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(54) **CONTEXT-BASED USER INTERFACE TO MEDICAL DATABASE**

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G16H 50/20	(2018.01)
G16H 80/00	(2018.01)

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

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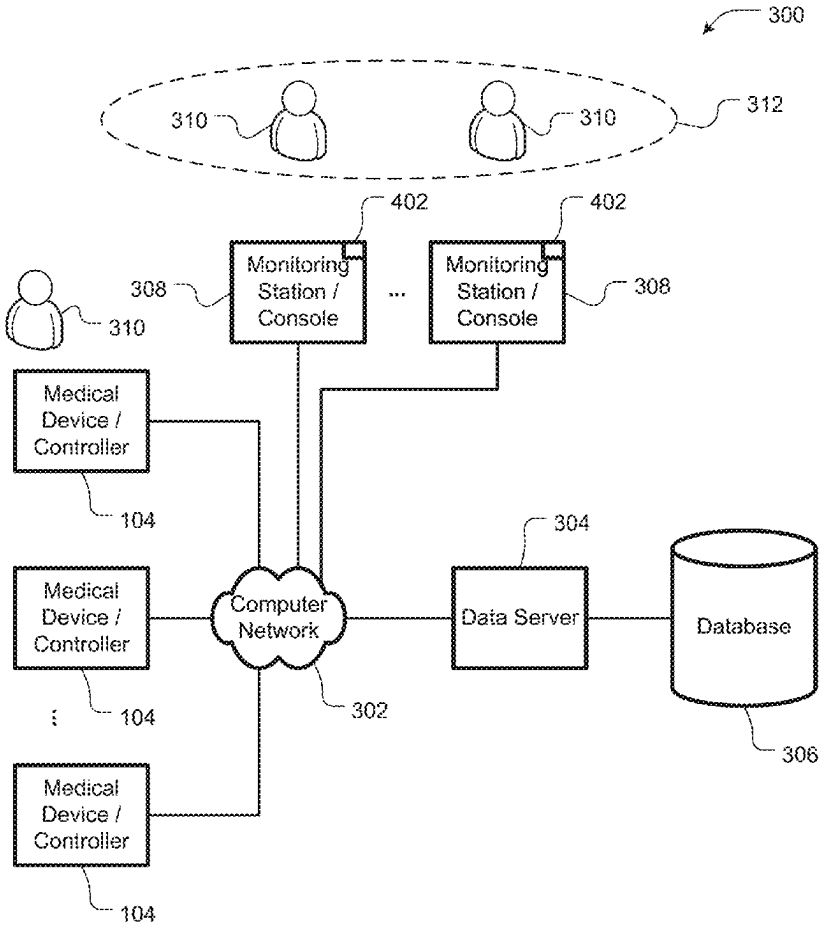
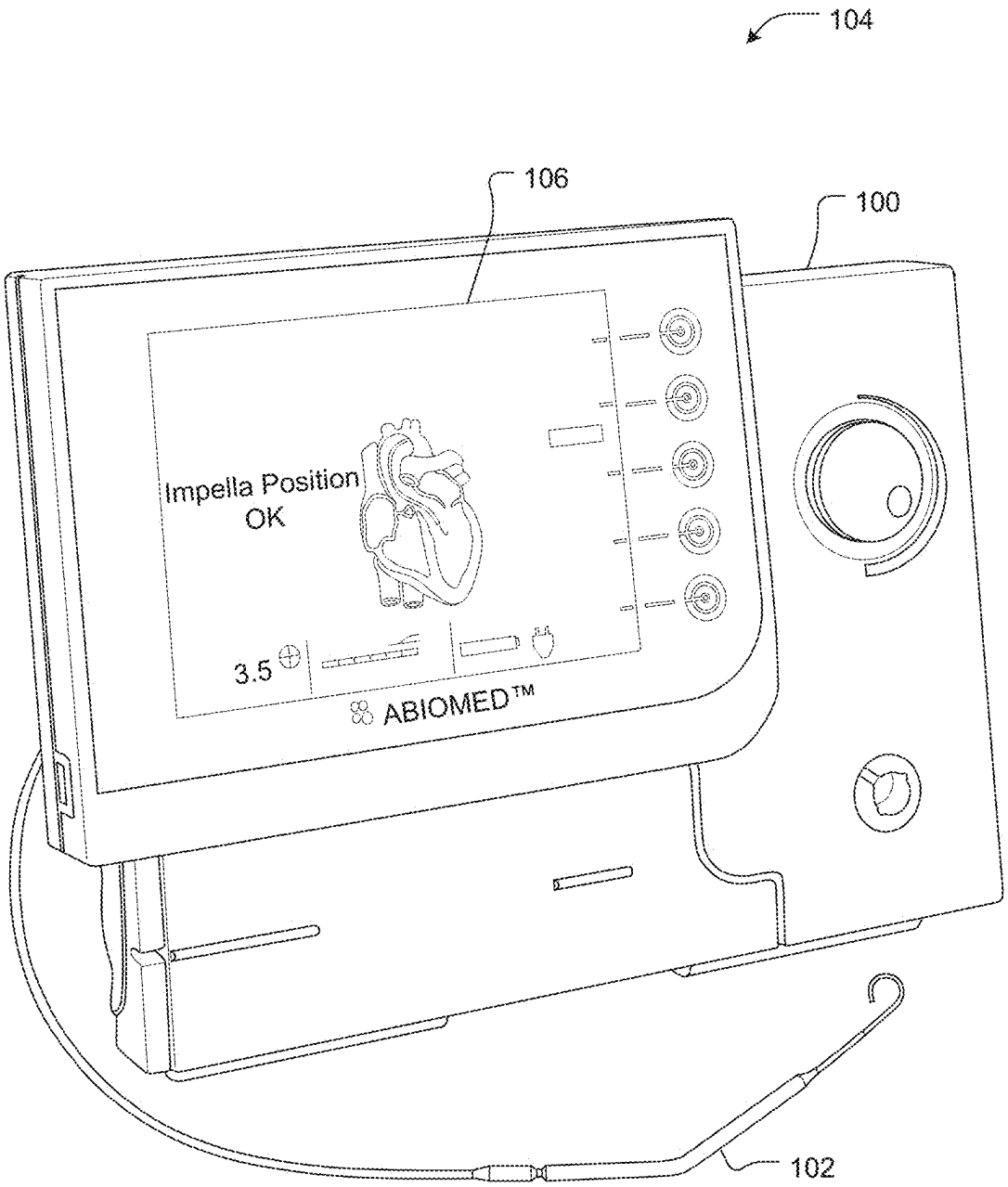
(57) **ABSTRACT**

A user interface to a medical database stores context information from previous queries and uses the context information as part of information selection criteria for a current query, without requiring the users to fully specify the information selection criteria in each query. The context information is automatically stored as a profile for each user, for each group of users and, optionally, for each institution to which a user is affiliated. In response to a current user query, a combination of the information selection criterion currently entered by the user and one or more information selection criteria previously entered by the user, group and (optionally) institution is used to query the medical database. Optionally, a user's group membership may be automatically determined, based on current physical location of the user and potential groups, for example as estimated from a meeting calendar or signals received by a wireless access point.





