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

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
17 March 2016 (17.03.2016)

WIPO | PCT

(10) International Publication Number
WO 2016/038378 A1

(51) International Patent Classification:
G06Q 50/00 (2012.01) *G06Q 10/10* (2012.01)

(21) International Application Number:
PCT/GB2015/052623

(22) International Filing Date:
10 September 2015 (10.09.2015)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
1416027.9 10 September 2014 (10.09.2014) GB

(71) Applicant: **MOO PRINT LIMITED** [GB/GB]; 32-38 Scrutton Street (REAR), London EC2A 4RQ (GB).

(72) Inventor: **MOROSS, Richard**; c/o MOO Print Limited, 32-38 Scrutton Street (REAR), London EC2A 4RQ (GB).

(74) Agents: **ELKINER, Kaya** et al.; Keltie LLP, No.1 London Bridge, London, Greater London, SE1 9BA (GB).

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

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

[Continued on next page]

(54) Title: INTERACTION BETWEEN USERS OF MOBILE DEVICES

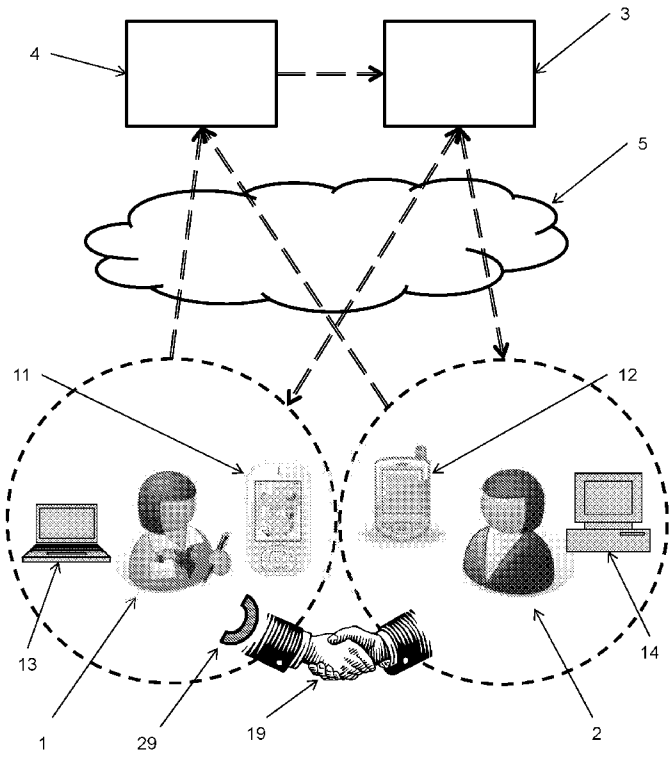

Figure 1

(57) Abstract: Digital information is exchanged in response to a physical interaction between users. First and second users each have a respective computing device (11, 12) and each computing device is configured to record user gestures. The two users (1, 2) each make a matched predetermined gesture (19). These predetermined gestures are recorded by the computing devices. Gesture recordings for each user are analysed to detect the predetermined gestures and to match them to the first and second users. In response, an exchange of information is made between the first user and the second user in accordance with a meaning assigned to the predetermined gestures. Suitably programmed computing devices and a gesture matching service are also provided.

WO 2016/038378 A1

Published:

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

INTERACTION BETWEEN USERS OF MOBILE DEVICES

Field of the Invention

The invention relates to interaction between users of electronic devices. In particular, embodiments relate to exchanges of information between users of electronic devices, such as the exchange of contact details after a meeting.

Background to the Invention

Most individuals now own, control, or have access to one or more electronic devices. Users of electronic devices may be considered to have their own digital presence in a digital domain. This digital presence includes a user's collection of digital information, such as e-mails, messages, images, documents and contacts, for example. This collection of information may be accessed from the electronic device, but may be held on the electronic device or remotely, for example in the cloud and accessed through an appropriate service – typically there will be a remotely held main collection of information with a local store on the electronic device itself. In addition to adding to, modifying or sharing their collection of information, the digital presence of users of electronic devices extends to actions that they take in a digital domain, such as electronic payment of bills.

In many cases, it would be desirable for a physical interaction between users of electronic devices to be accompanied by a related digital interaction between the digital presence of those users. One example of a physical interaction would be a physical meeting, with the related digital interaction being an exchange of contact details, as an alternative or supplement to an exchange of business cards. Various solutions have been proposed to achieve this exchange of digital information. One is simply to exchange physical business cards, and then simply scan or photograph the business cards – these may then be classified by the user, or optical character recognition used to prepare an entry for the user's contact database. This approach requires more user intervention than is desirable and is prone to errors. Another solution is for contact details to be exchanged in a short range networking exchange (NFC or Bluetooth, for example) – this avoids transcription errors, but also involves significant user intervention to determine when devices are allowed to connect to each other. It can also be difficult to make exchanges of information private, with setup difficulties often leading to a user making their own contact details available to any other user within range whether the first user wishes to share contact details with that other user or not.

With the developing capabilities of electronic devices, in particular of smartphones, and the increased use of peripherals linked to electronic devices in a personal short range network to extend these capabilities, it would be desirable to use electronic devices more effectively to achieve actions in a digital domain in association with interactions in a physical domain. In particular, it would be desirable for interactions between the digital presences of users of electronic devices to follow seamlessly from physical interactions between those users.

Summary of Invention

In a first aspect, the invention provides a method of exchanging information digitally in response to a physical interaction between users, the method comprising: a first user having a first computing device and a second user having a second computing device, wherein the first computing device and the second computing device are both configured to record user gestures; the first user and the second user each making a matched predetermined gesture, wherein the predetermined gestures are recorded by the first computing device and the second computing device; wherein a first computing device gesture recording and a second computing device gesture recording are analysed to detect the predetermined gestures and to match them to the first and second users, whereupon an exchange of information is made between the first user and the second user in accordance with a meaning assigned to the predetermined gestures.

Using this approach, predetermined physical gestures may be used by users to effect exchanges of information in a digital domain. This achieves the seamless integration between physical interaction and digital presence desired.

