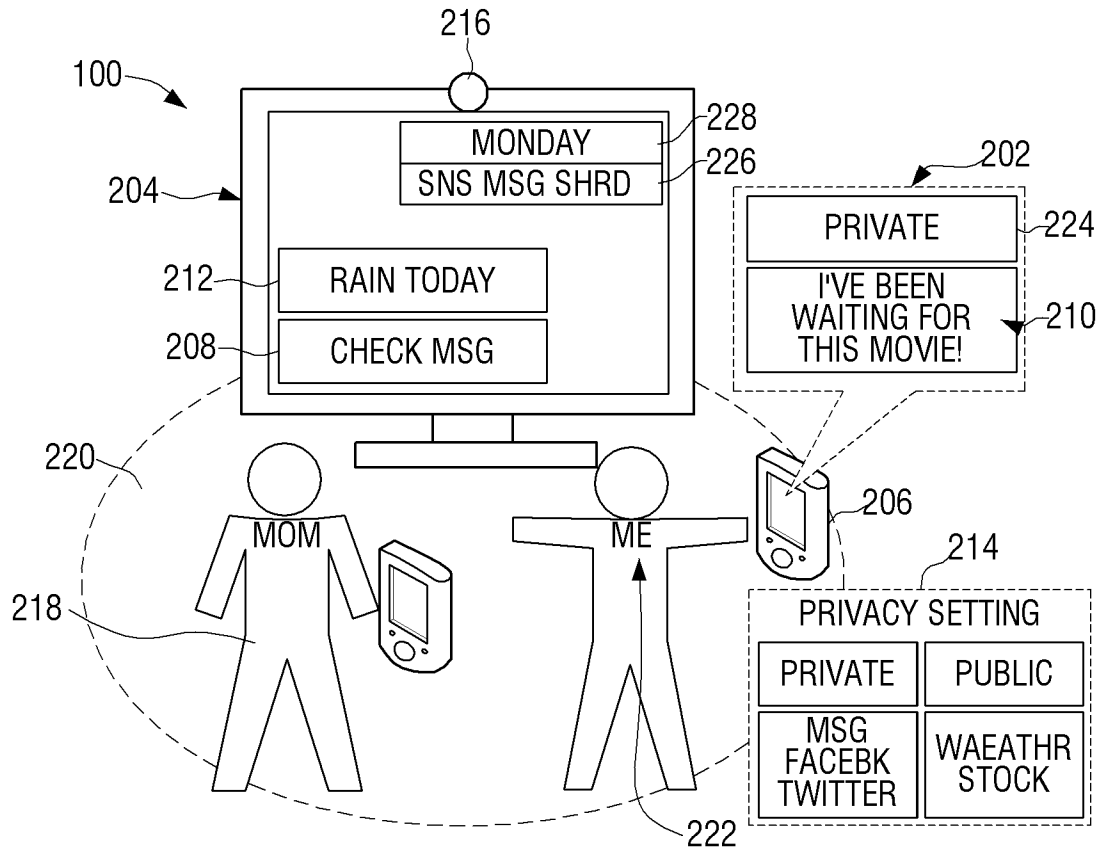


[Fig. 18]

