



US 20150105036A1

(19) **United States**

(12) **Patent Application Publication**

Goomansingh et al.

(10) **Pub. No.: US 2015/0105036 A1**

(43) **Pub. Date: Apr. 16, 2015**

(54) **MOBILE DEVICE OPERATING MODE
ALTERATION**

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(21) Appl. No.: **14/234,869**

(22) PCT Filed: **Jun. 17, 2013**

(86) PCT No.: **PCT/GB2013/051570**

§ 371 (c)(1),
(2) Date: **Jan. 24, 2014**

Publication Classification

(51) **Int. Cl.**

H04W 72/04 (2006.01)
H04W 88/06 (2006.01)
H04W 4/12 (2006.01)
H04B 1/04 (2006.01)

(52) **U.S. Cl.**

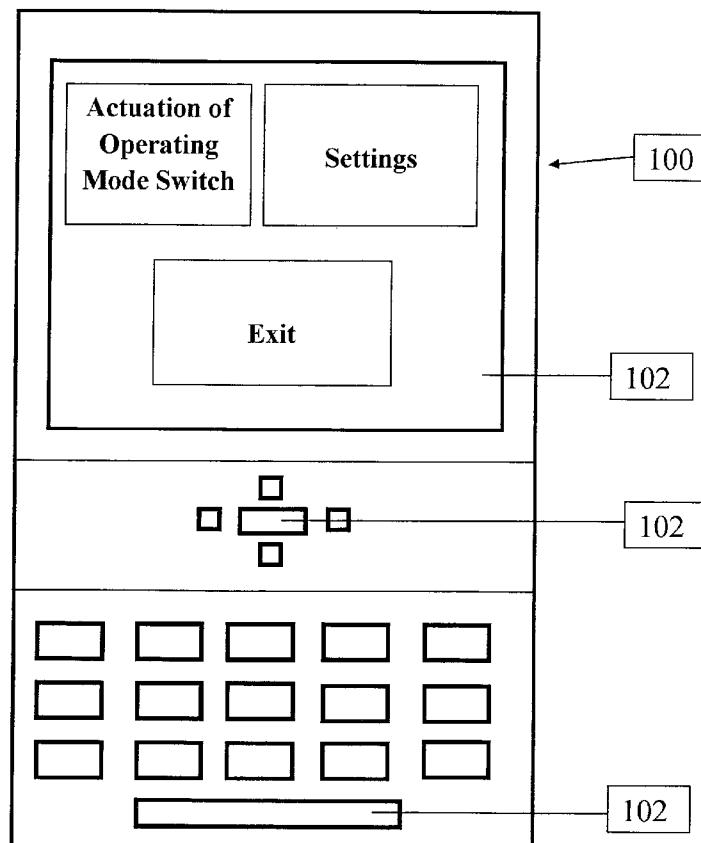
CPC **H04W 72/0453** (2013.01); **H04B 1/04** (2013.01); **H04W 88/06** (2013.01); **H04W 4/12** (2013.01)

(57) **ABSTRACT**

A mobile device, having at least one messaging system, a user interface element having variable intensity lighting, a frequency alteration module having selectable frequency modes, an operating mode switch and a data processor coupled to the messaging system, the user interface element, the frequency alteration module and the operating mode switch. The data processor includes at least one software application configured, following the operating mode switch actuation, to adjust the lighting intensity of the user interface element, to change the frequency mode of the frequency alteration module and to provide a customized output. The customized output aggregates the at least one mobile device messaging system.

Related U.S. Application Data

(60) Provisional application No. 61/663,601, filed on Jun. 24, 2012.



