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(54) Title: CONTEXT INFORMED WEARABLE DEVICE

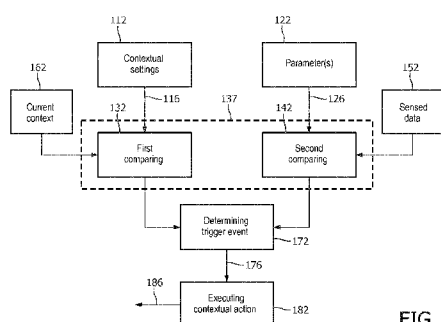


FIG. 1A

(57) Abstract: A method executes a contextual action of a wearable device by determining a current context of the wearable device and data sensed by the sensor of the wearable device. The sensor senses the data dependent on a type of wearing the wearable device. The scope of the current context is independent from the data sensed by the sensor. The method compares the current context and the values of the data with different combinations of a plurality of contextual settings of the wearable device and a plurality of parameters for the data sensed by the sensor of the wearable device. The method determines a trigger event upon detecting a positive match of the comparing and initiates an execution the contextual action upon determining the trigger event.

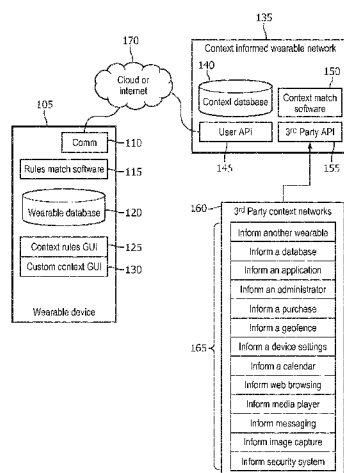


FIG. 1B



DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, **Published:**

LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE,
SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA,
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CONTEXT INFORMED WEARABLE DEVICE

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] The present application claims priority benefit of U.S. provisional application number 62/095,278 filed December 22, 2014 and entitled "Context Informed Wearable Data Informs," the disclosure of which is incorporated herein by reference.

BACKGROUND OF THE INVENTION

Field of the Invention

[0002] The present invention generally relates to a wearable device. More specifically, the present invention relates to a wearable device capable to perform different actions.

Description of the Related Art

[0003] Wearable technology, wearable devices, or simply "wearables" refer to a new class of electronic systems that can provide ubiquitous data acquisition through a variety of unobtrusive sensors. While the sensors provide information about changes in the environment, human activity or health status, there are significant challenges to the coordination, communication, and computation over the ubiquitously collected data. Furthermore, in order to synthesize the information to create useful knowledge or recommendations to consumer end-users, whether for fitness or other health applications, many sources of information complementary and in addition to the collected sensor information are needed. These unconventional combinations of information sources require new designs in the hardware and the software components.

[0004] The advantages of the wearable device include its proximity to the user and consistency of its computations. For example, a number of wearable devices, while worn by the user, constantly and continuously monitor user's data and/or vital signs of the user. Such information can be useful in subsequent analysis of condition and behavior of the user and/or can be used for performing an action necessitated by the sensed data. However, the constant monitoring of the user's data can reduce the

flexibility of the actions performed by the wearable device and can even lead to undesirable conclusions.

SUMMARY OF THE INVENTION

[0005] Some embodiments of an invention are based on recognition that in different situations or for different contextual settings the action required to be initiated by a wearable device can also be different. Such actions are referred herein as contextual actions.

[0006] For example, when the wearable device includes sensors for monitoring blood pressure of a user, the sudden increase of the blood pressure may indicate health problems requiring immediate medical attention. However, the same increase of the blood pressure can also indicate healthy physical activity of the user running on a treadmill in a gym, which requires different action or no action at all. The difference in the contextual settings, e.g., the location of the wearable device, can influence different contextual actions.

[0007] Similarly, an increase of the blood pressure coupled with a change of the location of the user can indicate jogging activity requiring no action. However, if that jogging is unusual for the user of the wearable device and happens at night in an unsafe neighborhood, that jogging can be an indication of a danger for the user and a police needs to be informed.

[0008] Some embodiment of the invention are based on realization that different contextual actions can be determined based on combination of parameters of the sensed data and the context of the wearable device when a scope of the contextual setting is independent from the data sensed by the sensor the wearable device. For example, it was realized that independence of the parameters from the contextual setting allows creation of different rules based on their cross-reference.

[0009] For example, if the parameter of the sensed data is a value for the vital signs, such as blood pressure of the user, and the context setting of the wearable device is monitoring the health condition of the user, which depends on the vital signs, it is

difficult to infer the reason for the increase of the blood pressure. To that end, a number of wearable devices just harvest the sensed data for subsequent analysis.

[0010] Conversely, when a scope of the contextual setting is independent from the parameter, such that the contextual setting does not include a value of the parameter, different contextual actions can be assigned for different combinations of the parameters and the settings. Examples of the parameters independent from the contextual settings include situations when the parameters include values of data sensed by one sensor of the wearable device and the context of the wearable device is determined by data sensed by a different sensor of the wearable device. For example, parameters can include values of the sensor sensing vital signs of the user and contextual setting can be determined from a map application that uses GPS. For example, parameters can include values of the one sensor sensing, e.g., blood pressure of the user, and contextual setting can be determined using another sensor sensing, e.g., temperature or vision of the user.

[0011] Accordingly, one embodiment of the invention discloses a method for executing a contextual action of a wearable device. At least some steps of the method are performed using a processor of the wearable device executing instructions stored in a memory of the wearable device. The method includes determining a current context of the wearable device, wherein the wearable device includes a sensor sensing data dependent on a type of wearing the wearable device, and wherein the current context is independent from the data sensed by the sensor the wearable device; determining current values of the data sensed by the sensor of the wearable device; comparing the current context and the values of the data with different combinations of a plurality of contextual settings of the wearable device and a plurality of parameters for the data sensed by the sensor of the wearable device, wherein the comparing comprises: first comparing each contextual setting with the current context of the wearable device; and second comparing each parameter with the current values of the sensed data; determining a trigger event upon detecting a combination of a positive match of the first comparing and a positive match of the second comparing; and initiating an execution the contextual action upon determining the trigger event. .

[0012] Another embodiment discloses a wearable device for executing a contextual action including an interface that receives a plurality of contextual settings and a parameter, wherein a scope of each contextual setting is independent from the parameter, such that a contextual setting does not include a value of the parameter; one or more sensors including a sensor sensing data dependent on a type of the wearable device; and a processor that executes instructions stored in a memory, wherein execution of the instructions by the processor: determines a trigger event upon detecting that a current context of the wearable device corresponds to the contextual setting and that values of the data sensed by the sensor of the wearable device corresponds to the parameter; and initiates an execution of the contextual action upon determining the trigger event.

[0013] Some embodiments of the invention are based on another recognition that limited memory and computational resources of the wearable device can preclude creation of all cross-reference rules for such a multitude of lifetime situations. Additionally or alternatively, some embodiments are based on recognition that in some situations the selection of contextual settings and/or contextual actions can be better determined by context network that can have access to different external servers.

[0014] For example, a slight increase of the pulse of the user located at home may indicate a potential the medical problem or no problem at all. However, the same slight increase of the pulse of a user located in a store and looking at a specific product can indicate an interest of the user to that product. In such situations, the contextual actions can be, e.g., sending the user a discount to this or similar product. Because it is unreasonable to store all variety of products and corresponding discounts in the memory of the wearable device, the selection of the contextual action can be delegated to the context network.

[0015] To that end, one embodiment of the invention includes receiving from a context network one or combination of the contextual setting, the parameter and the contextual action corresponding to the contextual setting. For example, the embodiment

can transmit the current context of the wearable device to the context network, and receive the positive match of the first comparing from the context network.

[0016] According to another embodiment, the wearable device can also include a transceiver that receives one or combination of the contextual setting, the parameter and the contextual action corresponding to the contextual setting from a context network, transmits the current context of the wearable device to the context network, and receives information indicative of the target event from the context network.

[0017] Some embodiments of the present invention can also include methods for receiving a contextual setting and identifying an action that corresponds to the contextual setting. Such methods can include receiving a selection of a contextual setting and a parameter at a user interface of a wearable device, detecting that a trigger event has occurred, and executing instructions to determine that a current context of the wearable device corresponds to the selected contextual setting, to determine that the detected trigger event corresponds to the selected parameter, and to initiate an action based on the determinations that the current context of the wearable device corresponds to the selected contextual setting and that the detected trigger event corresponds to the selected parameter.

[0018] For example, some embodiments of the present invention can include non-transitory computer readable storage media having embodied thereon a program executable by a processor to perform the method for receiving a contextual setting and identifying an action that corresponds to the contextual setting. Such a program may include instructions for receiving a selection of a contextual setting and a parameter at a user interface of a wearable device, detecting that a trigger event has occurred, determining that a current context of the wearable device corresponds to the selected contextual setting, determining that the detected trigger event corresponds to the selected parameter, and initiating an action based on the determinations that the current context of the wearable device corresponds to the selected contextual setting and that the detected trigger event corresponds to the selected parameter.

[0019] Additional embodiments of the present invention can include wearable devices for receiving a contextual setting and identifying an action that corresponds to the contextual setting. Such wearable devices may include a user interface that receives a selection of a contextual setting and a parameter, one or more sensors that detect information indicating that a trigger event has occurred, and a processor that executes instructions to determine that a current context of the wearable device corresponds to the selected contextual setting, to determine that the detected trigger event corresponds to the selected parameter, and to initiate an action based on the determinations that the current context of the wearable device corresponds to the selected contextual setting and that the detected trigger event corresponds to the selected parameter.

[0020] Yet further embodiments of the present invention can include systems for receiving a contextual setting and identifying an action that corresponds to the contextual setting. Such systems may include a wearable device such as described above and one or more context network servers, each storing different context settings.

BRIEF DESCRIPTION OF THE DRAWINGS:

[0021] FIGURE 1A illustrates a block diagram of a method for executing a contextual action of a wearable device according to some embodiments of the invention.

[0022] FIGURE 1B illustrates a wearable device in communication with a context informed wearable network over the cloud or internet according to some embodiments of the invention.

[0023] FIGURE 2 illustrates a flow chart of a context informed wearable network communicating with a rules database and a third party network according to one embodiment of the invention.

[0024] FIGURE 3 illustrates an exemplary rule matching methodology implemented in software at a wearable device of one embodiment of the invention.

