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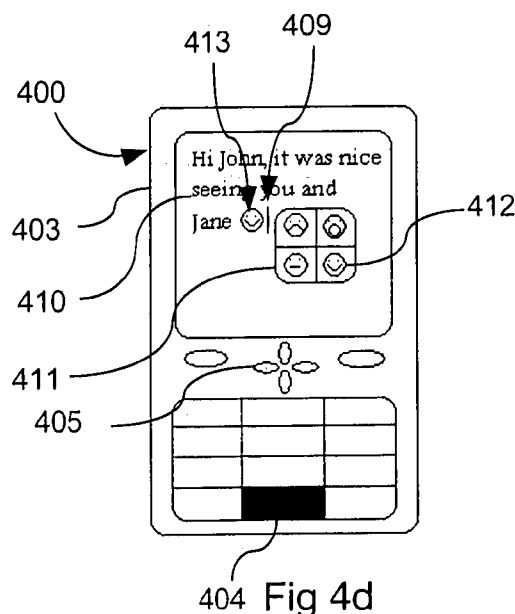
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[Continued on next page]

(54) Title: IMPROVED TITLE



(57) Abstract: An apparatus comprising a display and a controller, said controller being arranged to display a cursor, display a symbol overview comprising a plurality of symbols, receive input corresponding to an overview entering direction and in response thereto mark one of said plurality of symbols for selection and receive a selection command and in response thereto input said marked symbol.



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— *of inventorship (Rule 4.17(iv))*

IMPROVED TITLE

FIELD

The present application relates to a user interface, an apparatus and a method for
5 input of symbols, and in particular to a user interface, an apparatus and a method for
input of emoticons and other special characters using a limited keypad.

BACKGROUND

Input of special characters such as emoticons is traditionally difficult using a
10 limited keypad such as an ITU-T keypad only having 12 keys as there are simply not
enough keys to assign emoticons to them all without making the input cumbersome.
For example adding emoticons to the keys using multi-tap would make it difficult to
display all options on a limited physical space as well as require many keypresses to
arrive at the wanted emoticon or special character. Emoticons are popularly referred
15 to as smileys.

It is also difficult for many users to input the various emoticons using a
QWERTY keypad, simply because they can not remember all the different emoticons
and which characters are to be input to generate the wanted emoticon.
20

A device that allows fast and easy input of symbols would thus be useful in
modern day society

SUMMARY

25 On this background, it would be advantageously to provide a user interface, an
apparatus and a method that overcomes or at least reduces the drawbacks indicated
above by providing an apparatus according to the claims.

Further objects, features, advantages and properties of device, method and computer readable medium according to the present application will become apparent from the detailed description.

5 **BRIEF DESCRIPTION OF THE DRAWINGS**

In the following detailed portion of the present description, the teachings of the present application will be explained in more detail with reference to the example embodiments shown in the drawings, in which:

10 Fig. 1 is an overview of a telecommunications system in which a device according to the present application is used according to an embodiment,

Fig. 2 is a view of an apparatus according to an embodiment,

Fig. 3 is a block diagram illustrating the general architecture of an apparatus of Fig. 2 in accordance with the present application,

15 Figs. 4a, b, c and d are views of an apparatus according to an embodiment,

Fig. 5 is a view of an apparatus according to an embodiment,

Fig. 6a and b are views of an apparatus according to an embodiment,

Fig. 7 is a view of an apparatus according to an embodiment,

Fig. 8a and b are views of an apparatus according to an embodiment, and

20 Fig. 9 is a flow chart describing a method according to an embodiment of the application.

DETAILED DESCRIPTION

In the following detailed description, the user interface, the apparatus, the
25 method and the software product according to the teachings for this application in the form of a cellular/mobile phone will be described by the embodiments. It should be noted that although only a mobile phone is described the teachings of this application can also be used in any electronic device such as in portable electronic devices such as

laptops, PDAs, mobile communication terminals, electronic books and notepads and other electronic devices offering access to information.

FIG. 1 illustrates an example of a cellular telecommunications system in which the teachings of the present application may be applied. In the telecommunication system of FIG. 1, various telecommunications services such as cellular voice calls, www or Wireless Application Protocol (WAP) browsing, cellular video calls, data calls, facsimile transmissions, music transmissions, still image transmissions, video transmissions, electronic message transmissions and electronic commerce may be performed between a mobile terminal 100 according to the teachings of the present application and other devices, such as another mobile terminal 106 or a stationary telephone 132. It is to be noted that for different embodiments of the mobile terminal 100 and in different situations, different ones of the telecommunications services referred to above may or may not be available; the teachings of the present application are not limited to any particular set of services in this respect.