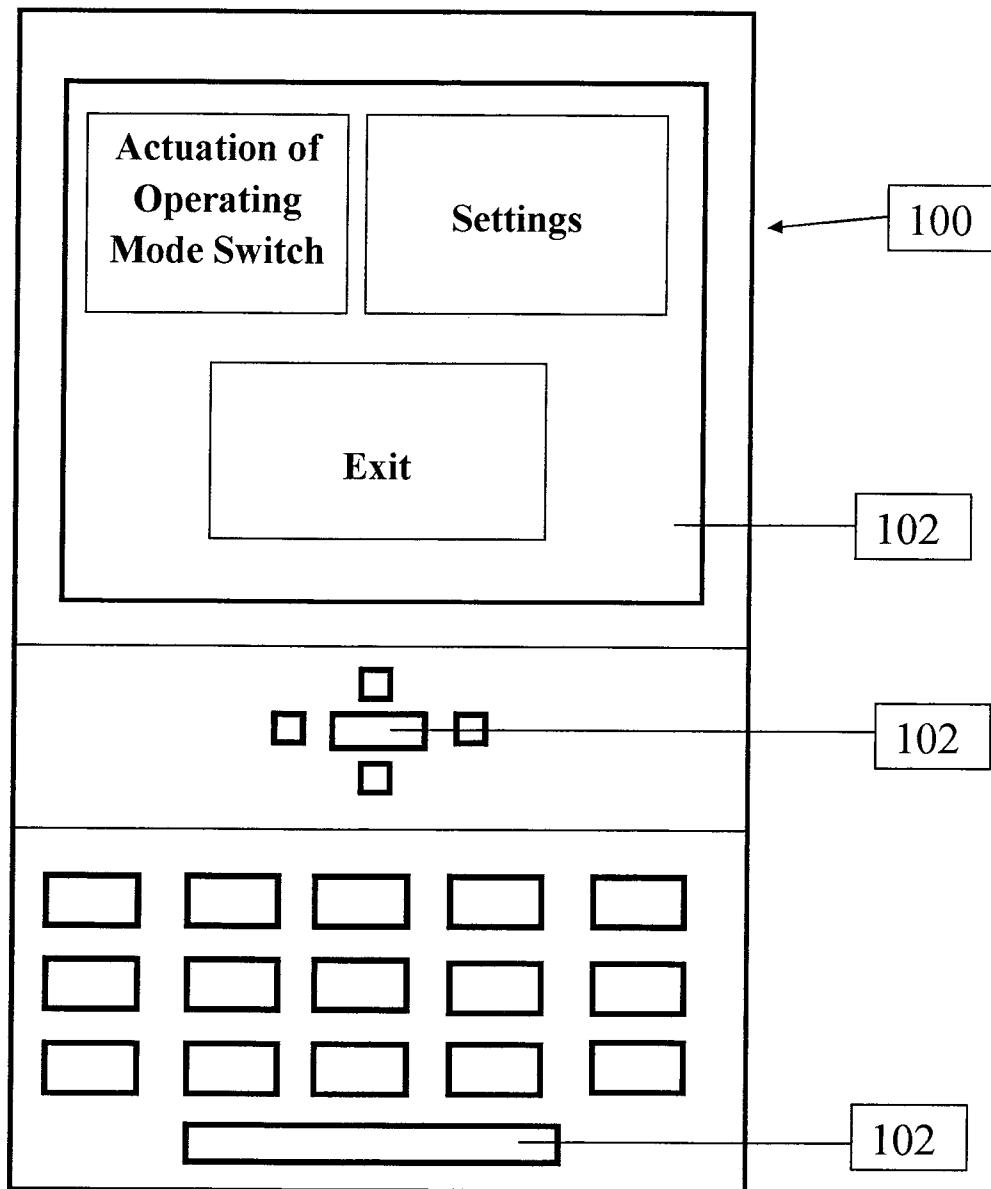