[0025] FIGURE 4 illustrates an exemplary context match methodology performed at a context informed wearable network according to one embodiment of the invention.

[0026] FIGURE 5A illustrates a context rules GUI displayed on a display at a wearable device according to one embodiment of the invention.

[0027] FIGURE 5B illustrates an exemplary custom context GUI displayed on a display at a wearable device according to one embodiment of the invention.

[0028] FIGURE 6 illustrates architecture of a wearable device according to one embodiment of the invention.

[0029] FIGURE 7A illustrates another exemplary custom context GUI displayed in a display at a wearable device of another embodiment of the invention.

[0030] FIGURE 7B illustrates yet another exemplary custom context GUI displayed in a display at a wearable device of an embodiment of the invention.

[0031] FIGURE 8 illustrates exemplary examples of a series of use cases where context information is used to share or receive information relating to a matched set of contextual information and settings according to different embodiments of the invention.

[0032] FIGURE 9 illustrates an exemplary methodology where contextual information of a wearable device is shared across a wearable device network according to one embodiment of the invention.

[0033] FIGURE 10 illustrates an exemplary methodology where contextual information of a wearable device triggers an action from a third party network according to one embodiment of the invention.

DETAILED DESCRIPTION

[0034] Some embodiments of the invention are directed to a wearable device configured to initiate different actions depending on current context of the wearable device. Such actions referred herein as contextual actions. Also, as used herein, the term "wearable" broadly encompasses devices associated with the user, e.g. worn over or attached to a body part, or embedded into an item of clothing or footwear, and configured for either contact or non-contact sensing of various vital signs through a number of approaches. For example, heart rate could be measured via photoplethysmography or bioimpedance measurements.

[0035] For example, the wearable device can include a holder for attaching the wearable device to the user. The type of the holder can determine a type of the wearable device. For example, the type of the wearable device can include one or combination of a wrist-wear type, such that the wearable device is attached to a wrist of an arm of the user for executing the contextual action. The type of the wearable device can include an eyewear type, such that the wearable device is attached to a head of the user for executing the contextual action, and an embedded type, such that the wearable device is embedded into a close of the user for executing the contextual action.

[0036] The wearable device can include different sensors based on the type of the wearable device. For example, a sensor for wrist-wear type of wearable devices can sense one or combination of a rate of swings of an arm of the user wearing the device, an acceleration of the user, a heartbeat of the user, and a blood pressure of the user. For example, sensors for eyewear type of wearable devices can sense one or combination of visual and/or acoustic perception of the user, an acceleration of the user, a heartbeat of the user, and a blood pressure of the user.

[0037] Some embodiments of an invention are based on recognition that in different situations and/or for different contextual settings the action required to be initiated by a wearable device can also be different. Some embodiment of the invention are based on realization that different contextual actions can be determined based on combination of parameters of the sensed data and the context of the wearable device when a scope of the contextual setting is independent from the data sensed by the sensor the wearable device. For example, it was realized that independence of the parameters from the contextual setting allows creation of different rules based on their cross-reference.

[0038] Figure 1A shows a block diagram of a method for executing a contextual action of a wearable device according to some embodiments of the invention. At least some steps of the method are performed using a processor of the wearable device executing instructions stored in a memory of the wearable device.

[0039] The method determines 162 a current context of the wearable device and determines 152 current values of the data sensed by a sensor of the wearable device. The sensor of the wearable device senses data dependent on a type of wearing the wearable device. For example, the sensor can sense a rate of swings of an arm of the user, an acceleration of the user, a heartbeat of the user, a blood pressure of the user, and visual and/or acoustic perception of the user. In some embodiments of the invention, a scope of the contextual setting is independent from the data sensed by the sensor the wearable device, i.e., the current context cannot be determined from the sensed data. Such an independence allows cross-referencing the values of the parameters with different scope of the contextual setting.

[0040] The method compares 137 the current context and the values of the data with different cross-combinations of a plurality of contextual settings 112 of the wearable device and a plurality of parameters 122 of the data sensed by the sensor of the wearable device. In such a manner, different contextual action for specific combination of the contextual setting and the parameter of the data can be determined. For example, the comparing 137 includes a first comparing 132 of each contextual setting 116 with the current context of the wearable device 162 and a second comparing 142 each parameter 126 with the current values 152 of the sensed data.

[0041] For example, in one embodiment, the contextual setting includes an element or a feature of an environment surrounding the wearable device and/or a rate of change of the feature of the environment. For example, the contextual setting can include at least one of a location of the wearable device, a geo-fence perimeter circumscribing the location of the wearable device, and a time of a day. The embodiment compares the current context, e.g., a location determined using a global positioning system (GPS), with the determined contextual context. For example, in one embodiment, the parameter corresponds to at least one of a range of the sensed data and a result of a calculation of the sensed data.

[0042] Next, the method determines 172 a trigger event 176 upon detecting a combination of a positive match of the first comparing 132 and a positive match of the

second comparing 126 and initiates 182 execution the contextual action 186 upon determining the trigger event.

[0043] For example, in one embodiment, the scope of the contextual setting is a function of a location of the wearable device, and the sensor senses vital signs of a user wearing the wearable device. This embodiment detects the trigger event when the wearable device is located in a predetermined location and a current value of the vital signs is greater than the parameter. According to another embodiment, the scope of the contextual setting is a function of a location of the wearable device and a time of a day. In this embodiment, the trigger event is detected when the wearable device is located in a predetermined location, the time of the day is within a time range, and a current value of the vital signs is greater than the parameter.

[0044] Various embodiments of the invention depend on a type of the wearable device that can be determined based on a type of wearing the device. For example, in one embodiment, the wearable device includes a wrist holder, such that the type of wearing is wearing the wearable device on a wrist of an arm of the user, and wherein the sensor senses vital signs of a user wearing the wearable device including one or combination of a rate of swings of an arm of the user, an acceleration of the user, a heartbeat of the user, and a blood pressure of the user.

[0045] In another embodiment, the wearable device includes one or combination of an eye-wear and an ear-wear, such that the type of wearing is wearing the wearable device on a head of the user, and wherein the sensor senses vital signs of a user wearing the wearable device including one or combination of visual and/or acoustic perception of the user, an acceleration of the user, a heartbeat of the user, and a blood pressure of the user.

[0046] In some embodiments the wearable device is integrated into a decorative object such as jewelry, piercing or tattoo, or accessory such as various kinds of utensils such as a spoon or a drinking glass, tools such as a pen or a screwdriver, or sport or hobby equipment such as a tennis racket.

[0047] Wearable devices according to some embodiments of the invention include multiple sensors. In those devices, the trigger event can be determined by comparing values of data sensed by different sensors. For example, one embodiment detects the trigger event when a first sensor of the wearable device senses visual and/or acoustic data corresponding to the contextual setting, and wherein a second sensor of the wearable device senses the vital signs of the user.

[0048] In some embodiments the contextual setting is determined based on data. For example, the system may discover that a vital sign, for example, blood pressure has occasionally an unusual value. By collecting the occurrences of the measurements in that value range the system may discover that they correlate with a particular contextual signature, for example, the context that user returned home later than usual in the previous evening. This contextual setting could be subsequently used as a trigger for the measurement so that when the user returns home late, the user receive a reminder to measure the blood pressure then next day.

[0049] In some embodiments the parameter can be determined based on the data. For example, the use of unsupervised clustering methods applied to plurality of sensory data can be used to discover reoccurring contextual settings. The statistics of the data in each contextual setting can thereafter be accumulated separately for each contextual setting, for example, to determine typical values or ranges of sensor data in each contextual setting. The statistics can then be used to determine a parameter value which is used to trigger some action. For example, the clustering method may discover, based on GPS data, an area where the user often spends time in afternoons, say, a park. The statistics of this contextual setting would reveal, for example, that the heart rate of the user in this context has a certain value range. The method of the invention would then associate a parameter with the range such that if the heart rate is outside of the range in the same contextual setting, the system triggers a notification.

[0050] Some embodiments of the invention are based on another recognition that limited memory and computational resources of the wearable device can preclude creation of all cross-reference rules for such a multitude of life situations. Additionally

or alternatively, some embodiments are based on recognition that in some situations the selection of contextual settings and/or contextual actions can be better determined by context network that can have access to different external servers.

[0051] For example, some embodiments of the invention relate to a system and method for a wearable device for identifying a context within which a wearable device communicates with a context informed wearable network when certain combinations of events are identified. Additionally or alternatively, some embodiments relate to a wearable device communicating with an external computing device according to a set of contextual settings that initiate the transfer of information between the wearable device and the external computing device.

[0052] Wearable devices and context informed wearable network communicate using any data communication technology known in the art. Also, in one embodiment, the wearable device communicates with a mobile device and then the mobile device communicates with the context informed wearable network

[0053] When a wearable device communicates with a mobile device, the wearable device can communicate with the mobile device using a first type of wireless data communication technology, and the mobile device can communicate with the first aid network using a second type of wireless data communication technology. Data communication interfaces used with the present invention include, yet not limited to cellular 3G-4G LTE, Wi-Fi (802.11), infrared, optical, near field, and Bluetooth data communication interfaces. In certain instances, a wearable device includes a plurality of data communication interfaces, a processor, a memory, a field programmable gate array (FPGA), an application specific integrated circuit (ASIC).

[0054] Mobile electronic devices described herein include, yet are not limited to, smartphones and notebook computers. Communications communicated by a wearable device or by a mobile device may be communicated over any data communication technology known in the art, including, yet not limited to Bluetooth, Cellular 3G 4G LTE, and Wi-Fi (802.11). In certain instances, a mobile device may include a plurality of data

communication interfaces, a processor, a memory, a field programmable gate array (FPGA), an application specific integrated circuit (ASIC).

[0055] The various methods of different embodiments are performed by software operating in conjunction with hardware. For example, instructions executed by a processor, the instructions otherwise stored in a non-transitory computer readable medium such as memory. Various interfaces may be implemented—both communications and interface. One skilled in the art will appreciate the various requisite components of a mobile device and integration of the same with one or more of the figures and/or descriptions included herein.

