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(54) Title: SYSTEM AND METHOD FOR SELECTIVE COMMUNICATION BLOCKING

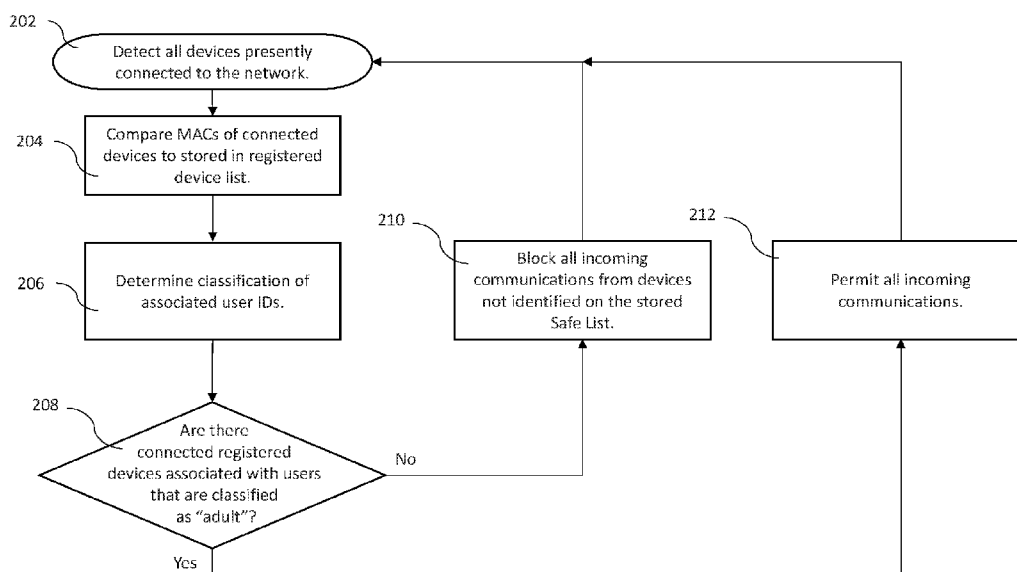


FIG. 2

(57) Abstract: A system and method for blocking incoming communications as a function of detecting a network connection to one or more devices identified as being under the control of an adult. A database associating a particular user classification with the Media Access Control ("MAC") address or the telephone number of each device authorized to connect with a local network is maintained. This classification indicates whether the user associated with a given device is categorized as belonging to either an adult or minor user. A list of safe telephone numbers and MACs is also maintained. When no devices having a MAC associated with an adult user are connected to the local network, communications from devices not associated with numbers or MACs on the safe list are blocked. When at least one device having a MAC associated with an adult connects to the network, selective call blocking is terminated.

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SYSTEM AND METHOD FOR SELECTIVE COMMUNICATION BLOCKING

BACKGROUND OF THE INVENTION

[0001] Throughout the world the ever-increasing use of automated calling systems has resulted in an almost unchecked proliferation of unwanted “robocalls”. These automated calls are often initiated by less-than-reputable telemarketers or “off-shore” entities who have little regard for legal prohibitions aimed at such unwanted communications. Couple these robocalls with a host of other human-initiated uninvited calls related to everything from political parties to charity organizations (some legitimate, some not) and you have a situation where both land-line and mobile telephones within any private residence are inundated with unwanted communications.

[0002] Numerous solutions, technical, legal and administrative, have been put into place in an attempt to push back against the continuing waves of nuisance calls. Do Not Call lists have been created by national governments, telecom providers have employed artificial intelligence filters aimed at recognizing and blocking the calls, and individuals have invested in various on-premises solutions. Unfortunately, none of these have proven to be completely effective in blocking these unwanted calls.

[0003] These calls are typically seen as a nuisance, but when received by a minor on their home phone or personal mobile device, the calls can be perceived as confusing, harassing or even frightening by the recipient minor. This is especially true if no adults are present at the time the call is received. Consequently, there remains a need for a simple, effective and reliable means for the parent or guardian of minor children to block these calls from reaching minors when an adult is not present.