(Prior Art)
FIG. 1

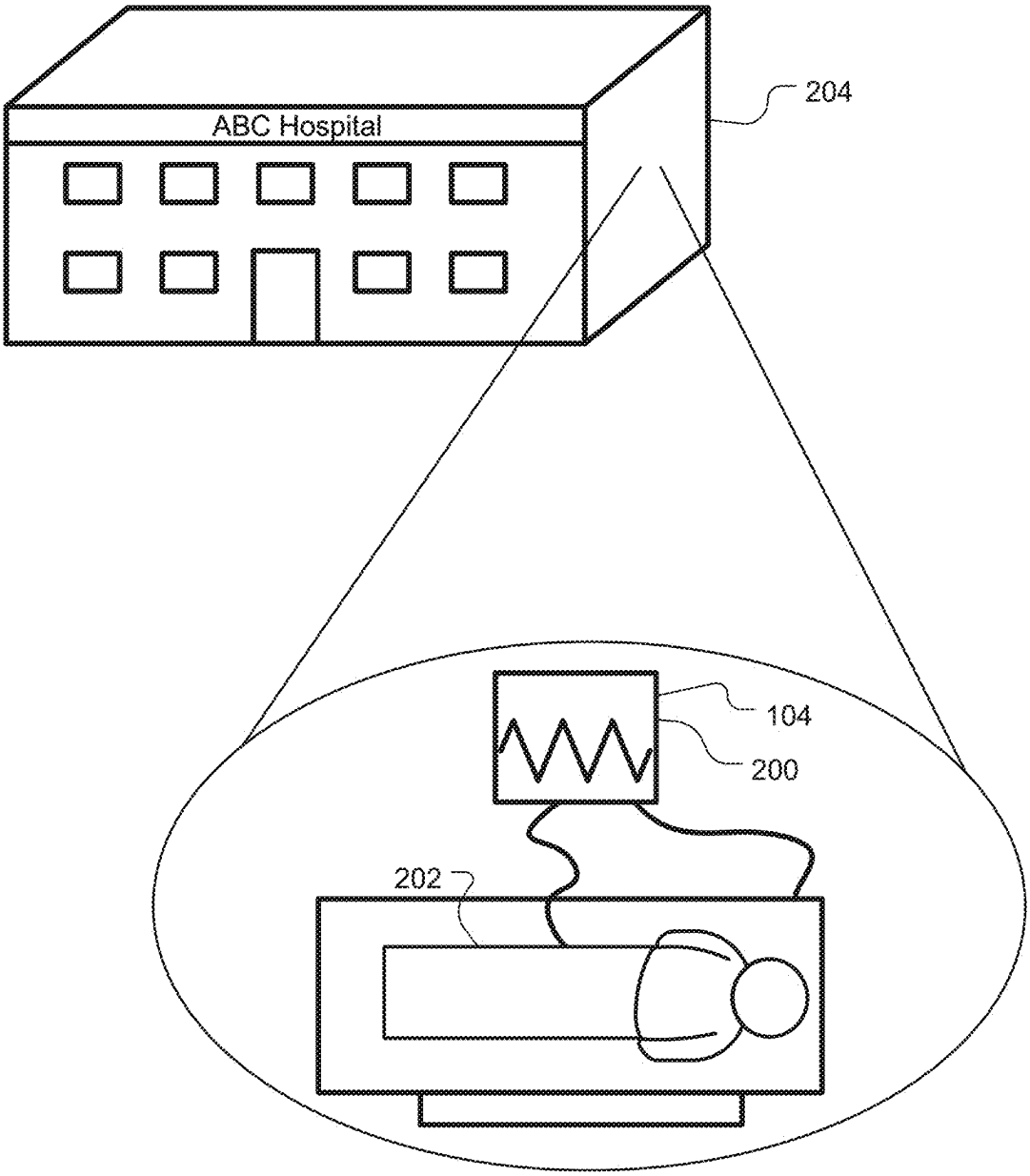


FIG. 2

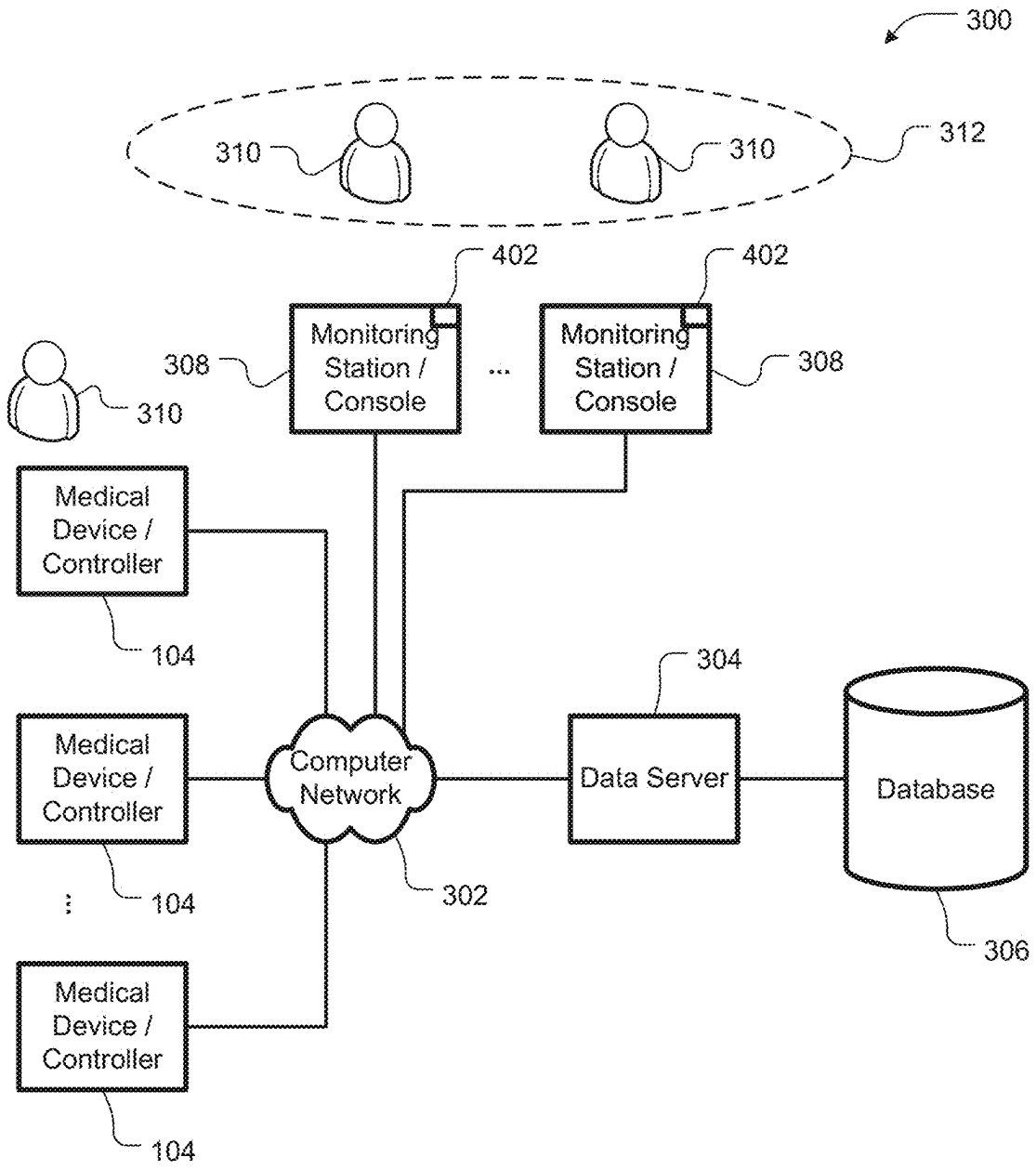

300
310
310
312
402
402
Monitoring Station / Console
Monitoring Station / Console
308
308
310
Medical Device / Controller
104
Medical Device / Controller
104
Medical Device / Controller
104
Computer Network
302
304
Data Server
Database
306

FIG. 3

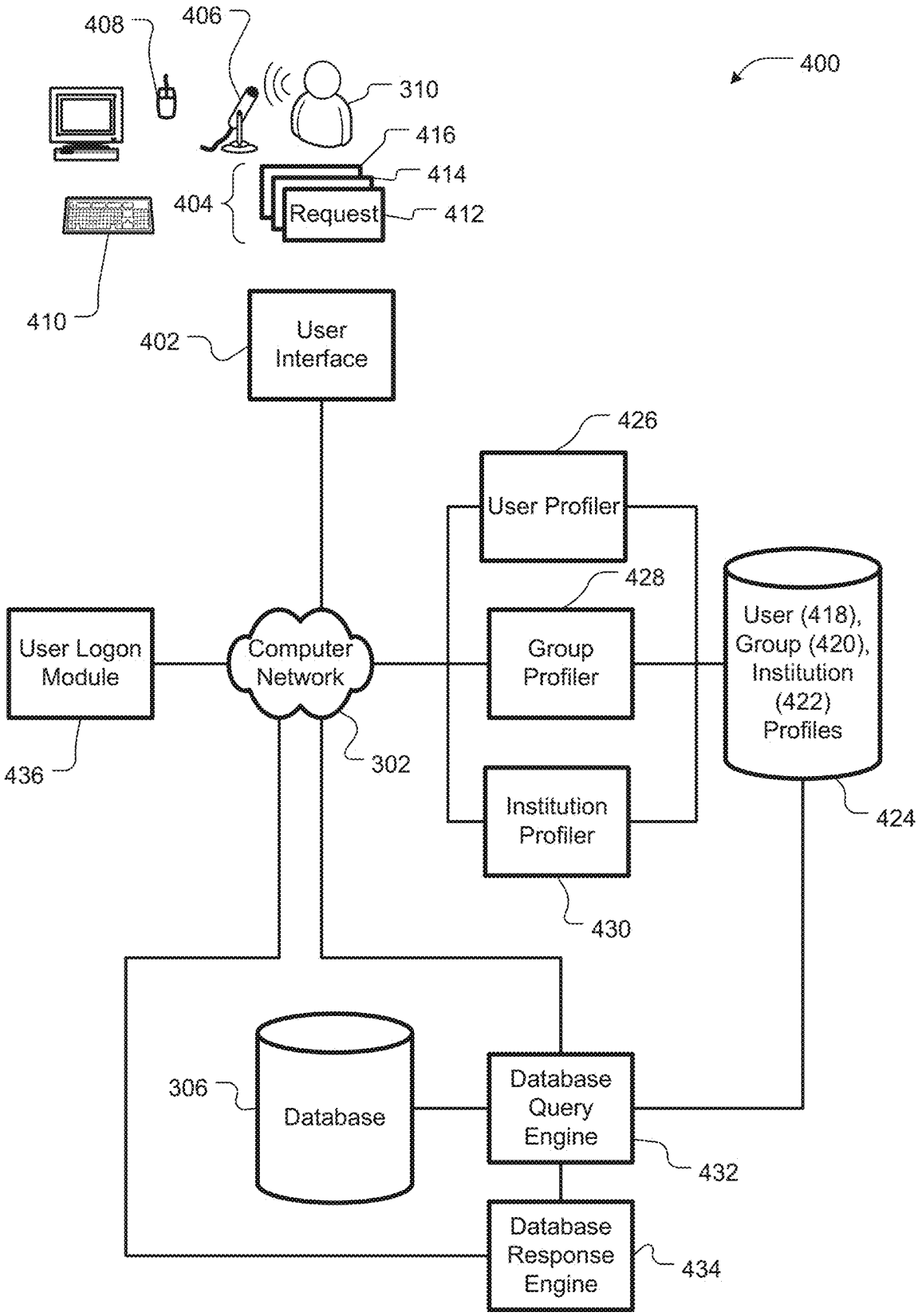

400
408
406
310
416
414
404
Request
412
410
402
User Interface
426
User Profiler
428
User Logon Module
Computer Network
Group Profiler
User (418), Group (420), Institution (422) Profiles
436
302
Institution Profiler
424
430
306
Database
Database Query Engine
432
Database Response Engine
434