The mobile terminals 100, 106 are connected to a mobile telecommunications network 110 through Radio Frequency (RF) links 102, 108 via base stations 104, 109. The mobile telecommunications network 110 may be in compliance with any commercially available mobile telecommunications standard, such as Group Spéciale Mobile (GSM), Universal Mobile Telecommunications System (UMTS), Digital Advanced Mobile Phone system (D-AMPS), The code division multiple access standards (CDMA and CDMA2000), Freedom Of Mobile Access (FOMA), and Time Division-Synchronous Code Division Multiple Access (TD-SCDMA).

25

The mobile telecommunications network 110 is operatively connected to a wide area network 120, which may be Internet or a part thereof. An Internet server 122 has a data storage 124 and is connected to the wide area network 120, as is an Internet

client computer 126. The server 122 may host a www/wap server capable of serving www/wap content to the mobile terminal 100.

5 A public switched telephone network (PSTN) 130 is connected to the mobile telecommunications network 110 as is commonly known by a skilled person. Various telephone terminals, including the stationary telephone 132, are connected to the PSTN 130.

10 The mobile terminal 100 is also capable of communicating locally via a local link 101 to one or more local devices 103. The local link can be any type of link with a limited range, such as Bluetooth, a Universal Serial Bus (USB) link, a Wireless Universal Serial Bus (WUSB) link, an IEEE 802.11 wireless local area network link, a Radio Standard link for example an RS-232 serial link, etc. The local devices 103 can for example be various sensors that can communicate measurement values to the
15 mobile terminal 100 over the local link 101.

A computer such as a laptop or desktop can also be connected to the network both via a radio link such as a WiFi link, which is the popular term for a radio frequency connection using the WLAN (Wireless Local Area Network) standard
20 IEEE 802.11.

It should be noted that the teachings of this application are also capable of being utilized in an internet network of which the telecommunications network described above may be a part of.

25

It should be noted that even though the teachings herein are described solely to wireless networks it is in no respect to be limited to wireless networks as such, but it to be understood to be usable in the Internet or similar networks.

It should thus be understood that an apparatus according to the teachings herein may be a mobile communications terminal, such as a mobile telephone, a personal digital assistant, a laptop as well as a stationary device such as a desktop computer or
5 a server.

The apparatus can also be a digital camera having communicative means. Such communicative means can be a serial connection through which it is capable of communicating with another device such as a computer.

10

An embodiment 200 of the mobile terminal 100 is illustrated in more detail in FIG. 2a. The mobile terminal 200 comprises a speaker or earphone 202, a microphone 206, a main or first display 203 and a set of keys 204 which may include a keypad 204a of common ITU-T type (alpha-numerical keypad representing characters "0"-
15 "9", "*" and "#") and certain other keys such as soft keys 204b, 204c and a joystick 205 or other type of navigational input device.

The internal component, software and protocol structure of the mobile terminal 200 will now be described with reference to FIG. 3. The mobile terminal has a
20 controller 300 which is responsible for the overall operation of the mobile terminal and may be implemented by any commercially available CPU ("Central Processing Unit"), DSP ("Digital Signal Processor") or any other electronic programmable logic device. The controller 300 has associated electronic memory 302 such as Random Access Memory (RAM), Read Only Memory (ROM), Electrically Erasable
25 Programmable Read-Only Memory (EEPROM), flash memory, or any combination thereof. The memory 302 is used for various purposes by the controller 300, one of them being for storing data used by and program instructions for various software in the mobile terminal. The software includes a real-time operating system 320, drivers

for a man-machine interface (MMI) 334, an application handler 332 as well as various applications. The applications can include a message text editor 350, a notepad application 360, as well as various other applications 370, such as applications for voice calling, video calling, sending and receiving messages such as Short Message Service (SMS), Multimedia Message Service (MMS) or email, web browsing, an instant messaging application, a phone book application, a calendar application, a control panel application, a camera application, one or more video games, etc. It should be noted that two or more of the applications listed above may be executed as the same application.

The MMI 334 also includes one or more hardware controllers, which together with the MMI drivers cooperate with the first display 336/203, and the keypad 338/204 as well as various other Input/Output devices such as microphone, speaker, vibrator, ringtone generator, LED indicator, etc.

The software also includes various modules, protocol stacks, drivers, etc., which are commonly designated as 330 and which provide communication services (such as transport, network and connectivity) for an RF interface 306, and optionally a Bluetooth interface 308 and/or an IrDA interface 310 for local connectivity. The RF interface 306 comprises an internal or external antenna as well as appropriate radio circuitry for establishing and maintaining a wireless link to a base station (e.g. the link 102 and base station 104 in FIG. 1). As is well known to a man skilled in the art, the radio circuitry comprises a series of analogue and digital electronic components, together forming a radio receiver and transmitter. These components include, band pass filters, amplifiers, mixers, local oscillators, low pass filters, Analog to Digital and Digital to Analog (AD/DA) converters, etc.

