(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
18 December 2014 (18.12.2014)

WIPO | PCT

(10) International Publication Number
WO 2014/201330 A1

(51) International Patent Classification:
G06F 19/00 (2011.01)

(21) International Application Number:
PCT/US2014/042273

(22) International Filing Date:
13 June 2014 (13.06.2014)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
61/834,973 14 June 2013 (14.06.2013) US

(71) Applicant: **GOJO INDUSTRIES, INC.** [US/US]; One Gojo Plaza, Suite 500, Akron, OH 44309 (US).

(72) Inventor: **CAMBIER, Timothy, Michael**; 3828 Sue Marie Circle, Uniontown, OH 44685 (US).

(74) Agent: **FISCHER, Marcus, A.**; Cooper Legal Group, LLC, 6505 Rockside Road, Suite 330, Independence, OH 44131 (US).

(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JP, KE, KG, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

Published:

— *with international search report (Art. 21(3))*

— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))*

(54) Title: HYGIENE OBSERVATION

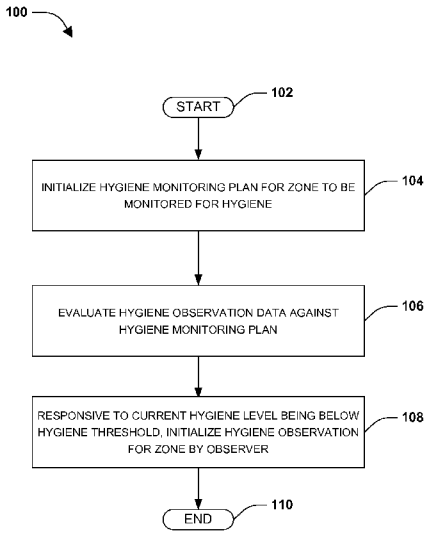

FIG. 1

(57) Abstract: Among other things, one or more systems and/or techniques for initiating a hygiene observation are provided herein. For example, a hygiene monitoring plan for a zone (e.g., a radiology department) may be initialized. The hygiene monitoring plan may comprise a hygiene threshold (e.g., 80% hygiene compliance) and/or other information such as a floor plan, hygiene dispenser locations, staff information, etc. Hygiene observation data may be evaluated against the hygiene monitoring plan. Responsive to a current hygiene level being below the hygiene threshold, a hygiene observation for the zone may be initiated. For example, an observation user interface may be loaded onto an observation device through which an observer may perform and record information for the hygiene observation. An interactive floor plan, observation instructions, dispenser locations, staff locations, and a variety of other information may be displayed through the observation user interface to facilitate the hygiene observation.

WO 2014/201330 A1

HYGIENE OBSERVATION

RELATED APPLICATION

[0001] This application claims priority to U.S. Provisional Application No. 61/834,973, titled "HYGIENE OBSERVATION" and filed on June 14, 2013, which is incorporated herein by reference.

TECHNICAL FIELD

[0002] The instant application is generally directed towards hygiene monitoring, such as hand washing and/or sanitization. Hygiene may be monitored by determining whether a hygiene event, such as washing hands, occurs in response to a hygiene opportunity, such as a medical practitioner interacting with a patient.

BACKGROUND

[0003] Many locations, such as hospitals, factories, restaurants, homes, etc., may implement various hygiene and/or disease control policies. For example, a hospital may set an 85% hygiene compliance standard for a surgery room. A hygiene opportunity may correspond to an opportunity where a person should perform a hygiene event, such as using a hand sanitizer or washing their hands. Compliance with the hygiene opportunity may increase a current hygiene level, while non-compliance may decrease the current hygiene level. In an example of monitoring hygiene, a hygiene dispenser may be monitored by measuring an amount of material, such as soap, lotion, sanitizer, etc., consumed from the dispensing system. However, greater utilization of the hygiene dispenser may not directly correlate to improved hygiene (e.g., medical staff may be inadvertently using the hygiene dispenser for relatively low transmission risk situations as opposed to relatively high transmission risk situations, such as after touching a high transmission risk patient in a hallway). In another example of monitoring hygiene, direct human observation may be performed to evaluate hygiene. However, during the observation, medical staff may temporarily alter their hygiene habits for an improved score. Also, the observation may be scheduled based upon various metrics that might not correspond to a current need for an observation (e.g., the observation may be scheduled for Tuesday, but a

current hygiene level for the surgery room may be relatively low on Monday, and thus the observation should instead occur on Monday rather than Tuesday).

SUMMARY

[0004] This summary is provided to introduce a selection of concepts in a simplified form that are further described below in the detailed description. This summary is not intended to identify key factors or essential features of the claimed subject matter, nor is it intended to be used to limit the scope of the claimed subject matter.

[0005] Among other things, one or more systems and/or techniques for facilitating a hygiene observation are provided herein. For example, a hygiene monitoring plan may be initialized for a zone to be monitored for hygiene. A zone may correspond to a location and/or one or more entities, such as a hospital, a city, a building, a home, a restaurant, a maternity ward of a hospital, a bathroom of a restaurant, restaurant staff member entities, nurse entities, university biology department staff member entities, and/or a wide variety of other locations and/or entities, for example. The hygiene monitoring plan may be tailored for the zone that is to be monitored. For example, the hygiene monitoring plan may comprise employee information for hygiene monitoring (e.g., descriptive and/or location information of nurses, doctors, and/or other medical staff that are to be monitored for hygiene compliance), patient or customer information for hygiene monitoring (e.g., descriptive and/or location information of hospital patients that medical staff may come in contact with as a potential path for disease transmission), a floor plan of the zone (e.g., a floor plan for a radiology department), hygiene dispenser information used to determine whether an entity has complied with a hygiene opportunity (e.g., a hand sanitizer dispenser located in a hallway of the radiology department that may be used by an employee as a hygiene event for compliance with a hygiene opportunity where the employee contacts a patient in the hallway), observer information (e.g., descriptive and/or location information for human and/or non-human observers capable of performing a hygiene observation), and/or a variety of other information. The hygiene monitoring plan may comprise a hygiene threshold associated with initiating a hygiene

observation (e.g., if a current hygiene level of a radiology department or staff member is below the hygiene threshold, then a hygiene observation may be initiated).

[0006] Hygiene observation data may be evaluated against the hygiene monitoring plan in order to determine whether a current hygiene level is below the hygiene threshold, and thus triggering initiation of the hygiene observation. In an example, the hygiene observation data may be received from an electronic hygiene monitoring system (e.g., a real-time locating system provider configured to track employees, patients, customers, hygiene dispensers, people entering and/or leaving a room or other area, bed sheets, medical equipment, and/or a variety of other entities and/or events). For example, the electronic hygiene monitoring system may identify a hygiene opportunity (e.g., a current position of a nurse and a patient indicating that the nurse may be in contact with the patient as a potential disease transmission), and may determine a current hygiene level based upon compliance or non-compliance with the hygiene opportunity and/or other hygiene opportunities (e.g., a dispenser located relatively close to the nurse was or was not utilized by the nurse after contact with the patient). Responsive to the current hygiene level being below the hygiene threshold, the hygiene observation for the zone may be initiated by an observer (e.g., direct human observation; robotic observation; electronic or mechanical observation; etc.). For example, an observer relatively close to the zone may be identified. The observer may be associated with an observation device (e.g., a tablet device, a wireless device, etc.). The observation device may be invoked to load an observation user interface through which the observer may perform the hygiene observation (e.g., the observation user interface may display the floor plan of the zone; indentify what portions of the zone and/or entities within the zone are to be monitored; a check list of what to monitor and/or an interface to record observations; an observation time; etc.). A set of observation results for the hygiene observation may be received, and may be provided through, for, example, a web interface and/or sent as a notification to a user such as a disease control supervisor, for example.

[0007] The following description and annexed drawings set forth certain illustrative aspects and implementations. These are indicative of but a few of the various ways in which one or more aspects can be employed. Other aspects, advantages, and novel features of the disclosure will become apparent from the

following detailed description when considered in conjunction with the annexed drawings.

DESCRIPTION OF THE DRAWINGS

[0008] Fig. 1 is a flow diagram illustrating a method of facilitating a hygiene observation, according to some embodiments.

[0009] Fig. 2 is a flow diagram illustrating a method of facilitating a hygiene observation, according to some embodiments.

[0010] Fig. 3 is an illustration of a hygiene monitoring plan, according to some embodiments.

[0011] Fig. 4 is a component block diagram illustrating a system for facilitating a hygiene observation, according to some embodiments.

[0012] Fig. 5 is an illustration of performing a hygiene observation, according to some embodiments.

[0013] Fig. 6 is a component block diagram illustrating a system for facilitating a hygiene observation, according to some embodiments.

[0014] Fig. 7 is an illustration of performing a hygiene observation, according to some embodiments.

[0015] Fig. 8 is an illustration of an observation user interface, according to some embodiments.

[0016] Fig. 9 is an illustration of an observation user interface, according to some embodiments.

[0017] Fig. 10 is an illustration of an exemplary computer readable medium wherein processor-executable instructions configured to embody one or more of the provisions set forth herein may be comprised.

[0018] Fig. 11 illustrates an exemplary computing environment wherein one or more of the provisions set forth herein may be implemented.

DETAILED DESCRIPTION

[0019] The claimed subject matter is now described with reference to the drawings, wherein like reference numerals are generally used to refer to like elements throughout. In the following description, for purposes of explanation, numerous specific details are set forth in order to provide an understanding of the claimed subject matter. It is evident, however, that the claimed subject matter can be practiced without these specific details. In other instances, structures and devices are illustrated in block diagram form in order to facilitate describing the claimed subject matter.

[0020] An embodiment for facilitating a hygiene observation is illustrated by an exemplary method 100 of Fig. 1. At 102, the method starts. At 104, a hygiene monitoring plan is initialized for a zone (e.g., a restaurant kitchen; a radiology department; radiology staff entities; staff at a daycare provider facility; etc.) that is to be monitored for hygiene. The hygiene monitoring plan may comprise a hygiene threshold associated with initialing a hygiene observation. That is, the hygiene threshold may specify various criteria used to trigger the hygiene observation (e.g., a decreasing trend in hygiene level; a hygiene threshold value or percentage; a first threshold for a first type of hygiene observation using a first set of observation criteria such as a relatively basic observation; a second threshold for a second type of hygiene observation using a second set of observation criteria such as a relatively extensive observation; etc.). For example, the hygiene threshold may apply (e.g., differently) to an employee entity (e.g., a particular doctor), the zone (e.g., a first floor of a hospital), a portion of the zone (e.g., a first floor hallway of the hospital), a medical facility unit (e.g., the radiology department), a medical facility room (e.g., a radiology room), a medical facility staff unit (e.g., nurses), and/or a variety of other locations and/or entities. The hygiene monitoring plan may comprise a variety of information tailored for the zone, such as a floor plan of the zone, employee information, patient or customer information, hygiene dispenser information, observer information, etc.

