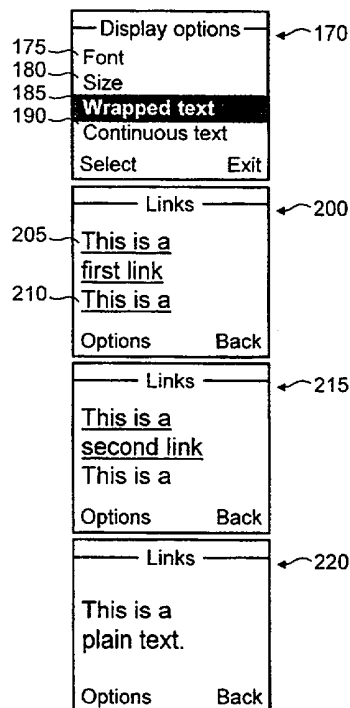| | |
|---|---|
| (21) Application No 0009081.1 | (51) INT CL$^7$<br>G06F 17/21 , H04M 1/247 |
| (22) Date of Filing 13.04.2000 | (52) UK CL (Edition S )<br>H4T TCGA T109 T121 T150 |
| (71) Applicant(s)<br>**Nokia Mobile Phones Limited**<br>**(Incorporated in Finland)**<br>**Keilalahdentie 4, 02150 Espoo, Finland** | (56) Documents Cited<br>EP 0949559 A1     EP 0698845 A1 |
| (72) Inventor(s)<br>**Peter Dam Nielsen**<br>**Christian Kraft** | (58) Field of Search<br>UK CL (Edition S ) **H4L LEUG , H4T TBLA TCGA TCGX**<br>**TCJA TDDA TDHA**<br>INT CL$^7$ **G06F 17/21 , H04M 1/247**<br>**Online databases: WPI, JAPIO, EPODOC** |
| (74) Agent and/or Address for Service<br>**Nokia IPR Department**<br>**Nokia House, Summit Avenue, Southwood,**<br>**FARNBOROUGH, Hampshire, GU14 0NG,**<br>**United Kingdom** | |

(54) Abstract Title
**Display with continuous or wrapped text**

(57) A display device intended for display of multiple items, any of which may have a length longer than the width of the display, may display one of the items in 'continuous' format, in which case the information is scrolled horizontally (Fig 4a), or in 'wrapped' format, in which the information is divided into portions each less than the width of the display and displayed simultaneously on plural lines.

Preferably, the user is provided with a menu from which 'wrapped' or 'continuous' text can be selected for the display format.
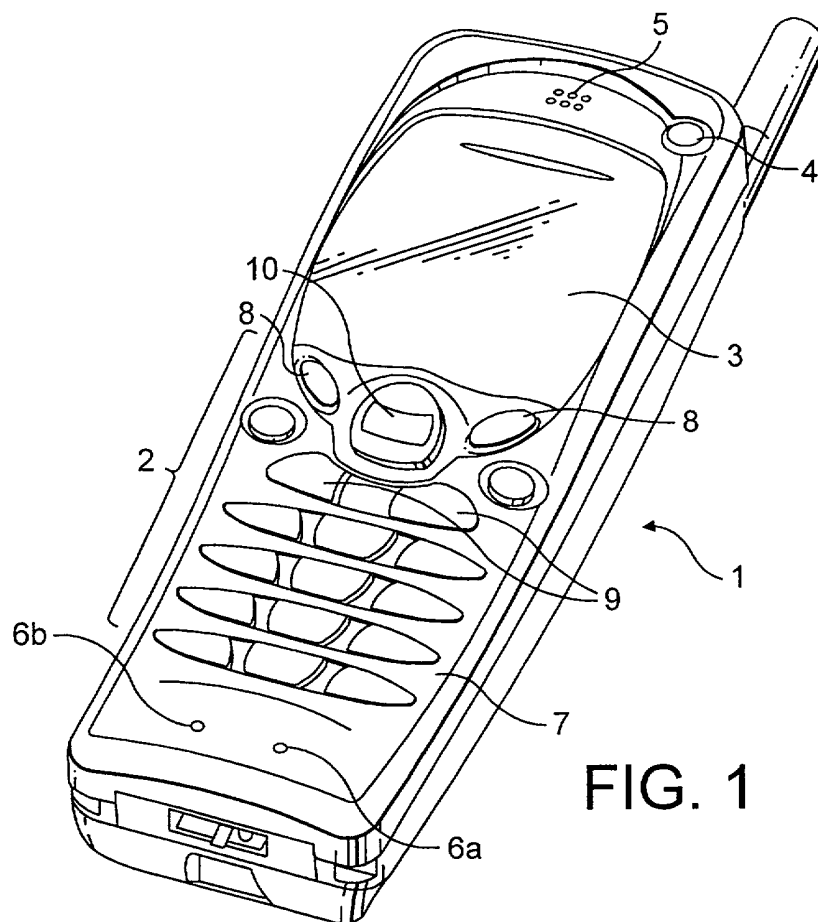
## FIG. 4b