Preferably, one or both of the first computing device and the second computing device is a mobile computing device. The mobile computing device may be a mobile telecommunications handset.

Preferably, the first and second computing devices send gesture information to a gesture matching service, and the gesture matching service matches the predetermined gestures to the first and second users and initiates the exchange of information between the first and second users. The gesture information may comprise a time at which a recorded gesture was made, and may comprise a location at which a recorded gesture was made.

Each computing device may analyse its computing device gesture recording to detect the predetermined gesture, in which case a predetermined gesture identification may be sent as part of the gesture information. This gesture information may comprise both the

predetermined gesture identification and the gesture recording. The computing device may provide an indication to the user on detecting the predetermined gesture.

Alternatively, each computing device may send its computing device gesture recording to the gesture matching service, in which case the gesture matching services detects the predetermined gesture. The gesture information may then comprise an extended recording of gesture sensor information logged against time.

Alternatively, each computing device may make a provisional gesture identification, in which case each computing device sends its computing device gesture recording for each provisional gesture identification to the gesture matching service, and the gesture matching services determines whether the provisional gesture identification corresponds to the predetermined gesture. The computing device may provide an indication to the user on making a provisional gesture identification.

Preferably, the gesture recording comprises recording data from one or more sensors adapted to capture gesture data. These sensors may comprise an accelerometer, or a camera. One or more sensors may be comprised within an accessory with a local data connection to the associated computing device. This accessory may be worn by the relevant user.

In embodiments, the predetermined gestures are the same for the first user and the second user, and may comprise a handshake between the first user and the second user.

The exchange of information may comprise an exchange of contact information between the first user and the second user, or may comprise creation of a social network connection between the first user and the second user.

Preferably, a notification is provided to each user's computing device when the exchange of information has taken place. This may comprise a synchronisation of data held on each user's computing device with data held by a remote service.

Preferably, the first and second users have provided preauthorisation for one or more types of information exchange in response to predetermined gestures.

In a second aspect, the invention provides a computing device adapted to record gesture information in response to a physical interaction between a user of the computing device and

another party, wherein the computing device comprises: a programmed processor adapted to receive sensor information from one or more sensors associated with the computing device, and to send gesture information to a gesture matching service to enable an exchange of information is made between the first user and the another party in accordance with a predetermined meaning.

Preferably, the computing device is a mobile computing device, and may be a mobile telecommunications handset.

The one or more sensors may comprise an accelerometer, and may comprise a camera.

In embodiments, one or more sensors are comprised within an accessory with a local data connection to the associated computing device. This accessory may be worn by the relevant user.

Preferably the computing device is adapted to recognise a predetermined gesture made by the user. The computing device may be programmed to train the user to make the predetermined gesture.

The gesture information may comprise a time at which a recorded gesture was made, and may comprise a location at which a recorded gesture was made.

In a third aspect, the invention provides a gesture matching service adapted to receive gesture information from a plurality of users, and to identify matched predetermined gestures from first and second users corresponding to a physical interaction between the first and second users, and to initiate an exchange of information between the first and second users in response.

Preferably, the gesture matching service is also adapted to identify predetermined gestures from gesture information provided from a user.

Brief Description of Drawings

Specific embodiments of the invention will be described below, by way of example, with reference to the accompanying drawings, of which:

Figure 1 illustrates an infrastructure in which embodiments of the invention may be used;

Figure 2 shows schematically relevant parts of a representative hardware and software architecture for a mobile computing device suitable for implementing an embodiment of the invention;

Figure 3 shows steps in an indicative embodiment according to the invention of a method of exchanging information digitally in response to a physical interaction between users; and

Figure 4 illustrates a process of exchange of contact information between users in accordance with an embodiment of the invention.

Detailed Description of Preferred Embodiments

Figure 1 illustrates an infrastructure in which embodiments of the invention may be used. A first user 1 and a second user 2 are each shown with electronic devices that they control and which contribute to, or provide a conduit to, their digital presence. The first user 1 has a mobile phone 11, a laptop computer 13, and also a wristband 29 – the wristband 29 comprises an accelerometer and is a peripheral to mobile phone 11 to which it is paired in a personal network (for example by Bluetooth). This wristband 29 may be of essentially the same type conventionally used for physical activity monitoring of mobile phone users. The second user 2 also has a mobile phone 12, but in this case without any paired peripheral, and also has a desktop computer 14. The two users will interact digitally by a handshake 19.

Two remote services (implemented by an appropriate computing infrastructure from a remote server to a disaggregated data centre) are in contact with the first and the second users through an appropriate communications infrastructure, such as the public Internet 5. Contact management service 3 is exemplary of a service (which may be a conventional service) which interacts with a user's digital presence. In this case, contact management service 3 (which may, for example, be a contact management part of an e-mail service such as Gmail or Hotmail) interacts with the electronic devices of the users to maintain their personal contacts database. The electronic devices of a user – for example, the mobile phone 11 and the laptop 13 of the first user – synchronise with the contact management service according to a predetermined pattern and will generally maintain a local copy of the contact management database in a contacts application.

The other remote service shown is not conventional – this is a gesture matching service 4. As will be described below, the gesture matching service 4 receives gesture information from the digital presence of the first user 1 and the second user 2. The gesture matching service 4 then determines where there is a gesture match between the first user 1 and the second user 2 indicating a physical interaction between them. The gesture matching service 4 then

communicates the intended result of the physical interaction in the digital domain to the relevant service – in this case, the contact management service 3. Details of processes involving the gesture matching service 4 are described in more detail below in explanation of embodiments of the invention.

Figure 2 shows schematically relevant parts of a representative hardware and software architecture for a mobile computing device suitable for implementing an embodiment of the invention. In the example shown, each mobile computing device is a mobile cellular telecommunications handset ("mobile phone" or "mobile device") – in other embodiments, the computing device may be another type of computing device such as a laptop computer or a tablet, the computing device need not have cellular telecommunications capabilities, and one of the computing devices need not even be mobile (in principle, embodiments of the invention could be provided in which neither computing device were mobile, though in most practical applications envisaged at least one computing device would be mobile).
Mobile phone 1 comprises an application processor 22, one or more memories 23 associated with the application processor, a SIM, SE or USIM 24 itself comprising both processing and memory capabilities and a short range wirelss (for example, NFC) controller 25. The mobile phone also has a display 26 (shown as an overlay to the schematically represented computing elements of the device), providing in this example a touchscreen user interface. The mobile phone shown also contains an accelerometer 21 – this is present in some, but not all, embodiments of the invention. The mobile phone is equipped with wireless telecommunications apparatus 27 for communication with a wireless telecommunications network and local wireless communication apparatus 28 for interaction by NFC.