[0021] At 106, hygiene observation data may be evaluated against the hygiene monitoring plan to determine whether a current hygiene level is below the hygiene threshold. In an example, the hygiene observation data may be received from information provided by one or more hygiene dispensers (e.g., notification that a

dispense event occurred). In another example, the hygiene observation data may be received from an electronic hygiene monitoring system that may electronically monitor hygiene associated with one or more entities. For example, the electronic hygiene monitoring system may track location and/or other information associated with employee entities (e.g., nurses, cooks, daycare providers, etc.), patient or customer entities (e.g., hospital patients, restaurant patrons, day care children, etc.), hygiene dispenser entities, object entities (e.g., a hospital bed, bed sheets, a doorway, an daycare equipment, hospital equipment, etc.), and/or a variety of other entities that may correspond to a hygiene opportunity (e.g., nurse entering a doorway into a quarantined room) and/or a hygiene event (e.g., a utilization of a dispenser). In this way, the current hygiene level may be based upon compliance (e.g., the nurse uses the dispenser to perform the hygiene event that results in compliance with the hygiene opportunity of entering the quarantined room), partial compliance, and/or non-compliance with one or more hygiene opportunities, for example.

[0022] At 108, responsive to the current hygiene level being below the hygiene threshold, the hygiene observation may be initiated for the zone by an observer (e.g., a human observer, a robotic observer, a camera, a monitoring system, etc.). In an example, an observation user interface may be loaded onto an observation device associated with the observer (e.g., a human observer may utilize a tablet observation device to perform the hygiene observation through the observation user interface). Various information may be displayed through the observation user interface, such as an interactive view of the floor plan for the zone (e.g., an illustration of a hospital floor), one or more entities (e.g., an icon representing a nurse that is to be observed, an indicator representing a room that is to be observed, a hygiene dispenser, etc.), a set of observation criteria for the hygiene observation (e.g., an input box for the observer to enter observation details, a dropdown list populated with selectable reasons why an entity did not comply, a checklist of what to observe, and/or a wide variety of other information that may facilitate the hygiene observation), one or more hygiene dispensers (e.g., a hygiene dispenser that may be used to comply with a hygiene opportunity), an observation time (e.g., 20 minutes out of 33 minutes remaining for the observation), and/or a plethora of other information that may be used by the observer to perform the hygiene observation (e.g., where more than one observer may perform one or more observations at a time, such as a human and a

monitoring system concurrently performing an observation (e.g., of the same, different, overlapping, etc. zone(s)).

[0023] Information displayed through the observation interface may be customized and/or tailored based upon based upon location of the observation device, a current observation task being perform, change in location information of entities, and/or a variety of other information. For example, the observation user interface may be modified based upon the observation device transitioning from a first portion of the zone to a second portion of the zone (e.g., the observation user interface may display first observation criteria for a first patient room while the observation device is in the first patient room for observation, and the first observation criteria may be modified to second observation criteria when the observation device is transitioned into a second patient room for observation).

[0024] In this way, a set of observation results may be created from the hygiene observation through the observation user interface. The set of observation results may be received from the observation device (e.g., the observation device may upload the set of observation results through a wireless connection). In an example, the set of observation results may be provided through a web interface (e.g., a web-enable dashboard accessible through a browser). In another example, the set of observation results may be provided through a notification to a user, such as a disease controller supervisor. At 110, the method ends.

[0025] An embodiment for facilitating a hygiene observation is illustrated by an exemplary method 200 of Fig. 2. At 202, the method starts. At 204, a hygiene observation trigger for a zone (e.g., a radiology department, a particular doctor, a surgery room, radiology staff, etc.) may be received. The hygiene observation trigger may be based upon a current hygiene level being below a hygiene threshold specified by a hygiene monitoring plan. For example, hygiene observation data (e.g., observations associated with whether an entity complied with a hygiene opportunity by performing a hygiene event such as hand sanitization) may be compared with the hygiene monitoring plan to determine that the current hygiene level is below the hygiene threshold (e.g., a current 70% compliance rate may be below an 80% compliance hygiene threshold).

[0026] At 206, an observation user interface for facilitating a hygiene observation

by an observer may be loaded (e.g., observation user interface 802 of Fig. 8 and observation user interface 902 of Fig. 9). For example, an interactive floor plan for the zone, one or more entities that are to be observed, a set of observation criteria for the hygiene observation, one or more hygiene dispensers, an observation time, and/or a variety of other information and/or interactive user interface elements may be displayed through the observation user interface. The observation user interface may be modified based upon a transition from a first portion of the zone (e.g., observation of a first radiologist) to a second portion of the zone (e.g., observation of a second radiologist). For example, the observation user interface may display first observation criteria for a first radiologist (e.g., the first portion of the zone may correspond to a first staff member of a radiology unit zone) while the observer is observing the first radiologist. The observation user interface may display second observation criteria for a second radiologist (e.g., the second portion may correspond to a second staff member of the radiology unit zone) based upon the observer transitioning from observing the first radiologist to the second radiologist. In an example, hygiene observation instructions may be provided to the observer through the observation user interface. For example, the hygiene observation instructions may specify a location entity within the zone to observe (e.g., a radiology examination room), an employee entity to observe (e.g., a first radiologist), a dispenser entity (e.g., a hygiene dispenser located in a hallway of the radiology department), patient information (e.g., a probability of disease transmission for a patient, a location of the patient, etc.), a medical facility unit entity to observe (e.g., the radiology department), etc.

[0027] At 208, responsive to completion of the hygiene observation, a set of observation results associated with the hygiene observation may be exposed. In an example, the set of observation results may be sent to a hygiene controller for storage and/or further processing. In another example, a notification of the set of observation results may be sent to a user. In another example, the set of observation results may be displayed through a web interface. At 210, the method ends.

[0028] Fig. 3 illustrates an example 300 of a hygiene monitoring plan 302. It may be appreciated that the hygiene monitoring plan 302 may merely illustrate a simplified example of a hygiene monitoring plan, and that various other information and/or organization of information is contemplated. In an example, the hygiene monitoring plan 302 comprises observation information for an intensive care unit zone 304,

observation information for a maternity ward zone 318, and/or observation information associated with other zones of a hospital. The observation information for the intensive care unit zone 304 may comprise a set of hygiene thresholds 306 for various entities, such as an employee entity threshold of 72%, a patient entity threshold for various disease transmission risks, a location entity threshold for a hallway of 40%, a location entity threshold for a surgery room of 92%, a dispenser hygiene threshold of 60%, and/or a variety of other thresholds that may be evaluated to determine whether a hygiene observation is to be initiated. The observation information for the intensive care unit zone 304 may comprise employee entity information 308 such as current hygiene levels for one or more employee entities (e.g., a current hygiene level, a trending hygiene pattern, etc.). The observation information for the intensive care unit zone 304 may comprise patient entity information 310, such as a disease transmission risks. The observation information for the intensive care unit zone 304 may comprise location entity information 312 such as current hygiene levels, location descriptions, etc. The observation information for the intensive care unit zone 304 may comprise dispenser information 314. The observation information for the intensive care unit zone 304 may comprise a floor plan 316 of the intensive care unit zone. In this way, the hygiene monitoring plan 302 may comprise information used to monitor hygiene for one or more zones and/or initiate hygiene observations based upon current hygiene levels being below hygiene thresholds.

[0029] Fig. 4 illustrates an example of a system 400 for facilitating a hygiene observation. The system 400 may comprise a hygiene controller 410 and/or an observation device locator 418. The hygiene controller 410 may be configured to initialize a hygiene monitoring plan for a zone, such as a physical therapy zone of a medical facility, which is to be monitored for hygiene. For example, the hygiene monitoring plan may comprise a physical therapy zone floor plan 402, employee information (e.g., descriptive and location information for a first staff member 422a, a second staff member 422b, a third staff member 422c, a fourth staff member 422d, etc.), patient information (e.g., descriptive and location information for a first patient 420a, a second patient 420b, a third patient 420c, a fourth patient 420d, etc.), dispenser information (e.g., descriptive, location, and/or usage information for a first dispenser 426a, a second dispenser 426b, etc.), one or more hygiene thresholds,

and/or other information.

[0030] The hygiene controller 410 may be configured to receive hygiene observation data 408. For example, the hygiene controller 410 may receive the hygiene observation data 408 from an electronic hygiene monitoring system 406 configured to collect observation data 404 for the physical therapy zone (e.g., utilizing a radio-frequency identifications (RFID) tracking technique and/or other monitoring techniques). The hygiene controller 410 may be configured to evaluate the hygiene observation data 408 against the hygiene monitoring plan to determine whether a current hygiene level is below a hygiene threshold. For example, the hygiene controller 410 may determine that a current hygiene level 424 for third patient room of the third patient 420c may be below a patient room hygiene threshold (e.g., the third staff member 422c may have come in contact with the third patient 420c within the third patient room without performing a hygiene event, such as utilizing the second dispenser 426b). In this way, the hygiene controller 410 may initiate 412 a hygiene observation. For example, the observation device locator 418 may identify an observation device 416 associated with an observer 414 that may be capable of performing the hygiene observation. An observation user interface for facilitating the hygiene observation by the observer 414 may be loaded onto the observation device 416 (e.g., example 500 of Fig. 5 for performing a hygiene observation). For example, the observation device locator 418 may invoke the observation device 416 to load the observation user interface.

[0031] Fig. 5 illustrates an example 500 of performing a hygiene observation. In an example, the hygiene observation is initiated based upon a hygiene controller 410 determining that a current hygiene level for a third patient room of a third patient 420c is below a hygiene threshold (e.g., initiate hygiene observation 412 based upon a current hygiene level 424, as illustrated by example 400 of Fig. 4). The hygiene controller 410 may be configured to provide hygiene observation instructions 502 to an observation user interface hosted by an observation device 416. For example, an observer 414 may be instructed to observe the third patient room of the third patient 420c for an observation time period (e.g., 30 minutes). The observer 414 may record various observation information, through the observation user interface, associated with the third patient 420c, a second staff member 422b, a third staff member 422c, a second dispense 426b, and/or other entities. The hygiene controller 410 may receive

a set of observation results 504 from the observation device 416 upon completion of the hygiene observation by the observer 414. The hygiene controller 410 may be configured to send a notification of the set of observation results 504 to a user and/or display the set of observation results 504 through a web interface, for example.

[0032] Fig. 6 illustrates an example of a system 600 for facilitating a hygiene observation. The system 600 may comprise a hygiene controller 610 and/or an observation device locator 618. The hygiene controller 610 may be configured to initialize a hygiene monitoring plan for a zone, such as a physical therapy zone of a medical facility, which is to be monitored for hygiene. For example, the hygiene monitoring plan may comprise a physical therapy zone floor plan 602, employee information (e.g., descriptive and location information for a staff member 622), patient information (e.g., descriptive and location information for a patient 620), dispenser information (e.g., descriptive, location, and/or usage information for hygiene dispenser 626), one or more hygiene thresholds, and/or other information.

[0033] The hygiene controller 610 may be configured to receive hygiene observation data 608. For example, the hygiene controller 610 may receive the hygiene observation data 608 from an electronic hygiene monitoring system 606 configured to collect observation data 604 for the physical therapy zone. The hygiene controller 610 may be configured to evaluate the hygiene observation data against the hygiene monitoring plan to determine whether a current hygiene level is below a hygiene threshold. For example, the hygiene controller 610 may determine that a current hygiene level 624 for the staff member 622 may be below a staff member hygiene threshold (e.g., the staff member 622 may have come in contact with the patient 620, as an hygiene opportunity, but may fail to comply with the hygiene opportunity because the staff member 622 did not perform a hygiene event such as using the dispenser 626. In this way, the hygiene controller 610 may initiate 612 a hygiene observation. For example, the observation device locator 618 may identify an observation device 616 associated with an observer 614 that may be capable of performing the hygiene observation. An observation user interface for facilitating the hygiene observation by the observer 614 may be loaded onto the observation device 616 (e.g., example 700 of Fig. 7 for performing a hygiene observation). For example, the observation device locator 618 may invoke the observation device 616 to load the observation user interface.

