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61/472,488 6 April 2011 (06.04.2011) US(71) Applicant (for all designated States except US): **ST-Ericsson SA** [CH/CH]; Chemin du Champ-des-Filles 39, CH-1228 Plan-les-ouates (CH).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **CARLSSON, Fredrik** [SE/SE]; Smörblommenvägen 12, SE-245 63 Hjärup (SE). **JÄRGENSTEDT, Mats** [SE/SE]; c/o Moldenius, Solursgränd 4, SE-162 65 Vällingby (SE).(74) Agent: **Ström & Gulliksson AB (Lund)**; Box 793, SE-220 07 Lund (SE).

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(54) Title: ZOOMING METHOD

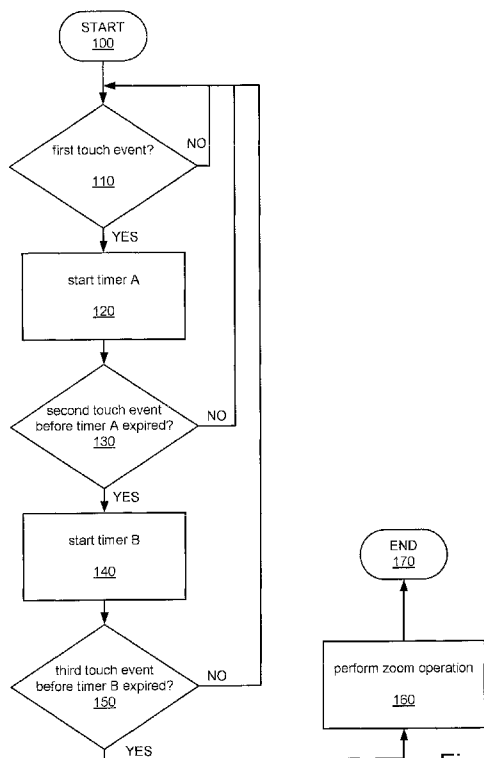


Fig. 9

(57) Abstract: A method of zooming in a graphical user interface of an electronic device (1) having a touch screen (2) for receiving input from a user via touch interactions is disclosed. The method comprises detecting a first touch event, which is the result of a first touch interaction at a first coordinate (c1) of said touch screen (2). The method further comprises detecting a second touch event, which is the result of a second touch interaction, subsequent to the first touch interaction, at a second coordinate (c2) of said touch screen (2). Furthermore, the method comprises detecting a third touch event, which is the result of a third touch interaction, subsequent to the second touch interaction, at a third coordinate (c3a, c3b) of said touch screen (2). Moreover, the method comprises controlling the touch screen to perform a zoom operation on an image displayed on the graphical user interface. The zoom operation is representative of a first distance L_1 between the first coordinate (c1) and the second coordinate (c2) and a second distance L_2 between the first coordinate (c1) and the third coordinate (c3a, c3b). A corresponding electronic device, a corresponding computer program product, and a corresponding computer readable medium are also disclosed.

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ZOOMING METHOD

Technical Field

The present invention relates to a method of zooming in a graphical user
5 interface of an electronic device having a touch screen.

Background

Electronic devices, such as mobile phones and the like, with touch screens have
gained an increased popularity in recent years. A user of the electronic device can
interact with a graphical user interface of the electronic device, displayed on the touch
10 screen of the electronic device, by performing touch operations, or touch interactions,
(e.g. with a finger or other physical object) on the touch screen, such as “press down”
operations, “release” operation (i.e. terminating a press-down operation), etc. One
common such interaction with the graphical user interface is zooming (i.e. magnifying
or scaling down image content of the graphical user interface).

15 Using a so called capacitive touch screen in the electronic device provides
great flexibility in such user interaction, since capacitive touch screens allow detection
of multiple simultaneous touch operations at different coordinates. Hence, the use of a
capacitive touch screen facilitates simple user-friendly user interactions, such as
zooming operations. A so called resistive touch screen, on the other hand, can only
20 detect a single touch operation at a single coordinate at a time, which makes it more
difficult to provide user-friendly means for performing user interaction, such as
zooming operations. However, resistive touch screens are preferred in many
applications due to their lower production cost.

Summary

25 An object of the present invention is therefore to provide a user-friendly means
for zooming in a graphical user interface of an electronic device having a touch screen
that can be utilized in such electronic devices where the touch screen is a resistive touch
screen. Embodiments of the invention are, however, also applicable for electronic
devices having a touch screen capable of detecting multiple simultaneous touch
30 operations at different coordinates.

According to a first aspect, there is provided a method of zooming in a graphical user interface of an electronic device having a touch screen for receiving input from a user via touch interactions. The method comprises detecting a first touch event, which is the result of a first touch interaction at a first coordinate of said touch screen.

5 Furthermore, the method comprises detecting a second touch event, which is the result of a second touch interaction, subsequent to the first touch interaction, at a second coordinate of said touch screen. The method further comprises detecting a third touch event, which is the result of a third touch interaction, subsequent to the second touch interaction, at a third coordinate of said touch screen. Moreover, the method comprises

10 controlling the touch screen to perform a zoom operation on an image displayed on the graphical user interface, wherein the zoom operation is representative of a first distance L_1 between the first coordinate and the second coordinate and a second distance L_2 between the first coordinate and the third coordinate.

For example, the zoom operation may be a zoom-in operation if $L_1 < L_2$ or a

15 zoom-out operation if $L_2 < L_1$. Alternatively, the zoom operation may be a zoom-out operation if $L_1 < L_2$ or a zoom-in operation if $L_2 < L_1$.

The first touch interaction may be a first press-down operation at said first coordinate. Furthermore, the second touch interaction may be a second press down operation at said second coordinate. The first press-down operation may be terminated

20 before the second press-down operation is performed.

The third touch interaction may include a movement to said third coordinate during said second press-down operation. Furthermore, the third touch event may include a release of the second press-down operation at said third coordinate.