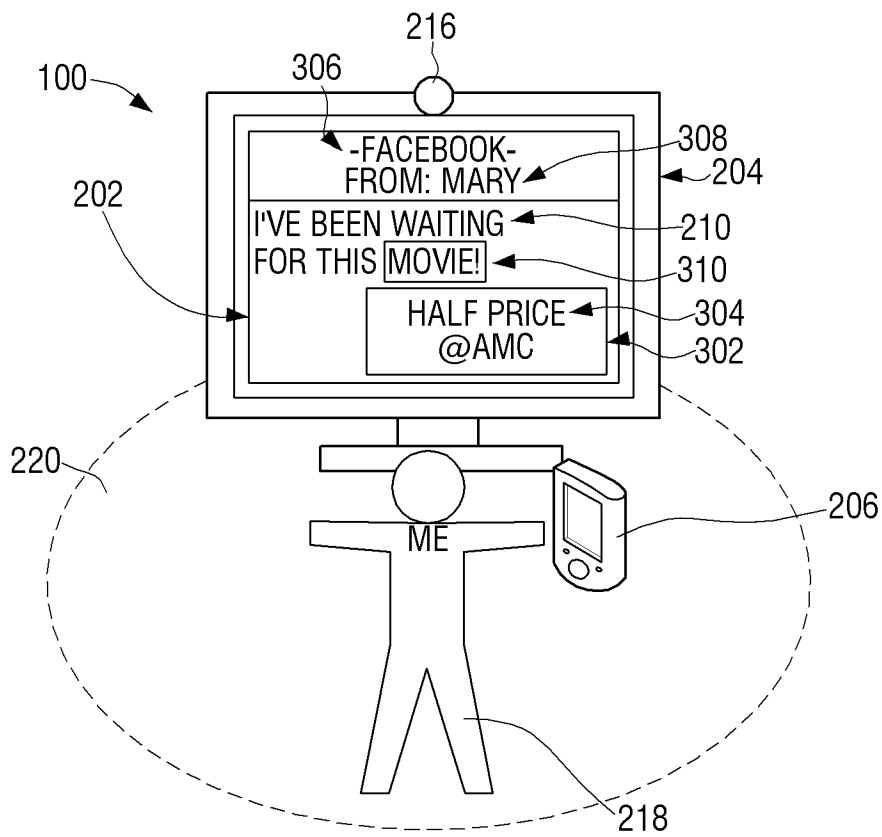




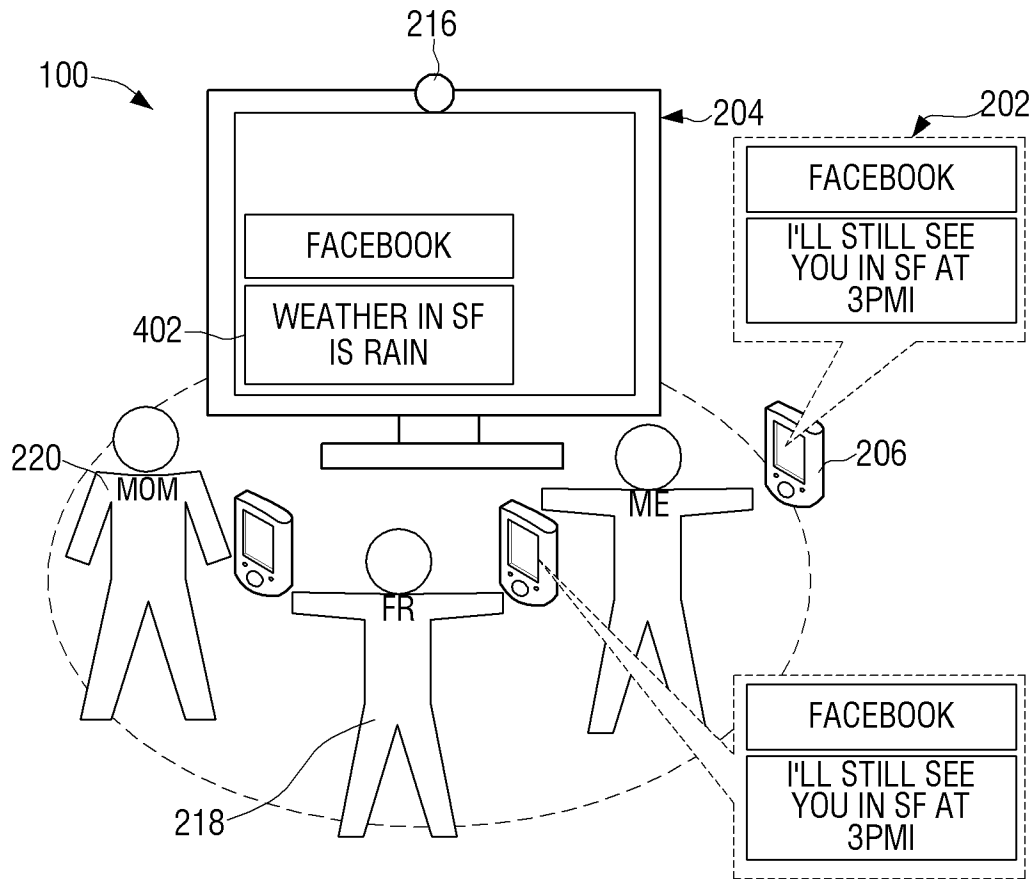
[Fig. 19]