In the arrangement shown, the application processor 22 and associated memories 23 comprise (shown within the processor space, but with code and data stored within the memories) a contact management application 201 and a gesture recordal application 202. It will also contain other applications normally needed by such a device, such as a browser 203 and a modem 204. The SE/SIM/USIM 24 may comprise a security domain 205 adapted to support cryptographic actions and an NFC application 206 which interfaces with the local wireless controller 25, which has interfaces 207 to local wireless devices (such as NFC devices and tags). One such local wireless device is an accelerometer peripheral 29, which may be used as well as, or instead of, accelerometer 21 (if present).

An indicative embodiment according to the invention of a method of exchanging information digitally in response to a physical interaction between users is set out in Figure 3. A first

user and a second user each have a mobile device configured to record user gestures (step 310), and the two users move to a common location where they can physically interact. In their physical interaction, the two users make a common gesture with a predetermined meaning (step 320) and this gesture is recorded by each mobile device (step 330). For each device, the recorded gestures are analysed (step 340) and a determination is made whether a common gesture between two users has been made (step 350) – the analysis of the recorded gestures may be made at the mobile device or at a central service, but the determination of a common gesture will most easily be carried out by a central service to which gesture information data has been uploaded from multiple user mobile devices. When a common gesture has been determined, an exchange of information involving the digital presences of the first and second users will then take place (step 360) according to the predetermined meaning of the common gesture.

Each of these steps, with optional features and variations provided by appropriate embodiments of the invention, are described in more detail below.

As noted above, both the first and second users have capacity for gesture recognition and recordal associated with their digital presence. In the main embodiment described, this is by a gesture recordal capability associated with a mobile device, such as a mobile telephone handset. Embodiments of the invention may exist without two mobile users, however – for example, and embodiment may involve one mobile user (such as a consumer with a mobile phone) and one user in a specific location adapted for gesture capture (for example, a shop or other retail establishment). The discussion below relates to interaction between two mobile users (users with mobile devices, typically mobile telephone handsets), but the skilled person will readily understand how to adapt the teaching in the discussion below to a non-mobile user.

Gesture recognition is a well-known technical field, and gesture recognition technologies are not the subject of this patent specification – the person skilled in the art may refer to reference literature or may acquire off the shelf gesture recognition solutions. Gesture recognition generally involves detection of signals which may be interpreted as a movement track in a three-dimensional space and matched against predetermined gesture types by an appropriate matching technology. The original signals may be derived from a variety of sensor types: accelerometers, gyroscopes, and depth aware and stereo cameras, for example. Exemplary off-the-shelf solutions including software developer kits may be found from SoftKinetic (using cameras and time-of-flight sensors) and Pebble (for an accelerometer) among many others – accelerometer-based mobile phone accessories such

as those provided by Jawbone and Fitbit have application programmer interfaces that allow such accessories to be used for gesture recognition in this way.

The first and second users need their mobile devices to be ready to capture gesture information before any physical interaction between the users. This may be done simply by switching on a gesture capture application which continuously captures accelerometer motion (for example) for gesture recognition either at the time or later (as will be discussed below). Alternatively, such an application may be switched on by the user before an intended physical interaction with associated gesture information, and turned off afterwards – while this requires a conscious user intervention, it allows the application to be configured on the basis of an expectation that there will be a gesture for recognition and recordal while the application is switched on. A further possibility is for gesture recognition and recordal to be integrated with another application using accelerometer information – this means that the accelerometer information may be recorded and then analysed using multiple algorithms to recognise and record gesture information while also recording other information (such as the physical activity of the user).

One or more gestures will be predetermined for recognition. The gesture identified in Figure 1 for recognition is a handshake between the first user and the second user – as the skilled person will appreciate, templates for handshake recognition are known, and a particular profile of handshake (for example, a hand clasp, three rapid vertical shakes and hand release in a defined "shake") may be determined for easier recognition. Other gestures may be defined for other purposes – for example, the handshake indicated above may be used for exchange of contact details, whereas another easily recognised gesture (such as a repeated "high five") might be used for sending a linking request on a predetermined social network.

Gesture recognition may take place at the mobile device, at the gesture matching service, or at some combination of the two. The advantage of gesture recognition at the mobile device is that it minimises the need to store data and transmit it to the gesture matching service – the disadvantages are that it relies on the computational capabilities of the mobile device to achieve effective gesture recognition and it limits the ability to use data from the first user and the second user in a complementary way. The advantages of gesture recognition at the gesture matching service are that extensive computational resources will be available and it may also be possible to use data from the first user and the second user together. Different gesture recognition options will be discussed below. In order for support matching of a gesture to two users, it is desirable to capture further information with the gesture

information: timing information (preferably matched against an absolute reference time) and location information (for example from global positioning or from cellphone cell information) – this further information makes it possible for gestures to be matched effectively by correspondence in gesture type, time and place, thereby rendering false matches very unlikely (partial matches could either be ignored, or possibly offered to the first and second user to make a manual confirmation of the action indicated by the gesture rather than an automatic action as would occur with full matching).

There is an extensive literature of algorithmic approaches to spatial gesture modelling and hence to gesture recognition – for example, by using 3D modelling based on skeletal or volumetric models, or by using appearance based models based on deformable templates or image sequences – different approaches are suitable for different sensor information. The skilled person would readily be able to use this literature to provide gesture recognition of predetermined gestures, and specific algorithmic approaches to gesture recognition are not discussed further in this patent specification.