[0056] FIGURE 1B illustrates a wearable device in communication with a context informed wearable network over the cloud or internet according to one embodiment of the invention. The wearable device 105 includes a data communication interface 110 (comm), rules match software 115, a wearable database 120, a context rules graphical user interface (GUI) 125, and a customer context GUI 130. The context informed wearable network 135 includes a context database 140, a user application program interface 145 (API), context match software 150, and a third party API 155. The third party API 155 communicates with third party context networks 160 when retrieving information relating to the context of one or more wearable devices. The third party context network 160 in FIGURE 1B can provide information that identifies a context 165 of a first wearable device and that may inform other wearable devices, applications, databases, an administrator, a calendar, a web browser, or other systems of the context of the first wearable device when certain events occur. In some implementations, the context 165 of the first wearable device is shared with an application, an administrator, a purchase kiosk, or a geo-fence. The context information 165 of the first wearable device can include device settings, information related to a schedule, information relating to web browsing, information regarding a media player and messaging options, can also include a captured image, or identify information related to a security system.

[0057] In one embodiment, the wearable device 105 receives settings via the custom rules GUI 125 or the custom context GUI 130 communicated over the

communication interface **110** and the cloud or Internet **170** to the context informed wearable network **135**. The third party context network **160** can optionally communicate contextual and other information with the context informed wearable network **135** over the third party API **155**. An event can be triggered when contextual information from a wearable device matches a rule set in the custom rules GUI **125**.

[0058] FIGURE 2 illustrates a flow chart of a context informed wearable network communicating with a rules database and a third party network according to one embodiment of the invention. The context informed wearable network **210** receives context data from a third party network **220** that can be stored in a context database **210** at the context informed wearable network **210**. In the embodiment of FIGURE 2, a custom context GUI **230** receives context data from a user mobile device. A rules database **225** at the wearable device may store the received context information. The custom context GUI **230** may also receive selections from a user of the wearable device via a display at the wearable device. The information stored in the rules database **225** at the wearable device may be sent to the context informed wearable network **210**, and the context informed wearable network **210** may send a message to the wearable device ruled database **225**. The message may include data that triggers an event at the wearable device.

[0059] FIGURE 3 illustrates a flow chart of an exemplary method 300 of rule matching methodology implemented in software at a wearable device according to one embodiment of the invention. In step **310**, a wearable database is polled when determining whether a trigger event has occurred. A trigger event may be related to a data or time, a connection status of the wearable device, or a global positioning system (GPS) position. When a trigger event occurs, the context information relating to the trigger event may be sent **320** to the context informed wearable network. Then the context informed wearable network may match the trigger event information with information stored on a third party network **330** and determine that a third party network is associated with the trigger event stored **340** in the context database.

[0060] In step 350 of the method 300, an identified third party network is sent the trigger event information and context information of the wearable device. In step 360 of the method a response from the third party network is waited for. When a response has been received from the third party network information corresponding to the request may be received 370 over a data communication interface at the wearable device.

[0061] If a response has not been received and a trigger has not expired 390, the third party network may be sent the trigger event information and context information again in step 350. If the trigger has expired program flow may move back to step 310 of the method.

[0062] FIGURE 4 illustrates a flow chart of an exemplary context match of a method 400 performed at a context informed wearable network. In step 410 of the context match method 400, trigger event data transmitted by a wearable device is received at the context informed wearable network. Next, step 420 of the method determines whether the trigger event data matches context information associated with the wearable device. When the trigger event information does not match context information associated with the wearable the method may flow back to step 410 of the method. When the trigger event information matches context information associated with the wearable, the context informed wearable network polls the wearable device for parameters in step 430, such as heart rate, sensed activity data, or an indication that an event has occurred.

[0063] Next in step 440, the method determines whether a parameter corresponds to (matches) a trigger action, when yes, the method flows to step 450 where the matching trigger action may be executed. When the parameter does not correspond (does not match) a trigger action, the method moves from step 440 back to step 430 where the parameters may be polled again. In step 460, the method determines whether a subsequent parameter matches a subsequent trigger action. When yes, the method moves back to step 450 where the subsequent trigger action can be executed. When there is not another parameter that matches a trigger action, the method moves to step 470. The step 470 determines whether a context event has expired. When yes, the method

moves back to the step 410. When step 470 determines that the context event has not expired, the method moves back to step 430 where the wearable device may be polled for parameters again.

[0064] FIGURE 5A illustrates a context rules GUI displayed on a display at a wearable device according to one embodiment of the invention. The context rule GUI 505 of FIGURE 5A allows a user to enter context rules in the context rules GUI 505. The context rules 510 in the context rule GUI 505 may associate an action or a trigger action with an application, a purchase, a calendar event, or with information stored on a third party database when a context rule 510 selection box in the context rules GUI 505 is checked (selected). The context rules GUI 505 of FIGURE 5A includes a plurality of context rules 510 that are included in a column of selection boxes and a column of information actions. The column of selection boxes and the column of information actions may be associated with an application, a purchase, a calendar event, or with information stored on a third party database. FIGURE 5A also includes “create custom context” selection box 515 that may open a custom context GUI when selected 520. In some embodiments, the context informed wearable data informs GUIs of FIGURES 5A and 5B are linked by the “create custom context” selection box 515.

[0065] The rules can describe context and parameter in generalized terms. For example, such rule could specify that if a parameter in a recurring contextual setting for the user has atypical value in the contextual setting, an event is triggered. The recurring contextual settings would be discovered from the historical data for example using unsupervised data clustering methods and the parameter would be associated with the typical value range of a sensor measurement in the discovered contextual setting.

[0066] Some embodiments allow a user to associate the action of sending information to a second (another) wearable device when a match has been made. This may be performed by selecting a selection box that corresponds to an action that may be performed when a match is made. In a first example, information corresponding to the match may be sent to a second wearable device worn by another person when the match corresponds to a dating application. In this instance the information may include profile

information corresponding to a person wearing a first wearable device that might be interested in dating the person wearing the second wearable device. The person wearing the second wearable device may then send a text message to a person wearing the first wearable device.

[0067] In a second example, information may be sent to a database when a match is made that associates a person wearing a first wearable device with an insurance application. The insurance application may then send an offer to the first wearable device for purchasing insurance.

[0068] Information may also be sent to the first wearable device when an application on the first wearable device is associated with receiving a review of a merchant on Yelp. For example, when the first user is searching for a restaurant, the search request may be matched with restaurant reviews at a context informed wearable network. Matching reviews may be retrieved from a third party website and forwarded to the first wearable device when a match has been made. The person wearing the first wearable device may then read the reviews when selecting a restaurant.

[0069] FIGURE 5A illustrates many other types of actions that may be performed when a context match has been made. An administrator's wearable device may be informed that an employee is sick, after the employee interacts with a human resources (HR) software application. A website, such as amazon.com may send a coupon to a wearable device when a user of the wearable device has been matched an item that may be purchased. Geo-fence information identifying a perimeter around an event in Central Park in New York City may be sent to a wearable device when a ticket to the event has been purchased using the wearable device. The brightness of a display screen at a wearable device may be modified based on a matched context relating to where and when a wearable device is being used.

[0070] Contextual rules 510 may also match a plurality of different sorts of information. For example a meeting (a calendar event) at a location could be matched with a present location and with a recommended route to arrive at the event location in time for the meeting. Similarly matches may be made between a specific website and a

browsing behavior of a user of a wearable device. Genera of music may be matched with songs played using an iTunes application and song selections may be sent to a wearable device. Text messages may be sent to a person's wife when GPS information from a wearable device is matched to information indicating that the person will be arriving home in a few minutes. A wearable device may capture an image using an Instagram application whenever a context match is made. In a last example, a home security application may send a wearable device a message when a lock is determined to not be locked after 9pm at night.

[0071] FIGURE 5B illustrates an exemplary custom context GUI displayed on a display at a wearable device of one embodiment of the invention. FIGURE 5B illustrates a map with an area surrounded by a rectangular shaped box 525. The rectangular box 525 is a geo-fence according to a geo-fence selection 520A in FIGURE 5B. FIGURE 5B also includes a name 530 of commute late, a time after 10pm M-F, a set of contextual settings, and trigger actions. The geo-fence may be drawn on the map in the context GUI by a user of the wearable device. Contextual settings depicted in FIGURE 5B include wearable input 1 535 of heart rate, parameter 1 540 of increases more than 30%, wearable input 2 545 accelerometer, and parameter 2 550 increased more than 100%. After association information is entered into the customer context GUI, the association information may be saved by selecting the save selection box 565 in FIGURE 5B.

[0072] FIGURE 5B also includes trigger 1 555 that corresponds to phone call and a phone number of the New York City Police Department. FIGURE 5B also includes a trigger 2 560 that corresponds an accelerometer and to recording an input from a microphone. When a sensed heartbeat increases according to the parameter 1 540 settings, when a sensed accelerometer measurement corresponds to the parameter 2 550 settings, and when the time corresponds to a late commute time of after 10pm M-F within the geo-fenced area 525, trigger events 1 555 and 2 560 may initiate actions on the wearable device. In the instance when all of the contextual information matches an association with danger is made, and the wearable device initiates the trigger 1 555

action of calling the police and the trigger 2 560 action of recording an audio recording at the wearable device.

[0073] FIGURE 6 illustrates architecture 600 of a wearable device according to one embodiment of the invention. The architecture 600 can be implemented in any number of portable devices including but not limited to smart wearable devices. Architecture 600 as illustrated in FIGURE 6 includes memory interface 602, processors 604, and peripheral interface 606. Memory interface 602, processors 604 and peripherals interface 606 can be separate components or can be integrated as a part of one or more integrated circuits. The various components can be coupled by one or more communication buses or signal lines.

[0074] Processors 604 as illustrated in FIGURE 6 are meant to be inclusive of data processors, image processors, central processing unit, or any variety of multi-core processing devices. Any variety of sensors, external devices, and external subsystems can be coupled to peripherals interface 606 to facilitate any number of functionalities within the architecture 600 of the exemplar mobile device. For example, motion sensor 610, light sensor 612, and proximity sensor 614 can be coupled to peripherals interface 606 to facilitate orientation, lighting, and proximity functions of the mobile device. For example, light sensor 612 could be utilized to facilitate adjusting the brightness of touch surface 646. Motion sensor 610, which could be exemplified in the context of an accelerometer or gyroscope, could be utilized to detect movement and orientation of the mobile device. Display objects or media could then be presented according to a detected orientation (e.g., portrait or landscape).