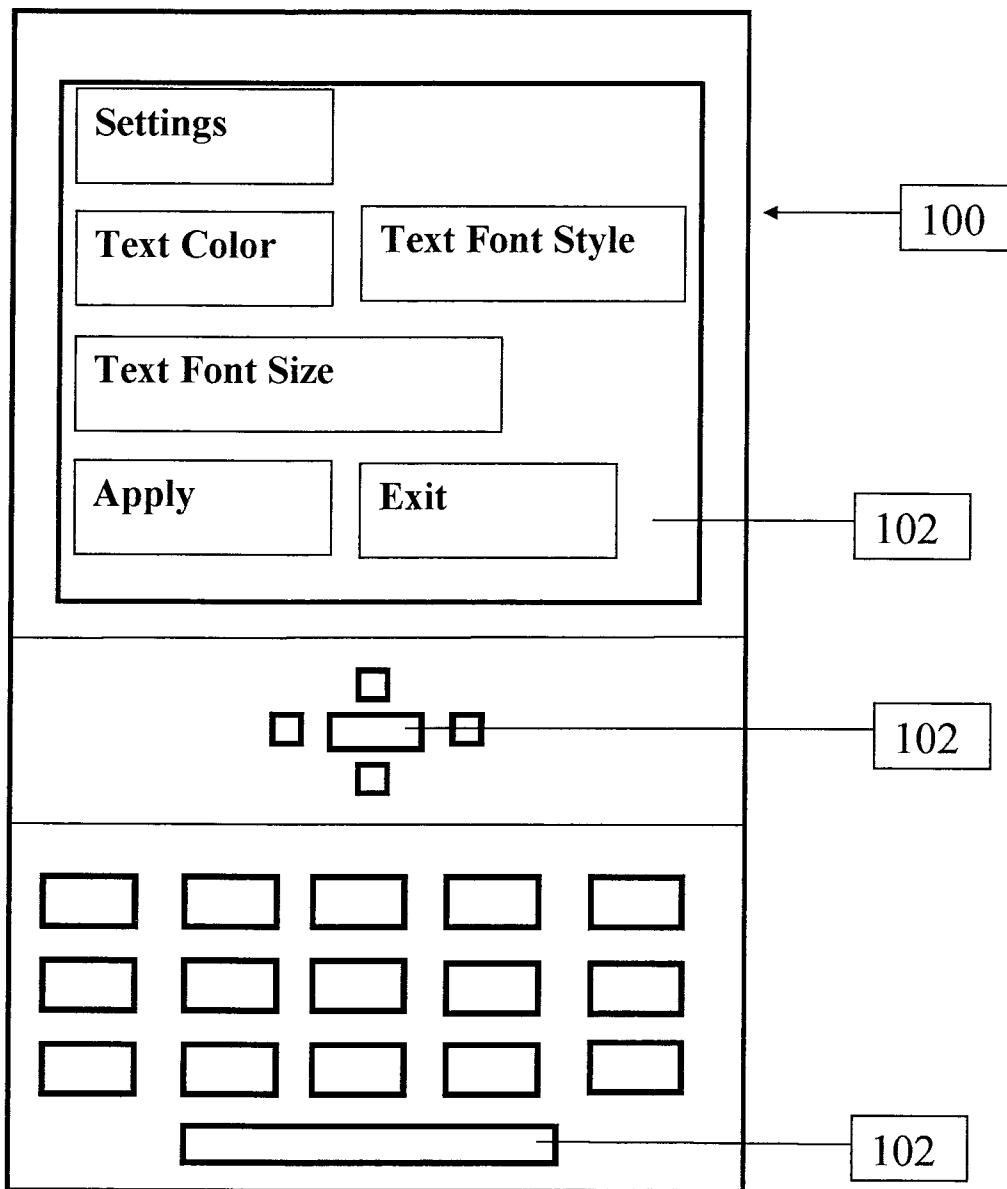