A first recognition option is for all gesture recognition to take place at a user's mobile device. If this approach is taken, when the gesture capture application is activated at the mobile device, it will continuously attempt to recognise sensor input as a gesture (this may occur in real time, or after a time lag of some duration to allow a recognition algorithm to be used for information in a defined time window). When a gesture is recognised, a gesture recognition event is logged along with an event time (or possibly an event start time and event finish time) and an event location. Preferably, the raw sensor data associated with the gesture is also preserved, as this may be of value in the gesture matching process as described below. At some point (for example at predetermined times of day, or at the first time after such times when there is an adequate network connection), this set of information is then transmitted for each gesture recognised at the mobile device to the gesture matching service for subsequent matching against gestures recognised by other users.

A second recognition option is for all gesture recognition to take place at the gesture matching service. In this case, the mobile device simply records all sensor data along with time and location information and periodically uploads this as a "gesture track" to the gesture matching service. This minimises the computational demands on the mobile device, at the cost of greater storage requirements and substantially greater communication of data from the mobile device to the gesture matching service.

A third recognition option is for gesture recognition to be split between the user's mobile device and the gesture matching service. In this approach, the first option could be followed but without full gesture recognition – it would be sufficient to identify an event as being probably (or possibly) a gesture to some degree of confidence, without a definite identification of the gesture. These candidate events could then be forwarded to the gesture matching service along with full sensor results in the relevant capture window and time and location information. The gesture matching service would then perform full gesture recognition as would be carried out according to the second option, with candidate events that were not recognised as a gesture discarded.

An advantage of providing at least some form of recognition at the user device is that this would enable the mobile device to provide some kind of feedback to the user. This could be a visual or audible alert either to indicate that a gesture had been provisionally recognised, or even that a specific type of gesture had been recognised.

After all of these options, the gesture matching service has uploaded gesture data for the first user for a particular time period for a recognised gesture type, together with time data and location data and (preferably) full sensor data for the uploaded gesture. When data for multiple users has been uploaded to the gesture matching service, gesture matching can occur.

The person skilled in the art will be aware of numerous known strategies for matching data items – in this case, the main matching step is to look for data sets with a common triplet of recognised gesture type, absolute time of gesture and gesture location. This may be done, for example, on uploading of a gesture event to scan through already recorded but unmatched gesture events to determine whether any took place at the same time, and then checking unmatched gesture events at the same time to see if they take place at the same location, and if so to determine whether they are of the same gesture type. "Same time" and "same location" may be defined to allow up to some predetermined time or location difference between the two sets of readings. A final, confirmatory stage of matching the gestures may be to compare the sensor readings directly – if these are clearly complementary to each other (for example, by a common pattern of movement down to fine details of the gesture). This may be more difficult if sensors are of a different type, but should still be possible (for example, by translating sensor values into a pattern of three-dimensional movement using a common coordinate framework).

As data from different users will be provided at different times, it may take some time after scanning before successful matching takes place, and some events may remain unmatched if data is never uploaded from a second user. On successful matching, it may be desirable to send some feedback to the first and second users who recorded the matched event – alternatively, such confirmation may be deferred until the information exchange associated with the gesture is carried out.

One such information exchange is an exchange of contact information between the first user and the second user, or between the digital presences of each user as represented by their respective contact management applications. Such an exchange of contact information is shown schematically in Figure 4 in the context of a full process of enabling exchange of contact information by gesture in accordance with an embodiment of the invention.

A first step in this process is for users to register 410 with the gesture matching service. As a part of the registration process, users would typically preauthorise 420 various actions associated with their digital presence, and in some cases this may involve allowing the gesture matching service permission to provide certain inputs to one of the user's service providers (for example, granting a permission to the gesture matching service to add a new entry to the user's contact database). The user will then download 430 the gesture recordal application – the gesture recordal application will preferably contain enough information to teach the user how to perform predetermined gestures correctly, possibly with the inclusion of a training routine that indicates when a test gesture has been performed correctly.

When the user has the gesture recordal application downloaded and in an active state, the main steps indicated above – the making and recording 440 of a gesture and the matching of the gesture 450 to the first and second users by the gesture matching service - may take place as indicated above. At this stage, the gesture matching service has identified a predetermined action to be carried out in respect of the digital presences of the first and second users. The gesture matching service then carries out the predetermined action 460, typically by notifying a relevant service (possibly the same service for both users, possibly a different service for each user) of the predetermined action to be carried out. For the exchange of contact information between the first and second users, for example, this may comprise the following steps: using the permission granted by the second user to release contact information for the second user to the gesture matching service, and using the permission granted by the first user to write the contact information for the second user into the first user's contact management database; and then taking the same steps with first and second users switched to write the contact information for the first user into the second

user's contact management database. At this point, there will preferably be notification 470 to the gesture recordal applications on the first and second users' mobile devices that the contact exchange (or other predetermined action) has been taken. At this time, there may also be a synchronisation operation between the relevant service or services and the relevant user's mobile device so the local representation of the user's digital presence reflects the change that has been made.

This approach is suitable for use with a contact management database integrated with a cloud-based e-mail service (such as Google's Gmail). It can also be used with other similar services – for example, to send and accept a connection request on a social network such as LinkedIn or Facebook. This approach could even be used for small value transactions – though it may be preferred for additional confirmation to be required before the transaction is finalised. In general, for information exchanges of greater sensitivity or transactions (particularly of more than a low value), it may be desirable for the information exchange to facilitate the action, rather than carry it out (for example, by requiring only a one click response from a user to carry out the action in response to an e-mail sent to the user).

While the contact exchange use described is symmetric between the first and second users, it should be noted that this need not be the case. The social network use described above is asymmetric in process (in that there needs to be an inviter and an invitee to make a connection in most social networks), though the outcome is symmetric (in that the two users are connected over the social network). However, payment is necessarily asymmetric (in that one user is the payer and the other the payee). Likewise, the gestures performed by the first user and the second user may be complementary, rather than the same, particularly for an asymmetric action – for example, the first user may raise a hand to the mouth and the second user raise a hand to the ear to schedule a call from the first user to the second user, for example.

A person skilled in the art will appreciate that the present invention is not limited to details of the described embodiments, rather numerous changes and modifications may be made without departing from the spirit and scope of the invention as set out in the appended claims, both in the processes described and in the range of applications for which these processes may be used.