[0034] Fig. 7 illustrates an example 700 of performing a hygiene observation. In an example, the hygiene observation is initiated based upon a hygiene controller 610 determining that a current hygiene level for a staff member 622 is below a hygiene threshold (e.g., initiate hygiene observation 612 based upon current hygiene level 624, as illustrated by example 600 of Fig. 6). The hygiene controller 610 may be configured to provide hygiene observation instructions 702 (e.g., through the observation device locator 618) to an observation user interface hosted by an observation device 616. For example, an observer 614 may be instructed to observe the staff member 622 for an observation time period. The observer 614 may record various observation information, through the observation user interface, associated with the staff member 622, such as a hygiene opportunity where the staff member 622 comes in contact with a patient 706 and/or whether the staff member 622 complies with the hygiene opportunity by using a dispenser 708. The hygiene controller 710 may receive a set of observation results 704 from the observation device 616 upon completion of the observation by the observer 614. The hygiene controller 610 may be configured to send a notification of the set of observation results 704 to a user and/or display the set of observation results 704 through a web interface.

[0035] Fig. 8 illustrates an example 800 of an observation user interface 802. The observation user interface 802 may be displayed through an observation device (e.g., a tablet device, a wireless device, etc.). The observation user interface 802 may aid an observer in performing a hygiene observation. In an example, the hygiene observation may be initiated based upon a current hygiene level 818 for a patient room of a medical facility being below a hygiene threshold. Accordingly, the observation user interface 802 may be loaded onto the observation device, and the observer may perform the hygiene observation by following hygiene observation instructions and/or recording observation data into the observation user interface 802. For example, an interactive floor plan 804 for the medical facility may be display. Staff member entities, patient entities, hygiene dispensers, directions 816, and/or a variety of other information may be provided through the interactive floor plan 804. One or more observation tasks, such as a first observation task 806, may be displayed through the observation user interface 802 (e.g., a task to observe the patient room for 30 minutes). The first observation task 806 may provide various instructions and/or user input interface elements for performing the first observation task 806, such as an

interface to record observations regarding a hygiene opportunity 808 for Jon and a hygiene opportunity 810 for Dan (e.g., Dan and Jon may have come in contact with a patient within the patient room). The observer may use an add new hygiene opportunity interface 812 to add a new hygiene opportunity for the first observation task 806 (e.g., the observer may create a new hygiene opportunity associated with changing dirty sheets within the patient room or cleaning up a spill on the floor). The observer may use an add notes interface 814 to record other various information for the observation. It may be appreciated that the observation user interface 802 is merely an example of an observation user interface, and that a wide variety of other information and/or display formats may be used and are contemplated.

[0036] Fig. 9 illustrates an example 900 of modifying an observation user interface. In an example, a modified observation user interface 902 may correspond to a modification of an observation user interface 802 of Fig. 8. For example, the observation user interface 802 may have been loaded onto an observation device so that an observer could perform a hygiene observation. Upon completion of a first observation task such as observing a patient room (e.g., example 800 of Fig. 8), the observer may be prompted to perform a second observation task 906 through the modified observation user interface 902. Accordingly, a modified floor plan 904 may be displayed. The modified floor plan 904 may display directions 916 to a staff member Kim 920 that is to be observed during the second observation task 906 based upon a current hygiene level 918 for the staff member Kim 920 being below a hygiene threshold. The second task 906 may provide various instructions and/or user input interface elements for performing the second task 906, such as interface elements to record observations regarding a first hygiene opportunity 908, record a second hygiene opportunity 910, add a new hygiene opportunity 912, add notes 914, and/or other information. It may be appreciated that the modified observation user interface 902 is merely an example of an observation user interface, and that a wide variety of other information and/or display formats may be used and are contemplated.

[0037] Still another embodiment involves a computer-readable medium comprising processor-executable instructions configured to implement one or more of the techniques presented herein. An example embodiment of a computer-readable medium or a computer-readable device that is devised in these ways is illustrated in

Fig. 10, wherein the implementation 1000 comprises a computer-readable medium 1008, such as a CD-R, DVD-R, flash drive, a platter of a hard disk drive, etc., on which is encoded computer-readable data 1006. This computer-readable data 1006, such as binary data comprising at least one of a zero or a one, in turn comprises a set of computer instructions 1004 configured to operate according to one or more of the principles set forth herein. In some embodiments, the processor-executable computer instructions 1004 are configured to perform a method 1002, such as at least some of the exemplary method 100 of Fig. 1 and/or at least some of the exemplary method 200 of Fig. 2, for example. In some embodiments, the processor-executable instructions 1004 are configured to implement a system, such as at least some of the exemplary system 400 of Fig. 4 and/or at least some of the exemplary system 600 of Fig. 6, for example. Many such computer-readable media are devised by those of ordinary skill in the art that are configured to operate in accordance with the techniques presented herein.

[0038] Although the subject matter has been described in language specific to structural features and/or methodological acts, it is to be understood that the subject matter defined in the appended claims is not necessarily limited to the specific features or acts described above. Rather, the specific features and acts described above are disclosed as example forms of implementing the claims.

[0039] As used in this application, the terms "component," "module," "system", "interface", and/or the like are generally intended to refer to a computer-related entity, either hardware, a combination of hardware and software, software, or software in execution. For example, a component may be, but is not limited to being, a process running on a processor, a processor, an object, an executable, a thread of execution, a program, and/or a computer. By way of illustration, both an application running on a controller and the controller can be a component. One or more components may reside within a process and/or thread of execution and a component may be localized on one computer and/or distributed between two or more computers.

[0040] Furthermore, the claimed subject matter may be implemented as a method, apparatus, or article of manufacture using standard programming and/or engineering techniques to produce software, firmware, hardware, or any combination thereof to control a computer to implement the disclosed subject matter. The term "article of manufacture" as used herein is intended to encompass a computer program accessible

from any computer-readable device, carrier, or media. Of course, those skilled in the art will recognize many modifications may be made to this configuration without departing from the scope or spirit of the claimed subject matter.

[0041] Fig. 11 and the following discussion provide a brief, general description of a suitable computing environment to implement embodiments of one or more of the provisions set forth herein. The operating environment of Fig. 11 is only one example of a suitable operating environment and is not intended to suggest any limitation as to the scope of use or functionality of the operating environment. Example computing devices include, but are not limited to, personal computers, server computers, hand-held or laptop devices, mobile devices (such as mobile phones, Personal Digital Assistants (PDAs), media players, and the like), multiprocessor systems, consumer electronics, mini computers, mainframe computers, distributed computing environments that include any of the above systems or devices, and the like.

[0042] Although not required, embodiments are described in the general context of "computer readable instructions" being executed by one or more computing devices. Computer readable instructions may be distributed via computer readable media (discussed below). Computer readable instructions may be implemented as program modules, such as functions, objects, Application Programming Interfaces (APIs), data structures, and the like, that perform particular tasks or implement particular abstract data types. Typically, the functionality of the computer readable instructions may be combined or distributed as desired in various environments.

[0043] Fig. 11 illustrates an example of a system 1100 comprising a computing device 1112 configured to implement one or more embodiments provided herein. In one configuration, computing device 1112 includes at least one processing unit 1116 and memory 1118. Depending on the exact configuration and type of computing device, memory 1118 may be volatile (such as RAM, for example), non-volatile (such as ROM, flash memory, etc., for example) or some combination of the two. This configuration is illustrated in Fig. 11 by dashed line 1114.

[0044] In other embodiments, device 1112 may include additional features and/or functionality. For example, device 1112 may also include additional storage (e.g., removable and/or non-removable) including, but not limited to, magnetic storage, optical storage, and the like. Such additional storage is illustrated in Fig. 11 by

storage 1120. In one embodiment, computer readable instructions to implement one or more embodiments provided herein may be in storage 1120. Storage 1120 may also store other computer readable instructions to implement an operating system, an application program, and the like. Computer readable instructions may be loaded in memory 1118 for execution by processing unit 1116, for example.

[0045] The term "computer readable media" as used herein includes computer storage media. Computer storage media includes volatile and nonvolatile, removable and non-removable media implemented in any method or technology for storage of information such as computer readable instructions or other data. Memory 1118 and storage 1120 are examples of computer storage media. Computer storage media includes, but is not limited to, RAM, ROM, EEPROM, flash memory or other memory technology, CD-ROM, Digital Versatile Disks (DVDs) or other optical storage, magnetic cassettes, magnetic tape, magnetic disk storage or other magnetic storage devices, or any other medium which can be used to store the desired information and which can be accessed by device 1112. Any such computer storage media may be part of device 1112.

[0046] Device 1112 may also include communication connection(s) 1126 that allows device 1112 to communicate with other devices. Communication connection(s) 1126 may include, but is not limited to, a modem, a Network Interface Card (NIC), an integrated network interface, a radio frequency transmitter/receiver, an infrared port, a USB connection, or other interfaces for connecting computing device 1112 to other computing devices. Communication connection(s) 1126 may include a wired connection or a wireless connection. Communication connection(s) 1126 may transmit and/or receive communication media.

[0047] The term "computer readable media" may include communication media. Communication media typically embodies computer readable instructions or other data in a "modulated data signal" such as a carrier wave or other transport mechanism and includes any information delivery media. The term "modulated data signal" may include a signal that has one or more of its characteristics set or changed in such a manner as to encode information in the signal.

[0048] Device 1112 may include input device(s) 1124 such as keyboard, mouse, pen, voice input device, touch input device, infrared cameras, video input devices,

and/or any other input device. Output device(s) 1122 such as one or more displays, speakers, printers, and/or any other output device may also be included in device 1112. Input device(s) 1124 and output device(s) 1122 may be connected to device 1112 via a wired connection, wireless connection, or any combination thereof. In one embodiment, an input device or an output device from another computing device may be used as input device(s) 1124 or output device(s) 1122 for computing device 1112.

[0049] Components of computing device 1112 may be connected by various interconnects, such as a bus. Such interconnects may include a Peripheral Component Interconnect (PCI), such as PCI Express, a Universal Serial Bus (USB), firewire (IEEE 1394), an optical bus structure, and the like. In another embodiment, components of computing device 1112 may be interconnected by a network. For example, memory 1118 may be comprised of multiple physical memory units located in different physical locations interconnected by a network.

[0050] Those skilled in the art will realize that storage devices utilized to store computer readable instructions may be distributed across a network. For example, a computing device 1130 accessible via a network 1128 may store computer readable instructions to implement one or more embodiments provided herein. Computing device 1112 may access computing device 1130 and download a part or all of the computer readable instructions for execution. Alternatively, computing device 1112 may download pieces of the computer readable instructions, as needed, or some instructions may be executed at computing device 1112 and some at computing device 1130.