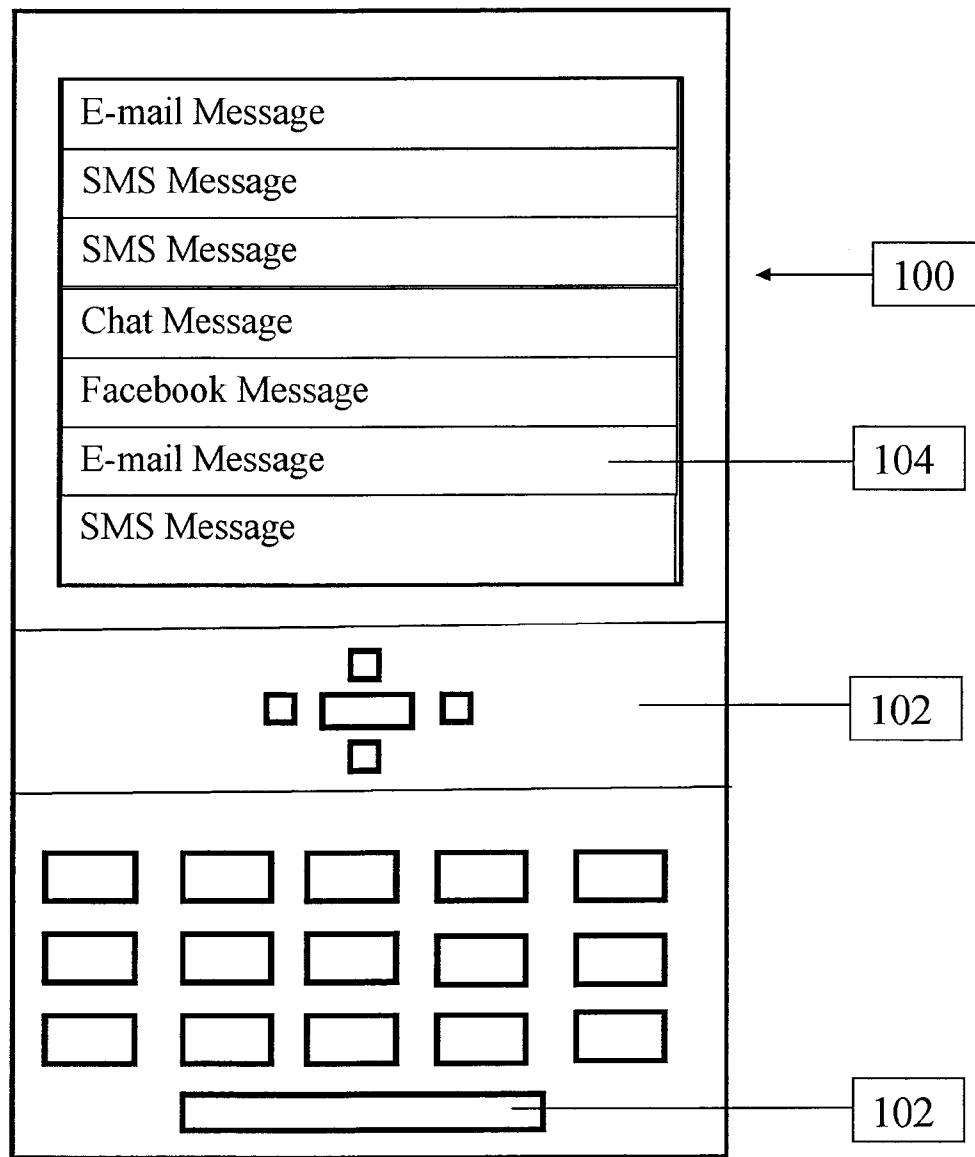