Alternatively, the third touch interaction may be a third press-down operation

25 at said third coordinate. In this case, the second press-down operation may be terminated before the third press-down operation is performed.

Performing the zoom operation may comprise zooming with a scaling factor proportional to L_2/L_1 .

The zoom operation may be such that image content displayed at the second

30 coordinate before the zoom operation is displayed at a fourth coordinate after the zoom operation. The fourth coordinate may have at least one of an x component and a y

component (possibly both) in an orthogonal coordinate system of said touch screen in common with the third coordinate.

The zoom operation may be such that image content displayed at the first coordinate before the zoom-operation is displayed at the first coordinate also after the
5 zoom operation.

Alternatively, the zoom operation may be such that image content displayed at a center coordinate, located in the middle between the first coordinate and the second coordinate, before the zoom operation is displayed at said center coordinate also after the zoom operation.

10 In some embodiments, the zoom operation is such that an aspect ratio is preserved.

The touch screen may be a resistive touch screen.

The method may comprise inhibiting the zoom operation if the second touch interaction has not occurred within a first predefined time period starting from the
15 detection of the first touch event. Alternatively or additionally, the method may comprise inhibiting the zoom operation if the third touch interaction has not occurred within a second predefined time period starting from the detection of the first touch event or from the detection of the second touch event.

According to a second aspect, there is provided an electronic device. The
20 electronic device comprises a touch screen having a graphical user interface and configured to receive input from a user via touch interactions. Furthermore, the electronic device comprises a control unit operatively connected to the touch screen. The control unit is configured to detect a first touch event, which is the result of a first touch interaction at a first coordinate of said touch screen. Furthermore, the control unit
25 is configured to detect a second touch event, which is the result of a second touch interaction, subsequent to the first touch interaction, at a second coordinate of said touch screen. The control unit is further configured to detect a third touch event, which is the result of a third touch interaction, subsequent to the second touch interaction, at a third coordinate of said touch screen. Moreover, the control unit is configured to control the
30 touch screen to perform a zoom operation on an image displayed on the graphical user interface, wherein the zoom operation is representative of a first distance L_1 between the

first coordinate and the second coordinate and a second distance L_2 between the first coordinate and the third coordinate.

The touch screen may be a resistive touch screen.

5 The control unit may be configured to inhibit the zoom operation if the second touch interaction has not occurred within a first predefined time period starting from the detection of the first touch event. Alternatively or additionally, the control unit may be configured to inhibit the zoom operation if the third touch interaction has not occurred within a second predefined time period starting from the detection of the first touch event or from the detection of the second touch event.

10 According to a third aspect, there is provided a computer program product comprising computer program code means for executing one or more of the embodiments of the method according to the first aspect when said computer program code means are run by a programmable control unit, which is operatively connected to the touch screen, of the electronic device.

15 According to a fourth aspect, there is provided a computer readable medium having stored thereon a computer program product comprising computer program code means for executing one or more of the embodiments of the method according to the first aspect when said computer program code means are run by a programmable control unit, which is operatively connected to the touch screen, of the electronic device.

20 Further embodiments of the invention are defined in the dependent claims.

It should be emphasized that the term “comprises/comprising” when used in this specification is taken to specify the presence of stated one or more features, integers, steps, or components, but does not preclude the presence or addition of one or more other features, integers, steps, components, or groups thereof.

25

Brief Description of the Drawings

Further objects, features and advantages of embodiments of the invention will appear from the following detailed description, reference being made to the accompanying drawings, in which:

30 Fig. 1 schematically illustrates an electronic device having a touch screen according to an embodiment of the present invention;

Figs. 2-4 illustrate a series of touch events according to an embodiment of the present invention;

Figs. 5-7 illustrate a series of touch events according to another embodiment of the present invention;

5 Fig. 8 illustrates distances between coordinates according to examples;

Fig. 9 is a flowchart of a method according to an embodiment of the present invention;

Figs. 10-11 illustrate a zoom-out operation according to an example; and

10 Fig. 12 schematically illustrates a computer-readable medium and a programmable control unit according to an embodiment of the present invention.

Detailed Description

Fig. 1 illustrates an electronic device 1 according to an embodiment of the present invention. The electronic device 1 may e.g. be, but is not limited to, a mobile phone, personal digital assistant, tablet device, or the like. According to the
15 embodiment, the electronic device 1 has a touch screen 2, which allows a user to interact with a graphical user interface of the electronic device 1 by performing touch operations, or touch interactions, e.g. with his finger 3 or some other object, such as a stylus or the like. Furthermore, the electronic device comprises a control unit 4 for controlling the touch screen 2 (and possibly other parts of the electronic device 1 as
20 well).

According to embodiments of the present invention, a method of zooming in the graphical user interface of the electronic device 1 is provided. The method may e.g. be performed, or controlled, by the control unit 4. Hence, the control unit 4 may be configured to perform the method. The method comprises detecting a first touch event,
25 which is the result of a first touch interaction at a first coordinate of the touch screen (2). In this description, there is made a distinction between touch interactions, which is the physical interaction between a user and the touch screen 2, and touch events, which are internal events within the electronic device 1, e.g. represented by electrical signals from the touch screen 2, resulting from touch interactions, where such touch events are
30 detectable by the control unit 4, e.g. in the form of interrupts or the like. Thus, the term “touch interaction” refers to the physical interaction between the user and the touch

screen 2, whereas the term "touch event" refers to an internal event within the electronic device 1 resulting from a touch interaction, for instance in the form of an interrupt provided to the control unit 4 as a result of the touch interaction. The method further comprises detecting a second touch event, which is the result of a second touch
5 interaction at a second coordinate of the touch screen 2. The second touch interaction is subsequent to the first touch interaction. Furthermore, the method comprises, detecting a third touch event, which is the result of a third touch interaction at a third coordinate of the touch screen 2. The third touch interaction is subsequent to the second touch interaction. Since the detection of the touch events are performed in sequential order
10 and at a single coordinate at a time, the embodiments of the method can be used in connection with a resistive touch screen. Therefore, in accordance with some embodiments of the present invention, the touch screen 2 is a resistive touch screen (but since a capacitive touch screen is more versatile than a resistive touch screen, a capacitive touch screen may naturally be used as well in other embodiments).