The mobile terminal also has a Subscriber Identity Module (SIM) card 304 and an associated reader. As is commonly known, the SIM card 304 comprises a processor as well as local work and data memory.

5 Figure 4 shows an apparatus 400 according to the teachings herein. It should be noted that such an apparatus is not limited to a mobile phone, but can be any apparatus capable of receiving text input.

On a display 403 a text 410 that has been input is displayed. At the end of the
10 text a cursor 409 is positioned and displayed. Adjacent the cursor 409 an overview 411 of available symbols 412 is provided on the display 403. This overview 411 provides the user with an easy to overview access to the available symbols 412 for input. The overview 411 is accessed or entered by the user pressing a direction key 405 indicating the direction of the overview in relation to the cursor. Please note that
15 even if only one reference number is used for the navigation key 405 it should be understood that a navigation key may be implemented by several keys or through a joystick as is commonly known in the art. A controller (not shown) is configured, in response thereto, to access the overview 411.

20 In the embodiment shown the overview 411 is provided in the right direction of the cursor 409 and it can be accessed by simply pressing on the right navigation key 405. This provides a user with an easy access to the overview 411 for selection using a key whose function is not so important for text input and find better use in this context. Examples of such a key is a softkey (204).

25

In one alternative embodiment the overview 411 is located below the cursor 409.

In one embodiment the key used for accessing the overview 411 is the key 405

indicating the direction of the overview 411 in relation to the cursor 409.

In one embodiment the overview 411 is accessed by a press on the down key 405.

5

In one embodiment a combination of the above is used in that the overview 411 is provided to the right of the cursor 409 if there is space to display the overview 411 to the right of the cursor 409 and below the cursor 409 if there is no space.

10 In one embodiment the direction key 405 for entering the overview 411 is fixed even if the overview 411 is displayed in different directions relative the cursor 409. This has the advantage of not confusing the user as all keys have their fixed functionality.

15 In one embodiment the overview 411 is displayed above the cursor 409. This has the advantage that only already used display space is used and it is not always important for a user to read exactly what has already been input.

20 As the overview 411 has been entered by pressing the correct direction key 405 the user is able to navigate through the overview 411 using the navigation or direction keys 405 until the wanted symbol 412 is highlighted or otherwise marked.

25 Figure 4b shows the apparatus 400 as a user has pressed the right key 405 (indicated by the key being blacked out) and entered the overview 411. Currently the first symbol 412 is marked.

As a user navigates through the overview 411 using the navigation keys 405 the various symbols 412 are marked in turn.

Figure 4c shows the apparatus 400 after a further press on the down and right key 405 (indicated by the keys being blacked out) and the bottom-right symbols 412 is currently marked.

5

The controller of the user interface of the apparatus is further configured to receive a selection command and to select and insert the currently marked symbol 412 in the text stream or string 410. The selection command can be provided through a press on a specific select key, such as a softkey (204b,c), a space key (204a), a designated select key or by a key assigned to another symbol, for example a key assigned with a letter which signals that further input is provided and that the input continues.

Figure 4d shows the apparatus 400 after a selection has been made by a user pressing on the bottom-middle key 404, which in this embodiment is assigned to be a space key. A symbol 413 corresponding to the one previously marked 412(see fig 4c) is now inserted into the text or string 410.

It should be noted that even though the symbol overview 411 in the examples and embodiments given only show four symbols 412 any number of symbols may be shown and the number shown depends on design criteria such as display size, application window size and font size and also on the number of available symbols.

In the embodiment of figure 4 emoticons are shown as symbols 412, but it should be noted that other symbols 412 may also be used. The symbols 412 that are to be displayed can be context specific, language specific and also application specific or a combination of any or all of these.

In one embodiment the controller is arranged to exit said overview 411 if a user navigates outside the overview 411. On example embodiment is where a user exits an overview by navigating back to the first symbol 412 and presses the direction opposite the one used to enter the overview 411. Another example embodiment is
5 where a user exits an overview 411 by pressing either down or right when the bottom-right symbol 412 is currently marked.

In one embodiment where the symbols 512 are application specific the application is a calculator and the symbols 512 are the various operands, see figure 5.
10 As is noted above the controller can be arranged to display further symbols 512 such as '(', ')', '%', and ' ' et.c. and other common mathematical symbols and operands.

In one embodiment a symbol 512 is associated with a function and the controller is arranged to execute said function upon selection of the corresponding symbol 512.
15

One example is displayed in figure 5 where selection of the symbol 512 '=' causes the controller to calculate and display the result of the expression previously input.