Fig. 1

**Fig. 2**

**Fig. 3**

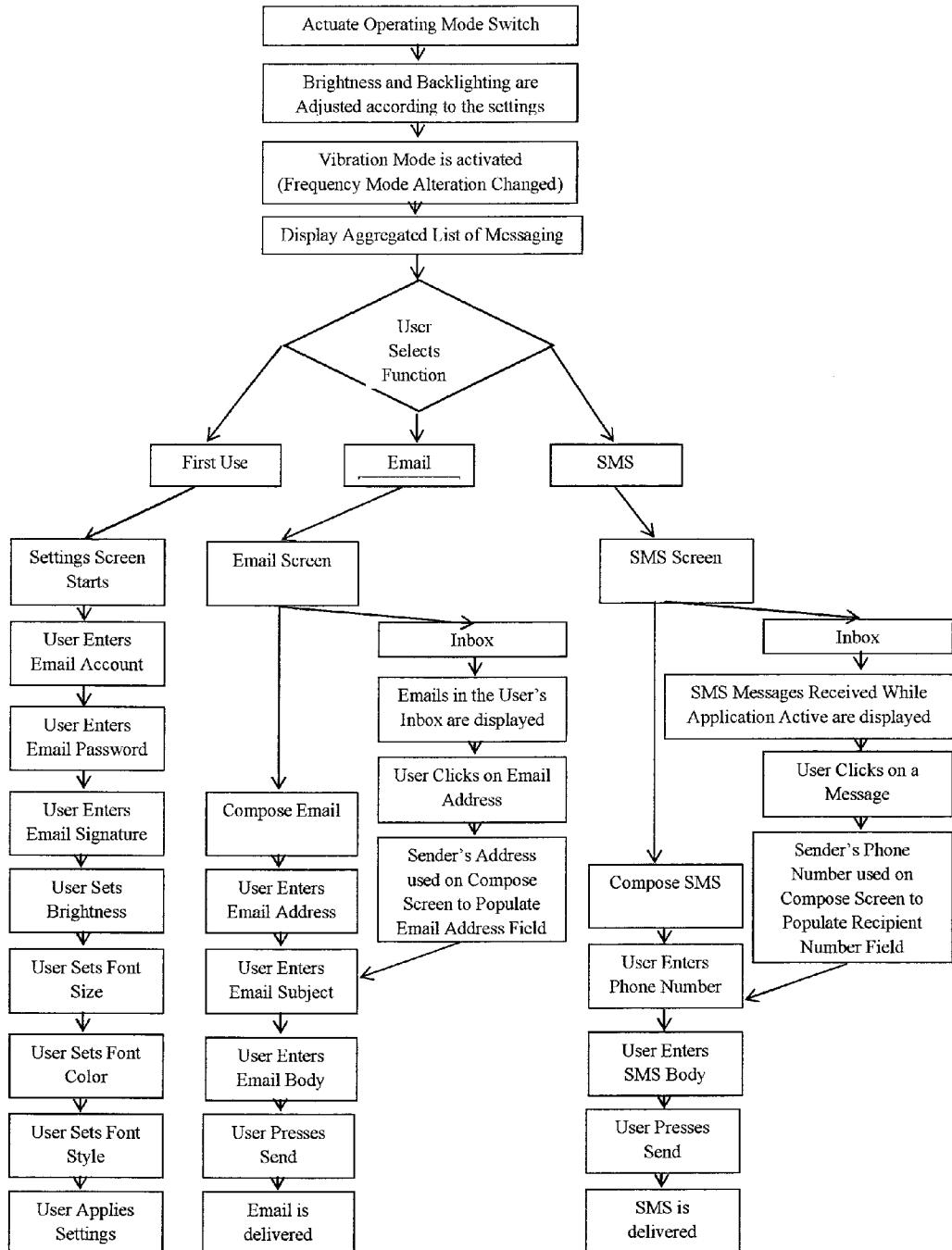


Fig. 4

MOBILE DEVICE OPERATING MODE ALTERATION

FIELD OF THE INVENTION

[0001] The present invention relates to mobile devices and more particularly to the method of operating mode alterations in mobile devices.

BACKGROUND

[0002] The conventional mobile device includes a display and a keypad for facilitating data entry by the user. Usage of mobile device in certain environmental conditions, such as darkened environment, is obtrusive due the lighting of the screen and other factors. A solution for this problem is required.

[0003] The following publications are believed to represent the current state of the art:

[0004] U.S. Patent Nos.: U.S. Pat. No. 8,184,423; U.S. Pat. No. 6,813,491; U.S. Pat. No. 6,246,761; U.S. Pat. No. 8,063,869 and U.S. Pat. No. 7,117,019.