15 The method further comprises controlling the touch screen 2 to perform a zoom operation on an image displayed on the graphical user interface. The zoom operation is representative of a first distance L_1 between the first coordinate and the second coordinate, and of a second distance L_2 between the first coordinate and the third coordinate. As a nonlimiting example, the method may comprise determining a number
20 indicative of the first distance L_1 between the first coordinate and the second coordinate and determining a number indicative of the second distance L_2 between the first coordinate and the third coordinate. According to an example embodiment, the zoom operation is a zoom-in operation if $L_1 < L_2$, or a zoom-out operation if $L_2 < L_1$. In alternative (perhaps less intuitive) embodiments, it may be the other way around, i.e.
25 that the zoom operation is a zoom-out operation if $L_1 < L_2$, or a zoom-in operation if $L_2 < L_1$. The zoom operation could e.g. take place continuously after the detection of the third touch event to allow the user to choose a suitable degree of zoom (in some cases referred to as "scaling factor" or "zoom factor").

30 Figs. 2-4 illustrate a series of touch interactions according to an embodiment of the present invention. In Fig. 2, the user performs a first press-down operation at the first coordinate c1. According to the embodiment, the first touch interaction is that first

press-down operation, or the initiation of the first press-down operation, at said first coordinate c1. In Fig. 3, the user performs a second press-down operation at the second coordinate c2 (after termination of the first press-down operation). According to the embodiment, the second touch interaction is that second press-down operation, or the initiation of the second press-down operation, at said second coordinate c2. Thereafter, the user drags his finger (or other object) on the touch screen 2 during the second press-down operation (i.e. without releasing the pressure on the touch screen 2 after having initiated the second press-down operation). This is illustrated in Fig. 3 with two arrows illustrating two example directions in which the user may drag his finger. A solid arrow indicates a first example direction and a dotted arrow indicates a second example direction. Naturally, the user may drag his finger in any direction, and the first and second example directions are mere examples. The third touch interaction may include this movement to the third coordinate (which is denoted c3a in Fig. 4 for movement in said first example direction and c3b for movement in the second example direction) during the second press-down operation. The third touch interaction may further include a release, or termination, of the second press-down operation at the third coordinate c3a or c3b. Accordingly, the third touch interaction may comprise that the user drags his finger to the third coordinate c3a or c3b during the second press-down operation and subsequently releases the pressure at the third coordinate c3a or c3b. Alternatively, the third touch interaction may be a movement to the third coordinate c3a or c3b during said second press-down operation, i.e. that the user has dragged his finger to the third coordinate c3a or c3b during the second press-down operation but not necessarily released the pressure.

Figs. 5-7 illustrate a series of touch interactions according to another embodiment of the present invention. In Fig. 5, the user performs a first press-down operation at the first coordinate c1. According to the embodiment, the first touch interaction is that first press-down operation, or the initiation of the first press-down operation, at said first coordinate c1. In Fig. 6, the user performs a second press-down operation at the second coordinate c2 (after termination of the first press-down operation). According to the embodiment, the second touch event is that second press down operation, or the initiation of the second press-down operation, at said second

coordinate c2. So far, this embodiment corresponds to the embodiment described above with reference to Figs. 2-4. However, from this point, this embodiment deviates from the former embodiment. As illustrated in Fig. 7, the user subsequently performs a third press-down operation at the third coordinate. According to the embodiment, the third touch interaction is the third press-down operation, or the initiation of the third press-down operation, at said third coordinate (after termination of the second press-down operation). Two examples of the third coordinate are illustrated in Fig. 7, denoted c3a and c3b respectively (same examples as the example coordinates c3a and c3b in Fig. 4).

Fig. 8 illustrates the distances L_1 and L_2 mentioned above for the two different examples of the third coordinate (c3a and c3b) considered in Figs. 4 and 7. For the example where the third coordinate is c3a, the distance $L_2 = L_{2a} < L_1$, whereby the zoom operation to be performed is a zoom-out operation according to the example embodiment mentioned above. For the example where the third coordinate is c3b, the distance $L_2 = L_{2b} > L_1$, whereby the zoom operation to be performed is a zoom-in operation according to the example embodiment mentioned above. In the examples illustrated in Fig. 8, the distances L_1 and L_2 corresponds to the length of a straight line between the first coordinate and the second coordinate and between the first coordinate and the third coordinate, respectively. In other embodiments, the distances L_1 and L_2 may be the distances in the x direction or in the y direction only between the first coordinate and the second coordinate and between the first coordinate and the third coordinate, respectively.

Different alternatives are possible for the actual zoom operation. For example, performing the zoom operation may comprise zooming with a scaling factor proportional to L_2/L_1 . Furthermore, the zoom operation may be such that an aspect ratio of the image content subject to the zooming is preserved.

Furthermore, the zoom operation may be such that image content displayed at the second coordinate c2 before the zoom operation is displayed at a fourth coordinate (not shown) after the zoom operation, where the fourth coordinate has at least one of an x component and a y component (possibly both) in an orthogonal coordinate system (such as the x/y-coordinate system indicated in Figs. 2-8) of the touch screen 2 in common with the third coordinate (such as c3a or c3b). That is, the second coordinate

c2 may define a corner of a zoom box before the zoom operation, and the fourth coordinate may define a corresponding corner of a corresponding zoom box after the zoom operation. In case the fourth coordinate only has one of said x and y components in common with the third coordinate, the other (x or y) component of the fourth
5 coordinate may be determined based on the condition that the aspect ratio should be preserved.