[0051] Various operations of embodiments are provided herein. In one embodiment, one or more of the operations described may constitute computer readable instructions stored on one or more computer readable media, which if executed by a computing device, will cause the computing device to perform the operations described. The order in which some or all of the operations are described should not be construed as to imply that these operations are necessarily order dependent. Alternative ordering will be appreciated by one skilled in the art having the benefit of this description. Further, it will be understood that not all operations are necessarily present in each embodiment provided herein.

[0052] Further, unless specified otherwise, “first,” “second,” and/or the like are not intended to imply a temporal aspect, a spatial aspect, an ordering, etc. Rather, such terms are merely used as identifiers, names, etc. for features, elements, items, etc. For example, a first object and a second object generally correspond to object A and object B or two different or two identical objects or the same object.

[0053] Moreover, "exemplary" is used herein to mean serving as an example, instance, illustration, etc., and not necessarily as advantageous. As used herein, "or" is intended to mean an inclusive "or" rather than an exclusive "or". In addition, "a" and "an" as used in this application are generally be construed to mean "one or more" unless specified otherwise or clear from context to be directed to a singular form. Also, at least one of A and B and/or the like generally means A or B or both A and B. Furthermore, to the extent that "includes", "having", "has", "with", and/or variants thereof are used in either the detailed description or the claims, such terms are intended to be inclusive in a manner similar to the term "comprising"..

[0054] Also, although the disclosure has been shown and described with respect to one or more implementations, equivalent alterations and modifications will occur to others skilled in the art based upon a reading and understanding of this specification and the annexed drawings. The disclosure includes all such modifications and alterations and is limited only by the scope of the following claims. In particular regard to the various functions performed by the above described components (e.g., elements, resources, etc.), the terms used to describe such components are intended to correspond, unless otherwise indicated, to any component which performs the specified function of the described component (e.g., that is functionally equivalent), even though not structurally equivalent to the disclosed structure which performs the function in the herein illustrated exemplary implementations of the disclosure. In addition, while a particular feature of the disclosure may have been disclosed with respect to only one of several implementations, such feature may be combined with one or more other features of the other implementations as may be desired and advantageous for any given or particular application.

What is claimed is:

1. A method for facilitating a hygiene observation, comprising:

initializing a hygiene monitoring plan for a zone to be monitored for hygiene, the hygiene monitoring plan comprising a hygiene threshold associated with initiating a hygiene observation;

evaluating hygiene observation data against the hygiene monitoring plan to determine whether a current hygiene level is below the hygiene threshold; and

responsive to the current hygiene level being below the hygiene threshold, initiating the hygiene observation for the zone by an observer.

2. The method of claim 1, the hygiene monitoring plan comprising at least one of employee information for hygiene monitoring, patient information for hygiene monitoring, a floor plan of the zone, hygiene dispenser information used to determine whether an entity has complied with a hygiene opportunity, or observer information.

3. The method of claim 1, comprising:

obtaining the hygiene observation data from an electronic hygiene monitoring system that electronically monitors hygiene associated with one or more entities, the current hygiene level based upon compliance or non-compliance with one or more hygiene opportunities.

4. The method of claim 1, the hygiene threshold associated with at least one of an employee entity, the zone, a portion of the zone, a medical facility unit, a medical facility room, or a medical facility staff unit.

5. The method of claim 1, the initiating the hygiene observation comprising:

invoking an observation user interface to load on an observation device associated with the observer.

6. The method of claim 5, the invoking comprising:

displaying at least one of a floor plan for the zone, one or more entities to be observed, a set of observation criteria for the hygiene observation, one or more hygiene dispensers, or an observation time through the observation user interface.

7. The method of claim 5, comprising:

responsive to detecting the observation device transitioned from a first portion of the zone to a second portion of the zone, modifying the observation user interface based upon an observation criteria for the second portion.

8. The method of claim 1, the hygiene threshold specifying a first threshold for the hygiene observation and a second threshold for the hygiene observation.

9. The method of claim 8, the initiating the hygiene observation comprising:

responsive to the current hygiene level being below the first threshold, defining a first set of observation criteria for the hygiene observation; and

responsive to the current hygiene level being below the second threshold, defining a second set of observation criteria for the hygiene observation different than the first set of observation criteria.

10. The method of claim 1, comprising:

receiving a set of observation results associated with the hygiene observation; and

providing the set of observation results through at least one of a notification to a user or a web interface.

11. A method for facilitating a hygiene observation, comprising:

receiving a hygiene observation trigger for a zone based upon a current hygiene level being below a hygiene threshold specified by a hygiene monitoring plan;

loading an observation user interface for facilitating a hygiene observation by an observer; and

responsive to completion of the hygiene observation, exposing a set of observation results associated with the hygiene observation.

12. The method of claim 11, the loading an observation user interface comprising:

displaying at least one of a floor plan for the zone, one or more entities to be observed, a set of observation criteria for the hygiene observation, one or more hygiene dispensers, or an observation time through the observation user interface.

13. The method of claim 11, comprising:

responsive to transitioning from a first portion of the zone to a second portion of the zone, modifying the observation user interface based upon an observation criteria for the second portion.

14. The method of claim 11, the exposing a set of observation results comprising at least one of:

sending the set of observation results to a hygiene controller;

sending a notification of the set of observation results to a user; or

displaying the set of observation results through a web interface.

15. The method of claim 11, comprising:

providing hygiene observation instructions to the observer through the observation user interface, the hygiene observation instructions specifying at least one of a location entity within the zone to observe, an employee entity to observe, a dispenser entity to observe, patient information, a medical facility unit entity to observe, a medical facility room entity to observe, or a medical facility staff unit entity to observe.

16. A system for facilitating a hygiene observation, comprising:

a hygiene controller configured to:

initialize a hygiene monitoring plan for a zone to be monitored for hygiene, the hygiene monitoring plan comprising a hygiene threshold associated with initiating a hygiene observation;

evaluate hygiene observation data against the hygiene monitoring plan to determine whether a current hygiene level is below the hygiene threshold; and

responsive to the current hygiene level being below the hygiene threshold, initiate the hygiene observation for the zone by an observer.

17. The system of claim 16, comprising:

an observation device locator configured to:

responsive to the initiation of the hygiene observation:

identify an observation device associated with the observer; and

invoke the observation device to load an observation user interface for facilitating the hygiene observation by the observer.

18. The system of claim 16, comprising:

an observation device configured to:

responsive to receiving an instruction to load an observation user interface, load the observation user interface for facilitating the hygiene observation by the observer.

19. The system of claim 18, the observation device configured to:

display at least one of a floor plan for the zone, one or more entities to be observed, a set of observation criteria for the hygiene observation, one or more hygiene dispensers, or an observation time through the observation user interface.

20. The system of claim 18, the observation device configured to send a set of observation results to the hygiene controller, and the hygiene controller configured to at least one of:

send a notification of the set of observation results to a user; or

display the set of observations results through a web interface.

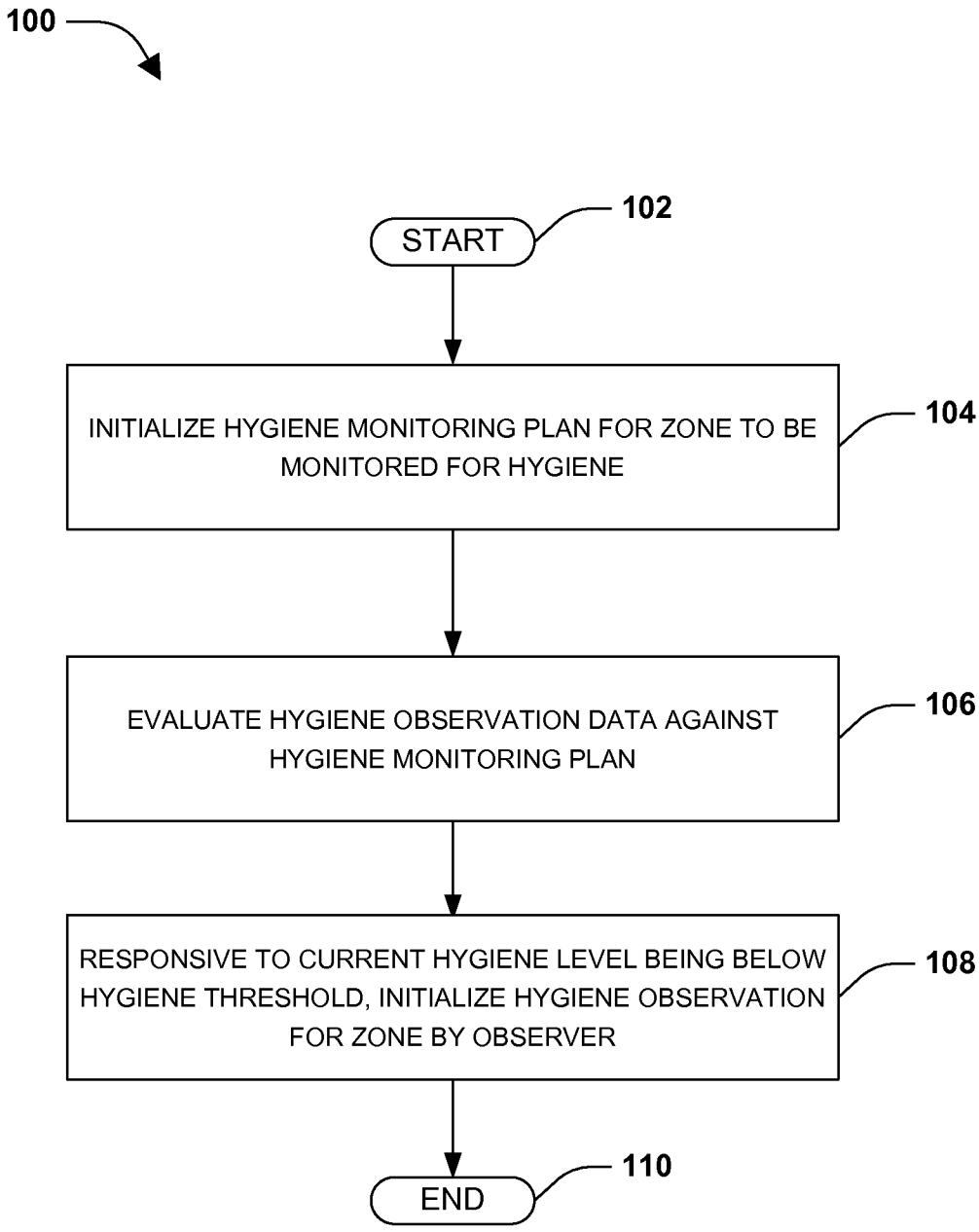
100
START
102
INITIALIZE HYGIENE MONITORING PLAN FOR ZONE TO BE MONITORED FOR HYGIENE
104
EVALUATE HYGIENE OBSERVATION DATA AGAINST HYGIENE MONITORING PLAN
106
RESPONSIVE TO CURRENT HYGIENE LEVEL BEING BELOW HYGIENE THRESHOLD, INITIALIZE HYGIENE OBSERVATION FOR ZONE BY OBSERVER
108
END
110