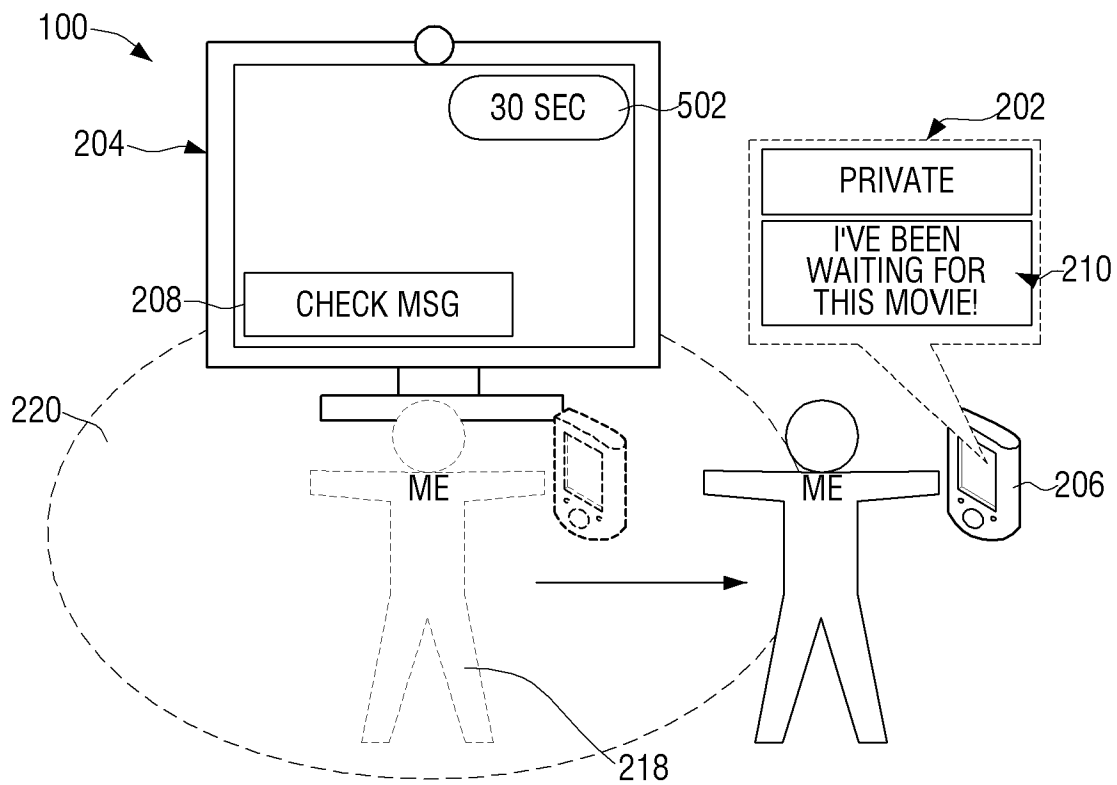
[Fig. 20]