Different alternatives may also be used for which coordinate should be “fixed” during the zoom operation. For example, the zoom operation may be such that the first coordinate c1 is fixed, i.e. such that image content displayed at (or close to) the first
10 coordinate c1 before the zoom-operation is displayed at (or close to) the first coordinate c1 also after the zoom operation. Alternatively, the zoom operation may be such that a center coordinate (not shown) located in the middle between the first coordinate c1 and the second coordinate c2 is fixed, i.e. such that image content displayed at (or close to) the center coordinate before the zoom operation is displayed at (or close to) the center
15 coordinate also after the zoom operation. Other alternatives are possible as well.

According to some embodiments, the zoom operation may be inhibited, or aborted, if the user operates too slowly (which could indicate e.g. that the user has initiated the zooming method unintentionally, or has changed his mind after initiating the zooming method). For example, the zoom operation may be inhibited if the second
20 touch interaction has not occurred within a first predefined time period starting from the detection of the first touch event. Alternatively or additionally, the zoom operation may be inhibited if the third touch interaction has not occurred within a second predefined time period, which may start e.g. from the detection of the first touch event or from the detection of the second touch event.

25 Fig. 9 is a flowchart of an embodiment of the method. The operation is started in step 100. In step 110, it is checked whether the first touch event has been detected. If not, the operation loops back to step 110 again checking whether the first touch event has been detected. Hence, according to this embodiment, the operation effectively stays in step 110 until the first touch event has been detected. When the first touch event has
30 been detected, the operation proceeds to step 120. In step 120, a first timer, denoted timer A, is started. According to this embodiment, the above-mentioned first predefined

time period expires when timer A expires. Hence, timer A is utilized to measure the first predefined time period.

In step 130, it is checked whether the second touch event has been detected before timer A has expired, i.e. if the second touch event has been detected within the first predefined time period. If not, the operation is “aborted” and returns to step 110, again waiting for the detection of a new first touch event. If, on the other hand, the second touch event is indeed detected within the first predefined time period, the operation proceeds to step 140. In step 140, a second timer, denoted timer B, is started. The above-mentioned second predefined time period expires when timer B expires. Hence, timer B is utilized to measure the second predefined time period. Consequently, the embodiment illustrated in Fig. 9 corresponds to the case when the second predefined time period starts from the detection of the second touch event. In an alternative embodiment (not shown), timer B may be started in step 120 instead, which would correspond to the case when the second predefined time period starts from the detection of the first touch event.

In step 150, it is checked whether the third touch event has been detected before timer B has expired, i.e. if the third touch event has been detected within the second predefined time period. If not, the operation is “aborted” and returns to step 110, again waiting for the detection of a new first touch event. If, on the other hand, the third touch event is indeed detected within the second predefined time period, the operation proceeds to step 160. In step 160, the zoom operation is performed based on the first, second, and third coordinates as outlined above in the context of various embodiments. This step may include that the image content is zoomed in or out accordance with the zoom operation, and the zoomed image content or a part of it (part which fits within the graphical user interface) is sent to the graphical user interface where it is displayed. Thereafter, the operation is ended in step 170. Alternatively, the operation may return from step 160 to step 110 waiting for a further zooming to be initiated.

The use of the first and second timer, timer A and timer B, mentioned above is merely an example. Any suitable time-out mechanism may be used to determine whether the user operates too slowly, e.g. to determine whether or not the second touch interaction has occurred within the first predefined time period and/or to determine

whether or not the third touch interaction has occurred within the second predefined time period.

Figs. 10-11 illustrate a zoom-out operation according to an example. Fig. 10 illustrates the content of the graphical user interface before the zoom-out operation, whereas Fig. 11 illustrates the content of the graphical user interface after the zoom-out operation. The example utilizes the coordinates c_1 , c_2 , and c_{3a} considered in Figs. 2-8 as the first, second, and third coordinate, respectively. Furthermore, in this example, the first coordinate c_1 is fixed such that image content displayed at the first coordinate c_1 before the zoom-operation is displayed at the first coordinate c_1 also after the zoom operation. Moreover, according to this example, the aspect ratio of the image data is fixed. Image content displayed at the second coordinate c_2 before the zoom operation is displayed at a fourth coordinate (denoted c_4 in Fig. 11) after the zoom operation. In the example shown, the fourth coordinate has the x component in common with the third coordinate c_{3a} , whereas the y component of c_4 is determined to preserve the aspect ratio of the image content.

As mentioned above, the control unit 4 may be configured to perform the one or more of the embodiments of the method described above. Accordingly, the control unit 4 may be configured to perform one or more of the steps of any of the embodiments of the method described above. For example, the control unit 4 may be configured to detect said first touch event, which is the result of said first touch interaction at said first coordinate of said touch screen 2. Furthermore, the control unit 4 may be configured to detect said second touch event, which is the result of said second touch interaction, subsequent to the first touch interaction, at said second coordinate of said touch screen 2. Moreover, the control unit 4 may be configured to detect said third touch event, which is the result of said third touch interaction, subsequent to the second touch interaction, at said third coordinate of said touch screen 2. Also, the control unit 4 may be adapted to control the touch screen 2 to perform said zoom operation on an image displayed on the graphical user interface, wherein the zoom operation is representative of said first distance L_1 and said second distance L_2 .

The control unit 4 (Fig. 1) may be implemented as an application-specific hardware unit. Alternatively, said control unit 4 or parts thereof may be implemented

using one or more configurable or programmable hardware units, such as but not limited to one or more field-programmable gate arrays (FPGAs), processors, or microcontrollers. Thus, the control unit 4 may be a programmable control unit 4. Hence, embodiments of the present invention may be embedded in a computer program
5 product, which enables implementation of the method and functions described herein. Therefore, according to embodiments of the present invention, there is provided a computer program product, comprising instructions arranged to cause the programmable control unit 4 to perform the steps of any of the embodiments of the method described herein. The computer program product may comprise program code
10 which is stored on a computer readable medium 200, as illustrated in Fig. 12, which can be loaded and executed by the programmable control unit 4, to cause it to perform the steps of any of the embodiments of the method described herein.