[0004] BRIEF SUMMARY OF THE INVENTION

[0005] A system and method for blocking incoming communications as a function of detecting a network connection to one or more devices identified as being under the control of an adult. A database associating a particular user classification with the Media Access Control (“MAC”) address or the telephone number of each device authorized to connect with a local network is maintained. This classification indicates whether the user associated with a given device is categorized as belonging to either an adult or minor user. A list of safe telephone numbers and MACs is also maintained. When no devices having a MAC associated with an adult user are connected to the local network, communications from devices not associated with

numbers or MACs on the safe list are blocked. When at least one device having a MAC associated with an adult connects to the network, selective call blocking is terminated.

[0006] BRIEF DESCRIPTION OF THE DRAWINGS

[0007] The aspects, and advantages of the present invention will become better understood with regard to the following description, appended claims, and accompanying drawings in which:

[0008] FIG. 1 is a functional diagram of a first preferred embodiment of a selective communication blocking network management system.

[0009] FIG. 2 is a is a flow diagram of operational steps executed within the system of FIG. 1.

[0010] FIG. 3 is a functional diagram of a first alternate configuration of the system of FIG. 1.

[0011] FIG. 4 is a functional diagram of a second alternate configuration of the system of FIG. 1.

[0012] DETAILED DESCRIPTION

[0013] FIG. 1 is a functional diagram of a preferred embodiment for a selective communication blocking management system. As shown, the system 100 includes Multimedia Access Terminal Control System (“MAC System”) 102 which serves as the nexus for the system. MAC 102 includes processor 104, and memory 106, Bluetooth® interface 108, ethernet interface 110, Wi-Fi interface 112, and graphical user interface 114. MAC System 102 is also shown to be connected to telco/cable headend 116 and to the Internet 118. MAC System 102 serves to control incoming and outgoing communications between telco/cable provider 116, internet 118 and the local network comprising a Wi-Fi system supported by Wi-Fi interface 112, an ethernet network supported ethernet interface 110 and a Bluetooth network supported by Bluetooth interface 108.

[0014] FIG. 1 also shows various devices that are connected to the local network. These devices include laptop 120 which is associated with adult user 122 and linked to the local network via ethernet connection 124; tablet 126 which is associated with minor user 128 and linked to the local network via Bluetooth connection 130; smartphone 132 which is associated with minor user 134 and linked to the local network via a Wi-Fi connection 136; and smartphone 138 which is associated with minor user 140 and linked to the local network via a Wi-Fi connection 142.

[0015] Memory 106 stores a listing of all devices authorized to connect to the local network, including a MAC address and/or telephone number associated with each device, a classification (either adult or minor) associated with each MAC address or telephone number, and an indicator reflective of whether each device is presently connected to the local network. Memory 106 also stores a list comprised of the MAC addresses or telephone numbers associated with communication devices that have been previously identified as “safe”. Safe devices are unconditionally permitted to communicate with any device connected to the local network.

[0016] Tables A and B provide a representation of such stored information for the system depicted in FIG. 1:

Authorized Devices				
Device Type	MAC Address	Telephone Number	Classification	Status
Smartphone	01-XX-XX-XX-XX-XX	XXX-XXX-0001	Adult	Connected
Laptop	02-XX-XX-XX-XX-XX	N/A	Adult	Connected

Smartphone	03-XX-XX-XX-XX-XX	XXX-XXX-0003	Minor	Connected
Tablet	04-XX-XX-XX-XX-XX	N/A	Minor	Connected

Table A

Safe Device Listing	
MAC Address	Telephone Number
11-XX-XX-XX-XX-XX	XXX-XXX-1001
12-XX-XX-XX-XX-XX	N/A
13-XX-XX-XX-XX-XX	N/A
14-XX-XX-XX-XX-XX	XXX-XXX-4004
15-XX-XX-XX-XX-XX	XXX-XXX-5005
N/A	XXX-XXX-6006
N/A	XXX-XXX-7007

Table B

The MAC Address, Telephone Number and Status information stored in memory 106 can be acquired directly from the connected devices by MAC System 102. Collecting such information from network devices is well-known in the art and the specifics of such will not be discussed here. The specific classification associated with the user of a device, as well as the information comprising the list of the MAC addresses/telephone numbers associated with safe communication devices are entered into the system by users via the various connected devices (120, 126, 132 and 138), or via graphical user interface 114.