FIG. 1

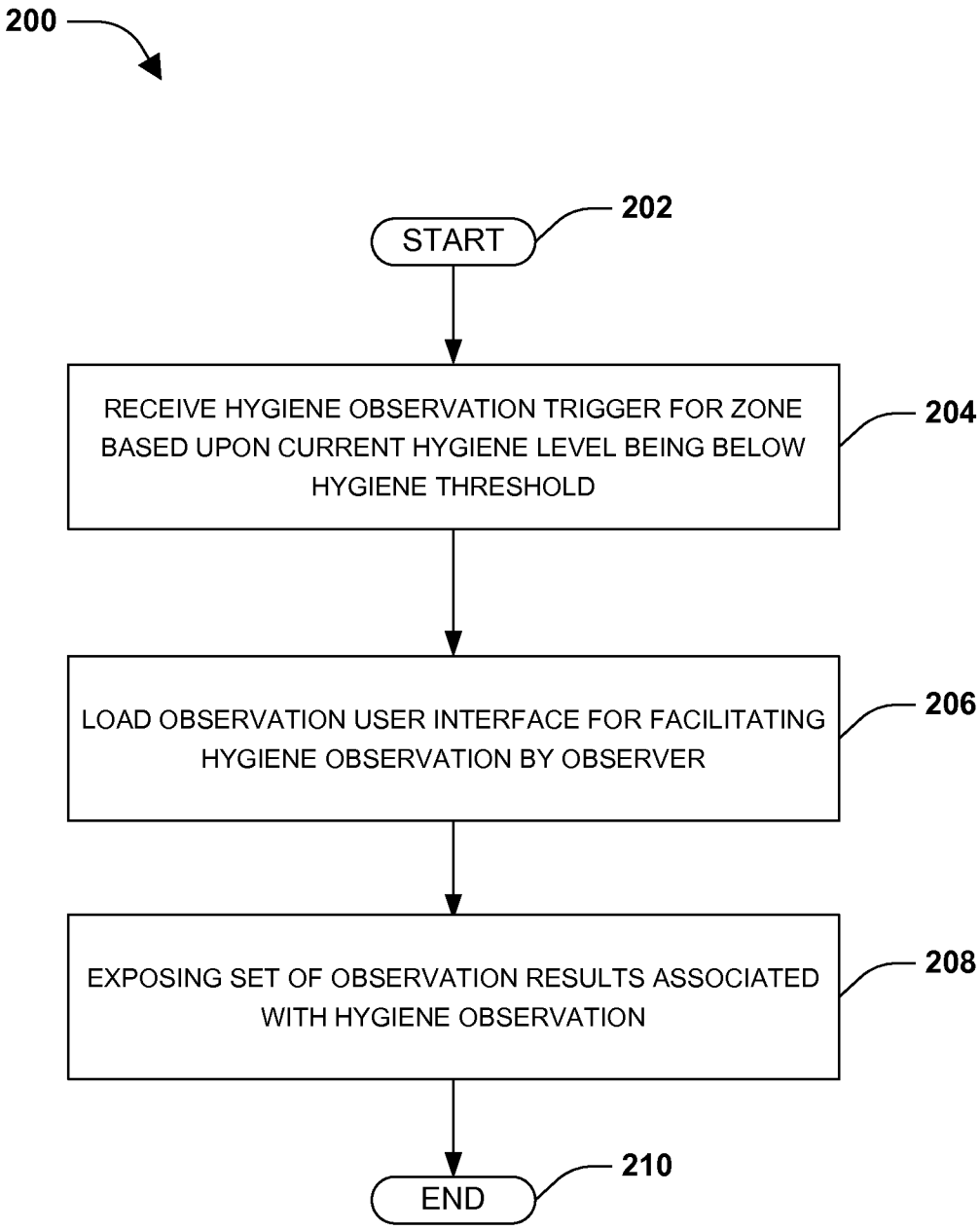
200
START
202
RECEIVE HYGIENE OBSERVATION TRIGGER FOR ZONE BASED UPON CURRENT HYGIENE LEVEL BEING BELOW HYGIENE THRESHOLD
204
LOAD OBSERVATION USER INTERFACE FOR FACILITATING HYGIENE OBSERVATION BY OBSERVER
206
EXPOSING SET OF OBSERVATION RESULTS ASSOCIATED WITH HYGIENE OBSERVATION
208
END
210

FIG. 2

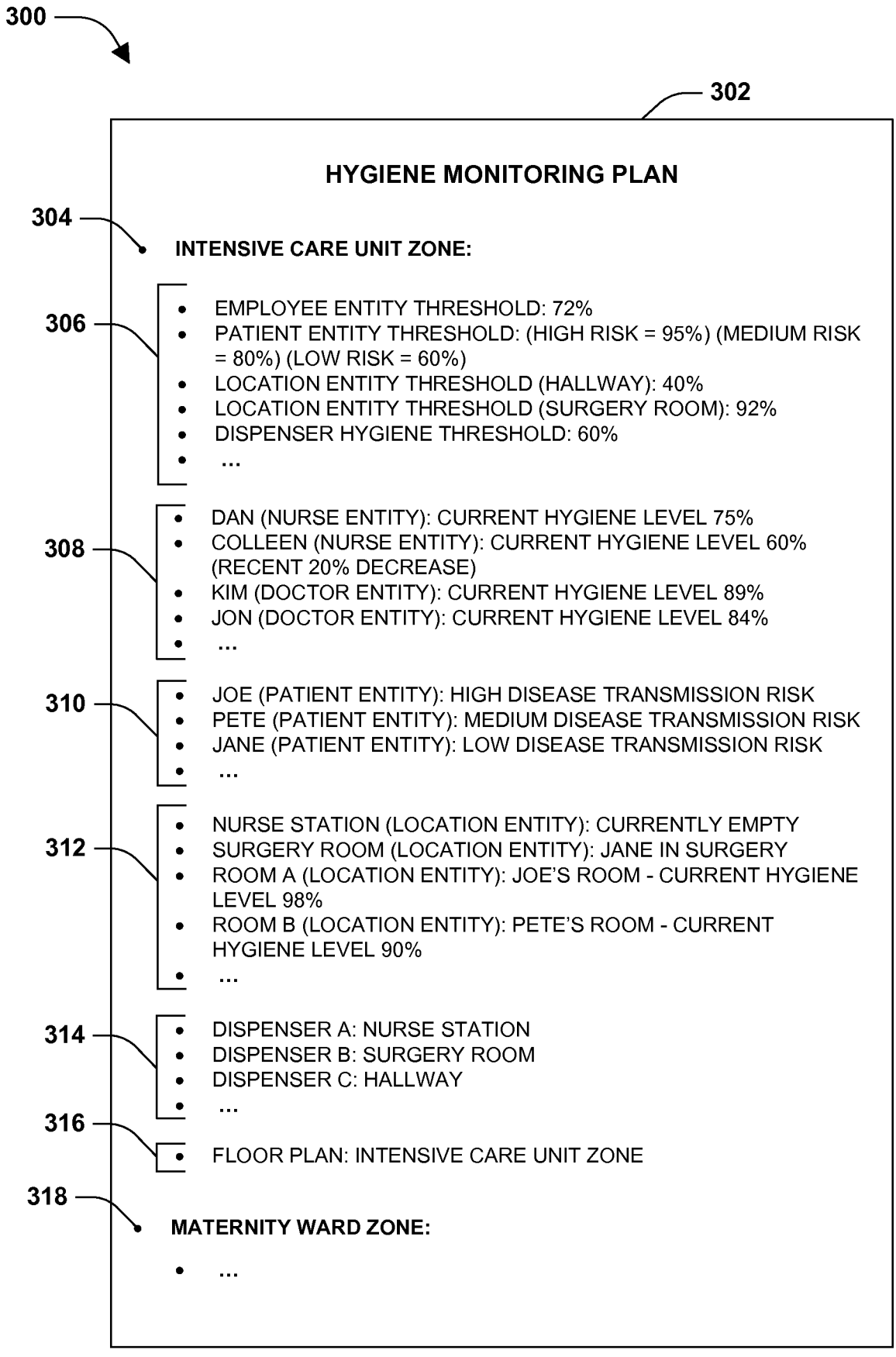
300
302
HYGIENE MONITORING PLAN
304
INTENSIVE CARE UNIT ZONE:
306
EMPLOYEE ENTITY THRESHOLD: 72%
PATIENT ENTITY THRESHOLD: (HIGH RISK = 95%) (MEDIUM RISK = 80%) (LOW RISK = 60%)
LOCATION ENTITY THRESHOLD (HALLWAY): 40%
LOCATION ENTITY THRESHOLD (SURGERY ROOM): 92%
DISPENSER HYGIENE THRESHOLD: 60%
...
308
DAN (NURSE ENTITY): CURRENT HYGIENE LEVEL 75%
COLLEEN (NURSE ENTITY): CURRENT HYGIENE LEVEL 60% (RECENT 20% DECREASE)
KIM (DOCTOR ENTITY): CURRENT HYGIENE LEVEL 89%
JON (DOCTOR ENTITY): CURRENT HYGIENE LEVEL 84%
...
310
JOE (PATIENT ENTITY): HIGH DISEASE TRANSMISSION RISK
PETE (PATIENT ENTITY): MEDIUM DISEASE TRANSMISSION RISK
JANE (PATIENT ENTITY): LOW DISEASE TRANSMISSION RISK
...
312
NURSE STATION (LOCATION ENTITY): CURRENTLY EMPTY
SURGERY ROOM (LOCATION ENTITY): JANE IN SURGERY
ROOM A (LOCATION ENTITY): JOE'S ROOM - CURRENT HYGIENE LEVEL 98%
ROOM B (LOCATION ENTITY): PETE'S ROOM - CURRENT HYGIENE LEVEL 90%
...
314
DISPENSER A: NURSE STATION
DISPENSER B: SURGERY ROOM
DISPENSER C: HALLWAY
...
316
FLOOR PLAN: INTENSIVE CARE UNIT ZONE
318
MATERNITY WARD ZONE:
...