20 Another example of a function is a SEND function corresponding to an envelope symbol.

In one embodiment where the symbols 612 are context specific the controller has recognized that a specific word such as "cost" has been input and is configured to
25 display various currency symbols 612 in the symbol overview 611. See fig 6A. It should be noted that emoticons could also be displayed as available symbols 612 in this embodiment.

In another embodiment where the symbols 612 are context specific the controller has recognized that a digit or number has been input and is configured to displays various units as well as currency symbols in the symbol overview 611. See fig 6B. In this embodiment the symbols 612 have been selected upon detection of the input of a
5 number. In one embodiment the word "length" could have been detected as a special symbol and the symbols could have been displayed without the €-sign and with a further length measure instead.

In one embodiment where the symbols are language specific, various special
10 characters used in the current language are provided in the symbol overview 712, see fig 7.

It should be noted that the overview 411 need not display all available symbols 412 and in one embodiment only the most frequently used symbols 412 are displayed.
15

In one embodiment a symbol 412 indicating further choices could be displayed as part of the overview 411. Selection of this symbol 412 would then cause the controller to display a new list of further symbols 412.

By providing an overview 411 of the available symbols 412 next to the cursor a
20 user always has a good overview of which symbols are available for input and by allowing the user to access the overview 411 in by using the direction key 405 in the direction of the overview 411 provides a user with an intuitive and easy to learn and use method of accessing and inputting symbols 412.

25

Figure 8 shows an alternative embodiment in which an icon 811A indicating symbol input is provided adjacent a cursor 809, see fig 8a. The icon may be selected by a press on the right navigation key 805 and a controller (not shown) is arranged to

display an overview 811 of available symbols 812 for selection in response thereto, see fig 8b. The overview 811 has been entered by a press on the right direction navigation key 805, which is indicated as blacked out, and the first symbol 812 is marked for selection.

5

The embodiments described above may well be combined with this embodiment in that an icon 811A is provided instead of the overview 411 until the icon 811A has been selected upon which the overview 411 is displayed.

10 Figure 9 shows a flow chart of an embodiment method according to the teachings herein. In a first step 910 a cursor is displayed. A user enters a direction command in a second step 920. In one embodiment this direction command is a press on a navigation key indicating the direction right. In response to the direction command an overview of available symbols are displayed in step 930. A user selects a
15 symbol from the symbol overview in step 940 and the symbol is input in step 950.

The various aspects of what is described above can be used alone or in various combinations. The teaching of this application may be implemented by a combination of hardware and software, but can also be implemented in hardware or software. The
20 teaching of this application can also be embodied as computer readable code on a computer readable medium. It should be noted that the teaching of this application is not limited to the use in mobile communication terminals such as mobile phones, but can be equally well applied in Personal digital Assistants (PDAs), game consoles, media players, personal organizers, computers or any other device designed for
25 sharing and viewing images.

The teaching of the present application has numerous advantages. Different embodiments or implementations may yield one or more of the following advantages.

It should be noted that this is not an exhaustive list and there may be other advantages which are not described herein. For example, one advantage of the teaching of this application is that a user is provided with a fast and intuitive way of inputting symbols that is highly intuitive to use and learn.

5

Although the teaching of the present application has been described in detail for purpose of illustration, it is understood that such detail is solely for that purpose, and variations can be made therein by those skilled in the art without departing from the scope of the teaching of this application.

10

For example, although the teaching of the present application has been described in terms of a mobile phone, it should be appreciated that the teachings of the present application may also be applied to other types of electronic devices, such as media players, palmtop, laptop and desktop computers and the like. It should also be noted that there are many alternative ways of implementing the methods and apparatuses of the teachings of the present application.

15

Features described in the preceding description may be used in combinations other than the combinations explicitly described.

20

Whilst endeavouring in the foregoing specification to draw attention to those features of the invention believed to be of particular importance it should be understood that the Applicant claims protection in respect of any patentable feature or combination of features hereinbefore referred to and/or shown in the drawings whether or not particular emphasis has been placed thereon.

25

The term "comprising" as used in the claims does not exclude other elements or steps. The term "a" or "an" as used in the claims does not exclude a plurality. A unit

or other means may fulfill the functions of several units or means recited in the claims.