[0075] Other sensors can be coupled to peripherals interface 606, such as a temperature sensor or other sensors measuring various vital signs of the user, a biometric sensor, or other sensing device to facilitate corresponding functionalities. Location processor 615 (e.g., a global positioning transceiver) can be coupled to peripherals interface 606 to allow for generation of geo-location data thereby facilitating geo-positioning. An electronic magnetometer 616 such as an integrated circuit chip could in turn be connected to peripherals interface 606 to provide data related to the

direction of true magnetic North whereby the mobile device could enjoy compass or directional functionality. Camera subsystem 620 and an optical sensor 622 such as a charged coupled device (CCD) or a complementary metal-oxide semiconductor (CMOS) optical sensor can facilitate camera functions such as recording photographs and video clips.

[0076] Communication functionality can be facilitated through one or more communication subsystems 624, which may include one or more wireless communication subsystems. Wireless communication subsystems 624 can include 802.5 or Bluetooth transceivers as well as optical transceivers such as infrared. Wired communication system can include a port device such as a Universal Serial Bus (USB) port or some other wired port connection that can be used to establish a wired coupling to other computing devices such as network access devices, personal computers, printers, displays, or other processing devices capable of receiving or transmitting data. The specific design and implementation of communication subsystem 624 may depend on the communication network or medium over which the device is intended to operate. For example, a device may include wireless communication subsystem designed to operate over a global system for mobile communications (GSM) network, a GPRS network, an enhanced data GSM environment (EDGE) network, 802.5 communication networks, code division multiple access (CDMA) networks, or Bluetooth networks. Communication subsystem 624 may include hosting protocols such that the device may be configured as a base station for other wireless devices. Communication subsystems can also allow the device to synchronize with a host device using one or more protocols such as TCP/IP, HTTP, or UDP.

[0077] Audio subsystem 626 can be coupled to a speaker 628 and one or more microphones 630 to facilitate voice-enabled functions. These functions might include voice recognition, voice replication, or digital recording. Audio subsystem 626 in conjunction may also encompass traditional telephony functions.

[0078] I/O subsystem 640 may include touch controller 642 and/or other input controller(s) 644. Touch controller 642 can be coupled to a touch surface 646. Touch

surface 646 and touch controller 642 may detect contact and movement or break thereof using any of a number of touch sensitivity technologies, including but not limited to capacitive, resistive, infrared, or surface acoustic wave technologies. Other proximity sensor arrays or elements for determining one or more points of contact with touch surface 646 may likewise be utilized. In one implementation, touch surface 646 can display virtual or soft buttons and a virtual keyboard, which can be used as an input/output device by the user.

[0079] Other input controllers 644 can be coupled to other input/control devices 648 such as one or more buttons, rocker switches, thumb-wheels, infrared ports, USB ports, and/or a pointer device such as a stylus. The one or more buttons (not shown) can include an up/down button for volume control of speaker 628 and/or microphone 630. In some implementations, device 600 can include the functionality of an audio and/or video playback or recording device and may include a pin connector for tethering to other devices.

[0080] Memory interface 602 can be coupled to memory 650. Memory 650 can include high-speed random access memory or non-volatile memory such as magnetic disk storage devices, optical storage devices, or flash memory. Memory 650 can store operating system 652, such as Darwin, RTXC, LINUX, UNIX, OS X, ANDROID, WINDOWS, or an embedded operating system such as VXWorks. Operating system 652 may include instructions for handling basic system services and for performing hardware dependent tasks. In some implementations, operating system 652 can include a kernel.

[0081] Memory 650 may also store communication instructions 654 to facilitate communicating with other mobile computing devices or servers. Communication instructions 654 can also be used to select an operational mode or communication medium for use by the device based on a geographic location, which could be obtained by the GPS/Navigation instructions 668. Memory 650 may include graphical user interface instructions 656 to facilitate graphic user interface processing such as the generation of an interface; sensor processing instructions 658 to facilitate sensor-related

processing and functions; phone instructions **660** to facilitate phone-related processes and functions; electronic messaging instructions **662** to facilitate electronic-messaging related processes and functions; web browsing instructions **664** to facilitate web browsing-related processes and functions; media processing instructions **666** to facilitate media processing-related processes and functions; GPS/Navigation instructions **668** to facilitate GPS and navigation-related processes, camera instructions **670** to facilitate camera-related processes and functions; and instructions **672** for any other application that may be operating on or in conjunction with the mobile computing device. Memory **650** may also store other software instructions for facilitating other processes, features and applications, such as applications related to navigation, social networking, location-based services or map displays.

[0082] FIGURE 7A illustrates a custom context GUI displayed in a display of a wearable device according to another embodiment of the invention. The custom context GUI **705** includes an application context selection box, an application Yelp **715**, a custom context name **720** of weekend shopping 12-5pm F-S, a context of connect to vendor Wi-Fi **725**, a first wearable input **730A** of heart rate, parameter 1 **730A** of decrease more than 20%, a trigger 1 **735A** of write review template, a text entry box, a wearable input 2 **730B** of heart rate, a parameter 2 **735B** of increase more than 20%, a trigger 2 **740B** of write review template, a second text entry box, two selection boxes **745** that relate to allowing promotions and to allowing a vendor to use data for special offers, and a save selection box **730**.

[0083] When a wearable device or a context informed wearable network determines that a contextual match that associates the day/time, with the first wearable input **730A**, and the first parameter **735A**, the wearable device may receive over a Wi-Fi data communication interface a request to enter a review into the first text entry box.

[0084] Similarly, when a wearable device or a context informed wearable network determines that a contextual match that associates the day/time, with the second wearable input **730B**, and the second parameter, the wearable device may receive

over a Wi-Fi data communication interface a request to enter a review into the second text enter box.

[0085] The Wi-Fi data communication interface may also receive promotional offers or special offers when either of the two selection boxes 745 (the promotional offer selection box or the special offers selection box) are selected and when the date/time is associated with a shopping time.

[0086] FIGURE 7B illustrates a custom context GUI according to yet another embodiment of the invention. FIGURE 7B includes an application context selection box 760, a dating application 765, a custom context name 770 of geo-fence 6-9pm F and S, a context 775 of connect to another wearable, and two selection boxes 780 that allow to access wearable data selection box and allow a wearable device to receive notifications selection box, a trigger of a dating application 785, and a save selection box 790. The wearable device may receive a message from the dating application 785 or from a wearable device worn by another person when the wearable device is within the downtown geo-fence between 6 and 9 pm on Friday or Saturday night. A message from the other wearable device may include an offer to meet for drinks, or link the two wearable devices together. The two wearable devices when linked may share information, such as GPS locations.

[0087] FIGURE 8 illustrates exemplary examples of a series of use cases according to different embodiment of the invention where context information may be used to share or receive information relating to a matched set of contextual information and settings. FIGURE 8 includes fourteen separate example use cases 800 where a third use case (use case3) in FIGURE 8, for example, identifies that context information + wearable device data may be used to inform a software application of product reviews, journal articles, or games that may be of interest to an individual wearing a wearable device.

[0088] FIGURE 9 illustrates an exemplary methodology where contextual information of a wearable device is shared across a wearable device network according to one embodiment of the invention. In step 910 of the method of FIGURE 9 a wearable

device is provided with a data communication interface, with a wearable database, rules match software, a custom context GUI, and a context rules GUI.

[0089] In step 920, the method provides a context informed wearable network with a context data base, a user API, a third party API, and with context match software. Then in step 930, the method allows third party network to input context rules in a context rule GUI at a wearable device, or to provide contextual information to a wearable device. In step 940 of the method, context rules are stored in the database at the wearable device. Then in step 950, a context database at the context informed wearable network synchronizes with a trigger event that may initiate information to be transferred from a third party to the wearable device. Next in step 960 of the method, actions are performed according to a set of rules configured on the wearable device.

[0090] FIGURE 10 illustrates an exemplary methodology where contextual information of a wearable device triggers an action from a third party network. FIGURE 10 may be an extension of the last step of FIGURE 9. Step 1010 of the method of FIGURE 10 is where a trigger event identifies a trigger action when parameters from a wearable device match a trigger event identified in a wearable database. In step 1020, a context informed wearable network receives trigger data from the wearable device at an API. Then in step 1030, the context informed wearable network identifies an associated third party network. Next in step 1040, information is received from the third party via the context informed wearable network. In step 1050, the information received from the third party network is sent to the wearable device from the context informed wearable network. Then in step 1060, information received by the wearable device may be output in a GUI at the wearable device. In step 1070, the information displayed in the GUI may be identified as being received from a particular third party.

[0091] In certain instances activities performed by an individual wearing a wearable device may be associated with a context. For example, the activity of running may be associated with a heart rate profile configured by user of a wearable device. The activity of swimming may be associated with a heart rate and a sensor reading indicating that the wearable device is immersed in a liquid. Thus, the present invention

may associate activity data with contextual information when identifying trigger events or trigger actions. Sensor data sensed by a sensor at a wearable device may be used by the present invention to sense physiological information of a person wearing the wearable device. For example, a sensor may measure the temperature of a person when determining whether the person has a fever or is hypothermic. The sensor data may also be used in a calculation. For example, the number of heartbeats in a 15 second period may be used when calculating a heart rate per minute by multiplying the number of beats by 4.

[0092] The various methods may be performed by software operating in conjunction with hardware. For example, instructions executed by a processor, the instructions otherwise stored in a non-transitory computer readable medium such as memory. Various interfaces may be implemented—both communications and interface. One skilled in the art will appreciate the various requisite components of a mobile device and integration of the same with one or more of the foregoing figures and/or descriptions.

[0093] Also, the embodiments of the invention may be embodied as a method, of which an example has been provided. The acts performed as part of the method may be ordered in any suitable way. Accordingly, embodiments may be constructed in which acts are performed in an order different than illustrated, which may include performing some acts simultaneously, even though shown as sequential acts in illustrative embodiments.

[0094] While various embodiments have been described above, it should be understood that they have been presented by way of example only, and not limitation. The descriptions are not intended to limit the scope of the invention to the particular forms set forth herein. Thus, the breadth and scope of a preferred embodiment should not be limited by any of the above-described exemplary embodiments. It should be understood that the above description is illustrative and not restrictive. To the contrary, the present descriptions are intended to cover such alternatives, modifications, and equivalents as may be included within the spirit and scope of the invention as defined

by the appended claims and otherwise appreciated by one of ordinary skill in the art. The scope of the invention should, therefore, be determined not with reference to the above description, but instead should be determined with reference to the appended claims along with their full scope of equivalents.