[0017] Processor 104 is adapted to implement a process comprising the operational steps depicted in the flow diagram of FIG. 2. The process initiates with processor 104 detecting all of the devices presently connected to the local network (step 202). The processor then compares the MAC or telephone number (whichever is appropriate for the particular type of connected device) with the authorized device MAC address/telephone numbers stored in memory 106 and queries the database stored in memory 106 so to determine the classification associated with the device (step 204). As shown in FIG. 1 and Table A, there are two devices associated with users having a classification of “adult” (devices 120 and 138). Consequently, the conditional of step 206 is answered in the affirmative, the process continues with step 210, and processor 104 permits all incoming communications to reach the devices connected to the local network.

[0018] A slightly altered configuration the local network is depicted in FIG. 3. As shown, laptop 120, associated with adult user 122 has disconnected from the local network.

Processor 104 would detect that laptop 120 had disconnected and the information stored in memory 106 would be updated. Table C is a representation of such stored information for the system depicted in FIG. 3:

Authorized Devices				
Device Type	MAC Address	Telephone Number	Classification	Status
Smartphone	01-XX-XX-XX-XX-XX	XXX-XXX-0001	Adult	Connected
Laptop	02-XX-XX-XX-XX-XX	N/A	Adult	Disconnected
Smartphone	03-XX-XX-XX-XX-XX	XXX-XXX-0003	Minor	Connected
Tablet	04-XX-XX-XX-XX-XX	N/A	Minor	Connected

Table C

[0019] Processor 104 would then apply the process depicted in the flow diagram of FIG. 2, detecting all of the devices presently connected to the local network (step 202). The processor then compares the MAC or telephone number (whichever is appropriate for the particular type of connected device) with the authorized device MAC address/telephone numbers stored in memory 106 and queries the database stored in memory 106 so to determine the classification associated with the device (step 204). As shown in FIG. 3 and Table C, there is at least one device (138) associated with a user classified as “adult”. Consequently, the conditional of step 206 is answered in the affirmative, the process continues with step 210, and processor 104 permits all incoming communications to reach the devices connected to the local network.

[0020] FIG. 4 depicts yet another configuration the local network. As shown, both laptop 120 (associated with adult user 122), and smartphone 138 (associated with adult user 140) have disconnected from the local network. Processor 104 would detect this and the information stored in memory 106 would be updated. Table D is a representation of such stored information for the system depicted in FIG. 4:

Authorized Devices				
Device Type	MAC Address	Telephone Number	Classification	Status
Smartphone	01-XX-XX-XX-XX-XX	XXX-XXX-0001	Adult	Disconnected
Laptop	02-XX-XX-XX-XX-XX	N/A	Adult	Disconnected
Smartphone	03-XX-XX-XX-XX-XX	XXX-XXX-0003	Minor	Connected
Tablet	04-XX-XX-XX-XX-XX	N/A	Minor	Connected

Table D

[0021] Processor 104 would then apply the process depicted in the flow diagram of FIG. 2, detecting all of the devices presently connected to the local network (step 202). The processor then compares the MAC or telephone number with the authorized device MAC address/telephone numbers stored in memory 106 and queries the database stored in memory 106 so to determine the classification associated with the device (step 204). As shown in FIG. 3 and Table D, there are no devices associated with a user classified as “adult” connected to the local network. Consequently, the conditional of step 206 is answered in the negative, and the process continues with step 208. Processor 104 instructs MAC System 102 to prohibit any communication originating from a MAC address or telephone number stored in the safe list of memory 106 (see table B). This prohibition would remain in force until such time as an authorized device associated with a user classified as “adult” was detected as being connected to the local network.