The present invention has been described above with reference to specific embodiments. However, other embodiments than the above described are possible
15 within the scope of the invention. Different method steps than those described above, performing the method by hardware or software, may be provided within the scope of the invention. The different features and steps of the embodiments may be combined in other combinations than those described. The scope of the invention is only limited by the appended patent claims.

CLAIMS

1. A method of zooming in a graphical user interface of an electronic device (1) having a touch screen (2) for receiving input from a user via touch interactions, wherein the method comprises
- 5 detecting a first touch event, which is the result of a first touch interaction at a first coordinate (c1) of said touch screen (2);
- detecting a second touch event, which is the result of a second touch interaction, subsequent to the first touch interaction, at a second coordinate (c2) of said
- 10 touch screen (2);
- detecting a third touch event, which is the result of a third touch interaction, subsequent to the second touch interaction, at a third coordinate (c3a, c3b) of said touch screen (2); and
- controlling the touch screen to perform a zoom operation on an image
- 15 displayed on the graphical user interface, wherein the zoom operation is representative of a first distance L_1 between the first coordinate (c1) and the second coordinate (c2) and a second distance L_2 between the first coordinate (c1) and the third coordinate (c3a, c3b).
- 20 2. The method according to claim 1, wherein the zoom operation is
- a zoom-in operation if $L_1 < L_2$; or
- a zoom-out operation if $L_2 < L_1$.
3. The method according to claim 1 or 2, wherein
- 25 the first touch interaction is a first press-down operation at said first coordinate (c1);
- the second touch interaction is a second press down operation at said second coordinate (c2); and
- the first press-down operation is terminated before the second press-down
- 30 operation is performed.

4. The method according to claim 3, wherein the third touch interaction includes a movement to said third coordinate (c3a, c3b) during said second press-down operation.

5 5. The method according to claim 4, wherein the third touch interaction further includes a release of the second press-down operation at said third coordinate (c3a, c3b).

10 6. The method according to any of the claims 1 - 3, wherein the third touch interaction is a third press-down operation at said third coordinate (c3a, c3b), and the second press-down operation is terminated before the third press-down operation is performed.

15 7. The method according to any preceding claim, wherein performing the zoom operation comprises zooming with a scaling factor proportional to L_2/L_1 .

20 8. The method according to any of the claims 1-6, wherein the zoom operation is such that image content displayed at the second coordinate (c2) before the zoom operation is displayed at a fourth coordinate (c4) after the zoom operation, wherein the fourth coordinate has at least one of an x component and a y component in an orthogonal coordinate system of said touch screen in common with the third coordinate (c3a, c3b).

25 9. The method according to any preceding claim, wherein the zoom operation is such that image content displayed at the first coordinate (c1) before the zoom-operation is displayed at the first coordinate (c1) also after the zoom operation.

30 10. The method according to any of the claims 1-8, wherein the zoom operation is such that image content displayed at a center coordinate, located in the middle between the first coordinate (c1) and the second coordinate (c2), before the zoom operation is displayed at said center coordinate also after the zoom operation.

11. The method according to any preceding claim, wherein the zoom operation is such that an aspect ratio is preserved.

5 12. The method according to any preceding claim, wherein the touch screen (2) is a resistive touch screen.

13. The method according to claim 1, wherein the zoom operation is
– a zoom-out operation if $L_1 < L_2$; or
10 – a zoom-in operation if $L_2 < L_1$

14. The method according to any preceding claim, comprising inhibiting the zoom operation if
– the second touch interaction has not occurred within a first predefined time
15 period starting from the detection of the first touch event; or
– the third touch interaction has not occurred within a second predefined time period starting from the detection of the first touch event or from the detection of the second touch event.

20 15. An electronic device (1) comprising:
a touch screen (2) having a graphical user interface and configured to receive input from a user via touch interactions; and
a control unit (4) operatively connected to the touch screen (2) and configured to
to
25 detect a first touch event, which is the result of a first touch interaction at a first coordinate (c1) of said touch screen (2);
detect a second touch event, which is the result of a second touch interaction, subsequent to the first touch interaction, at a second coordinate (c2) of said touch screen (2);

detect a third touch event, which is the result of a third touch interaction, subsequent to the second touch interaction, at a third coordinate (c3a, c3b) of said touch screen (2); and

control the touch screen to perform a zoom operation on an image displayed on the graphical user interface, wherein the zoom operation is representative of a first distance L_1 between the first coordinate (c1) and the second coordinate (c2) and a second distance L_2 between the first coordinate (c1) and the third coordinate (c3a, c3b).