FIG. 4

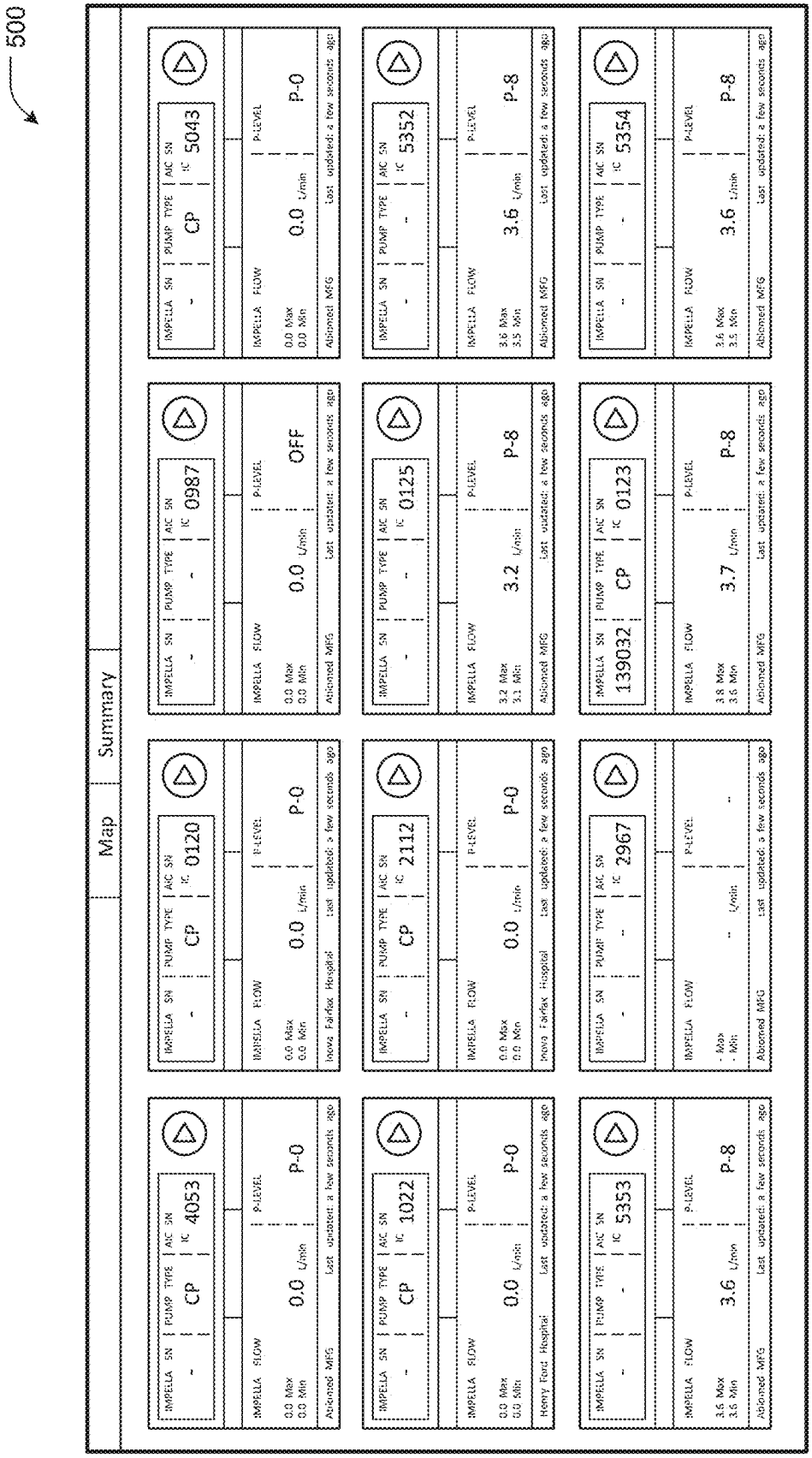

500
Map
Summary
IMPELLA SN
PUMP TYPE
AIC SN
IC
IMPELLA FLOW
P-LEVEL
Abiomed MFG
Last updated: a few seconds ago
Henry Ford Hospital
Inova Fairfax Hospital
CP
4053
0120
0987
5043
1022
2112
0125
5353
2967
0123
5354
5352
P-0
P-8
OFF
0.0 L/min
3.2 L/min
3.6 L/min
3.7 L/min
139032

FIG. 5

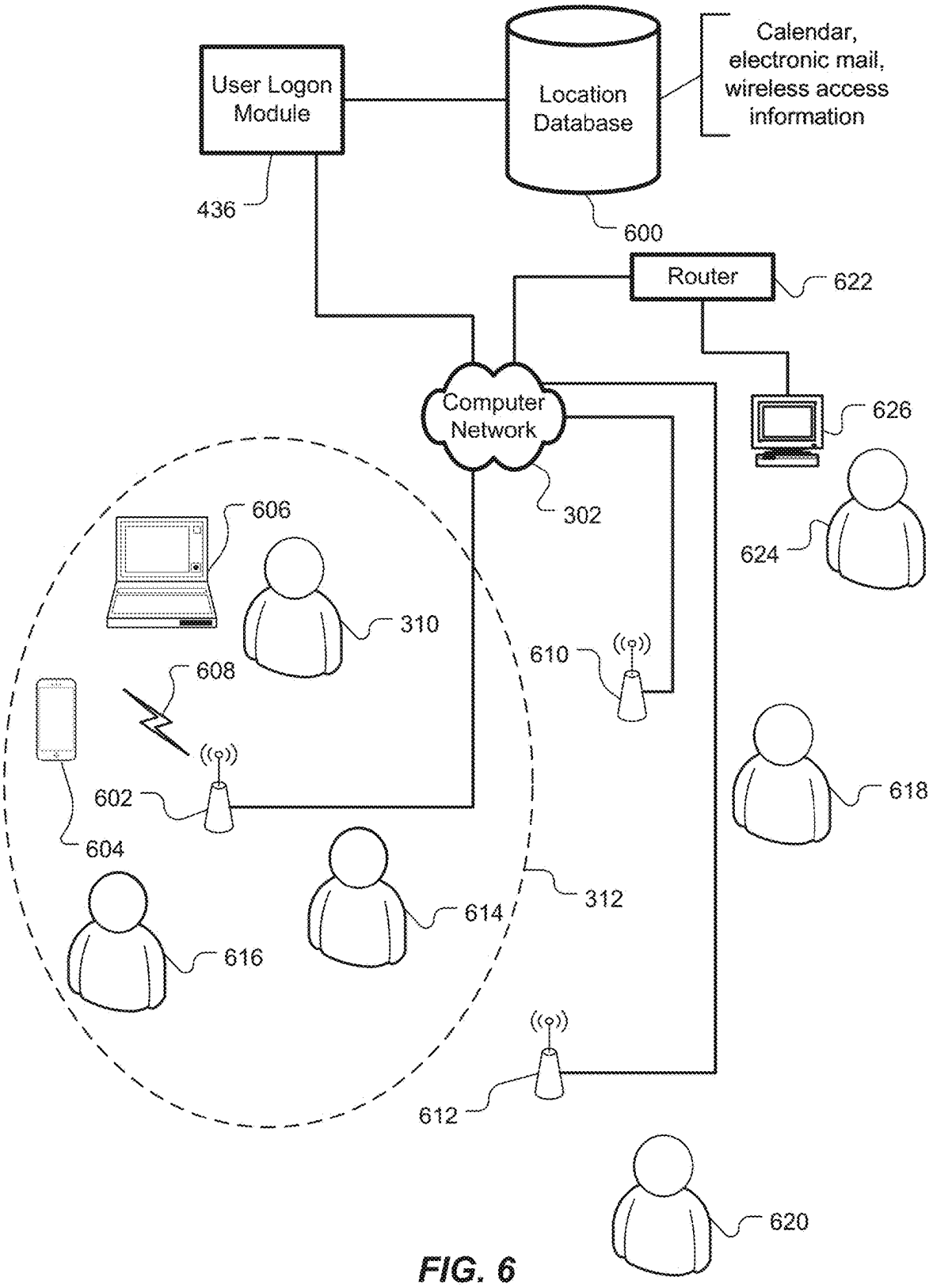

User Logon Module
Location Database
Calendar, electronic mail, wireless access information
436
600
Router
622
Computer Network
302
626
624
606
310
608
610
602
604
618
312
614
616
612
620

FIG. 6

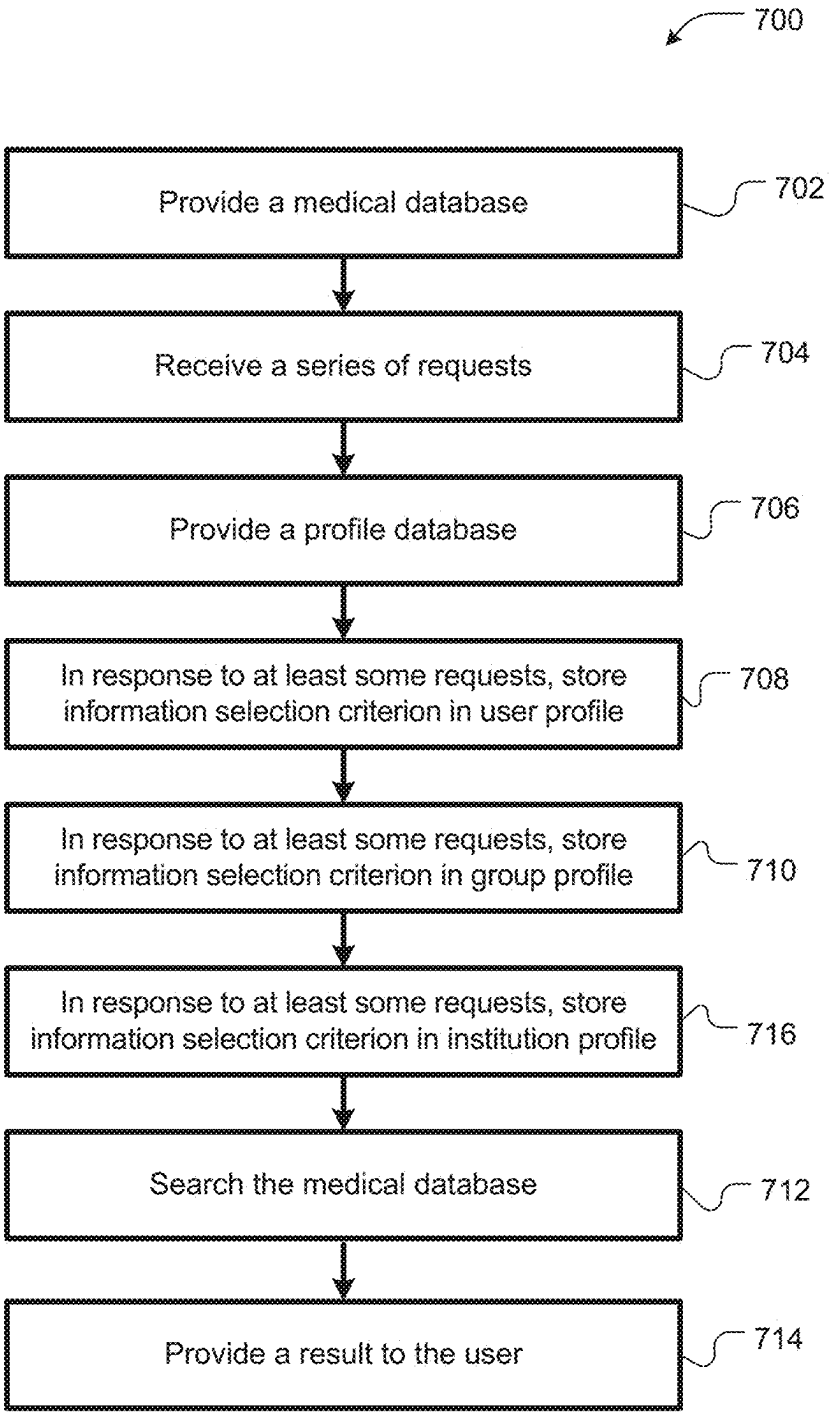

700
Provide a medical database
702
Receive a series of requests
704
Provide a profile database
706
In response to at least some requests, store information selection criterion in user profile
708
In response to at least some requests, store information selection criterion in group profile
710
In response to at least some requests, store information selection criterion in institution profile
716
Search the medical database
712
Provide a result to the user
714