CLAIMS

WHAT IS CLAIMED IS:

1. A method for executing a contextual action of a wearable device, wherein at least some steps of the method are performed using a processor of the wearable device executing instructions stored in a memory of the wearable device, comprising:
 - determining a current context of the wearable device, wherein the wearable device includes a sensor sensing data dependent on a type of wearing the wearable device, and wherein the current context is independent from the data sensed by the sensor the wearable device;
 - determining current values of the data sensed by the sensor of the wearable device;
 - comparing the current context and the values of the data with different combinations of a plurality of contextual settings of the wearable device and a plurality of parameters for the data sensed by the sensor of the wearable device, wherein the comparing comprises:
 - first comparing each contextual setting with the current context of the wearable device; and
 - second comparing each parameter with the current values of the sensed data;
 - determining a trigger event upon detecting a combination of a positive match of the first comparing and a positive match of the second comparing; and
 - initiating an execution the contextual action upon determining the trigger event.
2. The method of claim 1, wherein the contextual setting includes at least one of a location of the wearable device, a geo-fence perimeter circumscribing the location of the wearable device, and a time of a day.

3. The method of claim 1, wherein the parameter corresponds to at least one of a range of the sensed data and a result of a calculation of the sensed data.

4. The method of claim 1, wherein the current context is a function of a location of the wearable device, and wherein the sensor senses vital signs of a user wearing the wearable device, further comprising:

detecting the trigger event when the wearable device is located in a predetermined location and a current value of the vital signs is greater than the parameter.

5. The method of claim 1, wherein the current context is a function of a location of the wearable device and a time of a day, and wherein the sensor senses vital signs of a user wearing the wearable device, further comprising:

detecting the trigger event when the wearable device is located in a predetermined location, the time of the day is within a time range, and a current value of the vital signs is greater than the parameter.

6. The method of claim 1, further comprising:

receiving from a context network one or combination of the contextual setting, the parameter and the contextual action corresponding the combination of the parameter and the contextual setting.

7. The method of claim 6, further comprising:

transmitting the current context of the wearable device to the context network;
and

receiving the positive match of the first comparing from the context network.

8. The method of claim 1, wherein the wearable device includes a wrist holder, such that the type of wearing is wearing the wearable device on a wrist of an arm of the user, and

wherein the sensor senses vital signs of a user wearing the wearable device including one or combination of a rate of swings of an arm of the user, an acceleration of the user, a heartbeat of the user, and a blood pressure of the user.

9. The method of claim 1, wherein the wearable device includes one or combination of an eye-wear and an ear-wear, such that the type of wearing is wearing the wearable device on a head of the user, and wherein the sensor senses vital signs of a user wearing the wearable device including one or combination of visual and/or acoustic perception of the user, an acceleration of the user, a heartbeat of the user, and a blood pressure of the user.

10. The method of claim 9, wherein the wearable device includes multiple sensors, further comprising:

detecting the trigger event when a first sensor of the wearable device senses visual and/or acoustic data forming the current context corresponding to the contextual setting, and wherein a second sensor of the wearable device senses the vital signs with a current value greater than the parameter.

11. A wearable device for executing a contextual action, comprising:

an interface that receives a plurality of contextual settings and a parameter, wherein a scope of each contextual setting is independent from the parameter, such that a contextual setting does not include a value of the parameter;

one or more sensors including a sensor sensing data dependent on a type of the wearable device; and

a processor that executes instructions stored in a memory, wherein execution of the instructions by the processor:

determines a trigger event upon detecting that a current context of the wearable device corresponds to the contextual setting and that values of the data sensed by the sensor of the wearable device corresponds to the parameter; and

initiates an execution of the contextual action upon determining the trigger event.

12. The wearable device of claim 11, wherein the type of the wearable device includes one or combination of a wrist-wear type, such that the wearable device is attached to a wrist of an arm of a user, an eyewear type, such that the wearable device is attached to a head of the user, and an embedded type, such that the wearable device is embedded into a close of the user.

13. The wearable device of claim 11, wherein the contextual setting selection includes at least one of a location of the wearable device, a geo-fence perimeter circumscribing the location of the wearable device, sensor data sensed by a sensor at the wearable device, and a result calculated from the sensor data sensed by the sensor.

14. The wearable device of claim 13, wherein the location is determined by a global positioning system (GPS) at the wearable device.

15. The wearable device of claim 13, wherein the parameter corresponds to at least one of a range of data sensed by the sensor at the wearable device and the result of the calculation.

16. The wearable device of claim 11, further comprising:

a transceiver that receives one or combination of the contextual setting, the parameter and the contextual action corresponding to the contextual setting from a context network, transmits the current context of the wearable device to the context network, and receives information indicative of the target event from the context network.

17. The wearable device of claim 16, wherein information received from the context network matches information from a third party network.

18. The wearable device of claim 11, wherein the scope of the contextual setting is a function of one or combination of a location of the wearable device and a time of a day, and wherein the sensor senses vital signs of a user wearing the wearable device, and wherein the processor determines the trigger event when the wearable device is located in a predetermined location and/or the time of the day is within a time range, and a current value of the vital signs is outside of a range defined by the parameter.

19. The wearable device of claim 11, wherein the processor detects the trigger event when a first sensor of the wearable device senses visual and/or acoustic data corresponding to the contextual setting, and wherein a second sensor of the wearable device senses vital signs with a current value outside of a range defined by the parameter.

20. A system for receiving a contextual setting and identifying an action that corresponds to the contextual setting, the system comprising:

- a wearable device comprising:

- an interface that receives a plurality of contextual settings and a parameter,

- wherein a scope of each contextual setting is independent from the parameter, such that the contextual setting does not include a value of the parameter;

- one or more sensors including a sensor sensing data dependent on a type of the wearable device; and

- a processor that executes instructions stored in memory, wherein execution of the instructions by the processor:

- determines a trigger event upon detecting that a current context of the wearable device corresponds to a contextual setting from the plurality of

contextual settings and that values of the data sensed by the sensor of the wearable device corresponds to the parameter; and

executes the contextual action upon determining the trigger event; and

one or more context network servers storing information regarding the plurality of contextual settings.