***THE END***
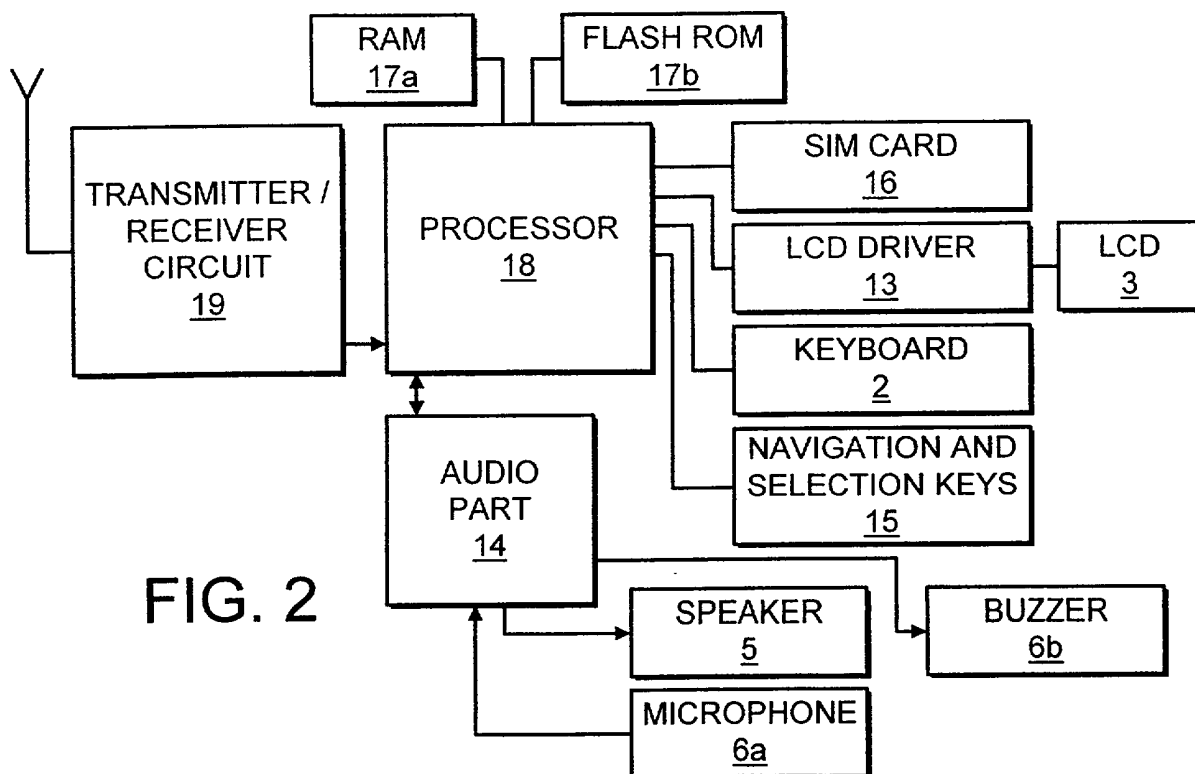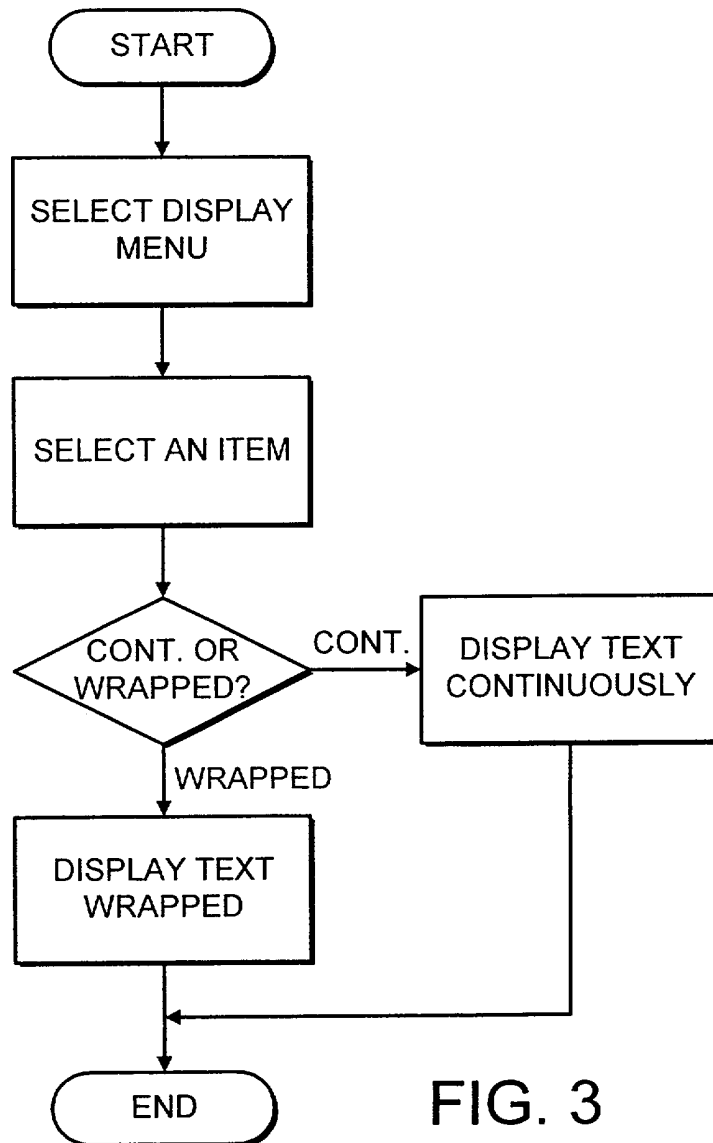
FIG. 1



RAM
17a

FLASH ROM
17b

TRANSMITTER /
RECEIVER
CIRCUIT
19

PROCESSOR
18

SIM CARD
16

LCD DRIVER
13

LCD
3

KEYBOARD
2

NAVIGATION AND
SELECTION KEYS
15

AUDIO
PART
14

SPEAKER
5

BUZZER
6b

MICROPHONE
6a

FIG. 2

FIG. 3

# FIG. 4a

35 — ✉ 🎵     15:02 ~ 30

**D1 Telekom** ~ 50

▮ ▮ ~ 45

▮ ▮

▮ ▮

▮ ▮

Ψ ▯

55 — ↑Menu     Names ~ 60

——— Menu ——— ~ 65

Browser ~ 70

🌐

7

71 — Home     Exit

~ 75

▐║║║║║║║║║║║║║║║║║║▌

Connecting to
Service... ~ 80

Cancel

——— D1 Web ——— ~ 85

Welcome to
D1 Web. ~ 90

95 — Options     Exit ~ 100

——— Links ——— ~ 110

120 — This is a . . .

125 — This is a . . .

130 — This is a . . .