FIG. 7

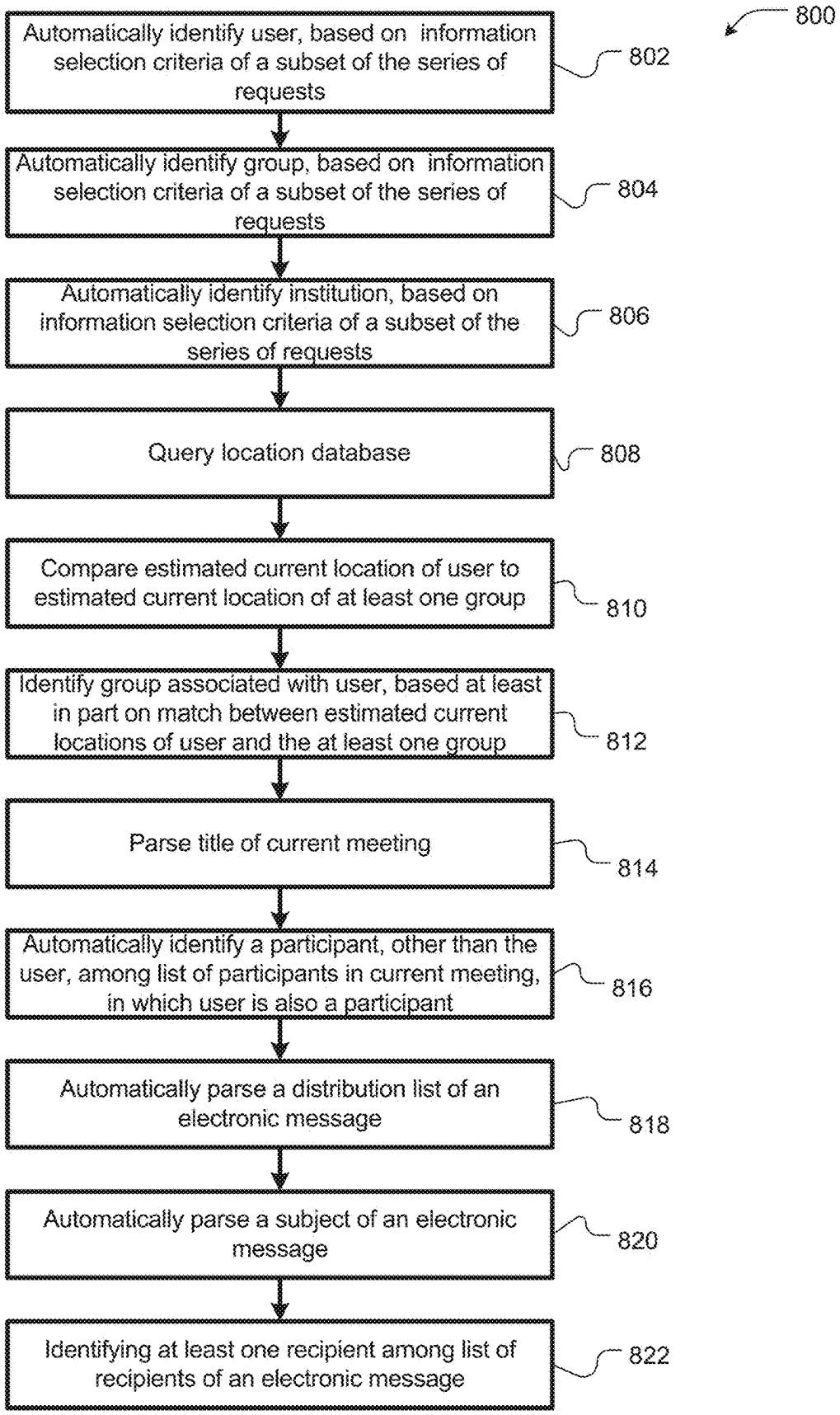

800
Automatically identify user, based on information selection criteria of a subset of the series of requests
802
Automatically identify group, based on information selection criteria of a subset of the series of requests
804
Automatically identify institution, based on information selection criteria of a subset of the series of requests
806
Query location database
808
Compare estimated current location of user to estimated current location of at least one group
810
Identify group associated with user, based at least in part on match between estimated current locations of user and the at least one group
812
Parse title of current meeting
814
Automatically identify a participant, other than the user, among list of participants in current meeting, in which user is also a participant
816
Automatically parse a distribution list of an electronic message
818
Automatically parse a subject of an electronic message
820
Identifying at least one recipient among list of recipients of an electronic message
822

FIG. 8

CONTEXT-BASED USER INTERFACE TO MEDICAL DATABASE

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application is a continuation of U.S. application Ser. No. 17/979,098, filed on Nov. 2, 2022, now allowed, which is a continuation of U.S. application Ser. No. 16/458,093, filed on Jun. 30, 2019, issued as U.S. Pat. No. 11,527,322, the disclosures of which are incorporated herein by reference.

BACKGROUND

[0002] The present invention relates to user interfaces to databases and, more particularly, to user interfaces to medical databases, in which information selection criteria from previous queries are used in a current query, without requiring a user to repeat the previous information selection criteria.

[0003] Many patients are connected to medical devices temporarily or longer. For example, heart attack victims may have heart pumps implanted temporarily to reduce loads on the patients' hearts, while the hearts recover. Heart monitors, blood pressure monitors, infusion pumps and many other types of medical devices may be connected to patients for longer terms, such as while the patients are admitted to hospitals. Remote monitoring systems, such as the Impella Connect remote monitoring system available from Abiomed, Inc., Danvers, MA, enable clinicians and others to remotely monitor such medical devices. However, with a large number of medical devices distributed across a large number of medical institutions, it is sometimes difficult for a clinician to easily specify a single medical device, patient or institution of interest, or a set of medical devices, patients and/or institutions of interest.

BRIEF SUMMARY

[0004] An embodiment of the present invention provides a medical database query system. The medical database query system is usable by a plurality of users. Each user is associated with at least one group of users.

[0005] A first database, of the medical database query system, is configured to store information about at least one of: (a) a plurality of medical devices, (b) a plurality of medical institutions and (c) a plurality of patients. Each medical device is configured for connection to a respective patient. Each medical institution is configured to admit patients and house medical devices configured for connection to respective patients. The information about the plurality of patients includes information about medical institutions, at which respective ones of the patients are currently admitted, and information about medical devices, to which respective ones of the patients are currently connected.

[0006] A human user interface is configured to receive, from a user, a series of requests. Each request includes a request for information from the database. Each request includes a respective information selection criterion.

[0007] A second database is configured to store, for each user, corresponding user profile information and, for each group of users, corresponding group profile information.

[0008] A user profiler is configured to store, in response to at least some requests of the series of requests, the information selection criterion of each such request into the second database in association with the user who made the at least some requests, thereby augmenting the user profile information for the user.

[0009] A group profiler is configured to store, in response to at least some requests of the series of requests, the information selection criterion of each such request into the second database in association with at least one group associated with the user who made the at least some requests, thereby augmenting the group profile information for the at least one group.

[0010] A database query engine is configured to search the first database. The search is based on a combination of: (a) an information selection criterion from a current request of the series of requests, (b) at least one information selection criterion from the user profile information corresponding to the user who made the current request and (c) at least one information selection criterion from the group profile information corresponding to a group associated with the user who made the current request.

[0011] A database response engine is configured to provide to the user a result returned by the database query engine.

[0012] Optionally, in any embodiment, each user may be associated with an institution. In such an embodiment, the second database is further configured to store, for each institution, corresponding institution profile information. Such an embodiment also includes an institution profiler. The institution profiler is configured to store, in response to at least some requests of the series of requests, the information selection criterion of each such request into the second database in association with the institution associated with the user who made the at least some requests, thereby augmenting the institution profile information for the institution. In this embodiment, the combination, upon which the database query engine is configured to search the first database, includes: (d) at least one information selection criterion from the institution profile information corresponding to an institution associated with the user who made the current request.

[0013] Optionally, any embodiment may include a user logon module configured to automatically identify the user, based on the respective information selection criteria of a subset of the series of requests.

[0014] Optionally, in any embodiment with a user logon module, the user logon module may be further configured to automatically identify the group associated with the user, based on the respective information selection criteria of a subset of the series of requests.

[0015] Optionally, in any embodiment with a user logon module, the user logon module may be further configured to automatically identify the institution associated with the user, based on the respective information selection criteria of a subset of the series of requests.

[0016] Optionally, in any embodiment with a user logon module, the user logon module may be further configured to automatically query a third database. The third database may be configured to store information about a plurality of users including, for each user, an estimated current location of the user. The third database may be further configured to store information about a plurality of groups of users including, for each group, an estimated current location of the group. The user logon module may be further configured to automatically compare the estimated current location of the user to the estimated current location of at least one group of the

plurality of groups and identify the group associated with the user, based on a match between the estimated current location of the user and the estimated current location of the at least one group of the plurality of groups.

[0017] Optionally, in any embodiment with a third database, the third database may include a calendar database configured to store information about a plurality of meetings including, for each meeting, a location of the meeting, a time of the meeting and a list of participants in the meeting.

[0018] Optionally, in any embodiment with a user logon module, in order to identify the group associated with the user, the user logon module may be configured to automatically parse a title of a current meeting, of the plurality of meetings, in which the user is a participant.

[0019] Optionally, in any embodiment with a user logon module, in order to identify the group associated with the user, the user logon module may be configured to automatically identify at least one participant, other than the user, among the list of participants in a current meeting, of the plurality of meetings, in which the user is also a participant.

[0020] Optionally, in any embodiment with a third database, the third database may include an electronic mail database configured to store a plurality of electronic messages including, for each electronic message, a subject and a list of recipients of the electronic message.

[0021] Optionally, in any embodiment with a user logon module, in order to identify the group associated with the user, the user logon module may be configured to automatically parse a distribution list of an electronic message of the plurality of electronic messages.

[0022] Optionally, in any embodiment with a user logon module, in order to identify the group associated with the user, the user logon module may be configured to automatically parse a subject of an electronic message of the plurality of electronic messages.

[0023] Optionally, in any embodiment with a user logon module, in order to identify the group associated with the user, the user logon module may be configured to automatically identify at least one recipient among the list of recipients of an electronic message of the plurality of electronic messages.

[0024] Optionally, in any embodiment with a third database, the third database may be configured to store the estimated current location of the user, based on information from a wireless access point to which a wireless mobile device, that is registered to the user, is currently wirelessly connected.

[0025] Optionally, in any embodiment with a third database, the third database may be configured to store the estimated current location of the user, based on information from a wireless access point to which a wireless mobile device, that is registered to the user, is currently wirelessly connected, and store the estimated current location of the group, based on information from at least one wireless access point to which respective wireless mobile devices, that are registered to the respective users associated with the group, are currently wirelessly connected.

[0026] Optionally, in any embodiment, the human user interface may include a speech user interface and/or a graphical user interface and/or a text user interface.

[0027] Another embodiment of the present invention provides a method for querying a medical database. The medical database is accessible by a plurality of users. The method is usable by a plurality of users. Each user is associated with at least one group of users.