FIG. 3

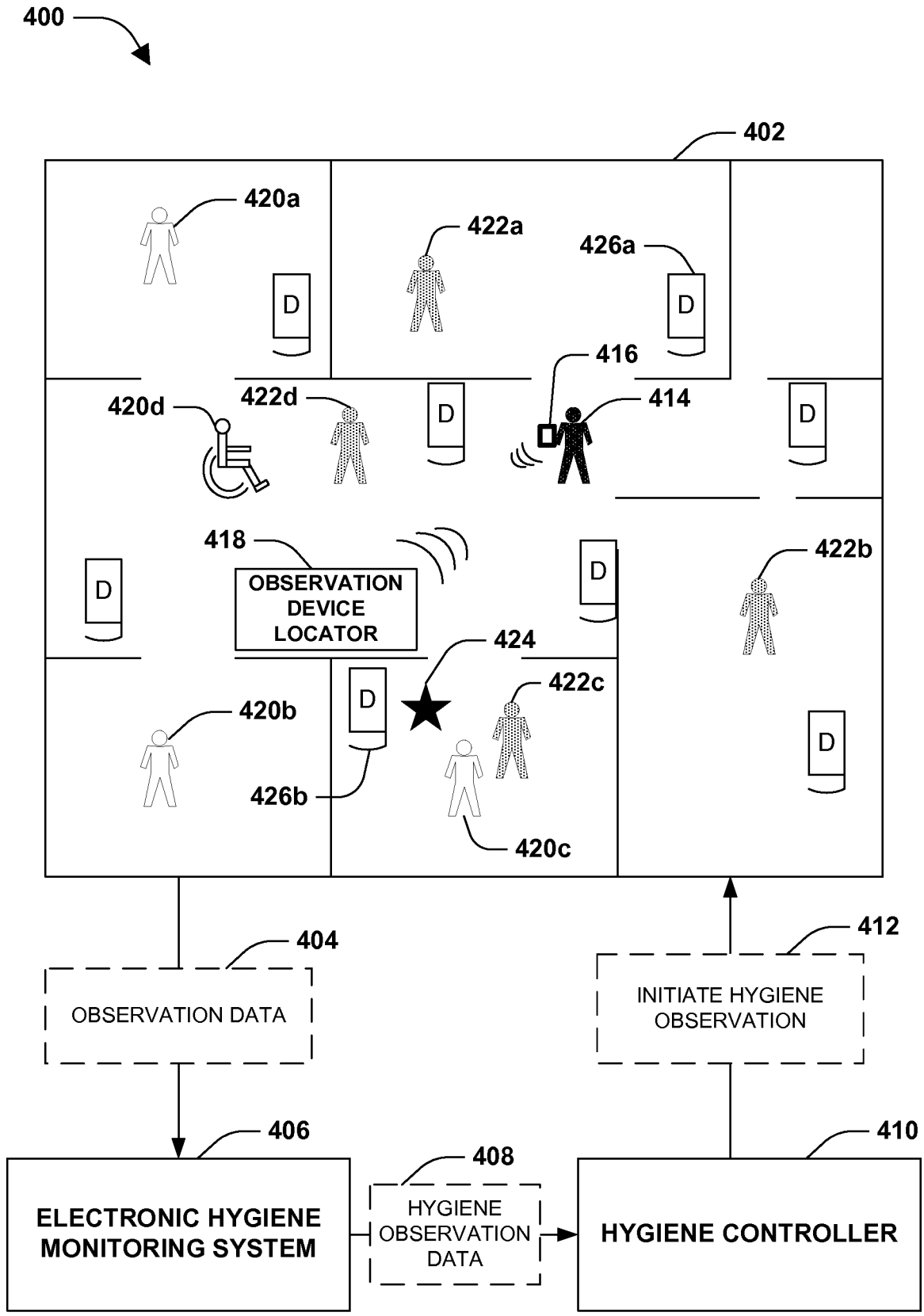
400
402
420a
422a
426a
D
D
416
420d
422d
D
414
D
418
OBSERVATION DEVICE LOCATOR
D
422b
D
424
422c
D
420b
426b
420c
404
412
OBSERVATION DATA
INITIATE HYGIENE OBSERVATION
406
408
410
ELECTRONIC HYGIENE MONITORING SYSTEM
HYGIENE OBSERVATION DATA
HYGIENE CONTROLLER

FIG. 4

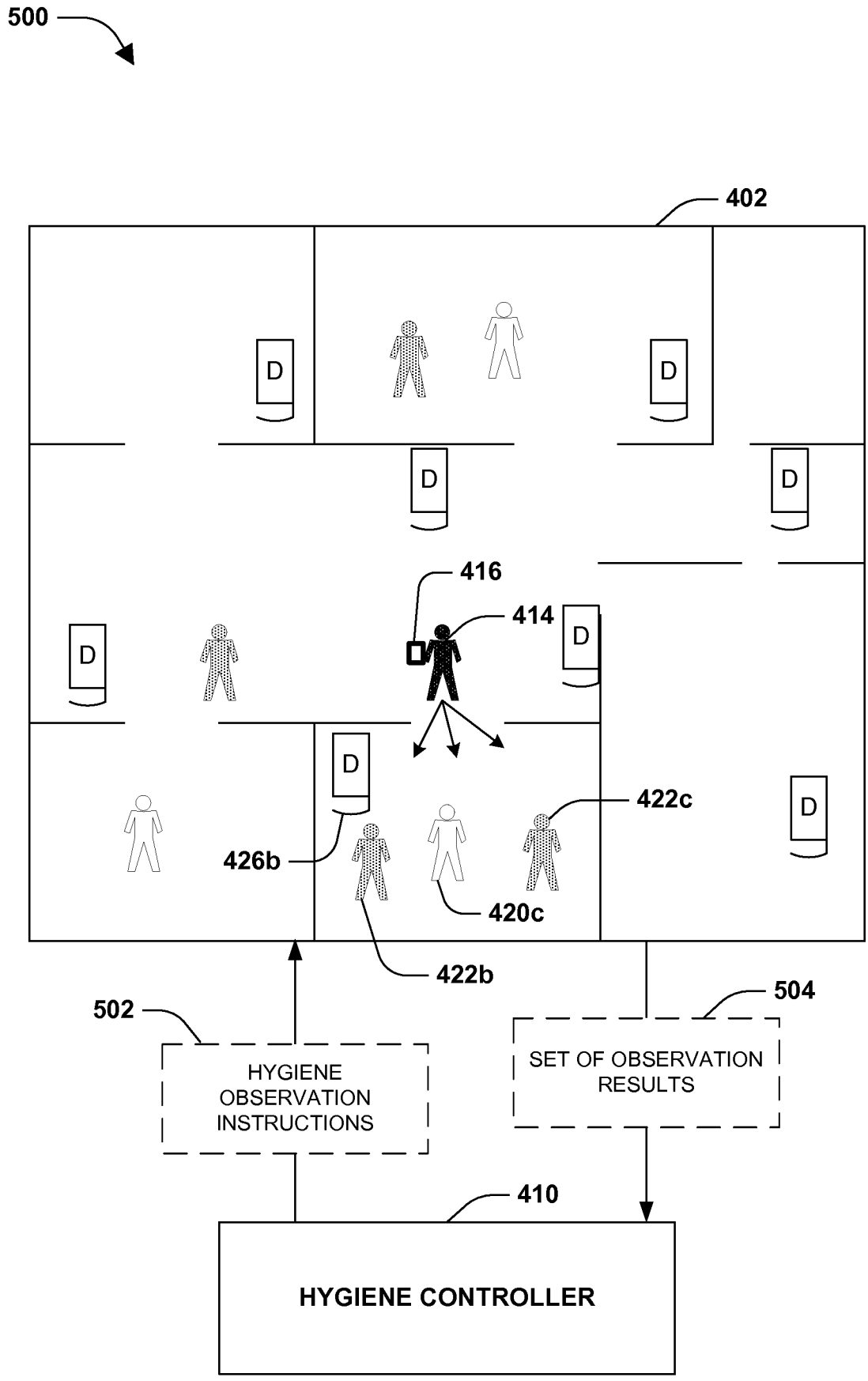
500
402
D
D
D
D
D
D
D
D
D
416
414
422c
426b
420c
422b
502
504
HYGIENE OBSERVATION INSTRUCTIONS
SET OF OBSERVATION RESULTS
410
HYGIENE CONTROLLER

FIG. 5

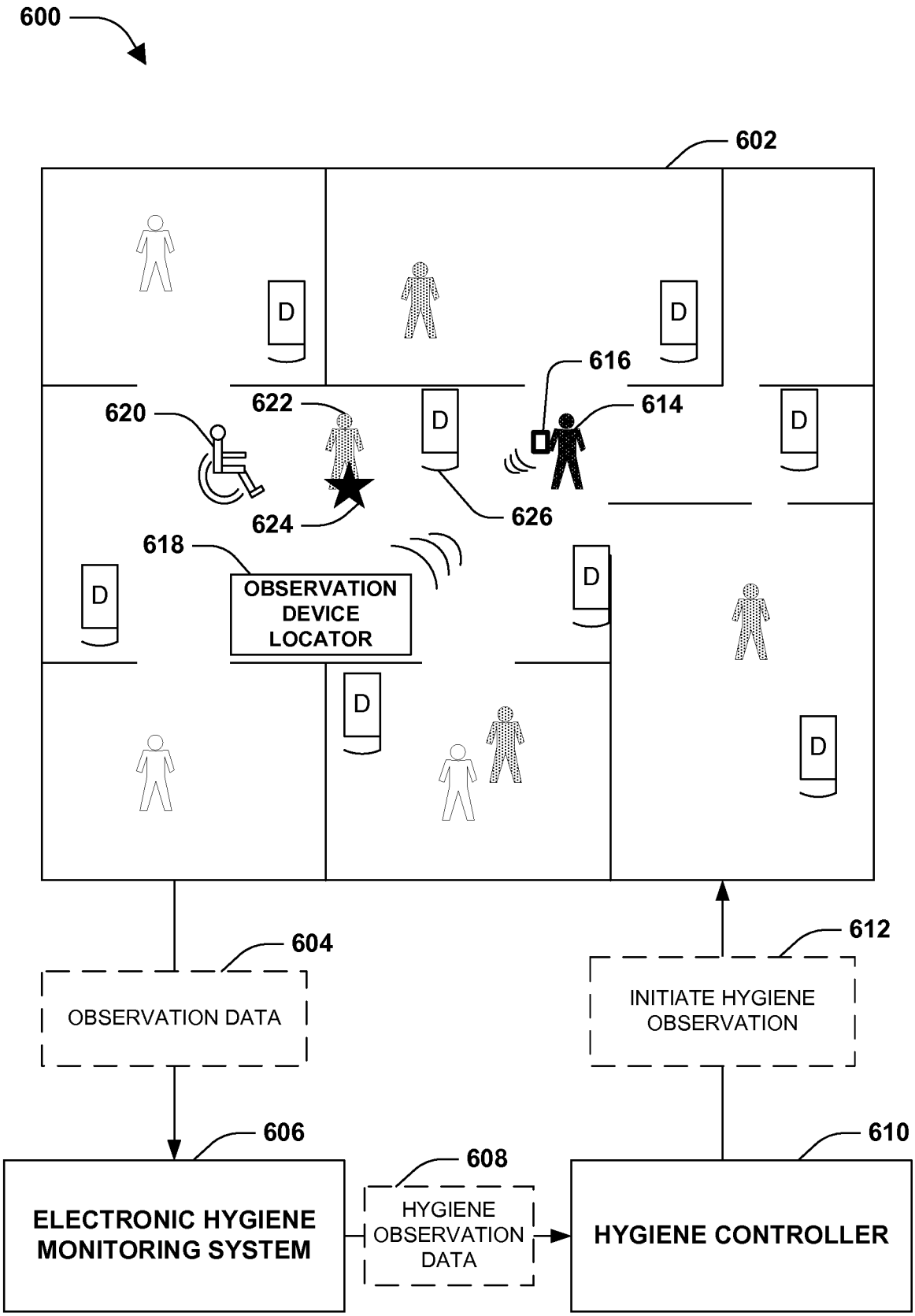
600
602
D
D
D
D
D
D
D
D
616
614
620
622
624
626
618
OBSERVATION DEVICE LOCATOR
604
OBSERVATION DATA
612
INITIATE HYGIENE OBSERVATION
606
608
610
ELECTRONIC HYGIENE MONITORING SYSTEM
HYGIENE OBSERVATION DATA
HYGIENE CONTROLLER