Claims

1. A method of exchanging information digitally in response to a physical interaction between users, the method comprising:

a first user having a first computing device and a second user having a second computing device, wherein the first computing device and the second computing device are both configured to record user gestures;

the first user and the second user each making a matched predetermined gesture, wherein the predetermined gestures are recorded by the first computing device and the second computing device;

wherein a first computing device gesture recording and a second computing device gesture recording are analysed to detect the predetermined gestures and to match them to the first and second users, whereupon an exchange of information is made between the first user and the second user in accordance with a meaning assigned to the predetermined gestures.

2. A method as claimed in claim 1, wherein one or both of the first computing device and the second computing device is a mobile computing device.

3. A method as claimed in claim 2, wherein the mobile computing device is a mobile telecommunications handset.

4. A method as claimed in any preceding claim, wherein the first and second computing devices send gesture information to a gesture matching service, and the gesture matching service matches the predetermined gestures to the first and second users and initiates the exchange of information between the first and second users.

5. A method as claimed in claim 4, wherein the gesture information comprises a time at which a recorded gesture was made.

6. A method as claimed in claim 4 or claim 5, wherein the gesture information comprises a location at which a recorded gesture was made.

7. A method as claimed in any of claims 4 to 6, wherein each computing device analyses its computing device gesture recording to detect the predetermined gesture, and wherein a predetermined gesture identification is sent as part of the gesture information.

8. A method as claimed in claim 7, wherein the gesture information comprises both the predetermined gesture identification and the gesture recording.

9. A method as claimed in claim 7 or claim 8, wherein the computing device provides an indication to the user on detecting the predetermined gesture.

10. A method as claimed in any of claims 4 to 6, wherein each computing device sends its computing device gesture recording to the gesture matching service, and wherein the gesture matching services detects the predetermined gesture.

11. A method as claimed in claim 10, wherein the gesture information comprises an extended recording of gesture sensor information logged against time.

12. A method as claimed in any of claims 4 to 6, wherein each computing device makes a provisional gesture identification, and wherein each computing device sends its computing device gesture recording for each provisional gesture identification to the gesture matching service, and wherein the gesture matching services determines whether the provisional gesture identification corresponds to the predetermined gesture.

13. A method as claimed in claim 12, wherein the computing device provides an indication to the user on making a provisional gesture identification.

14. A method as claimed in any preceding claim, wherein the gesture recording comprises recording data from one or more sensors adapted to capture gesture data.

15. A method as claimed in claim 14, wherein the one or more sensors comprise an accelerometer.

16. A method as claimed in claim 14, wherein the one or more sensors comprise a camera.

17. A method as claimed in any of claims 14 to 16, wherein one or more sensors are comprised within an accessory with a local data connection to the associated computing device.

18. A method as claimed in claim 17, wherein the accessory is worn by the relevant user.

19. A method as claimed in any preceding claim, wherein the predetermined gestures are the same for the first user and the second user.

20. A method as claimed in claim 19, wherein the predetermined gestures comprise a handshake between the first user and the second user.

21. A method as claimed in any preceding claim, wherein the exchange of information comprises an exchange of contact information between the first user and the second user.

22. A method as claimed in any preceding claim, wherein the exchange of information comprises creation of a social network connection between the first user and the second user.

23. A method as claimed in any preceding claim, wherein a notification is provided to each user's computing device when the exchange of information has taken place.

24. A method as claimed in claim 23, wherein the notification comprises a synchronisation of data held on each user's computing device with data held by a remote service.

25. A method as claimed in any preceding claim, wherein the first and second users have provided preauthorisation for one or more types of information exchange in response to predetermined gestures.

26. A computing device adapted to record gesture information in response to a physical interaction between a user of the computing device and another party, wherein the computing device comprises:

a programmed processor adapted to receive sensor information from one or more sensors associated with the computing device, and to send gesture information to a gesture matching service to enable an exchange of information is made between the first user and the another party in accordance with a predetermined meaning.

27. A computing device as claimed in claim 26, wherein the computing device is a mobile computing device.

28. A computing device as claimed in claim 27, wherein the mobile computing device is a mobile telecommunications handset.

29. A computing device as claimed in one of claims 26 to 28, wherein the one or more sensors comprise an accelerometer.

30. A computing device as claimed in one of claims 26 to 28, wherein the one or more sensors comprise a camera.

31. A computing device as claimed in any one of claims 26 to 30, wherein one or more sensors are comprised within an accessory with a local data connection to the associated computing device.

32. A computing device as claimed in claim 31, wherein the accessory is worn by the relevant user.

33. A computing device as claimed in any of claims 26 to 32, wherein the computing device is adapted to recognise a predetermined gesture made by the user.

34. A computing device as claimed in claim 33, wherein the computing device is programmed to train the user to make the predetermined gesture.

35. A computing device as claimed in any of claims 26 to 34, wherein the gesture information comprises a time at which a recorded gesture was made.

36. A computing device as claimed in any of claims 26 to 35, wherein the gesture information comprises a location at which a recorded gesture was made.

37. A gesture matching service adapted to receive gesture information from a plurality of users, and to identify matched predetermined gestures from first and second users corresponding to a physical interaction between the first and second users, and to initiate an exchange of information between the first and second users in response.

38. A gesture matching service as claimed in claim 37, wherein the gesture matching service is also adapted to identify predetermined gestures from gesture information provided from a user.