[0028] A first database is provided. The first database is configured to store information about at least one of: (a) a plurality of medical devices, (b) a plurality of medical institutions, and (c) a plurality of patients. Each medical device is configured for connection to a respective patient. Each medical institution is configured to admit patients and house medical devices configured for connection to respective patients. The information about the plurality of patients includes information about medical institutions, at which respective ones of the patients are currently admitted, and information about medical devices, to which respective ones of the patients are currently connected.

[0029] A series of requests is received from a user, via a human user interface. Each request includes a request for information from the database. Each request includes a respective information selection criterion.

[0030] A second database is provided. The second database is configured to store, for each user, corresponding user profile information and, for each group of users, corresponding group profile information.

[0031] In response to at least some requests of the series of requests, the information selection criterion of each such request is stored into the second database, in association with the user who made the at least some requests, thereby augmenting the user profile information for the user.

[0032] In response to at least some requests of the series of requests, the information selection criterion of each such request is stored into the second database, in association with at least one group associated with the user who made the at least some requests, thereby augmenting the group profile information for the at least one group.

[0033] The first database is searched, based on a combination of: (a) an information selection criterion from a current request of the series of requests, (b) at least one information selection criterion from the user profile information corresponding to the user who made the current request and (c) at least one information selection criterion from the group profile information corresponding to a group associated with the user who made the current request.

[0034] A result returned, as a result the searching of the first database, is provided to the user.

[0035] Optionally, in any embodiment, each user may be associated with an institution. In such an embodiment, the second database is further configured to store, for each institution, corresponding institution profile information. In such an embodiment, in response to at least some requests of the series of requests, the information selection criterion of each request is stored into the second database, in association with the institution associated with the user who made the at least some requests, thereby augmenting the institution profile information for the institution. In addition, the combination, upon which the first database is searched, includes: (d) at least one information selection criterion from the institution profile information corresponding to an institution associated with the user who made the current request.

[0036] Optionally, in any embodiment, the user may be automatically identified, based on the respective information selection criteria of a subset of the series of requests.

[0037] Optionally, in any embodiment, the group associated with the user may be automatically identified, based on the respective information selection criteria of a subset of the series of requests.

[0038] Optionally, in any embodiment, the institution associated with the user may be automatically identified, based on the respective information selection criteria of a subset of the series of requests.

[0039] Optionally, in any embodiment, a third database may be queried. The third database may be configured to store information about a plurality of users and a plurality of groups of users. The information about the plurality of users includes, for each user, an estimated current location of the user. The information about the plurality of groups of users includes, for each group, an estimated current location of the group. The estimated current location of the user may be compared to the estimated current location of at least one group of the plurality of groups. The group associated with the user may be identified, based at least in part on a match between the estimated current location of the user and the estimated current location of the at least one group of the plurality of groups.

[0040] Optionally, in any embodiment with a third database, the third database may include a calendar database configured to store information about a plurality of meetings including, for each meeting, a location of the meeting, a time of the meeting and a list of participants in the meeting.

[0041] Optionally, in any embodiment, identifying the group associated with the user may include automatically parsing a title of a current meeting, of the plurality of meetings, in which the user is a participant.

[0042] Optionally, in any embodiment, identifying the group associated with the user may include automatically identify at least one participant, other than the user, among the list of participants in a current meeting, of the plurality of meetings, in which the user is also a participant.

[0043] Optionally, in any embodiment with a third database, the third database may include an electronic mail database configured to store a plurality of electronic messages including, for each electronic message, a subject and a list of recipients of the electronic message.

[0044] Optionally, in any embodiment, identifying the group associated with the user may include automatically parsing a distribution list of an electronic message of the plurality of electronic messages.

[0045] Optionally, in any embodiment, identifying the group associated with the user may include automatically parsing a subject of an electronic message of the plurality of electronic messages.

[0046] Optionally, in any embodiment, identifying the group associated with the user may include identifying at least one recipient among the list of recipients of an electronic message of the plurality of electronic messages.

[0047] Optionally, in any embodiment with a third database, the third database may be configured to store the estimated current location of the user, based on information from a wireless access point to which a wireless mobile device, that is registered to the user, is currently wirelessly connected.

[0048] Optionally, in any embodiment with a third database, the third database may be configured to store the estimated current location of the user and the estimated current location of the group. The estimated current location of the user may be based on information from a wireless access point to which a wireless mobile device, that is registered to the user, is currently wirelessly connected. The estimated current location of the group may be based on information from at least one wireless access point to which respective wireless mobile devices, that are registered to the respective users associated with the group, are currently wirelessly connected.

[0049] Optionally, in any embodiment, the human user interface may include a speech user interface and/or a graphical user interface and/or a text user interface.

[0050] Yet another embodiment of the present invention provides a non-transitory computer-readable medium. The medium is encoded with instructions. When executed by a processor, the instructions establish processes for performing a computer-implemented method for querying a medical database usable by a plurality of users. Each user is associated with at least one group of users. The processes include the following:

[0051] A process configured to access a first database. The first database is configured to store information about at least one of: (a) a plurality of medical devices, (b) a plurality of medical institutions and (c) a plurality of patients. Each medical device is configured for connection to a respective patient. Each medical institution is configured to admit patients and house medical devices configured for connection to respective patients. The information about the plurality of patients includes information about medical institutions, at which respective ones of the patients are currently admitted, and information about medical devices, to which respective ones of the patients are currently connected.

[0052] A human user interface configured to receive, from a user, a series of requests. Each request including a request for information from the database. Each request includes a respective information selection criterion.

[0053] A second database. The second database is configured to store, for each user, corresponding user profile information and, for each group of users, corresponding group profile information.

[0054] A user profiler. The user profiler is configured to store, in response to at least some requests of the series of requests, the information selection criterion of each such request into the second database, in association with the user who made the at least some requests, thereby augmenting the user profile information for the user.

[0055] A group profiler. The group profiler is configured to store, in response to at least some requests of the series of requests, the information selection criterion of each such request into the second database, in association with at least one group associated with the user who made the at least some requests, thereby augmenting the group profile information for the at least one group.

[0056] A database query engine. The database query engine is configured to search the first database, based on a combination of: (a) an information selection criterion from a current request of the series of requests, (b) at least one information selection criterion from the user profile information corresponding to the user who made the current request and (c) at least one information selection criterion from the group profile information corresponding to a group associated with the user who made the current request.

[0057] A database response engine. The database response engine is configured to provide, to the user, a result returned by the database query engine.

BRIEF DESCRIPTION OF THE DRAWINGS

[0058] The invention will be more fully understood by referring to the following Detailed Description of Specific Embodiments in conjunction with the Drawings, of which:

[0059] FIG. **1** is a perspective view of an exemplary convention medical device controller and an exemplary conventional medical device, in this example a heart pump, coupled to the medical device controller, according to the prior art.

[0060] FIG. **2** is an illustration of an exemplary patient connected to an exemplary medical device, in this example a heart monitor, and admitted to an exemplary medical institution, in the context of an embodiment of the present invention.

[0061] FIG. **3** is a schematic block diagram of major components of a data storage and retrieval system for collecting, storing and retrieving operational data about medical devices, patients and medical institutions, such as the medical device of FIG. **1** and the patient and medical institution of FIG. **2**, in the context of an embodiment of the present invention.

[0062] FIG. **4** is a schematic block diagram of a medical database query system, including a medical database of FIG. **3**, according to an embodiment of the present invention.

[0063] FIG. **5** illustrates exemplary hypothetical results returned by a database query engine of the medical database query system of FIG. **4** and displayed to a user, such as by a monitoring station/console of FIG. **3**.

[0064] FIG. **6** is a schematic block diagram of optional components of the medical database query system of FIG. **4**, including a user logon module and a location database, according to respective embodiments of the present invention.

[0065] FIG. **7** is a flowchart schematically illustrating operations of the medical database query system of FIG. **4**, according to an embodiment of the present invention.

[0066] FIG. **8** is a flowchart schematically illustrating operations of an optional user logon module and location database of the medical database query system of FIGS. **4** and **5**, according to respective embodiments of the present invention.

DETAILED DESCRIPTION

[0067] Embodiments of the present invention provide user interfaces to medical databases. The user interfaces store context information from previous queries and use the context information as part of their information selection criteria for a current query, thereby easing a user's burden in specifying information the user wishes to receive, thereby freeing the user to concentrate on narrowing or otherwise clarifying the kind of information the user seeks.

[0068] Embodiments summarized above and described in further detail below have the effect of improving accuracy of database query systems in providing information requested by users, without requiring the users to fully specify the information in each query. Each user query includes at least one information selection criterion. This information selection criterion is used to select information from a database. However, these embodiments automatically create and utilize user profiles, which store information selection criteria previously entered by respective users in previous queries. In response to a current user query, embodiments combine: (a) the information selection criterion entered by the user in the current query with (b) one or more information selection criteria that were previously entered by the user, and stored in the user profile, to form more specific information selection criteria. The more specific information selection criteria are used to select information from the database. The selected information is then provided to the user. Thus, these embodiments utilize context, provided by recent queries by the user, to select the information from the database.

[0069] Each user is a member of, and is therefore associated with, at least one group. Examples of groups include: doctors caring for a particular patient; doctors affiliated with a particular medical practice or office; nurses assigned to a particular hospital floor or ward; technicians who maintain medical devices; administrators affiliated with a particular hospital; and technical support representatives affiliated with a particular medical device manufacturer. These embodiments also automatically create and utilize group profiles, which store information selection criteria entered in previous queries by users of the respective groups. In response to a current user query, embodiments combine: (a) the information selection criterion entered by the user in the current query with (b) one or more information selection criteria that were previously entered by the user, and stored in the user profile, and (c) one or more information selection criteria that were previously entered by users in the same group as the user, and stored in the group profile, to form more the specific information selection criteria.

[0070] Optionally, each user is associated with an institution, for example a hospital that employs the user or that has granted admitting privileges to the user. Other examples of institutions include manufacturers of medical devices and research organizations, such as universities. Some embodiments automatically create and utilize institution profiles, which store information selection criteria entered in previous queries by users associated with the respective institutions. In response to a current user query, these embodiments combine: (a) the information selection criterion entered by the user in the current query with (b) one or more information selection criteria that were previously entered by the user, and stored in the user profile, (c) one or more information selection criteria that were previously entered by users in the same group as the user, and stored in the group profile, and (d) one or more information selection criteria that were previously entered by users associated with the same institution as the user, and stored in the institution profile, to form the more specific information selection criteria.

[0071] Thus, these and other embodiments provide database information that more accurately meets the needs of the users, without burdening the users with fully specifying each query. These embodiments are premised on an assumption that a human user typically does not initially know how to fully specify a query and, instead, performs a series of progressively narrower queries, a series of progressively broader queries or a series of queries having an ever-shifting focus, until the user has refined his query to meet his needs. Often, the user does not know, a priori, what information he needs and, instead, essentially experiments with his queries until he is presented with information that appears to be useful. Sometimes, information returned in response to a query raises a question, which causes the user to perform a different, but related, query.