What is claimed is:

1. An apparatus comprising a display and a controller, said controller being arranged to
to
5 display a cursor;
display a symbol overview comprising a plurality of symbols;
receive input corresponding to an overview entering direction and in response thereto
mark one of said plurality of symbols for selection and
receive a selection command and in response thereto input said marked symbol.
10
2. An apparatus according to claim 1, wherein said controller is further arranged to
display a symbol icon adjacent said cursor and to display said overview upon receipt
of said overview entering input.
15
3. An apparatus according to claim 1 wherein said plurality of symbols are associated
with a context and wherein said controller is arranged to detect a specific word in a
text string and in response thereto display symbols corresponding to said specific
20 word in the overview.
4. An apparatus according to claim 3 wherein said specific word is a number or digit.
25
5. An apparatus according to claim 1 wherein said plurality of symbols are associated
with an application and wherein said controller is arranged to display symbols
associated with said application.
30
6. An apparatus according to claim 1 wherein at least one of said plurality of symbols
correspond to a function and said controller is arranged to execute said function upon
selection of said symbol corresponding to a function.

7. An apparatus according to claim 1 wherein said controller is further arranged to display said overview adjacent said cursor.

5

8. An apparatus according to claim 7 wherein said controller is arranged to determine whether there is enough display space to the right of the cursor and if so display the overview to the right of the cursor and if not display the overview below the cursor.

10

9. An apparatus according to claim 1 wherein said symbol is an emoticon.

15

10. A method for input of symbols comprising
displaying a cursor;
displaying a symbol overview comprising a plurality of symbols;
receiving input corresponding to an overview entering direction and in response thereto marking one of said plurality of symbols for selection and
receiving a selection command and in response thereto input said marked symbol.

20

11. A method according to claim 10, further comprising displaying a symbol icon adjacent said cursor and to display said overview upon receipt of said overview entering input.

25

12. A method according to claim 10 wherein said plurality of symbols are associated with a context and wherein said method further comprises detecting a specific word in a text string and in response thereto displaying symbols corresponding to said specific word in said overview.

30

13. A method according to claim 12 wherein said specific word is a number or digit.

14. A method according to claim 10 wherein said plurality of symbols are associated
5 with an application and wherein said method further comprises displaying symbols associated with said application.

15. A method according to claim 10 wherein at least one of said plurality of symbols
10 correspond to a function and said method further comprises executing said function upon selection of said symbol corresponding to a function.

16. A method according to claim 10 further comprising displaying said overview
15 adjacent said cursor.

17. A method according to claim 16 further comprising determining whether there is
20 enough display space to the right of the cursor and if so displaying the overview to the right of the cursor and if not displaying the overview below the cursor.

18. A method according to claim 10 wherein said symbol is an emoticon.

19. A computer readable medium comprising at least computer program code for
controlling an apparatus, said computer readable medium comprising:

software code for displaying a cursor;

software code for displaying a symbol overview comprising a plurality of symbols;

30 software code for receiving input corresponding to an overview entering direction and in response thereto marking one of said plurality of symbols for selection and

software code for receiving a selection command and in response thereto input said marked symbol.

20. An apparatus comprising:

means for displaying a cursor;

means for displaying a symbol overview comprising a plurality of symbols;

- 5 means for receiving input corresponding to an overview entering direction and means for marking one of said plurality of symbols for selection in response thereto and means for receiving a selection command and means for inputting said marked symbol in response thereto.