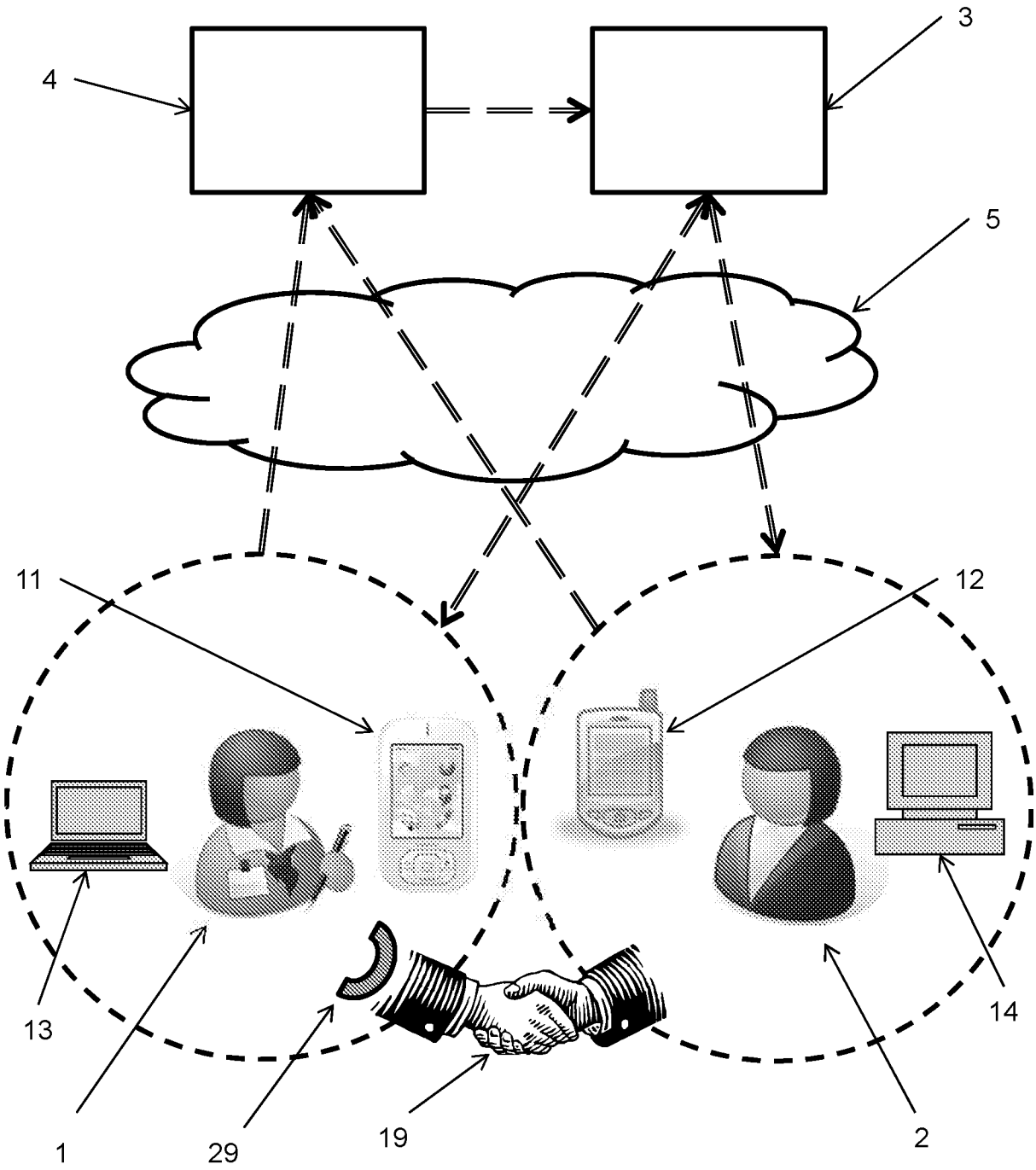

Figure 1

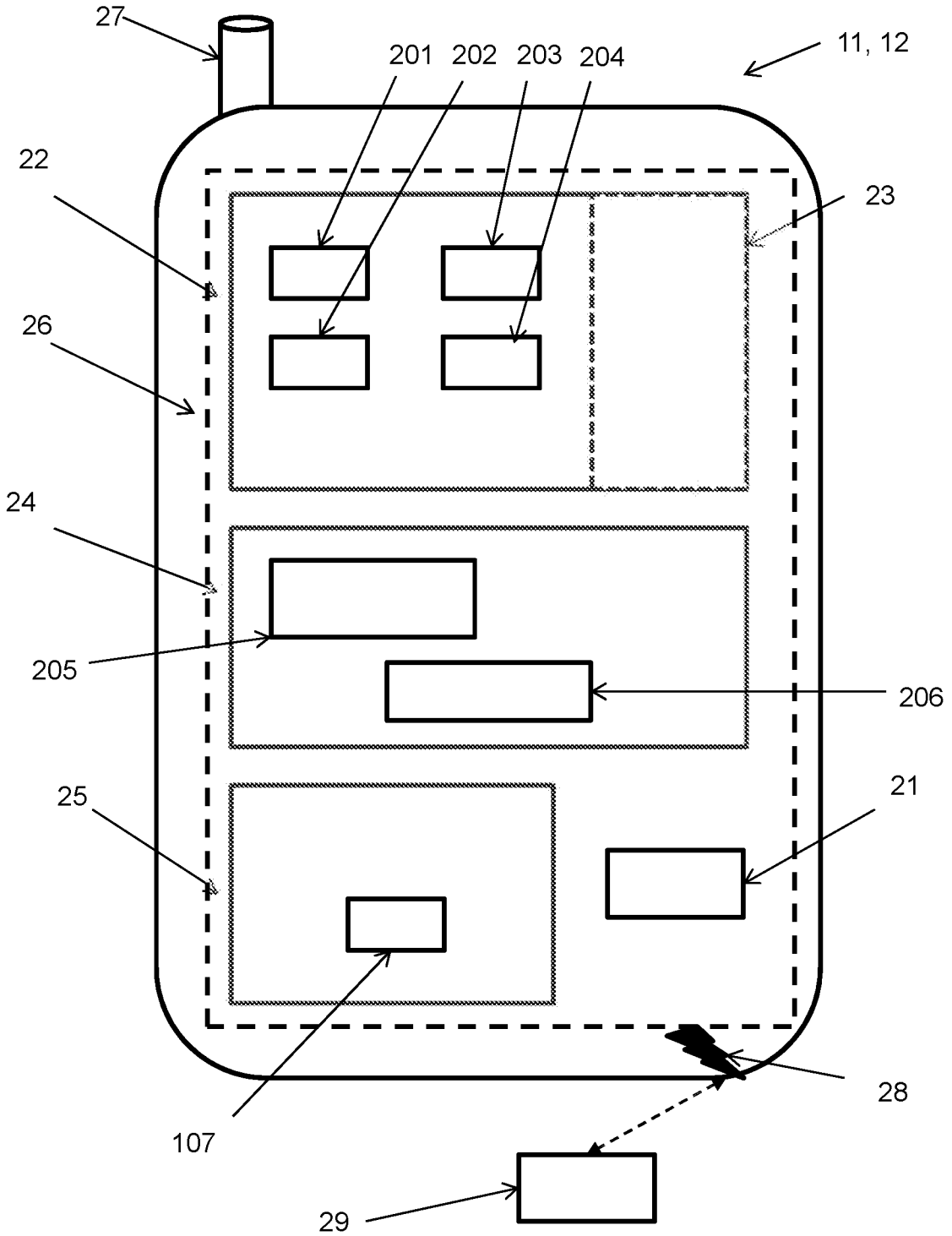

Figure 2

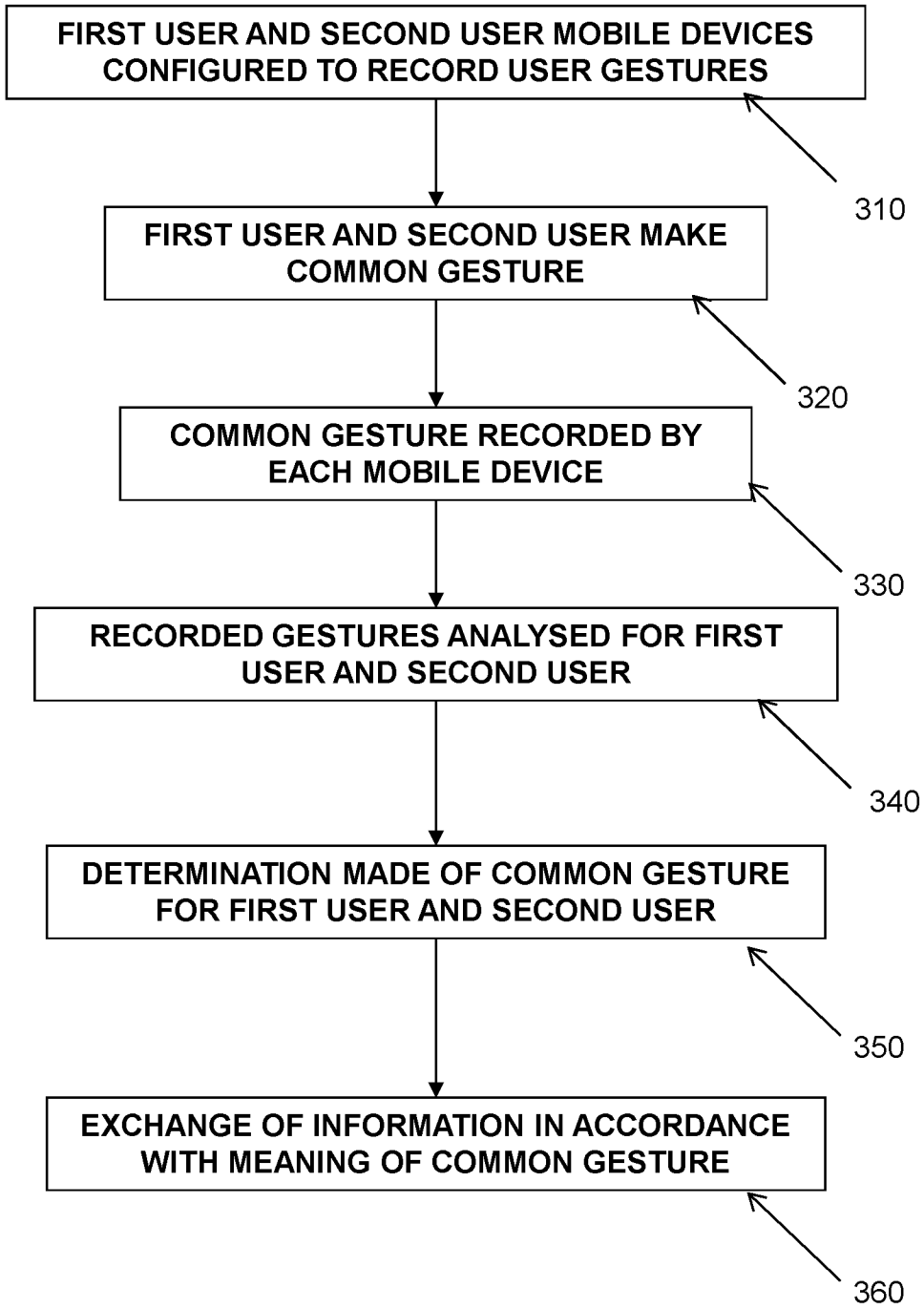
FIRST USER AND SECOND USER MOBILE DEVICES CONFIGURED TO RECORD USER GESTURES
310
FIRST USER AND SECOND USER MAKE COMMON GESTURE
320
COMMON GESTURE RECORDED BY EACH MOBILE DEVICE
330
RECORDED GESTURES ANALYSED FOR FIRST USER AND SECOND USER
340
DETERMINATION MADE OF COMMON GESTURE FOR FIRST USER AND SECOND USER
350
EXCHANGE OF INFORMATION IN ACCORDANCE WITH MEANING OF COMMON GESTURE
360