[0072] These embodiments take advantage of the fact that, in a series of queries by a user, at least some information

selection criteria are likely to be identical or similar among the queries. Thus, context, defined by initial queries of the series of queries, can be inferred and carried over to subsequent queries, and the user can concentrate on narrowing or broadening the scope of his query, rather than on repeating all previously-entered information selection criteria.

[0073] The group and institution profiles further ease the user's burden in specifying information the user wishes to receive, by taking advantage of similarities among likely queries by users who are members of a group and users who are associated with a common institution. Some embodiments automatically determine a user's current group membership, based on an automatically determined current physical location of the user. For example, if a user is physically located proximate a set of other users, such as in a conference room, these embodiments may estimate that the user is currently a member of a group that includes the other users in the conference room. The user's current physical location may be estimated by these embodiments from a meeting calendar, signals received by a wireless access point from the user's mobile device, ex. telephone, tablet or lap top computer, or other available information.

[0074] FIG. **1** is a perspective view of an exemplary convention medical device controller **100** and an exemplary conventional implantable medical unit **102**, in this example a heart pump, coupled to the medical device controller **100**. In the example shown in FIG. **1**, the medical device controller **100** is an Automated Impella Controller® from Abiomed, Inc., Danvers, MA, and the heart pump **102** is an Impella® 2.5 heart pump, also available from Abiomed, Inc., although any suitable medical unit and controller may be used.

[0075] The medical unit is connectable to a patient, such as by implanting the medical unit into the patient or by connecting the medical unit to the patient, such as via wires, straps, optical beams, etc. For example, an automated blood pressure cuff (not shown) is a medical unit that may be connected to a patient via a strap. In another example, an electrocardiograph (not shown) is a medical unit that may be connected to a patient via electrical wires.

[0076] Collectively, the medical device controller **100** and any associated medical unit are referred to herein as a medical device **104**. In some cases, the medical unit and its associated medical device controller are combined. Such a combination is also referred to herein simply as a medical device **104**.

[0077] As illustrated in FIG. **2**, each medical device **104**, in this case a heart monitor **200**, is configured for connection to a respective patient **202**. Medical institutions **204**, here represented by a hospital, are configured to admit patients, such as the patient **202**, and to house medical devices **104**, such as the heart monitor **200**. Other examples of medical institutions **204** include clinics, doctor offices, medical research facilities and medical device manufacturers.

[0078] Returning to FIG. **1**, the medical device controller **100** may include a display screen **106**, on which the medical device controller **100** displays operational data about the medical unit **102**, such as heart signal level, battery temperature, blood flow rate and plumbing integrity. The medical device controller **100** may be connected to a computer network and thereby send the operational data to a remote data server, as shown in FIG. **3**.

[0079] FIG. **3** is a schematic block diagram of major components of a data storage and retrieval system **300** for collecting, storing and retrieving operational data from and about medical devices, represented by exemplary medical devices **104**. Although three medical devices **104** are shown, other numbers of medical devices **104** may be used. The medical devices **104** may all be located at a single medical institution **204**, or the medical devices **104** may be distributed over several medical institutions **204**. Each medical device **104** may, but need not necessarily, be connectable to a computer network **302**. Each network-connectable medical device **104** is configured to automatically repeatedly capture status information about itself **104** and send messages containing the status information via the computer network **302** to a data server **304**, which stores the status information in a database **306**. Monitoring stations, exemplified by monitoring stations **308**, may request information, via the data server **304**, from the database **306** and display this information to users, represented by users **310**. An exemplary group **312** of user **310** is also shown in dotted line.

[0080] The monitoring stations **308** may also act as consoles, in which case the monitoring stations/consoles **308** may be used by the users **310** to manually enter information into the database **306**. In addition, some medical devices **104** may include user interfaces, by which the users **310** can enter information, for storage in the database **306**. For example, when a heart pump (FIG. **1**) is implanted into a patient **202**, patient information, such as name of a medical institution **204**, such as a hospital, in which the patient **202** has been admitted, hospital room number, identifiers of users who are privileged to access information about the patient **202**, an identification of the medical device **104** connected to the patient **202**, the medical institution **204** housing the medical device **104** or into which the patient **202** has been admitted, etc. may be entered and thereby stored by the data server **304** into the database **306**.

[0081] The database **306** thus stores information about the medical devices **104**. Specifically, the database **306** is configured to store information about at least one of: (a) a plurality of medical devices **104**, (b) a plurality of medical institutions **204** and (c) a plurality of patients **202**. The information about the medical devices **104** includes information about medical institutions **204** at which respective ones of the patients **202** are currently admitted and information about medical devices **104** to which respective ones of the patients **202** are currently connected. The information about the patients **202** includes information about medical institutions **204**, at which respective ones of the patients **202** are currently admitted, and information about medical devices **104**, to which respective ones of the patients **202** are currently connected.

[0082] Although FIG. **3** shows a single database **306**, several sub-databases may be used, such as one sub-database per medical institution **204** or per political jurisdiction, ex. Europe, Japan and the United States. Thus, for example, a separate sub-database may be used to store information about patients **202** admitted into each medical institution **204** and/or information about medical devices **104** housed at each medical institution **204**. Nevertheless, collectively these sub-databases are referred to herein as the database **306**.

[0083] FIG. **4** is a schematic block diagram of a medical database query system **400**, according to an embodiment of the present invention. The medical database query system **400** includes, and queries, the database **306** shown in FIG. **3**.

[0084] A human user interface **402** is configured to receive a series of requests **404** from a user **310**. Although one human user interface **402** and one user **310** are shown, the medical database query system **400** may include any number of the human user interfaces **402** and may be used by any number of users **310**. For example, each monitoring station/console **308** (FIG. **3**) may include the human user interface **402**. Returning to FIG. **4**, the human user interface **402** may include any combination of: a speech user interface **406**, a graphical user interface **408** and/or a text-based user interface **410**.

[0085] Each request of the series of requests **404** is a request for information from the database **306**. Each request of the series of requests **404** includes at least one respective information selection criterion. Examples of information selection criteria include: a selection criterion that specifies a particular patient **202**, such as by medical identification number (MIN); or a particular medical institution **204**, such as by name or identification number; or a particular medical device **104**, such as by serial number, manufacturer, function or type. An exemplary query is, "Show me information about Impella heart pump serial number 179078."

[0086] Each request of the series of requests **404** may include a combination of information selection criteria. For example, "Show information about patient with medical identification number 123 at ABC Hospital." Although some requests specify a single patient **202**, medical device **104** and/or medical institution **204**, a request may specify more than one patient **202**, more than one medical device **104** and/or more than one medical institution **204**. For example, "Show me all heart pumps at ABC Hospital," or "Show me all heart pumps in alarm."

[0087] As a result of obtaining information about a set of patients **202**, medical devices **104** and/or medical institutions **204**, the user **310** may wish to narrow or refine the search. For example, after requesting the system **400** to "Show me all heart pumps at ABC Hospital," the user **310** may wish to see information about only heart pumps that are in alarm, or only heart pumps that have been implanted for more than a specified amount of time, at ABC Hospital. Thus, in a subsequent request, the user **310** may request the system **400** to "Show alarms," or "Show implants longer than two days." The medical database query system **400** uses the most recent request **412** of the series of requests **404**, in the context of previous requests, such as previous requests **414** and **416**, to construct selection criteria, with which to query the medical database **306** to satisfy the user's **310** current request **412**. Thus, the user queries "Show alarms" and "Show implants longer than two days" may be implemented by the medical database query system **400** as "Show me all heart pumps at ABC Hospital in alarm," and "Show me all heart pumps at ABC Hospital implanted longer than two days," respectively.

[0088] The medical database query system **400** stores user profiles **418**, group profiles **420** and (optionally) institutional profiles **422** in a second database **424**. Each user profile **418** includes information selection criteria from some of the previous requests **414-416** made by the user **310**. The second database **424** is configured to store corresponding user profile information for each user **310**. Similarly, the second database **424** is configured to store corresponding group profile information for each group and (optionally) to store corresponding institutional profile information for each medical institution.

[0089] In response to the user **310** making a request **412**, a user profiler **426** stores the information selection criteria (on) of the current request **412** into the second database **424** and associates the information selection criteria (on) with the user **310** who made the request **412**. Thus, over time, as the user makes a series of requests **404**, the user profiler **426** augments the user profile information **418** for the user **310**.

[0090] Similarly, in response to the user **310**, and other users, making a request **412**, a group profiler **428** stores the information selection criteria (on) of the current request **412** into the second database **424** and associates the information selection criteria (on) with a group, of which the user **310** who made the request **412** is a member. Thus, over time, as the users **310** in the group **312** make requests, the group profiler **428** augments the group profile information **420** for the group.

[0091] Similarly, optionally, in response to the user **310**, or other users, making a request **412**, an institution profiler **430** stores the information selection criteria (on) of the current request **412** into the second database **424** and associates the information selection criteria (on) with an institution **204**, to which the user **310** who made the request **412** is affiliated. Thus, over time, as the users affiliated with the institution **204** make requests, the institution profiler **430** augments the institution profile information **422** for the institution.

[0092] As noted, the medical database query system **400** uses the most recent request **412** of the series of requests **404**, in the context of previous requests **414-416**, to construct selection criteria, with which to query the medical database **306** to satisfy the user's **310** current request **412**. A database query engine **432** is configured to search the medical database **306**, based on a combination of: (a) the information selection criteria (on) from the current request **412**, (b) at least one information selection criterion from the user profile information **418** corresponding to the user **310** who made the current request **412**, (c) at least one information selection criterion from the group profile information **420** corresponding to a group **312** associated with the user **310** who made the current request **412** and (optionally) (d) at least one information selection criterion from the institution profile information **422** corresponding to an institution **204** associated with the user **310** who made the current request **412**.

[0093] A database response engine **434** provides to the user **310** a result returned by the database query engine **432**. FIG. **5** illustrates exemplary hypothetical results **500** returned by the database query engine **432** and displayed to the user **310**, such as by one of the monitoring stations/consoles **308** (FIG. **3**).

[0094] Each user's **310** membership in one or more groups **312** and/or affiliation with one or more institutions **204** may be represented by data stored in the database **424**. This data may be entered and maintained by an administrator via an administrative user interface (not shown).

[0095] However, optionally, a user logon module **436** automatically identifies the user **310**, the group **312** with which the user **310** is associated and/or the institution **204** with which the user **310** is associated, such as based on information selection criteria in a subset of the series of requests **404** made by the user **310**. One method for automatically identifying the user **310** is to compare information selection criteria in the subset of requests to information selection criteria in the user profiles **418**. The user profile **418** that contains information selection criteria that best

match the information selection criteria in the subset of requests may be assumed to be associated with the current user **310** and, therefore, be used to identify the current user **310**.