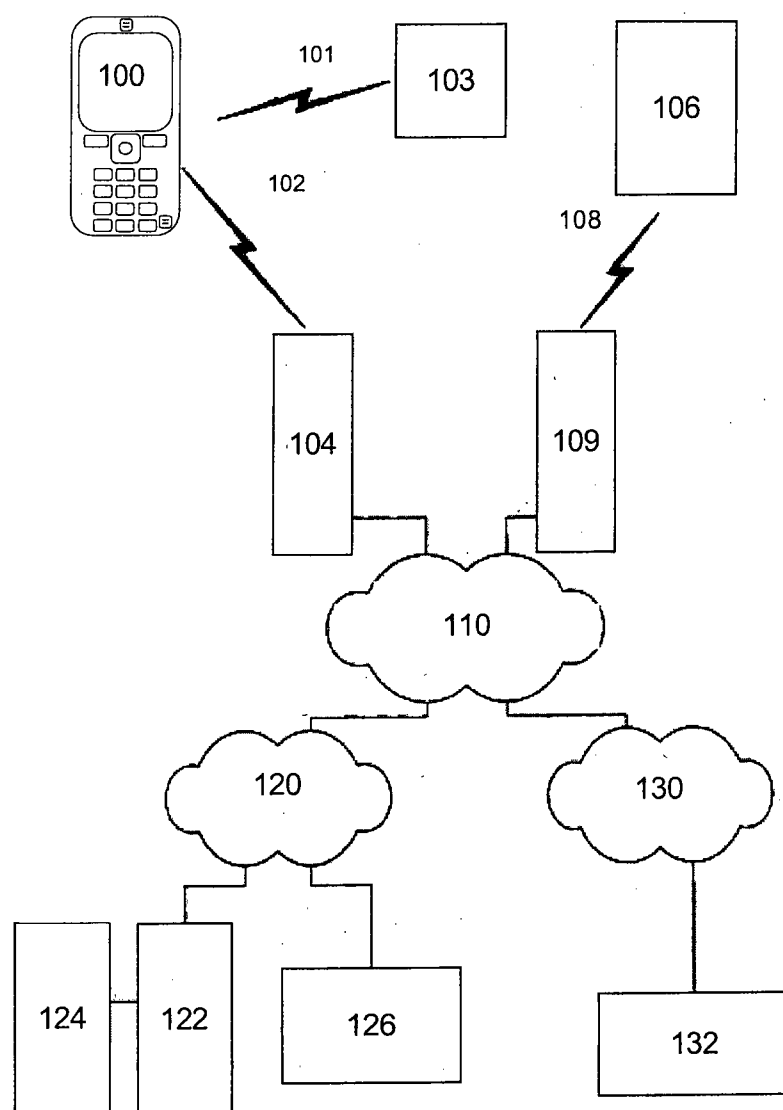


Fig 1

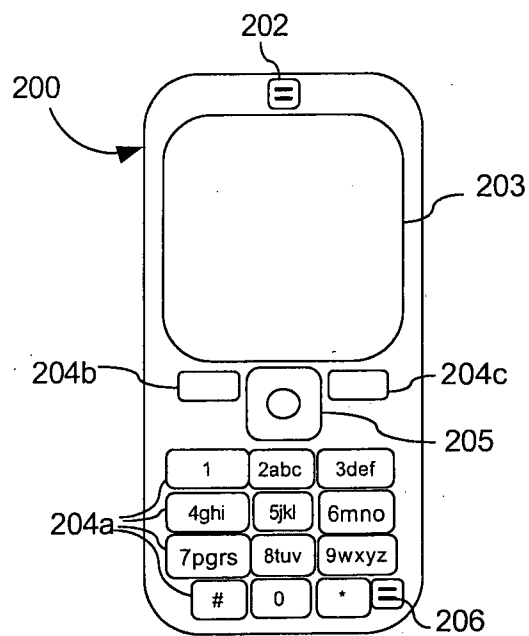


Fig 2

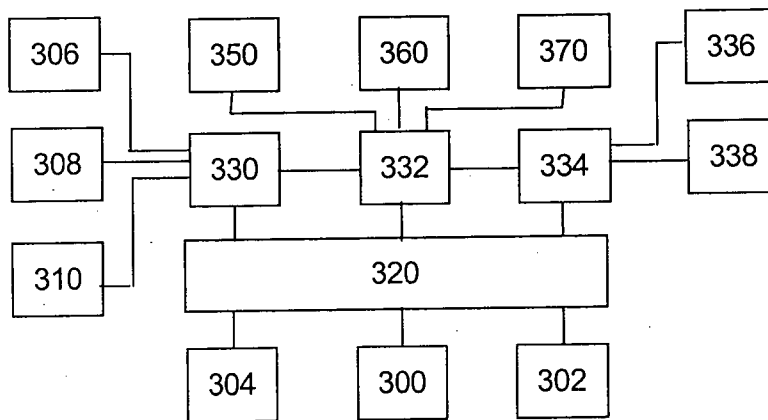


Fig 3

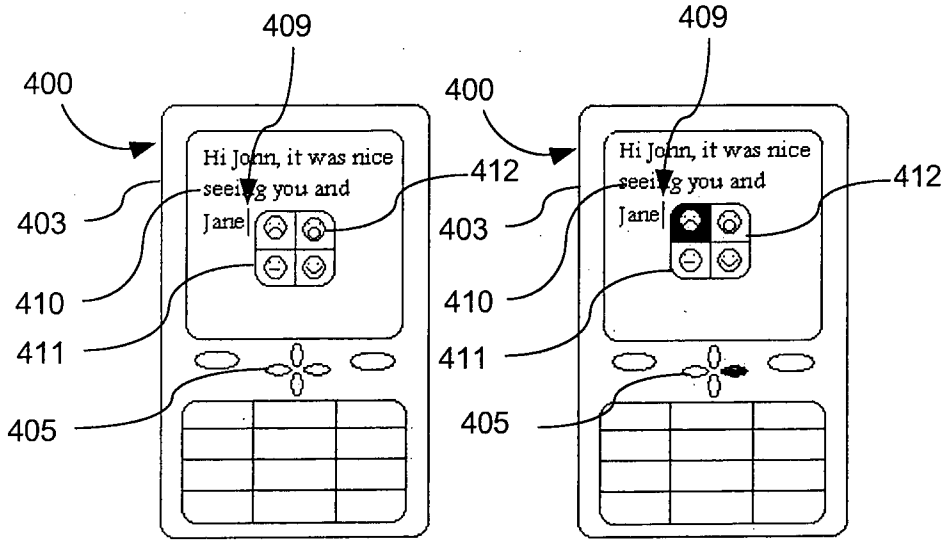


Fig 4a

Fig 4b

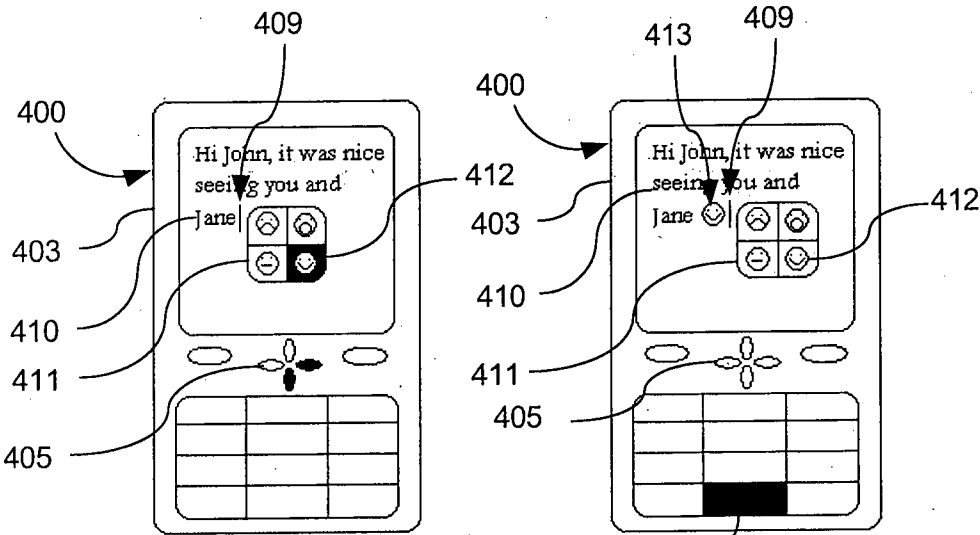


Fig 4c

404 Fig 4d

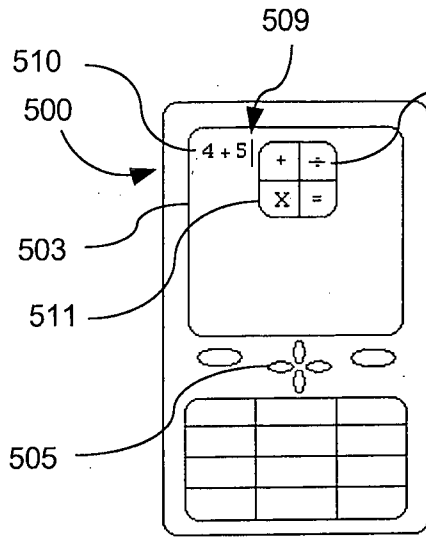


Fig 5

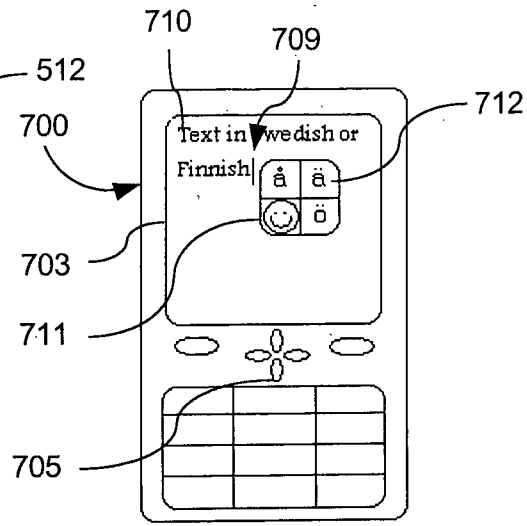


Fig 7

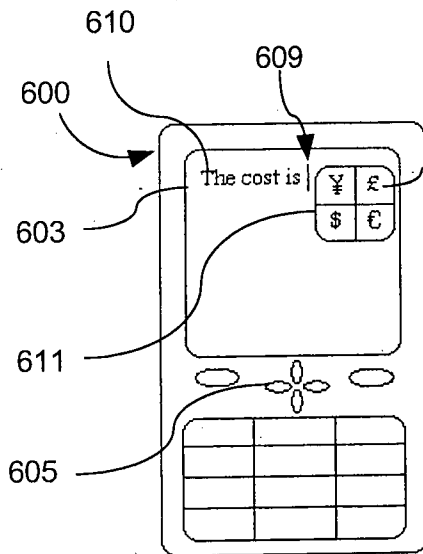


Fig 6a

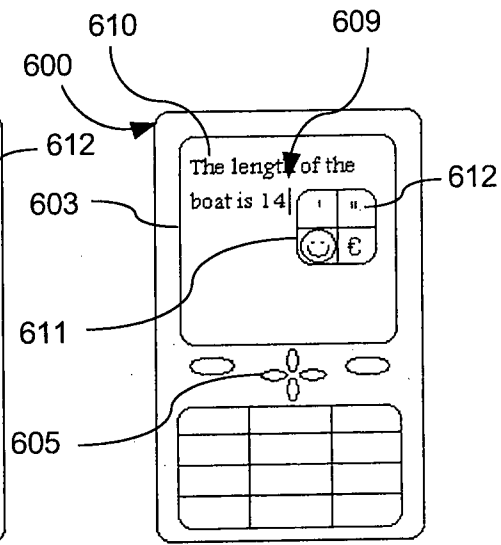


Fig 6b

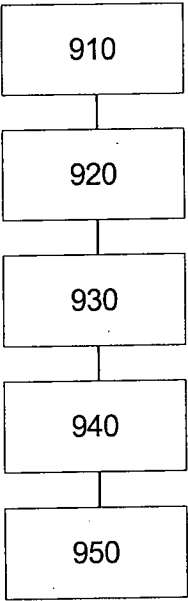
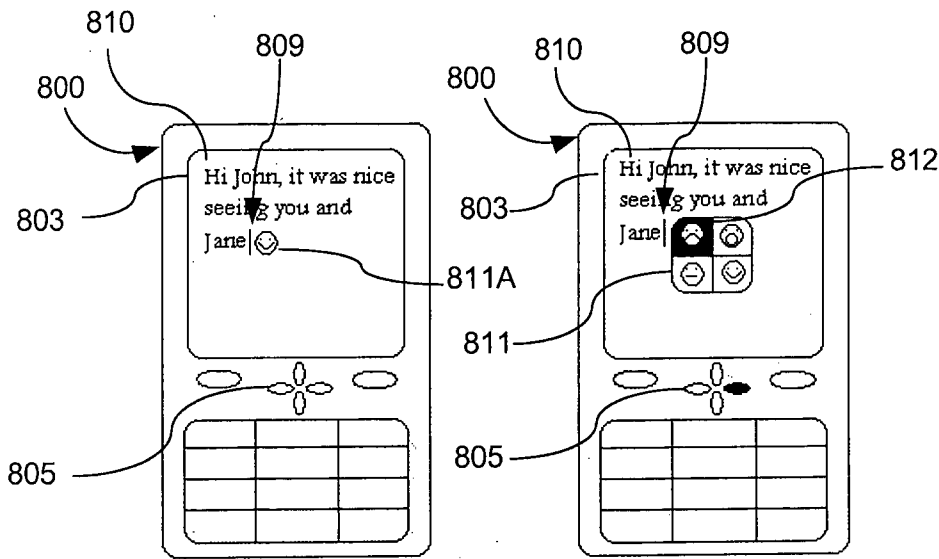


Fig 9

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2009/000142

A. CLASSIFICATION OF SUBJECT MATTER