135 — Options     Back

——— Links: ——— ~ 140

145 — Home

150 — Bookmarks

155 — Select

160 — **Display options**

165 — Select     Exit

# FIG. 4b

```
┌──── Display options ────┐  ◄─ 170
│ Font                    │
│ Size                    │
│ ██Wrapped text██████████│
│ Continuous text         │
│                         │
│ Select            Exit  │
└─────────────────────────┘
```

175 → Font
180 → Size
185 → Wrapped text
190 → Continuous text

```
┌──────── Links ──────────┐  ◄─ 200
│ This is a               │
│ first link              │
│ This is a               │
│                         │
│ Options           Back  │
└─────────────────────────┘
```

205 → This is a first link
210 → This is a

```
┌──────── Links ──────────┐  ◄─ 215
│ This is a               │
│ second link             │
│ This is a               │
│                         │
│ Options           Back  │
└─────────────────────────┘
```

```
┌──────── Links ──────────┐  ◄─ 220
│ This is a               │
│ plain text.             │
│                         │
│                         │
│ Options           Back  │
└─────────────────────────┘
```
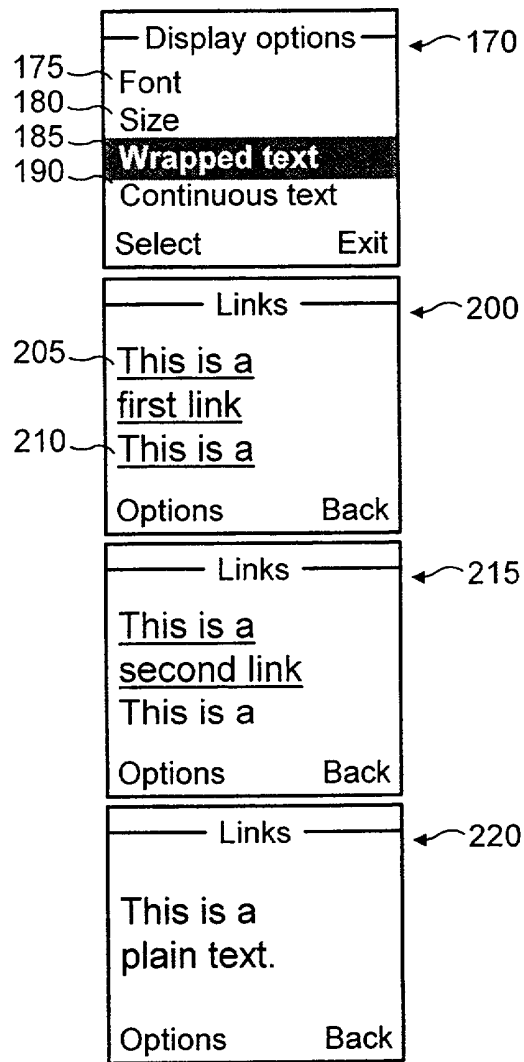
***THE END***

## A radio terminal

The present invention relates to a terminal and a method thereto for
5   displaying information on a small display.

Some handheld devices, such as personal digital assistants (PDA), cellular
phones, pagers as well as desk-top telephones, are capable of receiving and
displaying different kind of information. This information is typically elements
10   comprising a text based on alpha-numerical signs, but the elements can also
comprise graphics. However, these types of devices uses a display of rather
small size, which some users may experience as difficult to monitor. The
difficulty lays often in how the information is presented on the display, which
might differ depending on the information provider and/or the device itself.
15

One way of displaying the information would be to wrap a text and feed it
vertically down the display, which might be preferable if the text is longer than
the width of the display. If the text is longer than what can be continued in the
number of lines displayable in the display the text is being clipped vertically,
20   the remaining text can be accessed by scrolling the text downwards. The
scrolling could either be done manually, e.g. by pressing on a pre-defined key
which activates the scrolling function, or automatically.

Another way of displaying information could be to display a text which is
25   continuos, i.e. a text which shown on a single line. If the text is longer than the
width of the display, the text can be scrolled across the display either
manually, e.g. by pressing on a pre-defined key which activates the scrolling
function, or automatically.