[0005] U.S. Patent Publication Nos.: US20040127198; US20090307616; US20040012556 and US20080045207.

[0006] International Patent and Publication Nos. EP1701331 and EP1892612.

SUMMARY

[0007] The present invention seeks to provide a mobile device with improved capabilities.

[0008] There is thus provided in accordance with a preferred embodiment of the invention a mobile device, having at least one messaging system, a user interface element having variable intensity lighting, a frequency alteration module having selectable frequency modes, an operating mode switch and a data processor coupled to the messaging system, the user interface element, the frequency alteration module and the operating mode switch. The data processor includes at least one software application configured, following the operating mode switch actuation, to adjust the lighting intensity of the user interface element, to change the frequency mode of the frequency alteration module and to provide a customized output. The customized output aggregates the at least one mobile device messaging system.

[0009] Preferably, said frequency alteration module is configured to enable selection between a first frequency mode and a second frequency mode.

[0010] Advantageously, the first frequency mode provides an audio signal and the second frequency mode provides a vibration signal.

[0011] Preferably, said messaging system is selected from the group consisting of SMS, Email, MMS, chat clients and social networks clients.

[0012] Preferably, said customized output is displayed on the at least one of said user interface elements.

[0013] There is thus provided in accordance with a preferred embodiment of the invention a method of controlling an operating mode of a mobile device, including the following steps: providing at least one messaging system, providing a user interface element having variable intensity lighting, providing a frequency alteration module having selectable frequency modes, providing an operating mode switch, and providing a data processor coupled to the messaging system, the user interface element, the frequency alteration module and the operating mode switch. The data processor includes at

least one software application configured, following the operating mode switch actuation, to adjust the lighting intensity of the user interface element, to change the frequency mode of the frequency alteration module and to provide a customized output. The customized output aggregates the at least one mobile device messaging system.

[0014] Preferably, said frequency alteration module is configured to enable selection between a first frequency mode and a second frequency mode.

[0015] Advantageously, the first frequency mode provides an audio signal and the second frequency mode provides a vibration signal.

[0016] Preferably, said messaging system is selected from the group consisting of SMS, Email, MMS, chat clients and social networks clients.

[0017] Preferably, said customized output is displayed on the at least one of said user interface elements.

[0018] There is thus provided in accordance with a preferred embodiment of the invention an operating mode switch for controlling a mobile device having at least one messaging system according to a first and a second operating modes. Actuation of the operating mode is configured to automatically switch from the first operating mode to the second operating mode wherein in the second operating mode, visual characteristic change, audio characteristic change and aggregation of the at least one messaging systems occurs simultaneously.

[0019] Preferably, said audio characteristic change is configured to enable selection between a first audio mode and a second audio mode.

[0020] Preferably, the first audio mode provides an audio signal and the second audio mode provides a vibration signal.

[0021] Advantageously, said visual characteristic change is configured to enable variation of lighting intensity of the mobile device.

[0022] Preferably, said messaging system is selected from the group consisting of SMS, Email, MMS, chat clients and social networks clients.

BRIEF DESCRIPTION OF THE DRAWINGS

[0023] The present invention will be understood and appreciated more fully from the following detailed description, taken in conjunction with the drawings in which:

[0024] FIG. 1 is a simplified illustration of the main screen appearance in accordance to one embodiment of the present invention.

[0025] FIG. 2 is a simplified illustration of the settings screen appearance in accordance to one embodiment of the present invention.

[0026] FIG. 3 is a simplified illustration of the customized output screen in the actuated operating mode switch stage in accordance to one embodiment of the present invention.

[0027] FIG. 4 is a simplified flow chart depicting, by way of overview, the method of operating mode alteration employed in accordance to one embodiment of the present invention.

DETAILED DESCRIPTION

[0028] The embodiments of the present invention relate to a mobile device 100 and a method of mobile device operating mode alteration. Mobile device is for example, a cellular phone, a tablet, a net book, a smart-phone, an electronic book reader or any other type of mobile or portable electronic device.