See the extra sheet

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)

IPC: G06F 3/-, H03M11/-, H04Q7/-, H04M 1/-, G09G5/-

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)

EPDOC, WPI, PAJ; CNPAT; CNKI: CURSOR?, SYMBOL?, DISPLAY???, CHARACTER?, INPUT, SELECT???, MARK, MARKING, SIGN, SIGNING, MOBILE, PHONE, TERMINAL

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US2003/0017858A1 (Christian Kraft et al) 23 Jan.2003 (23.01.2003), claims 1-8, 0038-0089,0101-0103, figs.1-7	1,3-6,10,12-15,19-20
Y		2,7-9,11,16-18
Y	CN1664769A (LG ELECTRONICS CHINA RES & DEV) 07 Sep.2005 (07.09.2005), claims 1-3, page 4 line 3 to page 5 line 13, figs. 1-6	2,7-8,11,16-17
Y	CN1524387A(SUPERSCAPE PLC) 25 Aug. 2004 (25.08.2004), page 3 line 15, page 4 line 1, page 6 line 14, figs. 2,10	9,18

☒ Further documents are listed in the continuation of Box C.☒ See patent family annex.

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“&”document member of the same patent family

Date of the actual completion of the international search
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International application No.

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A. CLASSIFICATION OF SUBJECT MATTER

G06F 3/023 (2006.1) i

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