Also, these two ways of displaying, can be combined dynamically by the provider and/or the manufacturer. Thus, if some parts is considered as easier to monitor when displayed in one way, and vice versa, then the provider and/or the manufacturer can display the information in the preferred way. For example, the elements can be links displayed in a list, which can be scrolled down vertically. In order to do this quickly, it might be preferable to display the list as continuos text. However, if the elements are initially showing the same content on the display, and the remaining parts are not visible, then it might be preferred to wrap the text.

Here is an example of three elements to be displayed:

http://wap.nokia.com/club.wml
http://wap.nokia.com/stock.wml
http://wap.nokia.com/net.wml

Here is an example of how these three elements can be displayed as continuos text, which initially showing the same content on the display:

http://wap.nokia.com/...
http://wap.nokia.com/...
http://wap.nokia.com/...

Here is another example of how these three elements can be displayed as wrapped text:

http://wap.nokia.com/
club.wml
http://wap.nokia.com/
stock.wml

http://wap.nokia.com/

net.wml

Both of these two alternatives can be useful depending on what the user
5    would like to do. However, there are very few possibilities for the user to affect
the elements. Therefore, there is a need to improve and facilitate the
possibilities to display the information on a display.

According to one aspect of the present invention there is provided a method
10    for displaying information on a display, where the information is provided with
elements. An element is either having a continuos length presenting a length
which is equal to or greater than the size of said display, or a wrapped length
presenting a length which is less than the size of said display. The display is
further provided with a user interface having a menu structure of items. The
15    user interface is provided with a selectable continuos length item and/or a
wrapped length item. The information is displayed according to the selection
made in the menu structure of the user interface, in order to allow the user to
toggle between continuos length and wrapped length.

20    According to another aspect of the present invention there is provided a
terminal for displaying information on a display. The information comprising
elements, wherein an element is either provided with a continuos length
presenting a length which is equal to or greater than the size of the display, or
a wrapped length presenting a length which is less than the size of the
25    display. The terminal comprising a display for displaying the information, and
a user interface provided with a menu structure comprising a selectable
continuos length item and/or a wrapped length item. The items are arranged
to display the information according to a selection made in the menu
structure, in order to allow the user to toggle between continuos length and
30    wrapped length.

According to a third aspect of the present invention there is provided a terminal for displaying information on a display. The information comprising elements, wherein an element is either provided with a continuos length

5      presenting a length which is equal to or greater than the size of the display, or a wrapped length presenting a length which is less than the size of the display. The terminal comprising a display for displaying the information, means for setting a first type of elements to be displayed as a continuos length item and a second type of element to be displayed as a wrapped

10     length item. Also, the terminal comprising means for identifying the first type of element when acting in a text to be displayed, and means for displaying the first and second type of elements according to their setting.

For a better understanding of the present invention and to understand how

15     the same may be brought into effect reference will now be made by way of example only to the accompanying drawings in which:

Figures 1 and 2 schematically illustrate a radio handset ;

20     Figure 3 is a flowchart illustrating one aspect of the present invention; and

Figure 4 illustrates a user interface according to an embodiment of the present invention.

25     Fig. 1 shows a preferred embodiment of a terminal, hereafter also referred as a phone, according to a preferred embodiment of the invention. The phone, which is generally designated by 1, comprises a user interface having a keypad 2, a display 3, an on/off button 4, a speaker 5, a microphone 6a and a transducer 6b. The phone 1 according to the preferred embodiment is

30     adapted for communication via a wireless telecommunication network, e.g. a

cellular network. However, the phone could also have been designed for a cordless network. The keypad 2 has a first group 7 of keys as alphanumeric keys, by means of which the user can enter a telephone number, write a text message (SMS), write a name (associated with the phone number), etc. Each

5      of the twelve alphanumeric keys 7 is provided with a figure "0-9" or a sign "#" or "*", respectively. In alpha mode each key is associated with a number of letters and special signs used in text editing.

       The keypad 2 additionally comprises two soft keys 8, two call handling keys 9,

10     and a navigation key 10.