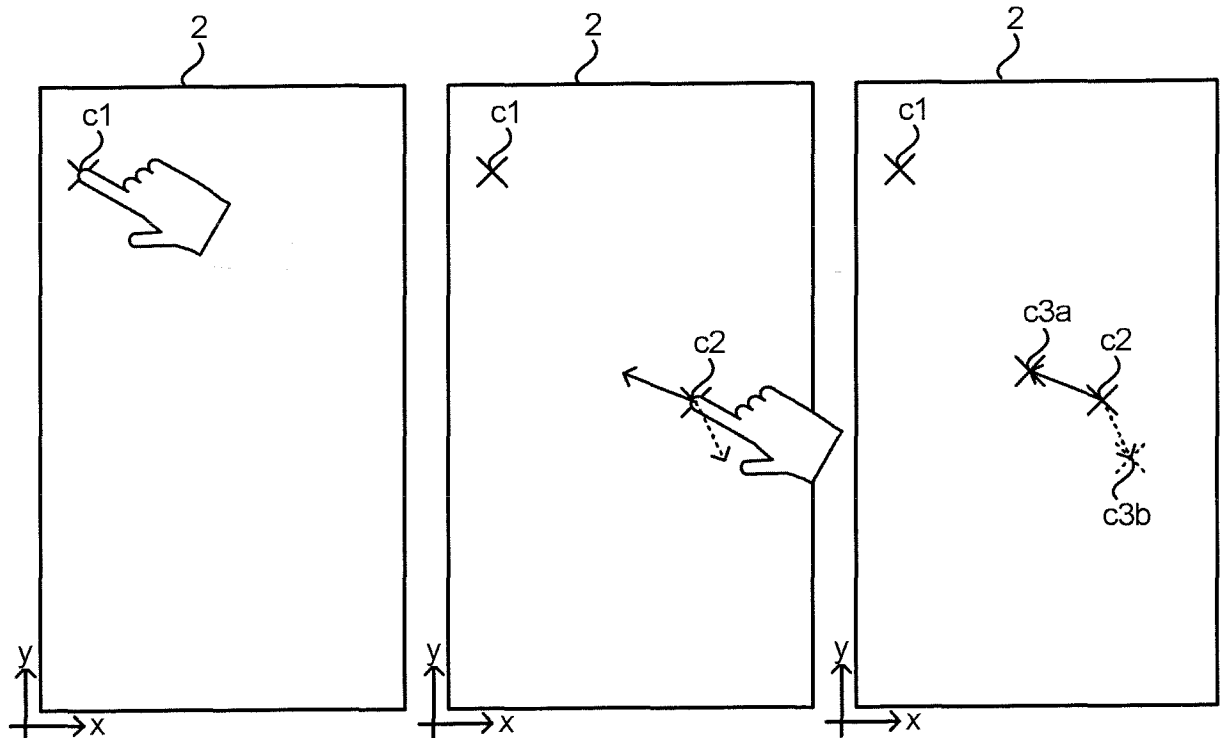
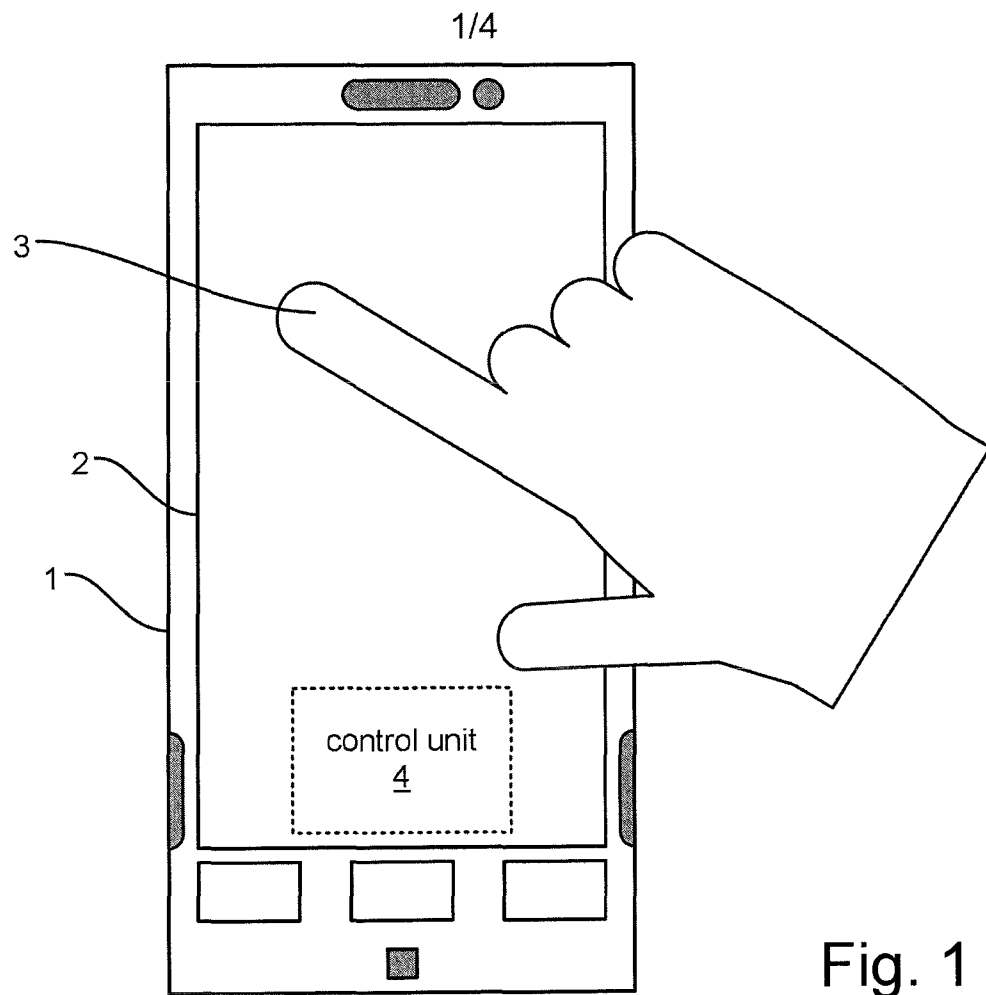
16. The electronic device (1) according to claim 15, wherein the touch screen (2) is a resistive touch screen.

17. The electronic device according to claim 15 or 16, wherein the control unit is configured to inhibit the zoom operation if the second touch interaction has not occurred within a first predefined time period starting from the detection of the first touch event.

18. The electronic device according to any of the claims 15-17, wherein the control unit is configured to inhibit the zoom operation if the third touch interaction has not occurred within a second predefined time period starting from the detection of the first touch event or from the detection of the second touch event.

19. A computer program product comprising computer program code means for executing one or more of the methods according to any of the claims 1 - 14 when said computer program code means are run by a programmable control unit (4), which is operatively connected to the touch screen (2), of the electronic device (1).

20. A computer readable medium (200) having stored thereon a computer program product comprising computer program code means for executing one or more of the methods according to any of the claims 1 - 14 when said computer program code means are run by a programmable control unit (4) which is operatively connected to the touch screen (2), of the electronic device (1).