FIG. 6

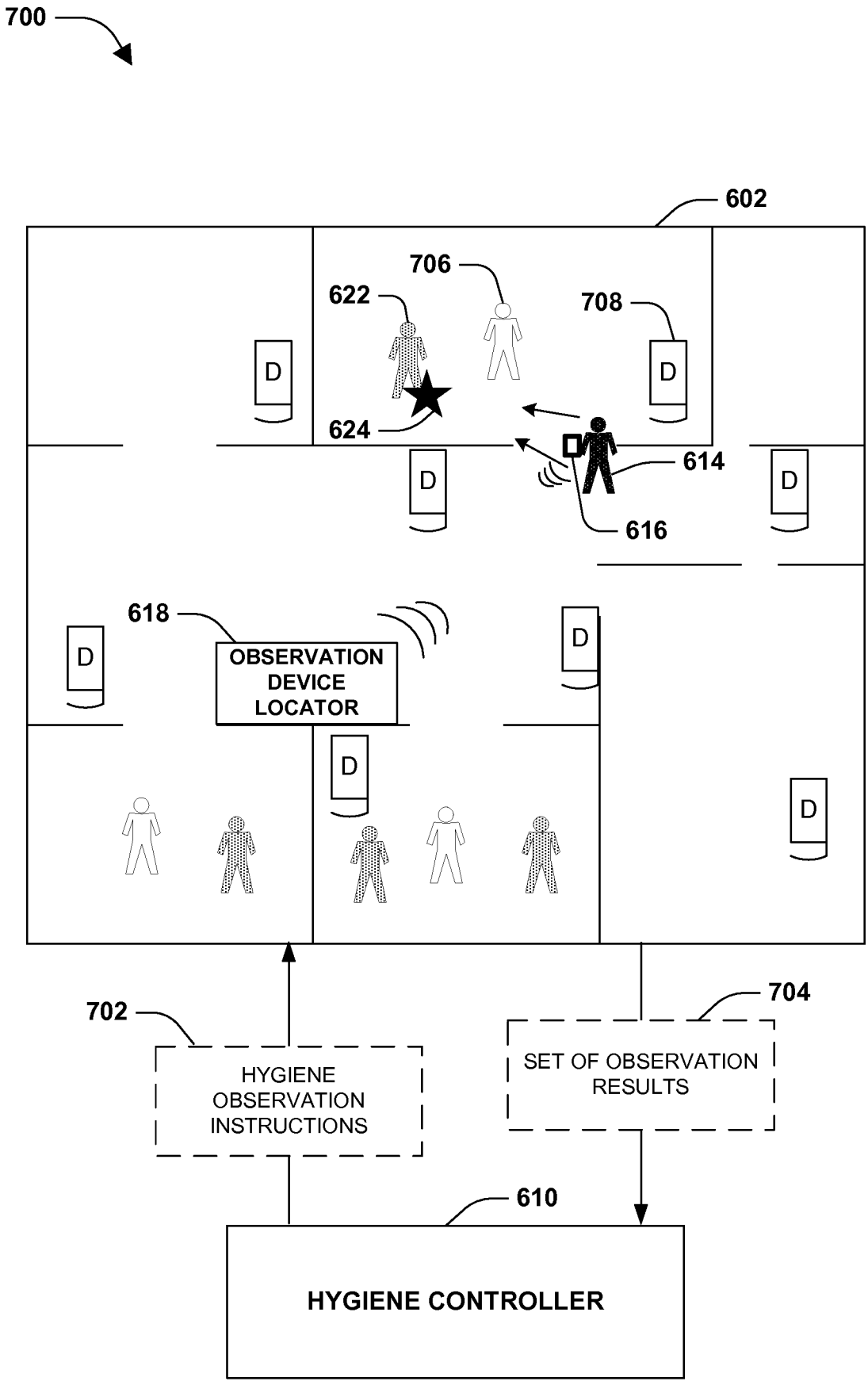
700
602
706
622
708
D
624
614
616
618
OBSERVATION DEVICE LOCATOR
702
HYGIENE OBSERVATION INSTRUCTIONS
704
SET OF OBSERVATION RESULTS
610
HYGIENE CONTROLLER

FIG. 7

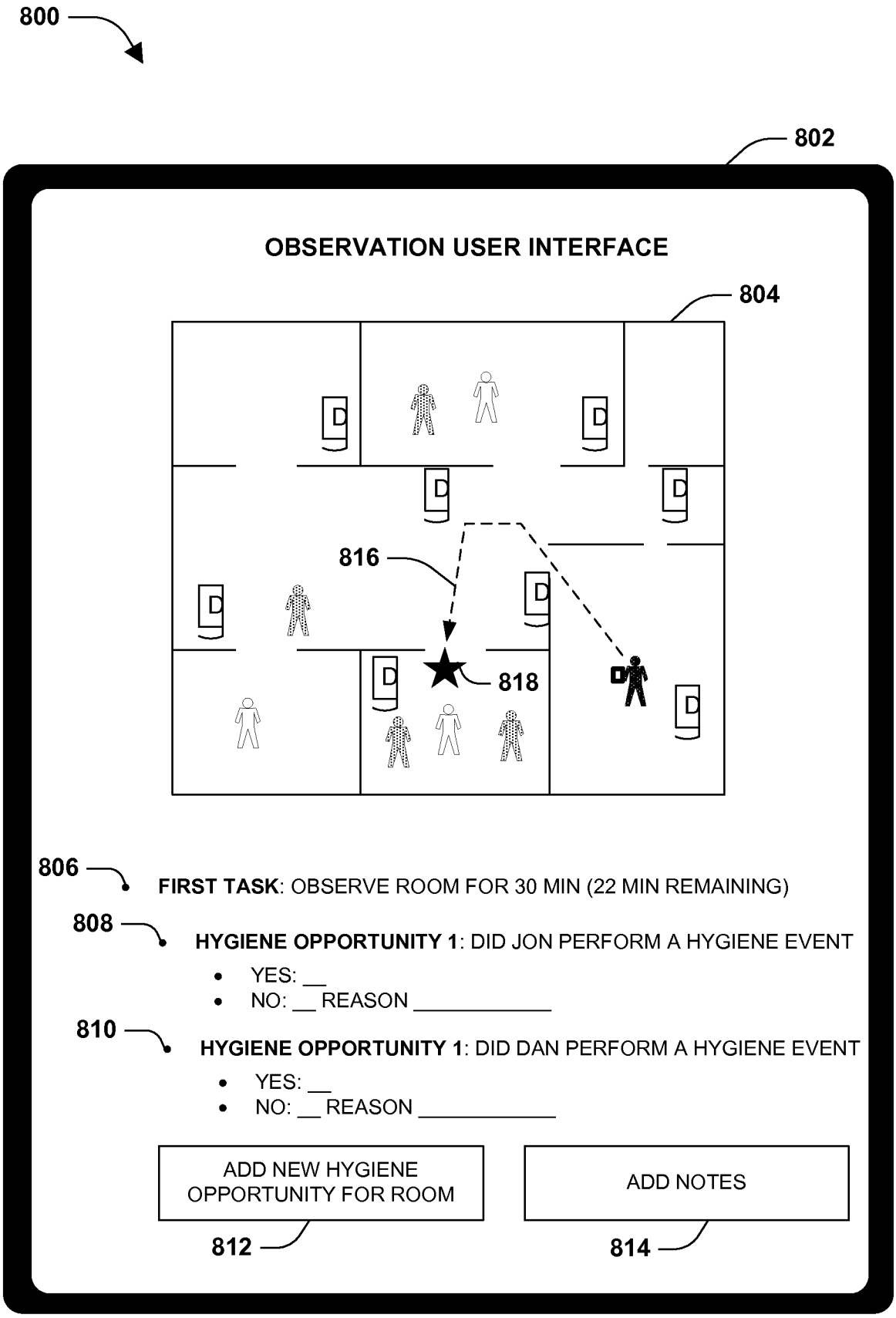
800
802
OBSERVATION USER INTERFACE
804
816
818
806
FIRST TASK: OBSERVE ROOM FOR 30 MIN (22 MIN REMAINING)
808
HYGIENE OPPORTUNITY 1: DID JON PERFORM A HYGIENE EVENT
YES: __
NO: __ REASON _____
810
HYGIENE OPPORTUNITY 1: DID DAN PERFORM A HYGIENE EVENT
YES: __
NO: __ REASON _____
ADD NEW HYGIENE OPPORTUNITY FOR ROOM
ADD NOTES
812
814

FIG. 8

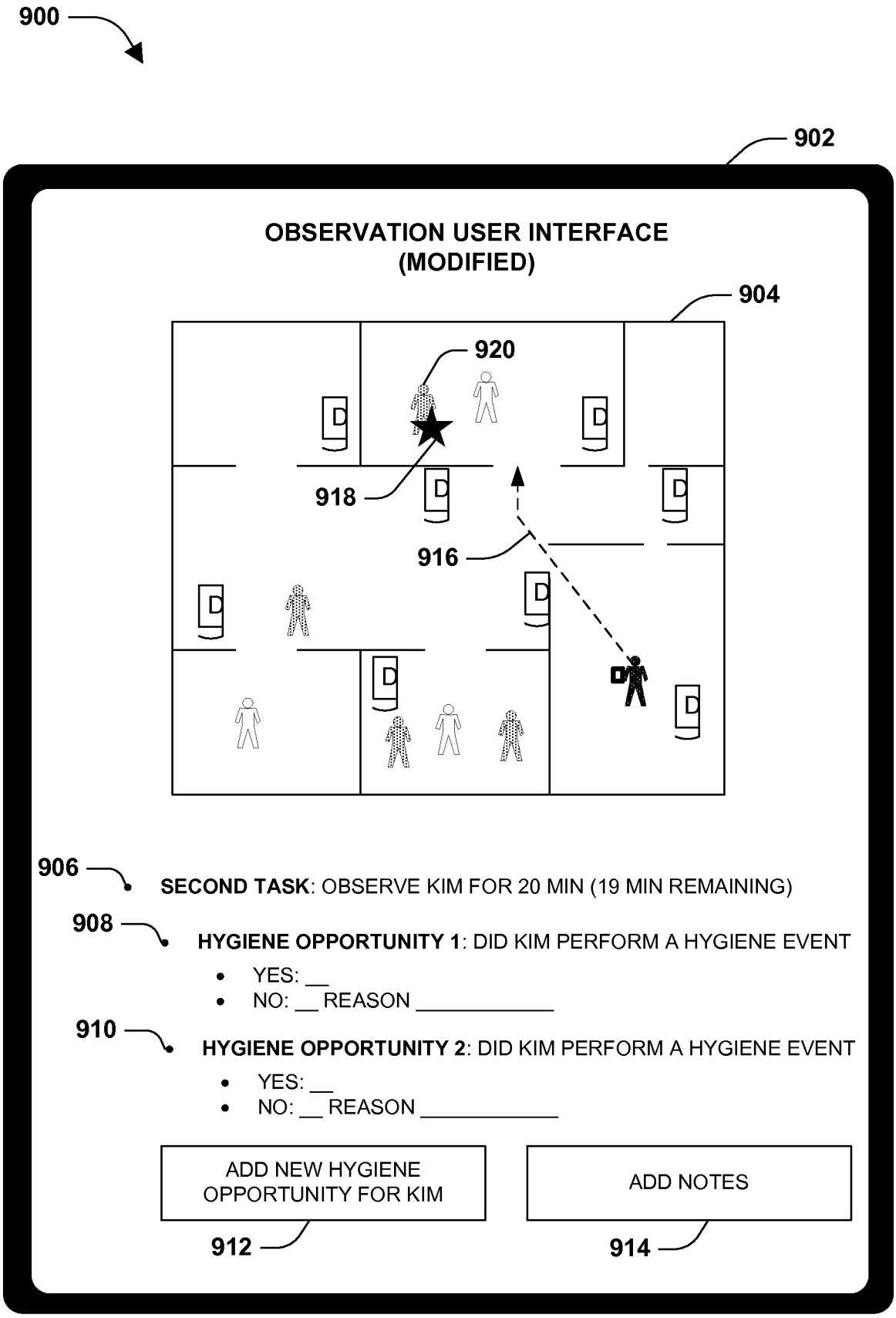
900
902
OBSERVATION USER INTERFACE
(MODIFIED)
904
920
918
916
906
SECOND TASK: OBSERVE KIM FOR 20 MIN (19 MIN REMAINING)
908
HYGIENE OPPORTUNITY 1: DID KIM PERFORM A HYGIENE EVENT
YES: __
NO: __ REASON _____
910
HYGIENE OPPORTUNITY 2: DID KIM PERFORM A HYGIENE EVENT
YES: __
NO: __ REASON _____
ADD NEW HYGIENE OPPORTUNITY FOR KIM
ADD NOTES
912
914