[0022] Although the invention herein has been described with reference to particular embodiments, it is understood that these embodiments are merely illustrative of the principles and applications of the present invention. For example, the local network can be supported by any wired or wireless infrastructure, and any combination thereof. The processor and memory depicted as being integral to the MAC System can be implemented in a separate co-located stand-alone appliance, or via a remotely located system, connected to the MAC System via a wired or wireless network. In addition, all functional aspects of the invention could be implemented via physical arrangements that might have varying degrees of integration. The entirety of the disclosed invention could be implemented within a monolithic system, or disparate discrete components without departing from the spirit and scope of the present invention as defined by the appended claims.

CLAIMS

1. A selective communication management system comprising:

a local network;

a controller adapted to manage incoming communications directed to one or more devices authorized to connect to the local network, and comprising comprising at least one processor and at least one memory, wherein:

the memory stores information indicative of identifiers associated with the authorized devices, classifiers associated with the users of the authorized devices, and a predetermined listing of devices that are unconditionally permitted to communicate with any device connected to the local network; and

the at least one processor is adapted to:

detect all authorized devices connected to the local network;

determine, based upon the stored identifier and classification information associated with at least one connected authorized device, that there is not at least one authorized device connected to the local network associated with a predetermined type of classifier; and

prohibit any device not included in the predetermined listing of devices from communicating with any device connected to the local network.

2. The system of claim 1 wherein the predetermined type of classifier provides an indication of age of user of the device.

3. The system of claim 1 wherein at least one of the identifiers associated with the authorized devices comprises a multimedia access control address.

4. The system of claim 1 wherein at least one of the identifiers associated with the authorized devices comprises a telephone number.

5. The system of claim 1 wherein the local network comprises a wireless network.

6. The system of claim 1 wherein the local network comprises an ethernet network.

7. The system of claim 1 wherein the local network comprises a Bluetooth network.
8. The system of claim 1 wherein the controller is adapted to provide a connection between the local network and the headend of a communication provider.
9. The system of claim 1 wherein the controller is adapted to provide a connection between the local network and the internet.
10. The system of claim 1 further comprising a user interface adapted to enable the entering of at least one classification associated with at least one device authorized to connect to the local network.
11. The system of claim 10 wherein the user interface comprises a wireless device.
12. The system of claim 1 further comprising a user interface adapted to enable the entering of MAC addresses and telephone numbers associated with communication devices permitted to unconditionally communicate with the authorized devices connected to the local network.
13. The system of claim 12 wherein the user interface comprises a wireless device.
14. A method for selectively managing incoming communication to a local network, comprising the steps of:
 - detecting all authorized devices connected to the local network;
 - determining, based upon an identifier for at least one authorized device connected to the local network and the classifier associated with the identifier, that there is not at least one authorized device connected to the local network associated with a predetermined type of classifier; and
 - prohibit any device not included in a predetermined listing of devices from communicating with any device connected to the local network.
15. The method of claim 14 wherein the predetermined type of classifier provides an indication of age of user of the device.
16. The method of claim 14 wherein the identifier for at least one authorized device connected to the local network comprises a multimedia access control address.

17. The method of claim 14 wherein the identifier for at least one authorized device connected to the local network comprises a telephone number.
18. The method of claim 14 wherein the local network comprises a wireless network.
19. The method of claim 14 wherein the local network comprises an ethernet network.
20. The method of claim 14 wherein the local network comprises a Bluetooth network.