[0096] Similarly, one method for automatically identifying the group **312** of the current user **310** is to compare information selection criteria in the subset of requests to information selection criteria in the group profiles **420**. The group profile **420** that contains information selection criteria that best match the information selection criteria in the subset of requests recently made by the user **310** may be assumed to be associated with the current user **310**.

[0097] Similarly, one method for automatically identifying the institution **204** of the current user **310** is to compare information selection criteria in the subset of requests to information selection criteria in the institution profiles **422**. The institution profile **422** that contains information selection criteria that best match the information selection criteria in the subset of requests recently made by the user **310** may be assumed to be associated with the current user **310**.

[0098] Another method for automatically identifying the user **310** and/or the group **312** and/or institution **204**, to which the user **310** is associated, is based on the current location of the user **310**. In an embodiment, the current or estimated location of the user **310** is compared to estimated locations of several potential groups **312**, and the group **312** to which the user **310** is most proximate may be assumed to be the group **312** to which the user **310** is currently associated. For example, if the user **310** is a member of several groups **312**, and one of those groups **312**, for example a Compliance Group or members of the Compliance Group, are currently meeting in a particular conference room, and the user **310** is scheduled to attend the meeting, the user **310** may be assumed to be meeting with the Compliance Group and, therefore, to currently be a member of that group **312**. Thus, in order to identify the group **312** associated with the user **310**, the user logon module **436** may automatically identify at least one participant, other than the user **310**, among the list of participants in a current meeting, in which the user **310** is also a participant.

[0099] Similarly, if the user **310** is affiliated with several institutions **204**, the current or estimated location of the user **310** may be compared to locations of several institutions **204**, and the institution **204** to which the user **310** is most proximate may be assumed to be the institution **204** to which the user **310** is currently associated.

[0100] The user logon module **436** may use a location database **600**, and optionally other infrastructure, as shown schematically in FIG. **6** to automatically estimate the user's **310** current location and/or to automatically identify the group **312**, in which the user **310** is currently a member. The location database **600** can, but need not, be distinct from the other databases **306** and **424**. The location database **600** is configured to store information about users **310** of the medical database query system **400** including, for each user **310**, an estimated current location of the user **310**. The location database **600** is also configured to store information about a plurality of groups **312** of users **310** including, for each group **312**, an estimated current location of the group **312**.

[0101] In some embodiments, the location database **600** includes a calendar database, such as a Microsoft Outlook, Microsoft Exchange or Google Calendar database. The calendar database stores information about a plurality of meetings. For each meeting, the calendar database stores a location of the meeting, a time of the meeting and a list of participants in the meeting. Thus, calendar entries typically list participants (potential users **310**) scheduled to meet together in a location. Often, calendar entries include titles or subjects, which may be parsed to infer an identity of the set of participants or purpose for meeting and, therefore, a group **312** identity. Thus, if the current user **310** is listed as a participant in a currently occurring meeting, together with other users **310** of a group **312** to which the current user **310** is a member, the user logon module **436** may infer that the current user **310** is currently a member of the group **312**.

[0102] Optionally or alternatively, the location database **600** includes an electronic mail database configured to store a plurality of electronic messages. For each electronic message, the electronic mail database stores a subject and a list of recipients of the electronic message. In order to identify the group **312** associated with the current user **310**, the user logon module **436** may automatically parse a distribution list of an electronic message. Recipients of an electronic message may be assumed to be members of a group **312**.

[0103] Optionally or alternatively, the user logon module **436** may use both the calendar database and the electronic mail database to identify the group **312** to which the current user **310** is a member. The user logon module **436** may require both an electronic message and a calendar entry to identify the same group **312** before assuming the current user **310** is a member of the group. Further, the user logon module **436** may automatically parse subjects of electronic messages to find a plurality of electronic messages having a common or similar subject, and then concatenate distribution lists of the respective electronic messages. Optionally or alternatively, the user logon module **436** may automatically parse subjects of electronic messages to find subjects similar to calendar meeting titles or subjects to correlate electronic messages with meetings. Distribution lists of electronic messages that correlate with attendees at meetings, where the electronic messages and the meetings have common or similar subjects or titles, may be used to increase confidence that a proposed group **312** is, indeed, the group to which the user **310** is currently a member.

[0104] Thus, in order to identify the group associated with the user, the user logon module **436** may be configured to automatically parse a subject of an electronic message and/or automatically identify at least one recipient among the list of recipients of an electronic message.

[0105] If the user's **310** physical location can be independently estimated, i.e., apart from the user **310** being scheduled to attend a meeting, and the user **310** is determined to be located inside or within a predetermined distance of the conference room, the user **310** may be assumed to be meeting with others in the conference room and, therefore, to currently be a member of that group **312**.

[0106] Calendar entries typically identify meeting places, such as by conference room name or other identifier. Since conference rooms typically are not mobile, the location database **600** can be provisioned with information about the physical location of each conference room. Then, as schematically illustrated in FIG. **6**, if the user's **310** current physical location can be independently estimated, i.e., apart from the user **310** being scheduled to attend the meeting, such as from WiFi signals transmitted by a mobile device carried by the user **310**, and the user **310** is determined to be located inside or within a predetermined distance of the

conference room, the user **310** may be assumed to be meeting with the participants in the meeting room and, therefore, to currently be a member of that group **312**. Optionally, the physical locations of others in a group **312** may be estimated independently, such as from respective WiFi signals transmitted by respective mobile devices carried by the other members of the group **312**.

[0107] The location database **600** may be configured to store the estimated current location of the user **310**, based on information from a wireless access point **602** to which a wireless mobile device, exemplified by a mobile telephone **604** or a Wi-Fi enabled laptop computer **606**, that is registered to the user **310**, is currently wirelessly connected **608**. The wireless access point **602** may be a Wi-Fi access point, a cellular telephone base station or any other type of wireless infrastructure equipment capable of identifying and localizing the wireless mobile device **604-606**. In the example shown in FIG. **6**, the wireless access point **602** establishes the wireless connection **608** with the user's **310** wireless mobile device **604-606**, due to its proximity to the wireless mobile device **604-606**, compared to other wireless access points, exemplified by wireless access points **610** and **612**, to which the user's **310** wireless mobile device **604-606** could, at least in theory, connect, but that are more distant.

[0108] Similarly, the location database **600** may be configured to store the estimated current locations of other users, represented by users **614**, **616**, **618** and **620**, based on information from wireless access points **602**, **610-612**, to which respective wireless mobile devices (not shown) that are registered to the other users **614-620**, are currently wirelessly connected. Users, for example users **614** and **616**, that are proximate each other, as determined by the wireless access points **602**, **610-612**, may be assumed, for purposes of the location database **600**, to be members of a group **312**, or at least prospective members of a group **312**, pending further clarification, such as by access to calendars and/or electronic messages of the prospective members of the group **312**, as discussed herein.

[0109] If at least some users **310** are known to be members of a group **312**, such as a result of provisioning of the location database **600** or provisioning of the database **424** (FIG. **4**), then for purposes of the location database **600**, any set of users **310** that are members of a given group **312** and are concurrently proximate each other, within a predetermined distance, may be deemed to be meeting together, for purposes of automatically determining if the current user **310** is proximate the meeting and, therefore, currently a member of the group **312**.

[0110] Thus, the location database **600** may be configured to store the estimated current location of a group **312**, based on information from at least one wireless access point **602**, to which respective wireless mobile devices, that are registered to the users **614-616** associated with the group **312**, are currently wirelessly connected.

[0111] Although automatically determining physical locations of respective users **310** has been discussed using wireless technology, wired computer network equipment may optionally or alternatively be used. For example, a wired router **622** may be used to estimate a location of a user **624** using a fixed-in-place computer **626** (or at least a fixed-in-place network connection), based on to which port on the router **622** the computer **626** establishes a network connection.

[0112] Thus, the user logon module **436** may compare the estimated current location of the user **310** to the estimated current location of at least one group **312** of a plurality of groups and identify the group **312** associated with the user **310**, based on a match between the estimated current location of the user **310** and the estimated current location of the at least one group **312**.

[0113] FIG. **7** is a flowchart schematically illustrating operations of the medical database query system **300** implementing a method **700** for querying the medical database **306**. The system **300** and method **700** are usable by a plurality of users **310**. Each user **310** is associated with at least one group **312** of users **310**.

[0114] At **702**, a first database **306** is provided. The first database **306** is configured to store information about at least one of: (a) a plurality of medical devices **104**, (b) a plurality of medical institutions **204** and (c) a plurality of patients **202**. Each medical device **104** is configured for connection to a respective patient **202**. The information about the medical institutions **204** includes information about medical institutions **204**, at which respective ones of the patients **202** are currently admitted, and information about medical devices **104**, to which respective ones of the patients **202** are currently connected. Each medical institution **204** is configured to admit patients **202** and house medical devices **104** configured for connection to respective patients **202**.

[0115] At **704**, a series of requests **404** is received from a user **310**, via a human user interface **406-410**. Each request is a request for information from the database **306**. Each request includes a respective information selection criterion. In some embodiments, the human user interface includes a speech user interface, a graphical user interface and/or a text user interface.

[0116] At **706**, a second database (profile database) **424** is provided. The second database **424** is configured to store, for each user **310**, corresponding user profile information **418** and, for each group **312** of users **310**, corresponding group profile information **420**.

[0117] At **708**, in response to at least some requests of the series of requests **404**, the information selection criterion of each such request is stored into the second database **424**, in association with the user **310** who made the at least some requests, thereby augmenting the user profile information **418** for the user **310**.

[0118] At **710**, in response to at least some requests of the series of requests **404**, the information selection criterion of each such request is stored into the second database **424**, in association with at least one group **312** associated with the user **310** who made the at least some requests, thereby augmenting the group profile information **420** for the at least one group **312**.

[0119] At **712**, the first database **306** is searched, based on a combination of: (a) an information selection criterion from a current request **412** of the series of requests **404**, (b) at least one information selection criterion from the user profile information **418** corresponding to the user **310** who made the current request **412** and (c) at least one information selection criterion from the group profile information **420** corresponding to a group **312** associated with the user **310** who made the current request **412**.

[0120] At **714**, a result **500** is provided to the user **310**, wherein the result **500** was returned as a result of the searching of the first database **306**.