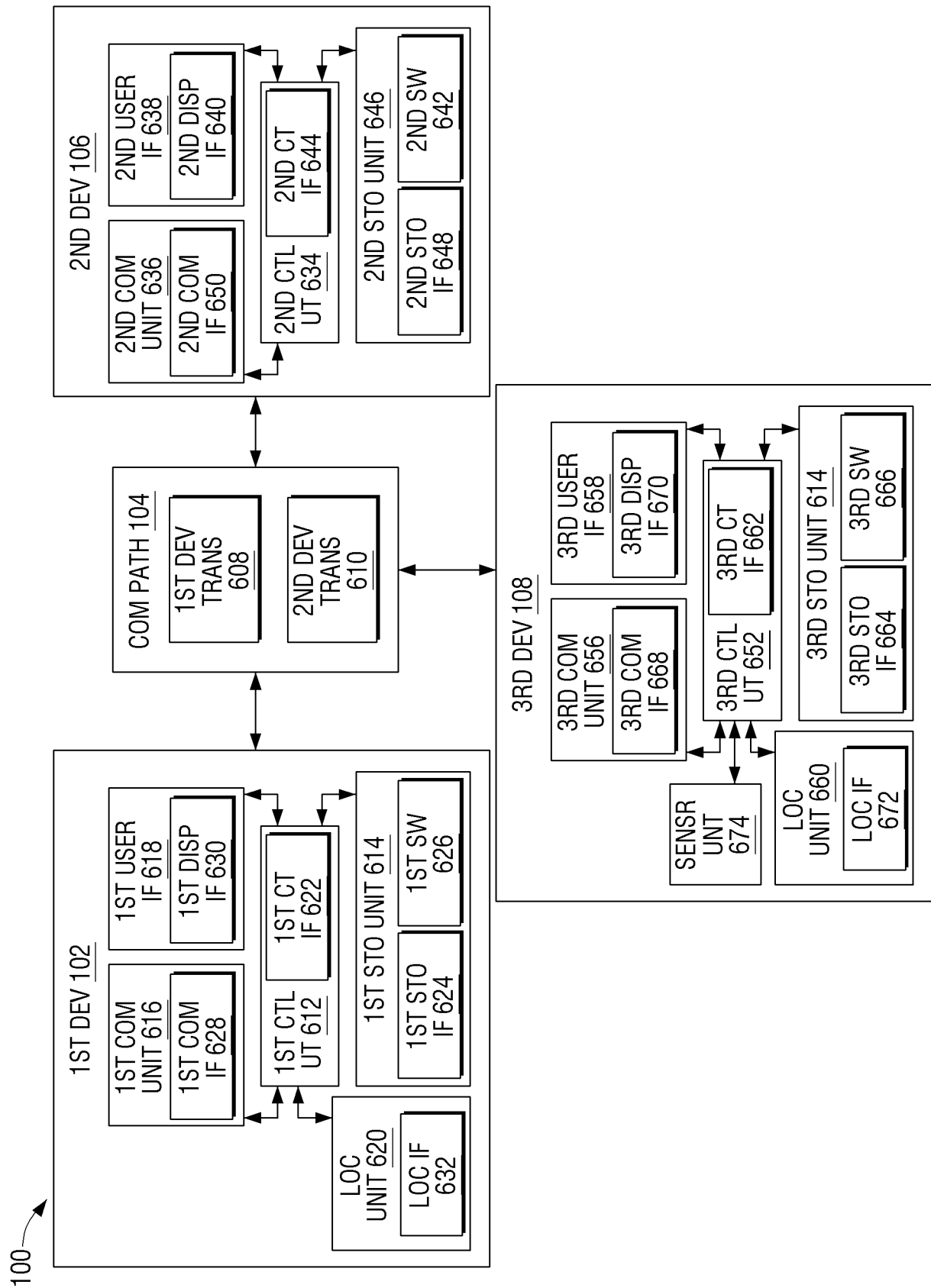
[Fig. 21]