Figure 3

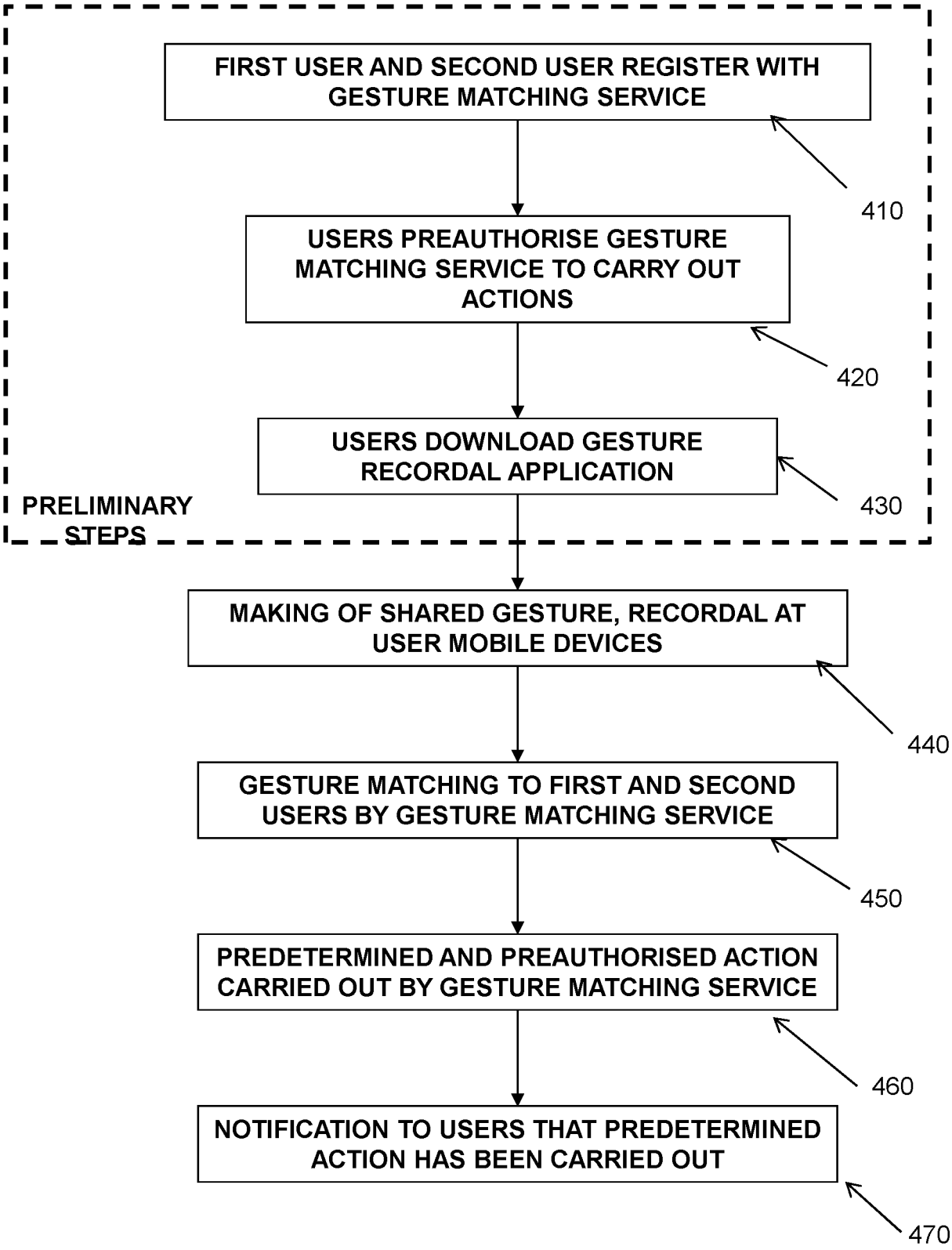
FIRST USER AND SECOND USER REGISTER WITH GESTURE MATCHING SERVICE
410
USERS PREAUTHORISE GESTURE MATCHING SERVICE TO CARRY OUT ACTIONS
420
USERS DOWNLOAD GESTURE RECORDAL APPLICATION
430
PRELIMINARY STEPS
MAKING OF SHARED GESTURE, RECORDAL AT USER MOBILE DEVICES
440
GESTURE MATCHING TO FIRST AND SECOND USERS BY GESTURE MATCHING SERVICE
450
PREDETERMINED AND PREAUTHORISED ACTION CARRIED OUT BY GESTURE MATCHING SERVICE
460
NOTIFICATION TO USERS THAT PREDETERMINED ACTION HAS BEEN CARRIED OUT
470

Figure 4

INTERNATIONAL SEARCH REPORT

International application No
PCT/GB2015/052623

A. CLASSIFICATION OF SUBJECT MATTER
INV. G06Q50/00 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 G06Q H04M

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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 8 219 028 B1 (FLAMHOLZ ABRAHAM I [US]) 10 July 2012 (2012-07-10) the whole document	1-38
X	US 2004/003133 A1 (PRADHAN SALIL [US] ET AL) 1 January 2004 (2004-01-01) the whole document	1-38
X	US 2011/191823 A1 (HUIBERS ANDREW G [US]) 4 August 2011 (2011-08-04) the whole document	1-38
X	US 2014/148094 A1 (PARK JAE [US] ET AL) 29 May 2014 (2014-05-29) the whole document	1-38

-/--

[X] Further documents are listed in the continuation of Box C.

[X] See patent family annex.

* Special categories of cited documents :

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

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

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

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

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

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

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

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

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
12 November 2015	23/11/2015

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

1

Form PCT/ISA/210 (second sheet) (April 2005)

INTERNATIONAL SEARCH REPORT

International application No
PCT/GB2015/052623

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 2007/188323 A1 (SINCLAIR MICHAEL [US] ET AL) 16 August 2007 (2007-08-16) the whole document	1-38
X	US 2014/149859 A1 (VAN DYKEN SHAUN W [US] ET AL) 29 May 2014 (2014-05-29) the whole document	1-38
X	US 2008/195735 A1 (HODGES STEPHEN [GB] ET AL) 14 August 2008 (2008-08-14) the whole document	1-38

1

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/GB2015/052623

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 8219028 B1	10-07-2012	NONE	
US 2004003133 A1	01-01-2004	NONE	
US 2011191823 A1	04-08-2011	NONE	
US 2014148094 A1	29-05-2014	CN 104969591 A	07-10-2015
		EP 2926582 A1	07-10-2015
		KR 20150090155 A	05-08-2015
		US 2014148094 A1	29-05-2014
		WO 2014085704 A1	05-06-2014
US 2007188323 A1	16-08-2007	NONE	
US 2014149859 A1	29-05-2014	CN 104813642 A	29-07-2015
		EP 2926532 A1	07-10-2015
		KR 20150090162 A	05-08-2015
		US 2014149859 A1	29-05-2014
		WO 2014085369 A1	05-06-2014
US 2008195735 A1	14-08-2008	US 2008195735 A1	14-08-2008
		US 2013082818 A1	04-04-2013