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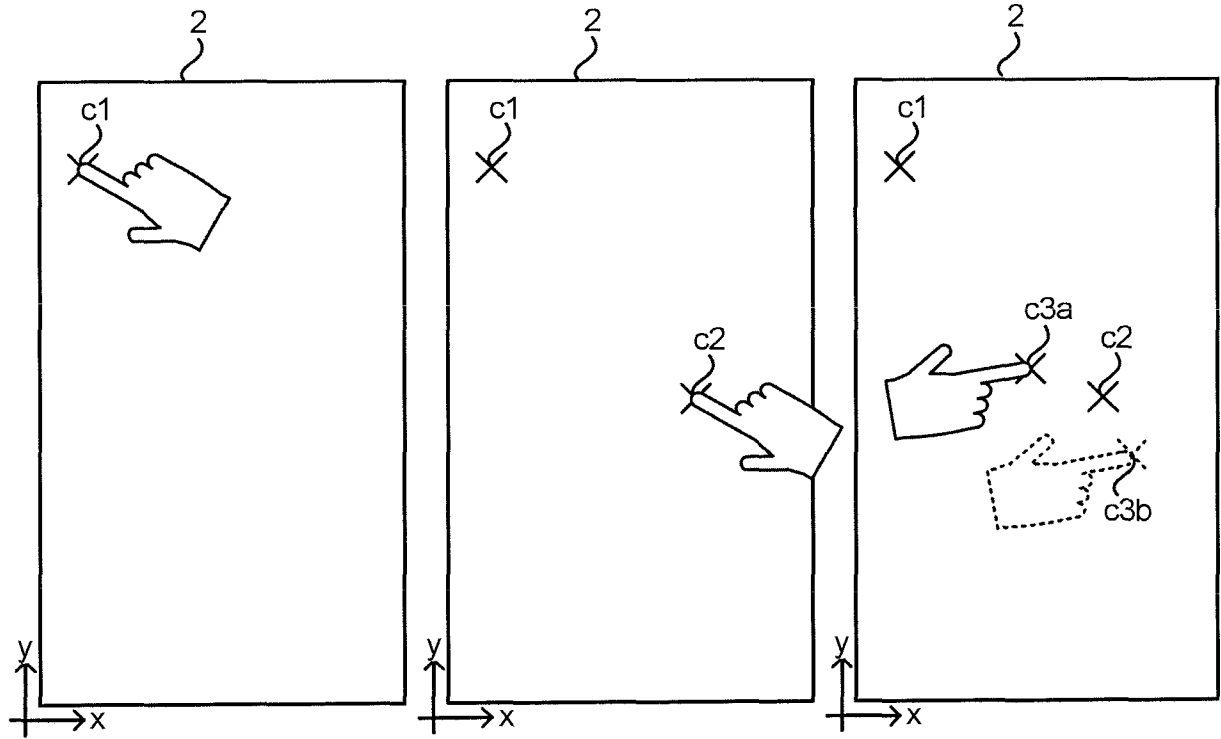


Fig. 5

Fig. 6

Fig. 7

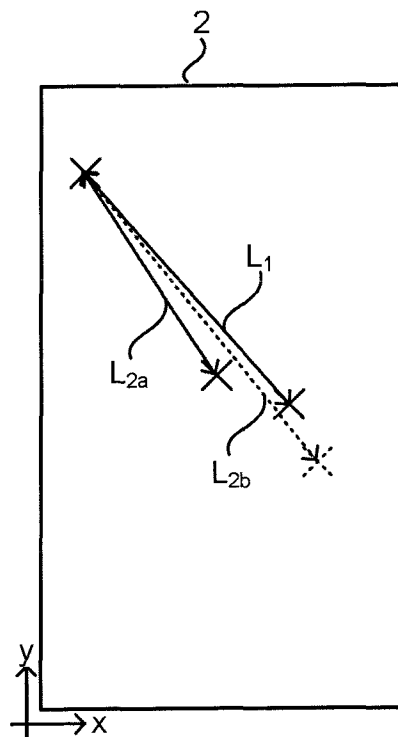


Fig. 8

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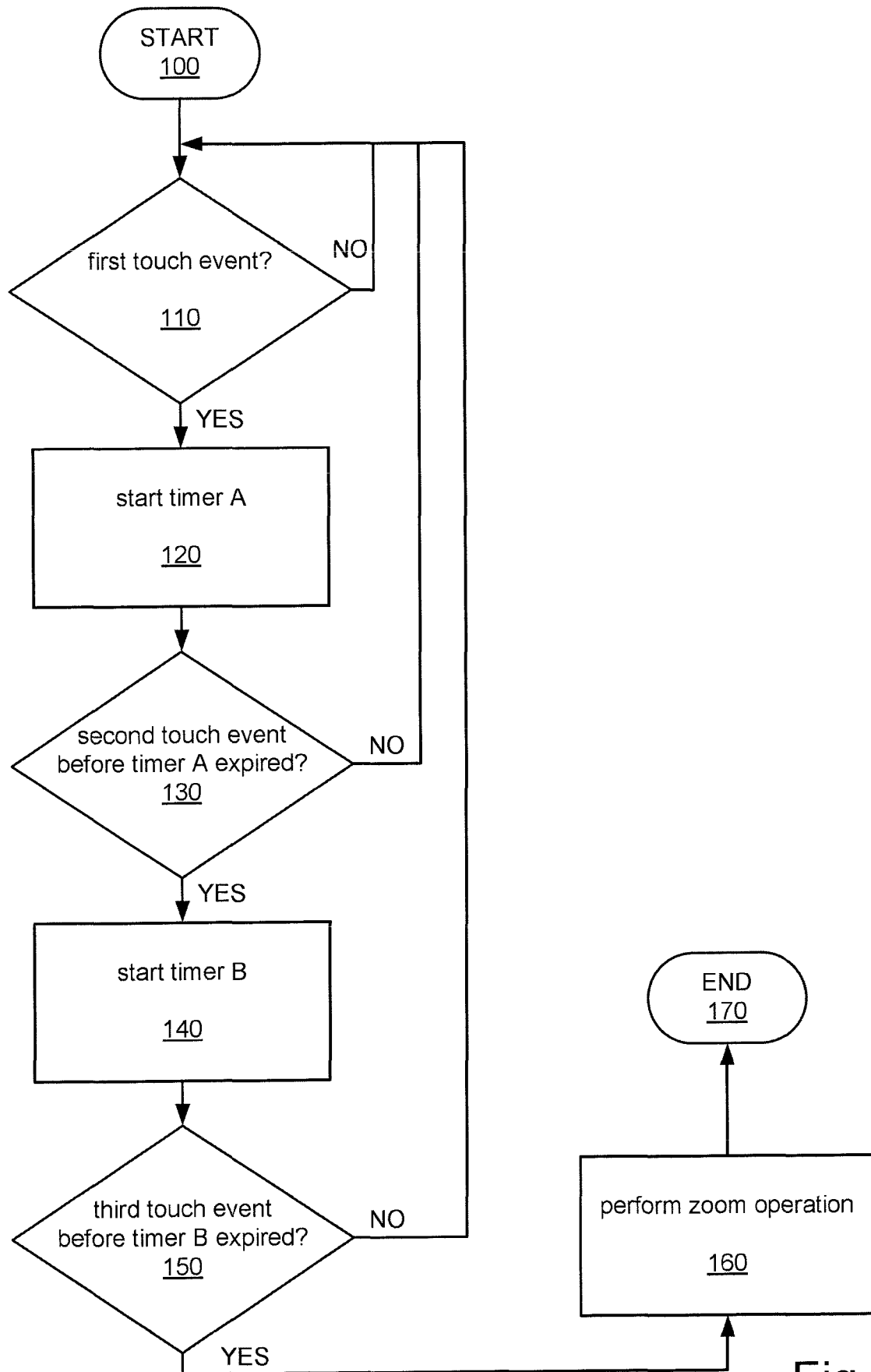