[Fig. 22]

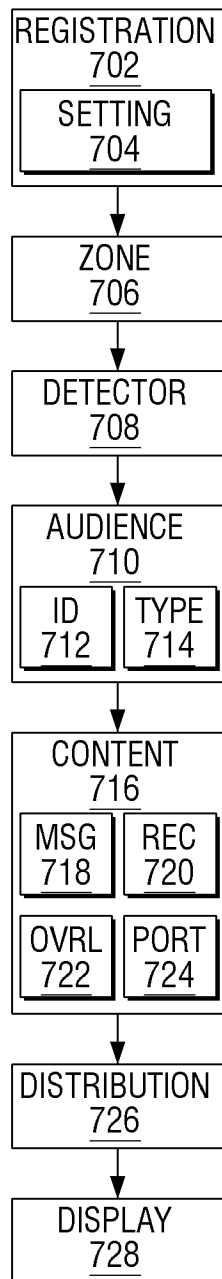


[Fig. 23]



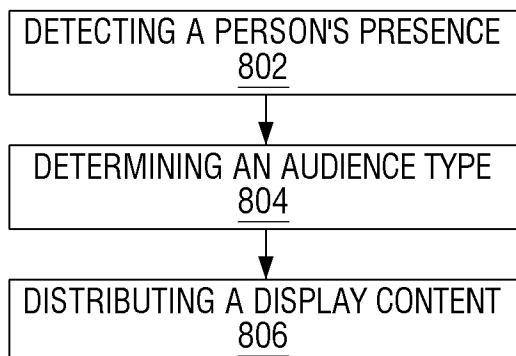
[Fig. 24]

100



[Fig. 25]

800



**A. CLASSIFICATION OF SUBJECT MATTER****G06F 15/16(2006.01)i, G06Q 50/10(2012.01)i, G06Q 50/30(2012.01)i**

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

G06F 15/16; H04N 7/10; G06F 15/173; H04N 5/44; H04W 12/06; H04N 5/445; G06Q 50/10; G06Q 50/30

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Korean utility models and applications for utility models

Japanese utility models and applications for utility models

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKOMPASS(KIPO internal) &amp; Keywords:television&lt;or&gt;display ,terminal&lt;or&gt; user device, recognition&lt;or&gt; authorization

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2007-0192486 A1 (BRIAN B. WILSON et al.) 16 August 2007 See paragraph 18 - paragraph 43; paragraph 50 - paragraph 71; paragraph 82 - paragraph 83; claims 1-21; and figures 1-5,14-15.	1-15
Y	KR 10-2011-0119323 A (LG ELECTRONICS CO., LTD.) 02 November 2011 See paragraph 58 - paragraph 64; paragraph 95 - paragraph 172; claims 1-15; and figures 2,5-13.	1-15
Y	KR 10-2011-0054291 A (LG ELECTRONICS CO., LTD.) 25 May 2011 See paragraph 12 - paragraph 56; paragraph 121 - paragraph 173; claims 13-20; and figures 1-3,14-18.	3,11-15
A		1-2,4-10
A	US 2009-0113472 A1 (SHETH NIRAL et al.) 30 April 2009 See paragraph 15 - paragraph 55; and figures 1-4.	1-15



Further documents are listed in the continuation of Box C.



See patent family annex.

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"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&amp;" document member of the same patent family

Date of the actual completion of the international search

26 September 2013 (26.09.2013)

Date of mailing of the international search report

**27 September 2013 (27.09.2013)**

Name and mailing address of the ISA/KR

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**INTERNATIONAL SEARCH REPORT**

Information on patent family members

International application No.

**PCT/KR2013/004235**

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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KR 10-2011-0054291 A	25/05/2011	CN 102612841 A	25/07/2012
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		US 8311200 B2	13/11/2012
		WO 2011-062339 A1	26/05/2011
US 2009-0113472 A1	30/04/2009	None	