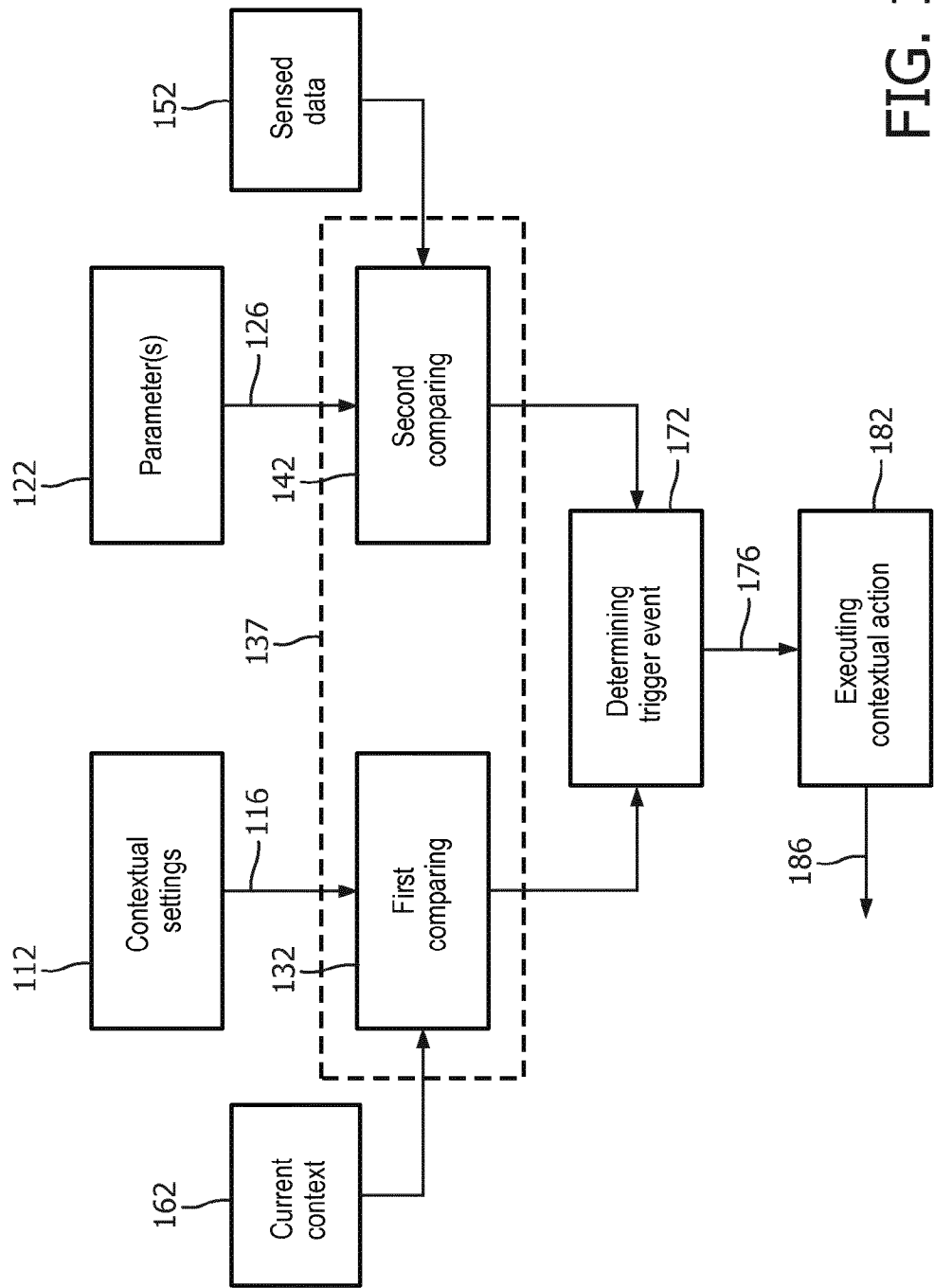


FIG. 1A

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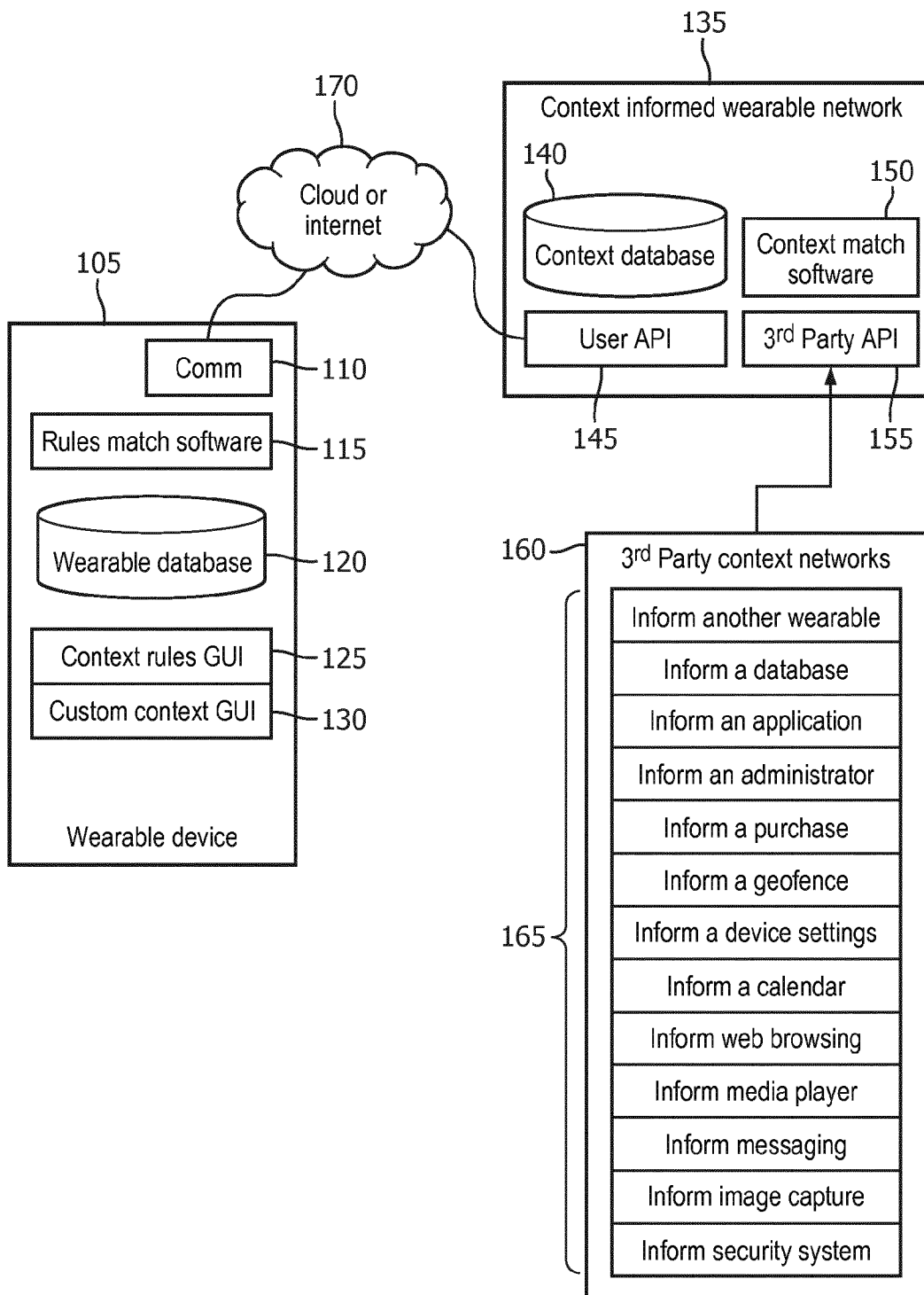


FIG. 1B

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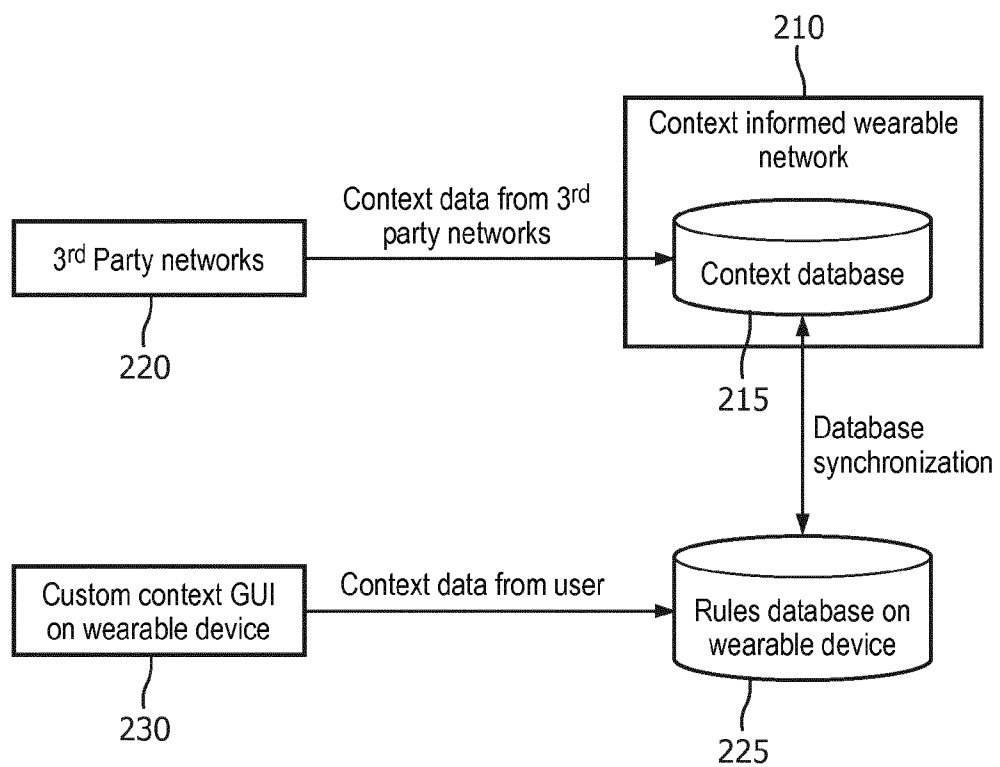


FIG. 2

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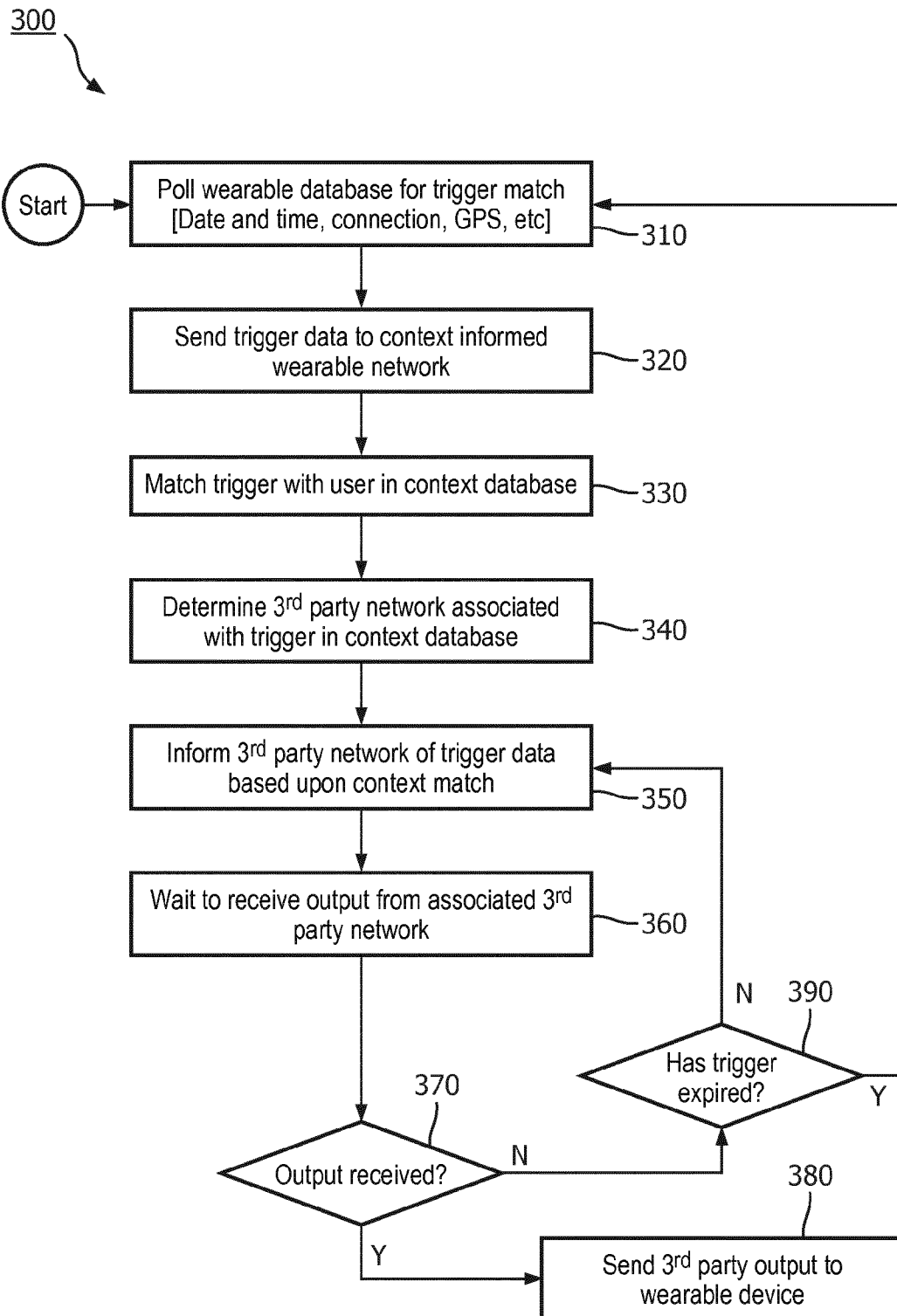