[0121] Optionally, each user **310** may be associated with an institution **204**. In this case, the second database **424** is further configured to store, for each institution **204**, corresponding institution profile information **422**. Optionally at **716**, in response to at least some requests of the series of requests **404**, the information selection criterion of each request is stored into the second database **424**, in association with the institution **204** associated with the user **310** who made the at least some requests, thereby augmenting the institution profile information **422** for the institution **204**. In this case, at **712**, the combination, upon which the first database **306** is searched, also includes: (d) at least one information selection criterion from the institution profile information **422** corresponding to an institution **204** associated with the user **310** who made the current request **412**.

[0122] FIG. **8** is a flowchart schematically illustrating optional operations **800** of the optional user logon module **436** and the optional location database **600**.

[0123] Optionally, at **802**, the user **310** is automatically identified, based on the respective information selection criteria of a subset of the series of requests **404**.

[0124] Optionally, at **804**, the group **312** that is associated with the user **310** is automatically identified, based on the respective information selection criteria of a subset of the series of requests **404**.

[0125] Optionally, at **806**, the institution **204** associated with the user **310** is automatically identified, based on the respective information selection criteria of a subset of the series of requests **404**.

[0126] Optionally, at **808**, a third database (the location database) **600** is queried. The third database **600** is configured to store information about a plurality of users **310** and a plurality of groups **312**. For each user, the third database **600** is configured to store an estimated current location of the user **310**. For each group, the third database **600** is configured to store an estimated current location of the group **312**. At **810**, the estimated current location of the user **310** is compared to the estimated current location of at least one group **312** of the plurality of groups. At **812**, the group **312** associated with the user **310** is identified, based at least in part on a match between the estimated current location of the user **310** and the estimated current location of the at least one group **312** of the plurality of groups.

[0127] As noted, the third database (location database) **600** may include a calendar database configured to store information about a plurality of meetings. For each meeting, the third database **600** stores a location of the meeting, a time of the meeting and a list of participants in the meeting.

[0128] Optionally, at **814**, identifying the group **312** associated with the user **310** includes automatically parsing a title of a current meeting, of the plurality of meetings, in which the user **310** is a participant.

[0129] Optionally, at **816**, identifying the group **312** associated with the user **310** includes automatically identify at least one participant, other than the user **310**, among the list of participants in a current meeting, of the plurality of meetings, in which the user **310** is also a participant.

[0130] As noted, the third database (location database) **600** may include an electronic mail database configured to store a plurality of electronic messages including, for each electronic message, a subject and a list of recipients of the electronic message.

[0131] Optionally, at **818**, identifying the group **312** associated with the user **310** includes automatically parsing a distribution list of an electronic message of the plurality of electronic messages.

[0132] Optionally, at **820**, identifying the group **312** associated with the user **310** includes automatically parsing a subject of an electronic message of the plurality of electronic messages.

[0133] Optionally, at **822**, identifying the group **312** associated with the user **310** includes identifying at least one recipient among the list of recipients of an electronic message of the plurality of electronic messages.

[0134] The third database (location database) **600** may be configured to store the estimated current location of the user **310**, based on information from a wireless access point **602** to which a wireless mobile device **604-606**, that is registered to the user **310**, is currently wirelessly connected **608**.

[0135] Optionally, the third database (location database) **600** is configured to store the estimated current location of the user **310**, based on information from a wireless access point **602** to which a wireless mobile device **604-606**, that is registered to the user **310**, is currently wirelessly connected **608**. In addition, the third database (location database) **600** may be configured to store the estimated current location of the group **312**, based on information from at least one wireless access point **602** to which respective wireless mobile devices, that are registered to the respective users **614-616** associated with the group **312**, are currently wirelessly connected.

[0136] While the invention is described through the above-described exemplary embodiments, modifications to, and variations of, the illustrated embodiments may be made without departing from the inventive concepts disclosed herein. For example, although specific parameter values, such as dimensions and materials, may be recited in relation to disclosed embodiments, within the scope of the invention, the values of all parameters may vary over wide ranges to suit different applications. Unless otherwise indicated in context, or would be understood by one of ordinary skill in the art, terms such as "about" mean within ±20%.

[0137] As used herein, including in the claims, the term "and/or," used in connection with a list of items, means one or more of the items in the list, i.e., at least one of the items in the list, but not necessarily all the items in the list. As used herein, including in the claims, the term "or," used in connection with a list of items, means one or more of the items in the list, i.e., at least one of the items in the list, but not necessarily all the items in the list. "Or" does not mean "exclusive or."

[0138] Although aspects of embodiments may be described with reference to flowcharts and/or block diagrams, functions, operations, decisions, etc. of all or a portion of each block, or a combination of blocks, may be combined, separated into separate operations or performed in other orders. References to a "module" are for convenience and not intended to limit its implementation. All or a portion of each block, module or combination thereof may be implemented as computer program instructions (such as software), hardware (such as combinatorial logic, Application Specific Integrated Circuits (ASICs), Field-Programmable Gate Arrays (FPGAs), processor or other hardware), firmware or combinations thereof.

[0139] The medical database query system **400**, or portions thereof, may be implemented by one or more proces-

sors executing, or controlled by, instructions stored in a memory. Each processor may be a general purpose processor, such as a central processing unit (CPU), a graphic processing unit (GPU), digital signal processor (DSP), a special purpose processor, etc., as appropriate, or combinations thereof.

[0140] The memory may be random access memory (RAM), read-only memory (ROM), flash memory or any other memory, or combination thereof, suitable for storing control software or other instructions and data. Instructions defining the functions of the present invention may be delivered to a processor in many forms, including, but not limited to, information permanently stored on tangible non-transitory non-writable storage media (e.g., read-only memory devices within a computer, such as ROM, or devices readable by a computer I/O attachment, such as CD-ROM or DVD disks), information alterably stored on tangible non-transitory writable storage media (e.g., floppy disks, removable flash memory and hard drives) or information conveyed to a computer through a communication medium, including wired or wireless computer networks. Moreover, while embodiments may be described in connection with various illustrative data structures, systems may be embodied using a variety of data structures.

[0141] Disclosed aspects, or portions thereof, may be combined in ways not listed above and/or not explicitly claimed. In addition, embodiments disclosed herein may be suitably practiced, absent any element that is not specifically disclosed herein. Accordingly, the invention should not be viewed as being limited to the disclosed embodiments.

[0142] As used herein, numerical terms, such as "first," "second" and "third," are used to distinguish respective databases from one another and are not intended to indicate any particular order or total number of databases in any particular embodiment. Thus, for example, a given embodiment may include only a second database and a third database.

1-37. (canceled)

38. A system comprising one or more processors configured to:

receive, from a network access point, information regarding a device that has communicated with the network access point, wherein the device is registered to a user;

identify an institution associated with the user based on the information received from the network access point;

receive, from the user, a request for information from a first database, wherein the received request comprises a first information selection criterion;

search the first database, based on a combination of: (a) the first information selection criterion, (b) a second information selection criterion retrieved from user profile information that is both stored in a second database and associated with the user, and (c) a third information selection criterion retrieved from institution profile information that is both stored in the second database and associated with the identified institution; and

transmit, to the user, a result from the search of the first database.

39. The system of claim **38**, wherein the user profile information comprises at least one information selection criterion from at least one previous request received from the user for information from the first database.

40. The system of claim **39**, wherein the institution profile information comprises at least one information selection criterion from at least one previous request received from another user associated with the identified institution for information from the first database.

41. The system of claim **40**, wherein the identified institution employs the user.

42. The system of claim **38**, wherein the one or more processors are further configured to:

receive, from the user, a series of requests for information from the first database, wherein each one of the series of requests comprises a respective information selection criterion; and

identify the user based on the respective information selection criteria of a subset of the series of requests.

43. The system of claim **42**, wherein the identification of the institution associated with the user is further based on the respective information selection criteria of a subset of the series of requests.

44. The system of claim **38**, wherein the identification of the institution associated with the user is further based on a match between an estimated current location of the user and an estimated current location of the identified institution.

45. The system of claim **44**, wherein the one or more processors are further configured to:

obtain the estimated current locations of the user and the identified institution from a calendar database, wherein the calendar database is configured to store information about a plurality of meetings.

46. The system of claim **44**, wherein the one or more processors are further configured to:

obtain the estimated current locations of the user and the identified institution from an electronic mail database, wherein the electronic mail database is configured to store a plurality of electronic messages.

47. The system of claim **44**, wherein the current location of the user is estimated based on the information received from the network access point.

48. The system of claim **47**, wherein the one or more processors are further configured to:

receive, from the network access point, additional information regarding another device that has communicated with the network access point, wherein the other device is registered to another user associated with the identified institution, and

wherein the current location of the identified institution is estimated based on the additional information received from the network access point.

49. The system of claim **38**, wherein the first database is a medical database configured to store information about a plurality of patients.

50. The system of claim **49**, wherein the medical database is further configured to store information about a plurality of medical devices to which respective ones of the plurality of patients are currently connected.

51. The system of claim **50**, wherein the transmitted result is a map of screens, and wherein each screen provides operational data for a respective one of the plurality of medical devices.

52. The system of claim **50**, wherein the second information selection criterion comprises a name of one of the plurality of patients or a name of one of the plurality of medical devices.

53. The system of claim **50**, wherein the third information selection criterion comprises a name of one of the plurality of patients or a name of one of the plurality of medical devices.

54. The system of claim **50**, wherein the transmitted result comprises information about one of the plurality of patients or one of the plurality of medical devices.

55. The system of claim **38**, wherein the transmitted result is a subset of the information in the first database corresponding to the first information selection criterion that is further limited by the second information selection criterion and the third information selection criterion.

56. A method comprising:

receive, with one or more processors, from a network access point, information regarding a device that has communicated with the network access point, wherein the device is registered to a user;

identify, with the one or more processors, an institution associated with the user based on the information received from the network access point;

receiving, with the one or more processors, from the user, a request for information from a first database, wherein the received request comprises a first information selection criterion;

searching, with the one or more processors, the first database, based on a combination of: (a) the first information selection criterion, (b) a second information selection criterion retrieved from user profile information that is both stored in a second database and associated with the user, and (c) a third information selection criterion retrieved from institution profile information that is both stored in the second database and associated with the identified institution; and

transmitting, with the one or more processors, to the user, a result from the search of the first database.

57. A non-transitory computer-readable medium having instructions stored thereon that, when executed by one or more processors, cause the one or more processors to:

receive, from a network access point, information regarding a device that has communicated with the network access point, wherein the device is registered to a user;

identify an institution associated with the user based on the information received from the network access point;

receive, from the user, a request for information from a first database, wherein the received request comprises a first information selection criterion;

search the first database, based on a combination of: (a) the first information selection criterion, (b) a second information selection criterion retrieved from user profile information that is both stored in a second database and associated with the user, and (c) a third information selection criterion retrieved from institution profile information that is both stored in the second database and associated with the identified institution; and

transmit, to the user, a result from the search of the first database.

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