[0029] The mobile device 100 has at least one user interface element 102, such as a display, a keypad, input buttons or a touch screen. The at least one user interface element 102 preferably has variable intensity lighting, such that the intensity of the backlight provided to the at least one user interface element 102 can be manually adjusted by a user or automatically adjusted using a particular software in order to suit different environmental conditions.

[0030] The mobile device 100 also has an audio device and a vibration device. A frequency alteration module having selectable frequency modes is coupled to the mobile device and is configured to selectively change the output mode of the mobile device from audial to tactile mode and vice versa or the combination thereof, whereas audial output is preferably provided by an audio device, such as a speaker and tactile output is preferably provided by a vibration device, such as a vibration speaker. The several selectable frequency modes of the frequency alteration module can be changed either manually by the user or automatically using particular software in order to suit different environmental conditions.

[0031] The mobile device 100 additionally has at least one messaging system, such as for example, SMS, MMS, Email, chat and various social network messaging systems.

[0032] The mobile device 100 includes a data processor that controls the overall operation of the device and is preferably coupled to the above mentioned at least one of the user interface elements 102, to the at least one of the messaging systems and to the frequency alteration module. Different software applications can be integrated to the mobile device data processor in order to control the mobile device operating mode.

[0033] It is a particular feature of the present invention that an operating mode switch is coupled to the mobile device data processor and a software is configured to perform a pre-defined set of alterations to the operating mode of the mobile device, upon actuation of the operating mode switch. The particular pre-defined set of alterations performed upon the actuation of the operating mode switch are described in detail hereinbelow:

[0034] The variable lighting intensity of the at least one of the user interface elements 102, which may be the display of the mobile device, is automatically changed. The intensity of the back lighting is preferably decreased to suit dark environmental conditions and the text font lighting may be increased to allow reading.

[0035] The selectable frequency mode of the frequency alteration module is preferably adjusted to provide a tactile output and avoid audial output in order to suit certain environmental conditions.

[0036] It is a particular feature of the present invention that simultaneously, upon operating mode switch actuation, a customized output 104 is provided. The customized output typically aggregates the at least one messaging system of the mobile device 100. For example, if SMS messaging application, EMAIL application and a certain chat application are configured on the mobile device 100, all of these applications are aggregated and displayed on a single screen, which constitutes the customized output 104.

[0037] It is appreciated that other features provided in the mobile device 100 may be altered by employing the operating mode switch, such as for example, text font style, text font size, mobile device display brightness. These features may be altered simultaneously with the operating mode switch actua-

tion or may be alternatively manually changed by the user immediately after the operating mode switch actuation.

[0038] The customized output 104 allows for exposing the user to a limited amount of mobile device functionalities, which are all aggregated into one screen.

[0039] It is appreciated that upon first operating mode switch actuation, the user is requested to define the initial settings, generally as follows:

[0040] 1) The user actuates the operating mode switch, for example by mechanically pushing a button or actuation by means of a touch screen.

[0041] 2) Main screen of the customized output is presented, having an option to choose "Settings".

[0042] 3) The user chooses the "Settings".

[0043] 4) The user adjusts at least one of the features of the at least one of user interface elements, such as for example, back illumination, text font style, text font size or mobile device display brightness and presses "Apply" option.

[0044] Following the above mentioned initial setting process, the customized output 104 will be provided upon actuation of the operating mode switch in such a manner that the initial settings as noted above are automatically applied.

[0045] It is appreciated that the actuation of the operating mode switch as well as termination on and off may be performed manually by the user and may be alternatively performed automatically by means of a software.

[0046] The main screen upon actuation of the operating mode switch preferably has several options as generally described in the simplified main screen illustration of FIG. 1.

[0047] It is seen in FIG. 1 that the user has an option to actuate the operating mode switch, to enter the settings or exit.

[0048] The settings screen that appears upon actuation of the operating mode switch preferably has several options as generally described in the simplified settings screen illustration of FIG. 2.