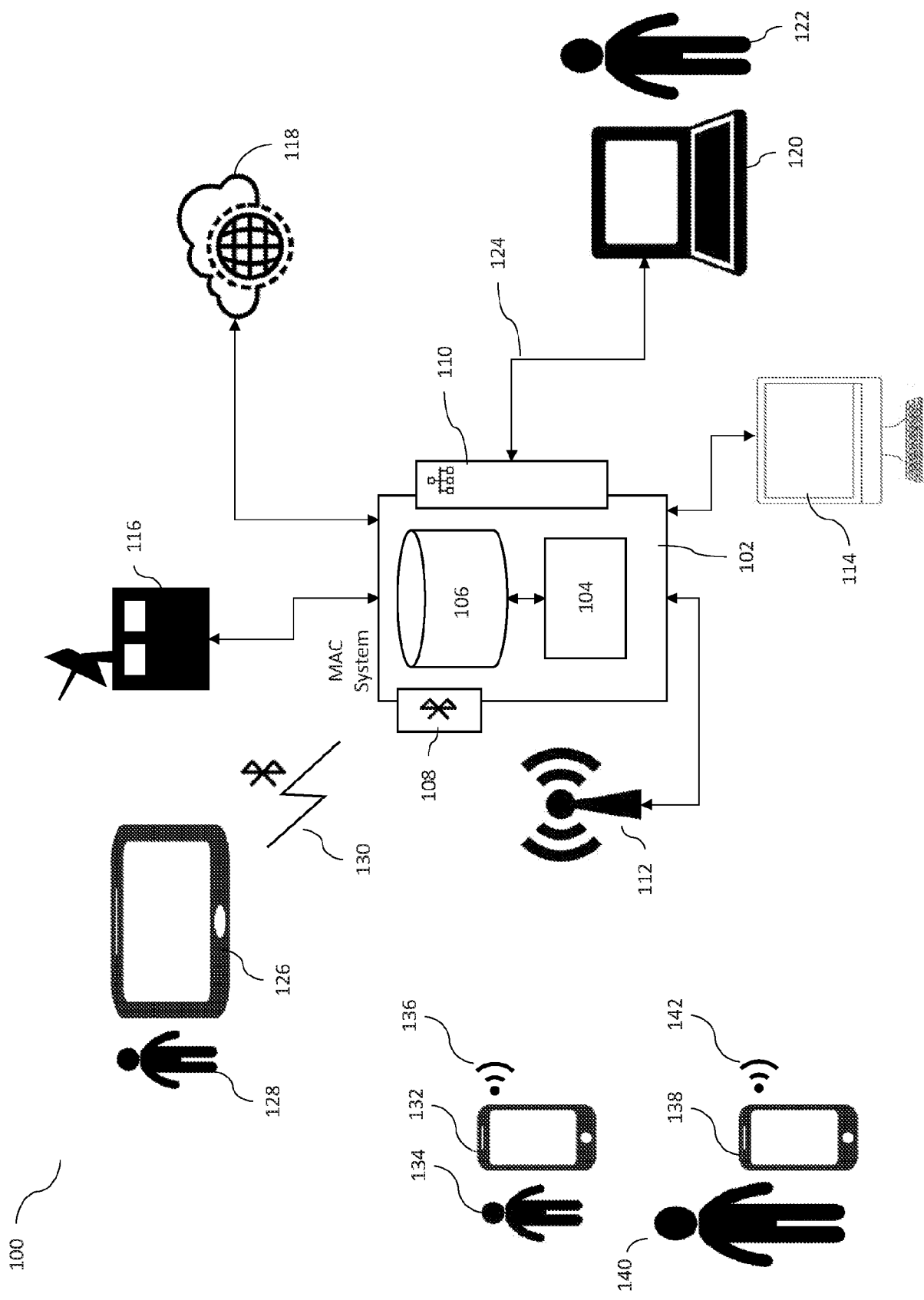


FIG. 1

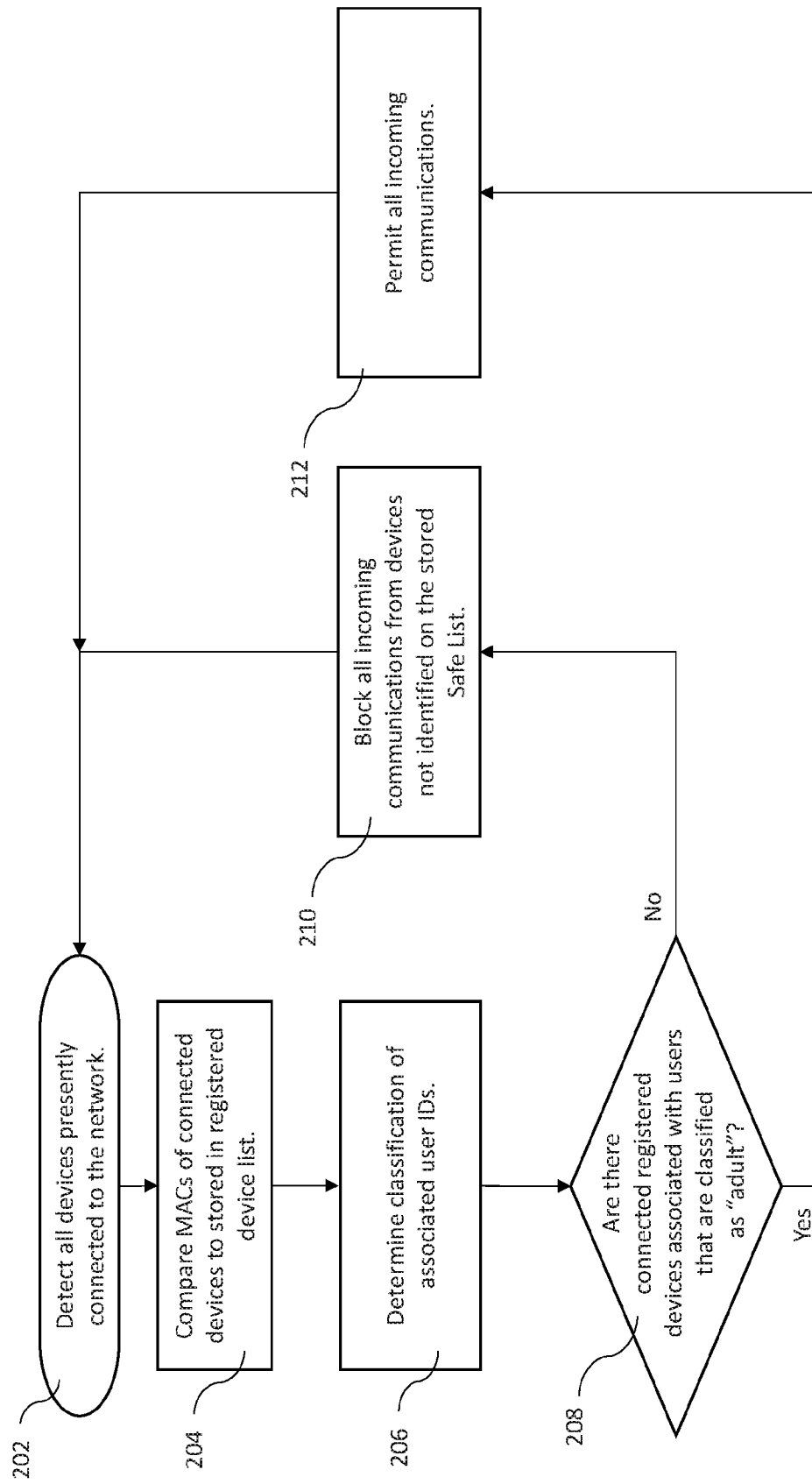


FIG. 2

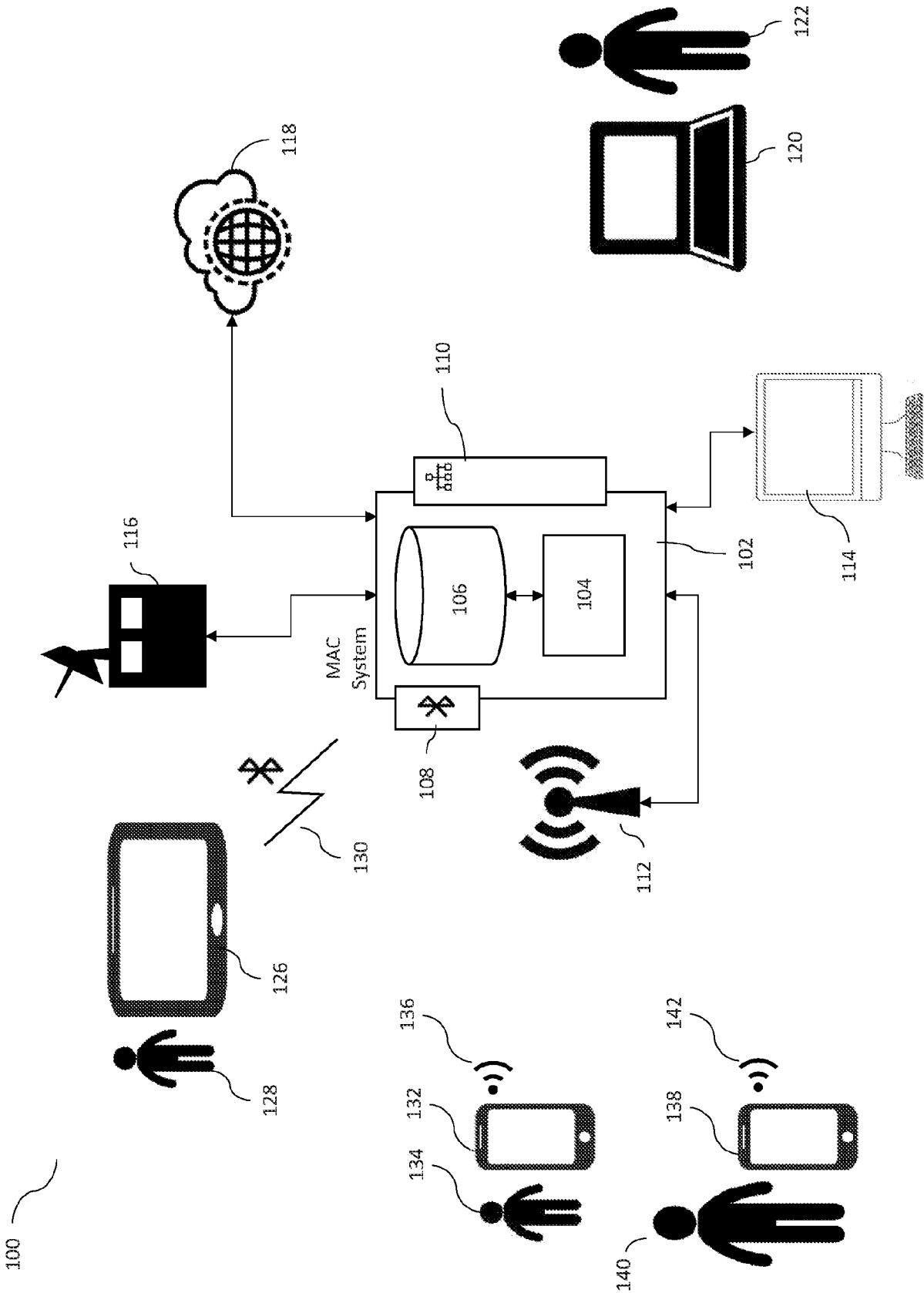


FIG. 3

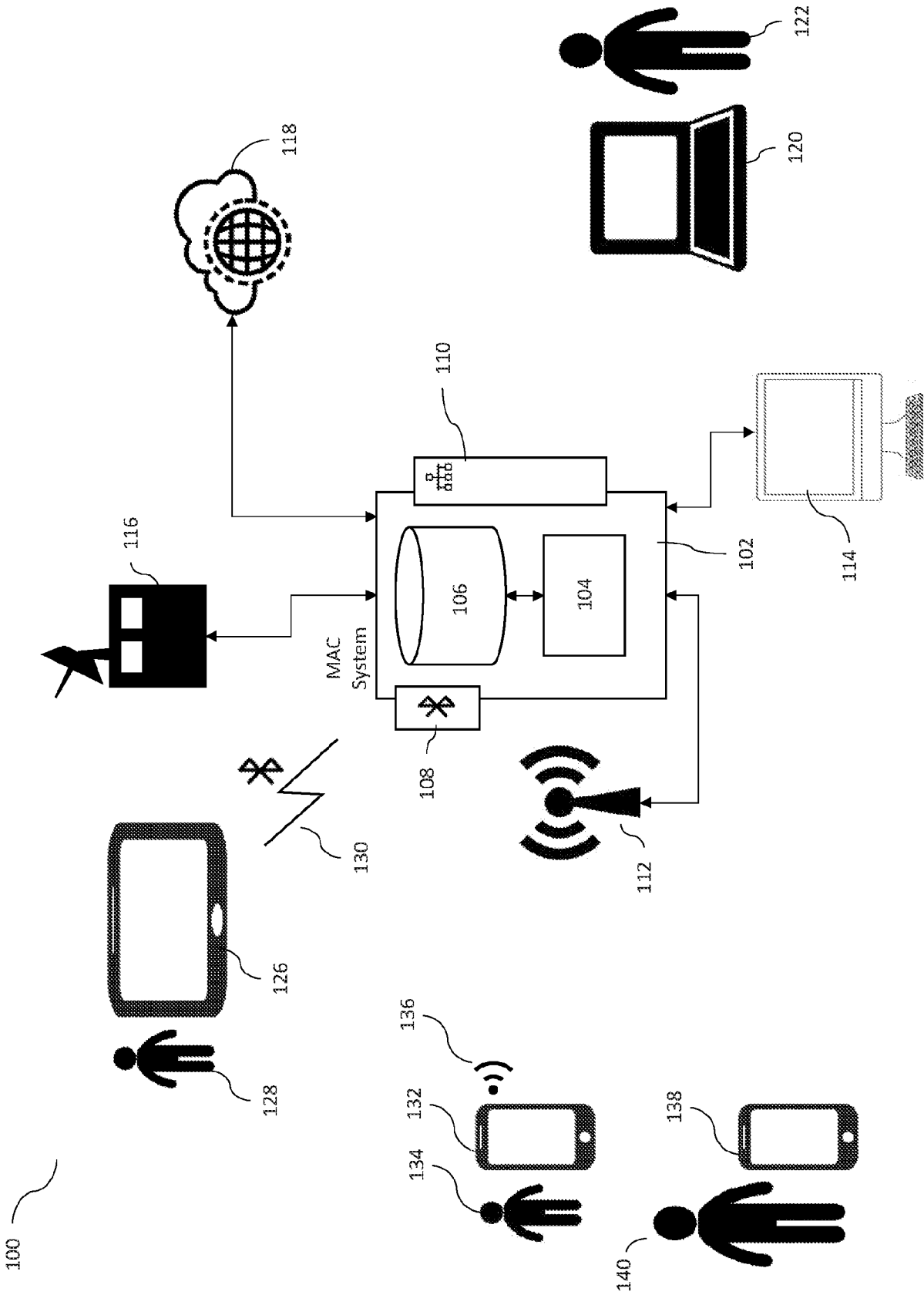


FIG. 4

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2020/092503

A. CLASSIFICATION OF SUBJECT MATTER

H04L 29/06(2006.01)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)

H04L; G06F; H04W

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

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

CNPAT;CNKI;WPI;EPODOC;IEEE;3GPP:adult, child, minor, permit, block, prohibit, network, communicat+, web, internet, control, present, presence, watch, accompany, list, white, router, gateway, access

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 2017067204 A1 (LE HOLDINGS BEIJING CO., LTD. et al.) 27 April 2017 (2017-04-27) description, pages 4-9 and figures 1-3	1-20
A	CN 102984163 A (HUAWEI TECHNOLOGIES CO., LTD.) 20 March 2013 (2013-03-20) the whole document	1-20
A	WO 2019059908 A1 (FACEBOOK, INC.) 28 March 2019 (2019-03-28) the whole document	1-20
A	WO 2006076696 A2 (GLASS, Paul, H.) 20 July 2006 (2006-07-20) the whole document	1-20
A	US 2009132813 A1 (SURIDX, INC.) 21 May 2009 (2009-05-21) the whole document	1-20

☐ Further documents are listed in the continuation of Box C.☒ See patent family annex.

* Special categories of cited documents:

“A” document defining the general state of the art which is not considered to be of particular relevance

“E” earlier application or patent but published on or after the international filing date

“L” document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

“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

“&” document member of the same patent family

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INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.

PCT/CN2020/092503

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