FIG. 9

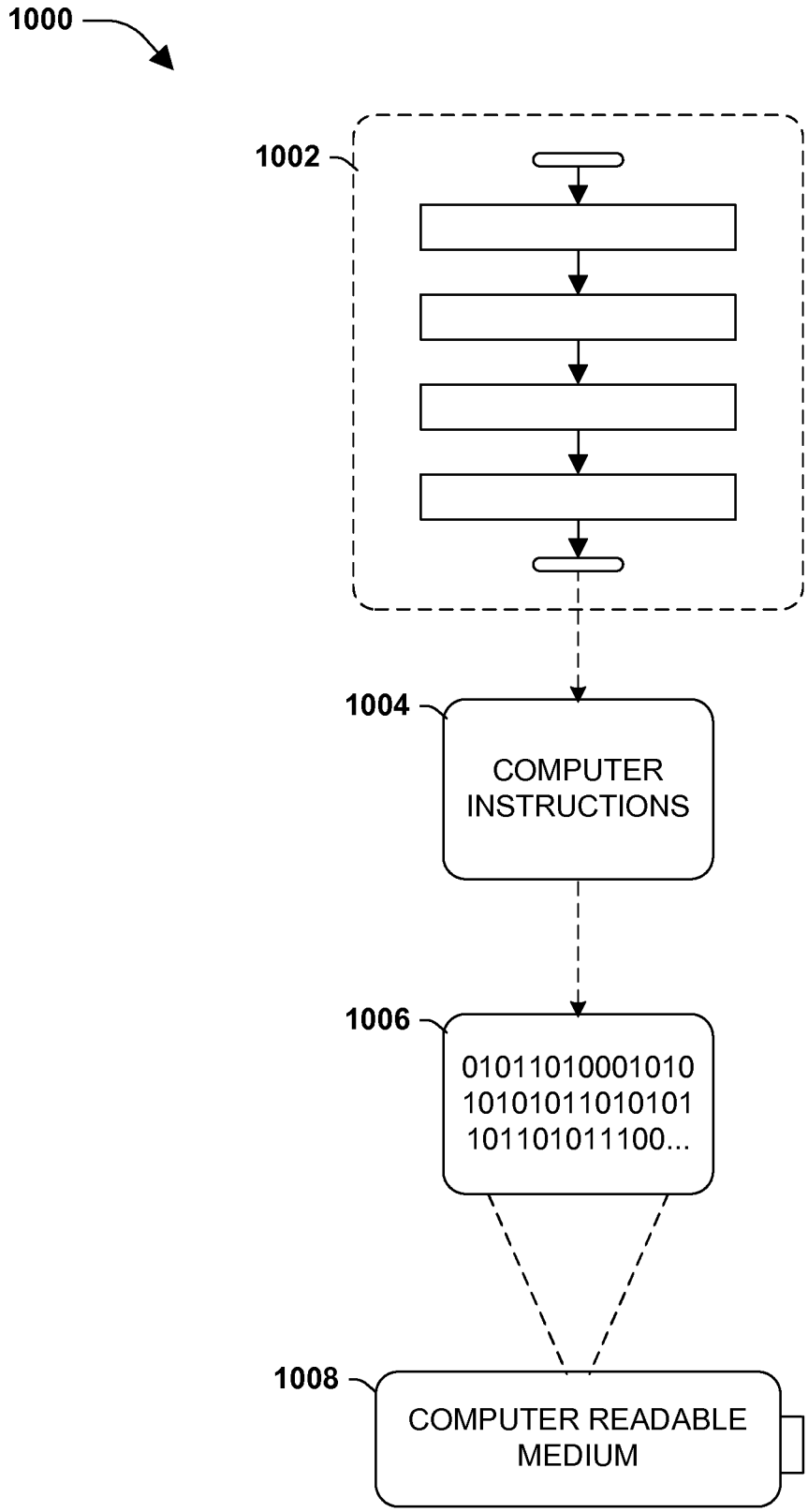
1000
1002
1004
COMPUTER INSTRUCTIONS
1006
01011010001010
10101011010101
101101011100...
1008
COMPUTER READABLE MEDIUM

FIG. 10

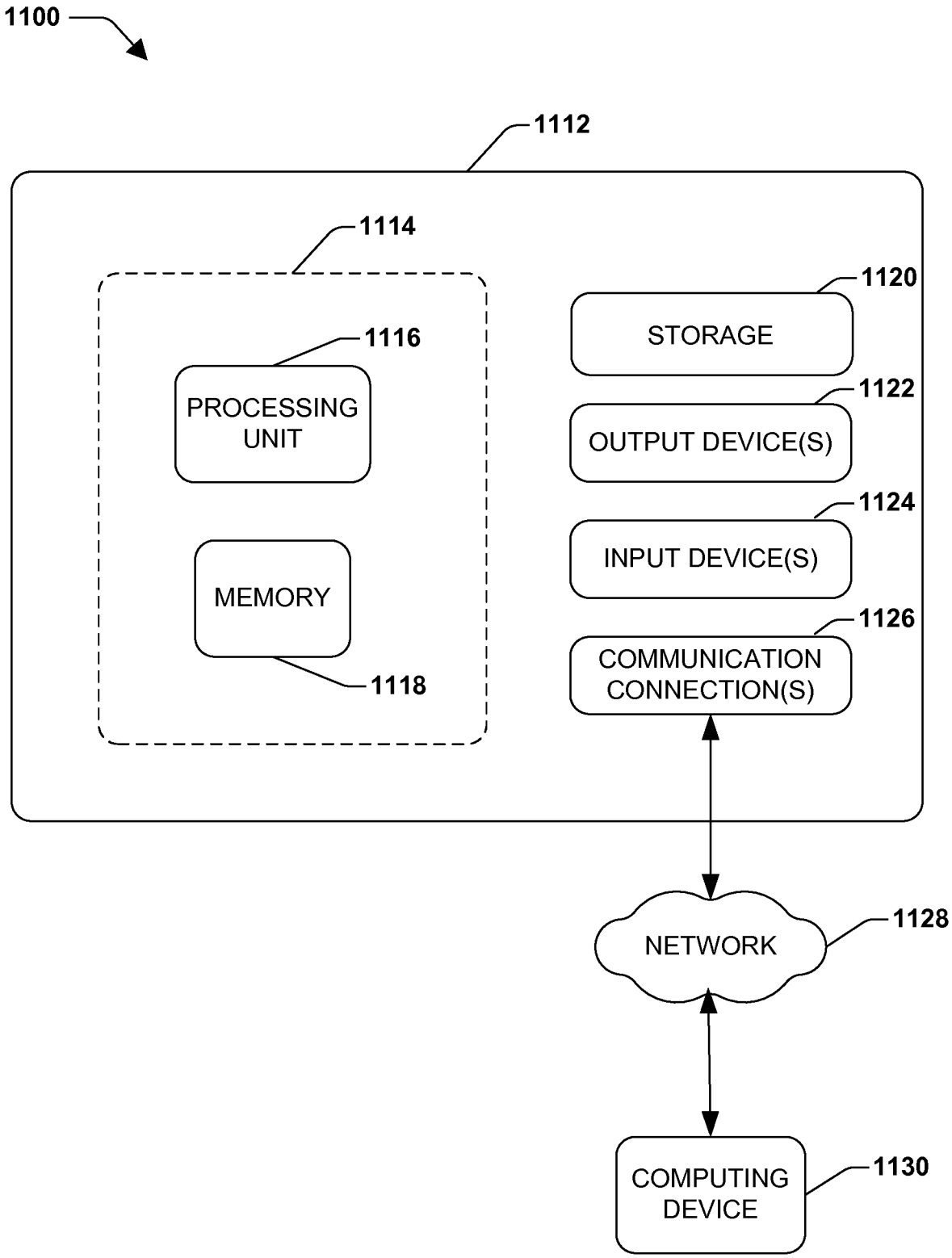
1100
1112
1114
1116
PROCESSING UNIT
MEMORY
1118
1120
STORAGE
1122
OUTPUT DEVICE(S)
1124
INPUT DEVICE(S)
1126
COMMUNICATION CONNECTION(S)
NETWORK
1128
COMPUTING DEVICE
1130

FIG. 11

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2014/042273

A. CLASSIFICATION OF SUBJECT MATTER
INV. G06F19/00
ADD.

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 G08B

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)
EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2010/328076 A1 (KYLE JAMES ROBERT [CA] ET AL) 30 December 2010 (2010-12-30) the whole document	1-20
A	US 2010/153374 A1 (LEBLOND CLAUDE W [US] ET AL) 17 June 2010 (2010-06-17) the whole document	1-20
A	WO 2011/062658 A1 (VERSUS TECHNOLOGY INC [US]; TENARVITZ HENRY J [US]; WISER ROBERT [US]) 26 May 2011 (2011-05-26) the whole document	1-20
A	WO 2009/134931 A2 (MERITECH INC [US]; BARNHILL PAUL [US]; GLENN JAMES [US]; PRODANOVICH T) 5 November 2009 (2009-11-05) 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

Date of the actual completion of the international search	Date of mailing of the international search report
22 October 2014	30/10/2014

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Itoafa, Alex

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/US2014/042273

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2010328076 A1	30-12-2010	NONE	
US 2010153374 A1	17-06-2010	US 2010153374 A1	17-06-2010
		US 2011093313 A1	21-04-2011
WO 2011062658 A1	26-05-2011	AU 2010322439 A1	31-05-2012
		CA 2780915 A1	26-05-2011
		EP 2502216 A2	26-09-2012
		US 2011121974 A1	26-05-2011
		WO 2011062658 A1	26-05-2011
WO 2009134931 A2	05-11-2009	US 2009267776 A1	29-10-2009
		US 2009272405 A1	05-11-2009
		US 2009273477 A1	05-11-2009
		US 2009299787 A1	03-12-2009
		US 2009301523 A1	10-12-2009
		US 2012073604 A1	29-03-2012
		WO 2009134931 A2	05-11-2009