FIG. 3

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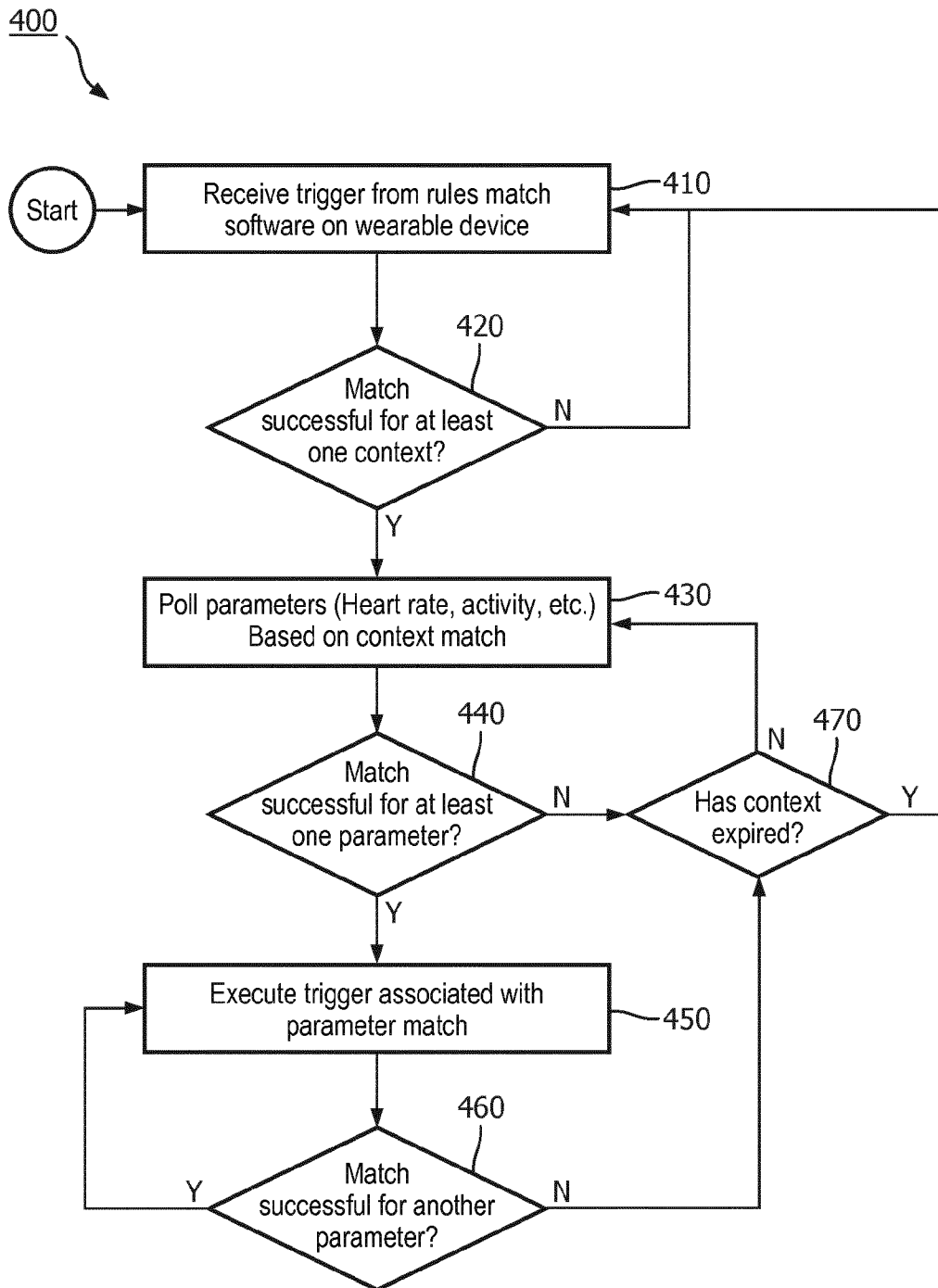


FIG. 4

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505

Set up context rules

Allow context to inform wearable data to ...

✓	Inform another wearable	Dating app
✓	Inform a database	Insurance app
✓	Inform an application	Yelp app
✓	Inform an administrator	HR dept. app
✓	Inform a purchase	Amazon.com
✓	Inform a geofence	Central park geo
✓	Inform a device setting	Display brightness
✓	Inform a calendar	Work calender
✓	Inform web browsing	Yahoo.com
✓	Inform media player	iTunes app
✓	Inform messaging	SMS w/ Sally
✓	Inform image capture	Instagram app
✓	Inform security system	Home security app

Create new custom context >

FIG. 5A

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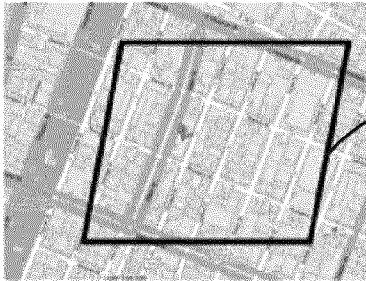
520

Create a new costum...

520A —

Geofence	V
----------	---

Map



525

530 — Name:

Commute late

 Time:

After 10pm M-F

Context

535 — Wearable input 1:

Heart rate

540 — Parameter 1:

Increases	More than	30%
-----------	-----------	-----

545 — Wearable input 2:

Accelerometer

550 — Parameter 2:

Increases	More than	100%
-----------	-----------	------

555 — **Trigger 1**

Phone call...	V
---------------	---

Contact	NYPD: 555-555-5555
---------	--------------------

560 — **Trigger 2**

Microphone	V
------------	---

Microphone: Record

565 —

Save

FIG. 5B

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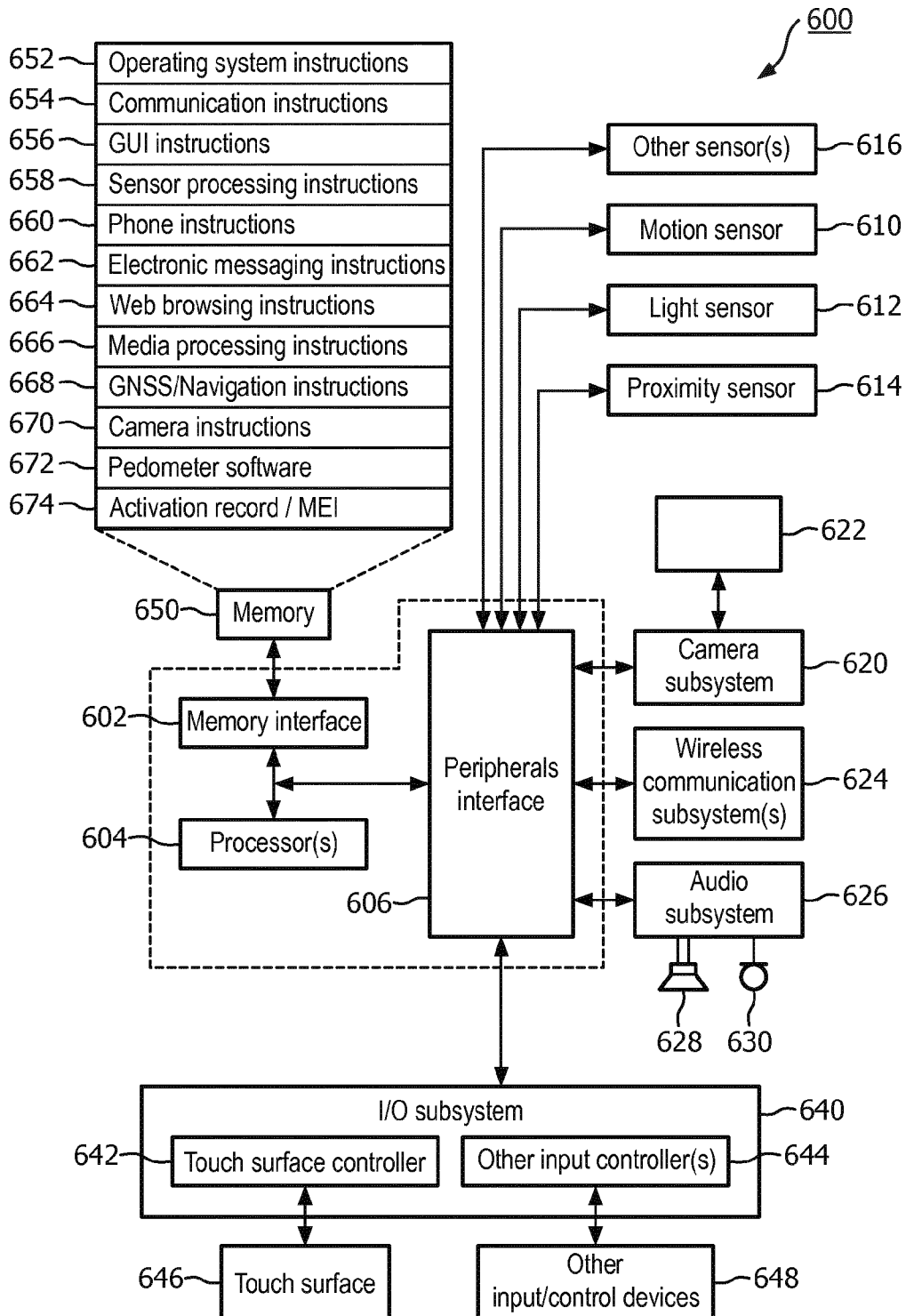


FIG. 6

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705

Create a new costum...

Application context

V

Application:

Yelp

Name:

Weekend shopping

12-5pm F-S

Context:

Connected to vendor WiFi

Wearable input 1:

Heart rate

Parameter 1:

Decrease

More than

20%

Trigger 1

Write review template:

1 Visited {Vendor name} on {Data} and found it relaxing

Wearable input 2:

Heart rate

Parameter 2:

Increase

More than

20%

Trigger 2

Write review template:

1 Visited {Vendor name} on {Data} and found it exciting

✓

Allow Vendor promotions

✓

Allow Vendor to use wearable data for special offers

Save

FIG. 7A

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755

Create a new costum...

760 Application context V 765

Application: Dating app

770 Name: Geofence downtown 6-9pm F and S

775 **Context:** Connected to another wearable

780 ☒ Allow app to access wearable data
☒ Allow wearable to receive notifications?