       The two soft keys 8 have a functionality corresponding to what is known from the phones Nokia 2110™, Nokia 8110™ and Nokia 3810™. The functionality of the soft key depends on the state of the phone and the navigation in the menu

15     by using a navigation key. The present functionality of the soft keys 8 is shown in separate fields in the display 3 just above the keys 8.

       The two call handling keys 9 according to the preferred embodiment are used for establishing a call or a conference call, terminating a call or rejecting an

20     incoming call.

       The navigation key 10 is an up/down key and is placed centrally on the front surface of the phone between the display 3 and the group of alphanumeric keys 7. Hereby the user will be able to control this key by simply pressing the

25     up/down key using his/her thumb. Since many experienced phone users are used to one-hand control, it is a very good solution to place an input key, requiring precise motor movements. Thus, the user may place the phone in the hand between the finger tips and the palm of the hand. Hereby, the thumb is free for inputting information.

30

The transducer 6b could be a buzzer, and is arranged to generate a sound of a ring tone, upon reception of a signal from another phone, e.g. an incoming call or reception of an SMS (short messaging service) message.

5    Fig. 2 schematically shows the most essential parts of a preferred embodiment of the phone. These parts being essential to understand the invention. The preferred embodiment of the phone of the invention is adapted for use in connection with a GSM network, but, of course, the invention may also be applied in connection with other phone networks, such as other kinds

10   of cellular networks and various forms of cordless phone systems or in dual band phones accessing sets of these systems/networks. The microphone 6a records the user's speech, and the analogue signals formed thereby are A/D converted in an A/D converter (not shown) before the speech is encoded in an audio part 14. The encoded speech signal is transferred to controller

15   means 18, which may support software in the phone. The controller means 18 also forms the interface to the peripheral units of the apparatus, including a RAM memory 17a and a Flash ROM memory 17b, a SIM card 16, the display 3 and the keypad 2 (as well as data, power supply, etc.). The controller means 18 communicates with the transmitter/receiver circuit 19. The audio

20   part 14 speech-decodes the signal, which is transferred from the controller 18 to the earpiece 5 via a D/A converter (not shown).

Also, the audio part 14 is also able to give an output of an ring tone to the buzzer 6b. The ring tone can be stored in either of the memories 17a,b, and is

25   recalled when the receiver 19 receives an incoming signal, by means of the controller 18. Thus, the ring tone is recalled from the memory, forwarded to the audio part 14, and the ring tone is generated as an output from the buzzer 6b.

The controller means 18 is connected to the user interface. Thus, it is the controller means 18 which monitors the activity in the phone and controls the display 3 in response thereto.

5    Therefore, it is the controller means 18 which detects the occurrence of a state change event and changes the state of the phone and thus the display text. A state change event may be caused by the user when he activates the keypad including the navigation key 10, and these type of events are called entry events or user events. However, the network communicating with the

10   phone may also cause a state change event. This type of event and other events beyond the user's control are called non user events. Non user events comprise status change during call set-up, change in battery voltage, change in antenna conditions, message on reception of SMS, etc.

15   Figure 3 shows a flowchart over a method for displaying information on a display, in accordance with the present invention. The information is provided with elements. An element is either having a continuos length presenting a length which is equal to or greater than the size of the display, or a wrapped length presenting a length which is less than the size of said display. The

20   display is further provided with a user interface having a menu structure of items.

In order to allow the user to toggle between continuos length and wrapped length, the user is first able to select a display menu "SELECT DISPLAY

25   MENU". In this menu, the user interface is provided with a selectable continuos length item and/or a wrapped length item "SELECT AN ITEM". If the present text is set as wrapped text, and the user would like to change it into continuos text, the user would perhaps like to choose the continuos length item, "CONT. OR WRAPPED?". Thereafter, the information is finally

displayed according to the selection made in the menu structure of the user interface, which in this case was "DISPLAY TEXT CONTINUOSLY".