Fig. 9

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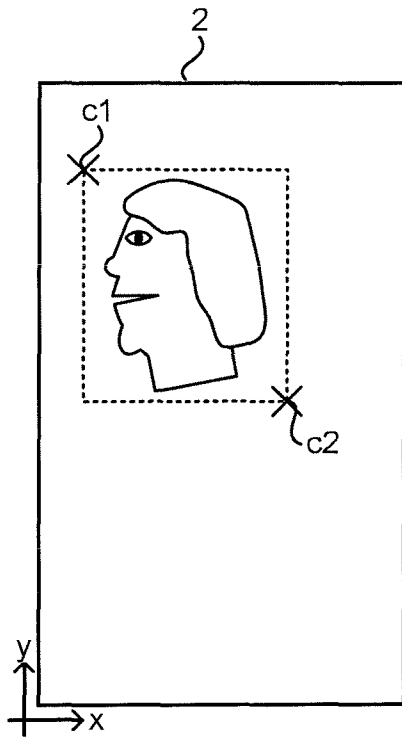


Fig. 10

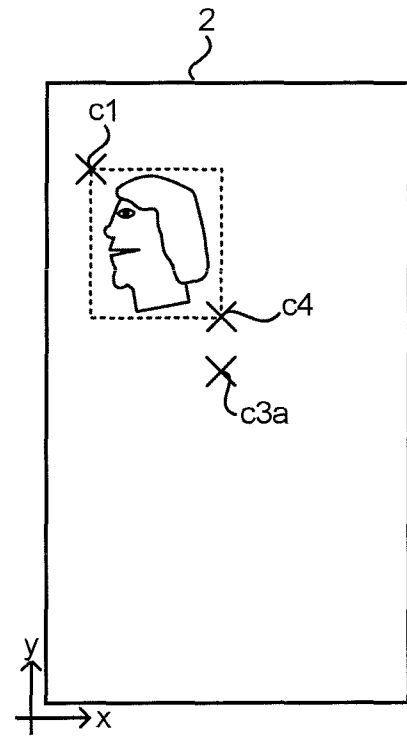


Fig. 11

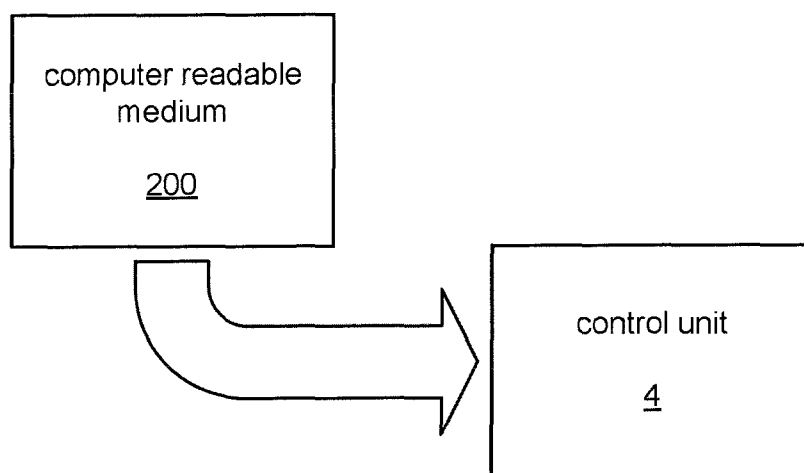


Fig. 12

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2012/053083

A. CLASSIFICATION OF SUBJECT MATTER
INV. G06F3/048
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

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

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A	paragraph [0028] - paragraph [0056]; figures 4,5,7	6-8,12, 14,16-18
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A	paragraph [0038] - paragraph [0174]; figures 3-5, 7	3-14, 16-18
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Further documents are listed in the continuation of Box C.



See patent family annex.

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Date of the actual completion of the international search

24 April 2012

Date of mailing of the international search report

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Name and mailing address of the ISA/

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040,
Fax: (+31-70) 340-3016

Authorized officer

Russo dos Santos, C

INTERNATIONAL SEARCH REPORT

International application No

PCT/EP2012/053083

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