785 **Trigger:** Dating app

790 Save

FIG. 7B

Use case examples

1. Context + wearable data - informs another wearable
 - a - a dating application could be informed by context, wearable geolocation and user heart rate to determine if one users heart rate change is similar to another users heart change. E.g. are users excited to meet each other
 - b - caretakers could be informed by a context, geolocation, and heart rate trigger of another users wearable device
2. Context + wearable data - informs a 3rd party database
 - a - an insurance agency could collect context informed wearable data
3. Context + wearable data - informs an application (other applications: product reviews, journals, games, etc.)
4. Context + wearable data - informs an administrator (human resources could monitor how stressed everyone was at work)
5. Context + wearable data - informs a purchase (user receives discounts or notifications for shopping while excited, for example)
6. Context + wearable data - informs geofence (using would be able to look at a map and see where they were most excited/calm)
7. Context + wearable data - informs smartphone settings, such as work + stressed = do not disturb/disable notifications
8. Context + wearable data - informs routing application (a mapping application could determine your based upon stress levels)
9. Context + wearable data - informs a calendar schedule (if reoccurring events cause the user to be stressed, alert or make suggestion)
10. Context + wearable data - informs web browsing, (automatically bookmark exciting websites)
11. Context + wearable data - informs media (playlist to switch to more exciting songs if your heart rate is too low during exercise, or while driving (i.e. falling asleep))
12. Context + wearable data - informs messaging (input emotion into messaging based upon context, like someone is excited while messaging a significant other, worker is stressed/busy thus explaining a curt email)
13. Context + wearable data - informs images (out on a hike taking pictures posts to social media, broken down on the side of the road taking pictures opens insurance app, based on HR)
14. Context + wearable data - informs security system

FIG. 8

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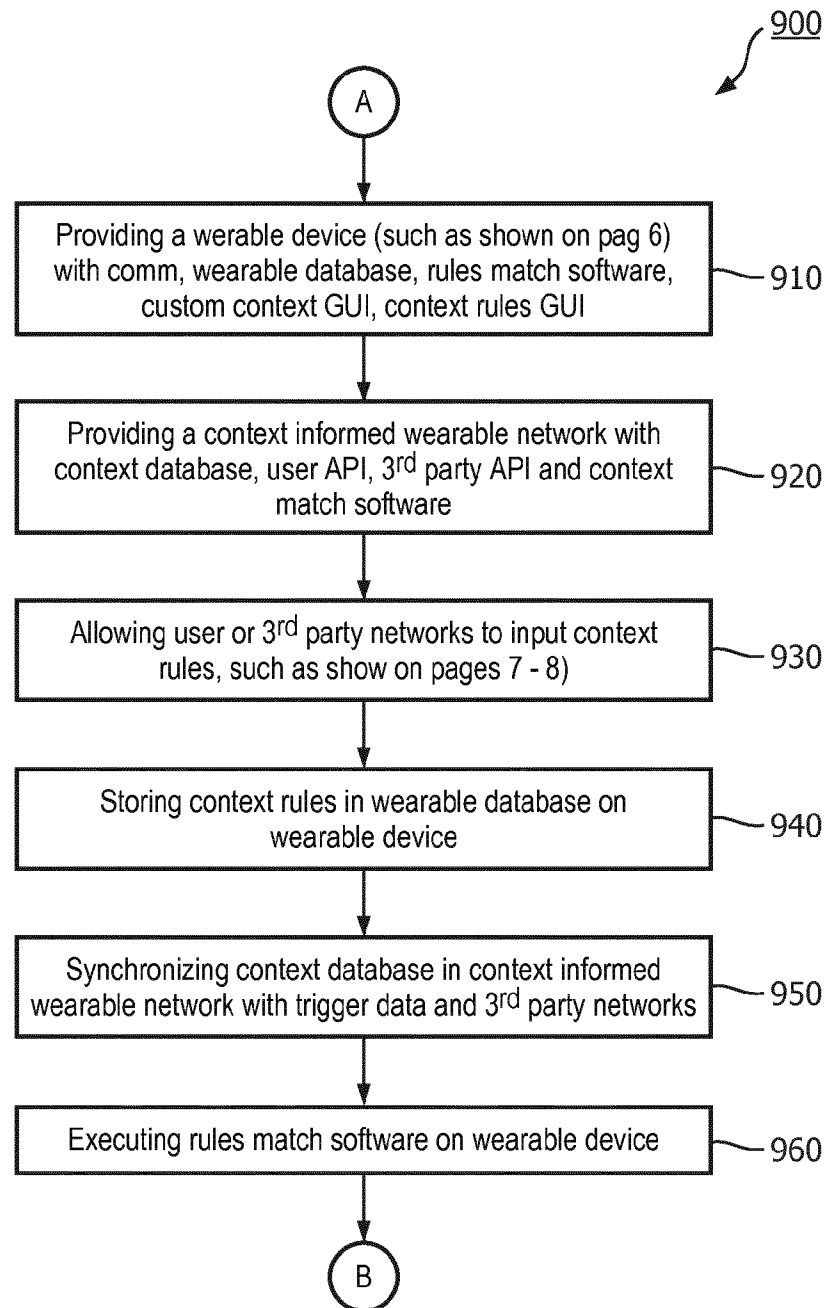


FIG. 9

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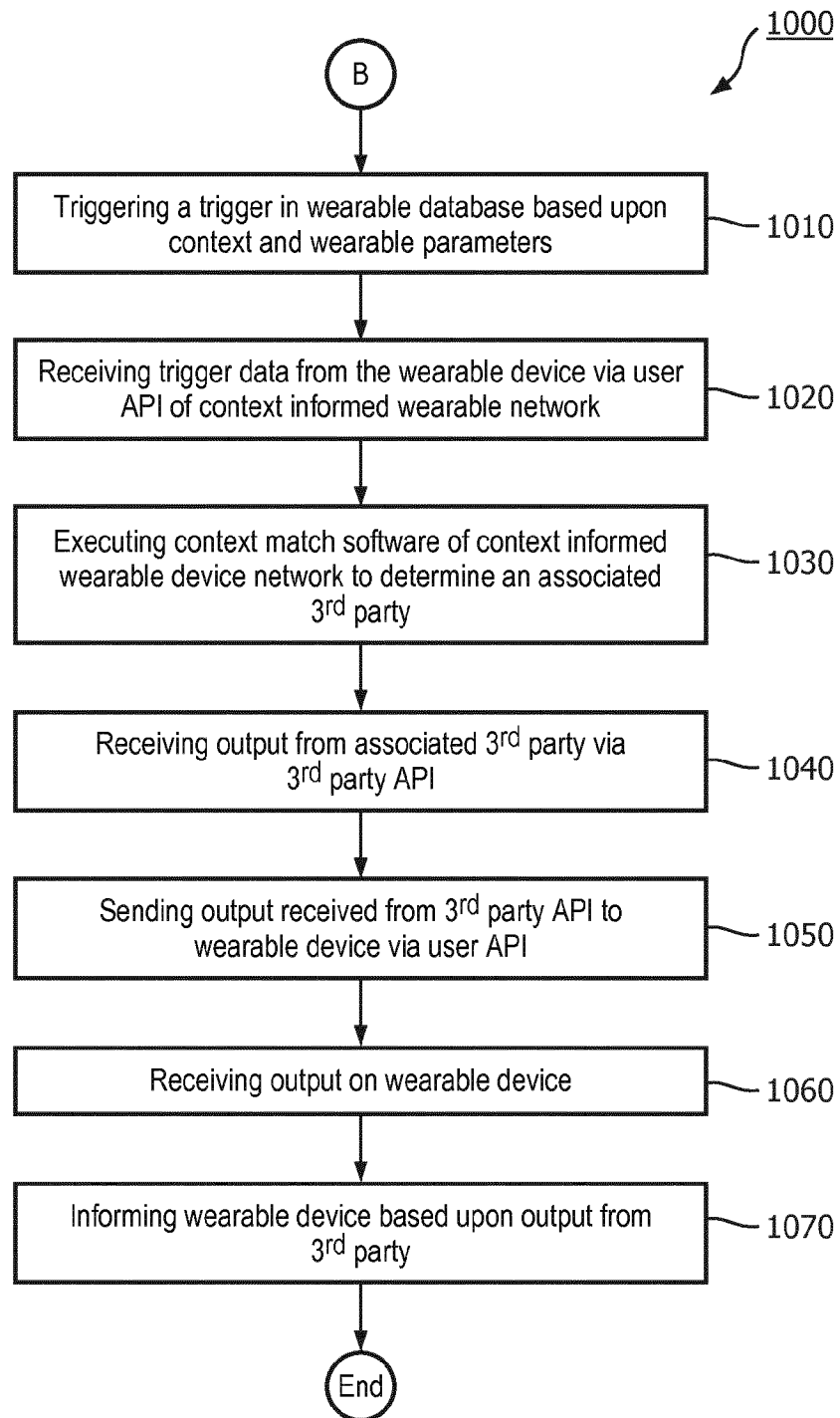


FIG. 10

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2015/080705

A. CLASSIFICATION OF SUBJECT MATTER
INV. G06F9/54 G06F19/00 A61B5/00 G06Q10/10
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 A61B G06Q

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, WPI Data, IBM-TDB

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 8 812 419 B1 (TELLER ERIC [US] ET AL) 19 August 2014 (2014-08-19) column 1, line 18 - line 25 column 3, line 50 - line 55 column 5, line 33 - line 48 column 14, line 63 - column 15, line 31 column 17, line 30 - column 18, line 20 column 19, line 21 - line 62 column 24, line 4 - line 54 column 26, line 10 - line 49 ----- -/--	1-20



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents :

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Date of the actual completion of the international search

15 February 2016

Date of mailing of the international search report

22/02/2016

Name and mailing address of the ISA/

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Authorized officer

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INTERNATIONAL SEARCH REPORT

International application No

PCT/EP2015/080705

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2014/278229 A1 (HONG JUNG OOK [US] ET AL) 18 September 2014 (2014-09-18) paragraph [0103] - paragraph [0112] paragraph [0127] - paragraph [0136] paragraph [0281] - paragraph [0223] paragraph [0246] - paragraph [0272] paragraph [0380] paragraph [0184] paragraph [0340]	1-15
X	----- US 2014/039842 A1 (YUEN SHEL TEN GEE JAO [US] ET AL) 6 February 2014 (2014-02-06) paragraph [0015] - paragraph [0018] paragraph [0080] - paragraph [0087] paragraph [0102] - paragraph [0106] paragraph [0117] paragraph [0137] - paragraph [0148] paragraph [0168] - paragraph [0169] -----	1-20

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/EP2015/080705

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 8812419	B1	19-08-2014	NONE

US 2014278229	A1	18-09-2014	US 2014278229 A1 18-09-2014
			US 2014305204 A1 16-10-2014
			US 2015314166 A1 05-11-2015

US 2014039842	A1	06-02-2014	US 2014039842 A1 06-02-2014
			US 2014218369 A1 07-08-2014