As an alternative solution, in accordance with the present invention, the
5    selection could be done automatically. This is done by providing the terminal with means for setting a first type of elements to be displayed as a continuos length item and a second type of element to be displayed as a wrapped length item. The terminal also comprising means for identifying the first type of element when acting in a text to be displayed, and means for displaying the
10   first and second type of elements according to their setting.

With reference to Fig. 4a and 4b, an example is shown on how the display in a user interface can act by interaction of the user according to the present invention. The user interface may comprise the same elements as shown in
15   Fig.1, i.e. a keypad 2, a display 3, an on/off button 4, a speaker 5 and a microphone 6. Also, it is the control means 18 in Fig. 2 which controls the user interface. Starting from Fig. 4a, there is a layout 30 presented on a display in a phone, as shown in Fig.1 and 2, which indicates signal strength 35 from the wireless telecommunication network "D1 Telekom" 40, the battery power 45
20   and a clock showing the time 50 in hours and minutes. Preferably, the display in the phone is an LCD (Liquid Crystal Display) display. The display, can be controlled by the control means 18 as shown in Fig. 2. The layout 30 presents an example of the phone in idle mode, i.e. when the phone is activated and awaiting an action, e.g. an incoming or outgoing call. In the bottom of the
25   display there are two items which are denoted as "Menu" 55 and "Names" 60. If the user selects "Names" 60 he/she can e.g. access a built in phone book. If the user selects "Menu" 55, he/she can select among several different menus. The actual selection of features in the bottom of the display, like "Menu" and "Names", can be selected by means of the soft keys disclosed with reference
30   to Fig. 1.

One of the menus can be the next layout 65 called "Browser" 70. If the user chooses to use this menu, he/she can access different telecom related information services, e.g. Internet. One way of accessing this kind of

5    information is to use the Wireless Application Protocol, WAP. The Wireless Application Protocol (WAP) is a result of continuous work to define an industry wide standard for developing applications over wireless communication networks. WAP is disclosed in the Wireless Application Protocol Architecture Specification; Version 30-Apr-1998; by Wireless Application Protocol

10   Architecture Working Group.


If the user chooses to select "Home" 71, this may lead to the next layout 75, which graphically indicates, "Connecting to Service" 80. This shows an example of how the phone is trying to establish a connection to e.g. Internet,

15   by sending an access request to a server. If a connection is established, some kind of welcome text for a home page might be displayed, "Welcome to D1 Web." 90. If the user selects "Options" 100 a list of selections can be displayed as shown in the following layout 110. For example, the different choices could be different links or just plain text, wherein a link is indicated by

20   the underline "This is a ..." 120, 125 and a plain text have no underlining "This is a ..." 130. The dots "..." indicates that not all the text is visible, and is an example of continuos text.  The text is typically alpha-numerical.


In this example the user selects to continue with pressing on the softkey as is

25   indicated as Options 135, which brings us to the next layout 140. This layout shows a menu structure of items; "Home" 145, "Bookmarks" 150, "Select" 155 and "Display options" 160. The text which is inverted in "Display options" 160 is selected by 165, which brings us to Fig. 4b and the layout for Display options 170. In this layout the user has the following choices: Font 175, Size

180, Wrapped text 185 and Continuos text 190. In accordance with the present invention, the user is allowed to toggle between the continuos length (as shown in layout 110) and wrapped length, by providing a selectable item of either "Wrapped text" 185 or "Continuos text" 190. Other items are also

5    shown in this layout, like Font 175 and Size 180, which gives the user further choices to adopt the text in a preferred manner. Since the information displayed in layout 110 is continuos and not all information is visible, the user chooses in this example to select Wrapped text 185.

10    By selecting Wrapped text the text in layout 110 is changed to be displayed like the text in layout 200. Now, the user is able to read the whole text of the first text "This is a first link" 205 and a part of the second text "This is a" 210. When the user scrolls down the text in the display, by using navigation key 10 (Fig. 1), the remaining text from layout 110 is now visible from layout 215 and

15    220.

Although the invention has been described with respect to a particularly preferred embodiment, it should be appreciated that the invention as defined by the claims extends beyond the particular features of the embodiment

20    described to encompass modifications and variations to the embodiment not necessarily described.

CLAIMS:

1. A method for displaying information on a display, said information having elements, wherein an element having either a continuos length presenting a length which is equal to or greater than the size of said display, or a wrapped length presenting a length which is less than the size of said display, and said display is further provided with a user interface having a menu structure of items, said method comprising the following steps:

- providing in said menu structure a selectable continuos length item and/or a wrapped length item,

- selecting said continuos length item or said wrapped length item in the menu structure of the user interface, and

- displaying said information according to the selection made in the menu structure of the user interface, in order to allow the user to toggle between continuos length and wrapped length.

2. A method according to claim 1, wherein said information is displayed as alpha-numerical signs.

3. A method according to claim 1 or 2, wherein said element, having a continuos length, is scrolled over said display.

4. A method according to claim 1 or 2, wherein the element, having a wrapped length, is adopted to fit the size of the display, by splitting the element into several parts each part fit in the size of the display and feeding said parts in a vertical direction over said display, each time the length of the element is greater than the width of the display.

5. A terminal for displaying information on a display, said information comprising elements, wherein an element is either provided with a continuos length presenting a length which is equal to or greater than the size of said display, or a wrapped length presenting a length which is less than the size of said display, said terminal comprising

- a display for displaying said information, and

- a user interface provided with a menu structure comprising a selectable continuos length item and/or a wrapped length item, said items are arranged to display said information according to a selection made in the menu structure, in order to allow the user to toggle between continuos length and wrapped length.

6. A terminal according to claim 5, wherein said information is alpha-numerical.

7. A terminal according to claim 5 or 6, wherein said element, having a continuos length, is arranged to be scrolled over said display.

8. A terminal according to claim 5 or 6, wherein the element, having a wrapped length, is arranged to split the element into several parts each part fit in the size of the display and to feed said parts in a vertical direction over said display, each time the length of the element is greater than the width of the display.

9. A terminal, or method substantially as hereinbefore described with reference to the accompanying figures 3, 4a and 4b and/or as shown in the accompanying figures 3, 4a and 4b.

10. A terminal for displaying information on a display, said information comprising elements, wherein an element is either provided with a

continuos length presenting a length which is equal to or greater than the size of said display, or a wrapped length presenting a length which is less than the size of said display, said terminal comprising

- a display for displaying said information,

5 - means for setting a first type of elements to be displayed as a continuos length item and a second type of element to be displayed as a wrapped length item,

- means for identifying said first type of element when acting in a text to be displayed, and

10 - means for displaying the first and second type of elements according to their setting.

INVESTOR IN PEOPLE

| Application No: | GB 0009081.1 | 14. | Examiner: | Sue Willcox |
|---|---|---|---|---|
| Claims searched: | 1, 5, 10 | | Date of search: | 24 January 2001 |

## Patents Act 1977
## Search Report under Section 17

**Databases searched:**

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.S): H4T TBLA, TCGA, TCGD, TCGX, TCJA, TDDA, TDHA; H4L LEUG

Int Cl (Ed.7): G06F 17/21; H04M 1/247

Other: Online databases: WPI, JAPIO, EPODOC

**Documents considered to be relevant:**

| Category | Identity of document and relevant passage | Relevant to claims |
|---|---|---|
| Y | EP 0949559 A1      Unwired Planet Inc - see particularly col 5, lines 17 - 21 & col 7, lines 12 - 15 | all |
| Y | EP 0698845 A1      International Business Machines Corp. - see Fig 7 | all |

| | | | |
|---|---|---|---|
| X | Document indicating lack of novelty or inventive step | A | Document indicating technological background and/or state of the art. |
| Y | Document indicating lack of inventive step if combined with one or more other documents of same category. | P | Document published on or after the declared priority date but before the filing date of this invention. |
| & | Member of the same patent family | E | Patent document published on or after, but with priority date earlier than, the filing date of this application. |

An Executive Agency of the Department of Trade and Industry