[0049] It is seen in FIG. 2 that the user has several options, for example, to change text color, preferably to white or grey. There is an option of changing the text font style and the text font size. Additionally, there is an option to apply the settings or exit.

[0050] The customized output screen 104 in the actuated operating mode switch stage preferably has several options as generally described in the simplified customized output screen illustration of FIG. 3.

[0051] It is seen in FIG. 3 that upon actuation of the operating mode switch, the light intensity of the at least one of the user interface elements is decreased, the brightness of the display is adjusted as per the applied settings and an aggregated list from the at least one messaging system of the mobile device is displayed on the customized output screen 104.

[0052] Reference is now made to FIG. 4, which is a simplified flow chart illustration of the mobile device operating mode alteration method. It is seen in FIG. 4 that the user can choose any particular message from the aggregated list of messages and compose a reply.

[0053] It is a particular feature of the present invention that a window for composing a reply is implemented in such a manner that the incoming message is not quoted, rather the window is blank and ready for text entry.

[0054] It will be appreciated by persons skilled in the art that the present invention is not limited by what has been particularly shown and described hereinabove. Rather the

scope of the present invention includes both combinations and sub combinations of various features described hereinabove as well as variations and modifications thereof which are not in the prior art.

1. A mobile device, comprising:
 - at least one messaging system;
 - a user interface element having variable intensity lighting;
 - a frequency alteration module having selectable frequency modes;
 - an operating mode switch; and
 - a data processor coupled to said messaging system, said user interface element, said frequency alteration module and said operating mode switch, wherein said data processor includes at least one software application configured, following the operating mode switch actuation, to adjust the lighting intensity of said user interface element, to change the frequency mode of said frequency alteration module and to provide a customized output, wherein said customized output aggregates said at least one mobile device messaging system.
2. A mobile device according to claim 1, wherein said frequency alteration module is configured to enable selection between a first frequency mode and a second frequency mode.
3. A mobile device according to claim 2, wherein the first frequency mode provides an audio signal and the second frequency mode provides a vibration signal.
4. A mobile device according to claim 1, wherein said messaging system is selected from the group consisting of SMS, Email, MMS, chat clients and social networks clients.
5. A mobile device according to claim 1, wherein said customized output is displayed on the at least one of said user interface elements.
6. A method of controlling an operating mode of a mobile device, comprising the steps of:
 - providing at least one messaging system;
 - providing a user interface element having variable intensity lighting;
 - providing a frequency alteration module having selectable frequency modes;
 - providing an operating mode switch; and
 - providing a data processor coupled to said messaging system, said user interface element, said frequency alter-

ation module and said operating mode switch, wherein said data processor includes at least one software application configured, following the operating mode switch actuation, to adjust the lighting intensity of said user interface element, to change the frequency mode of said frequency alteration module and to provide a customized output, wherein said customized output aggregates said at least one mobile device messaging system.

7. A method according to claim 6, wherein said frequency alteration module is configured to enable selection between a first frequency mode and a second frequency mode.
8. A method according to claim 7, wherein the first frequency mode provides an audio signal and the second frequency mode provides a vibration signal.
9. A method according to claim 6, wherein said messaging system is selected from the group consisting of SMS, Email, MMS, chat clients and social networks clients.
10. A mobile device according to claim 6, wherein said customized output is displayed on the at least one of said user interface elements.
11. An operating mode switch for controlling a mobile device having at least one messaging system according to a first and a second operating modes, actuation of said operating mode is configured to automatically switch from said first operating mode to said second operating mode wherein in said second operating mode, visual characteristic change, audio characteristic change and aggregation of said at least one messaging systems occurs simultaneously.
12. An operating mode switch according to claim 11, wherein said audio characteristic change is configured to enable selection between a first audio mode and a second audio mode.
13. An operating mode switch according to claim 12, wherein the first audio mode provides an audio signal and the second audio mode provides a vibration signal.
14. An operating mode switch according to claim 11, wherein said visual characteristic change is configured to enable variation of lighting intensity of the mobile device.
15. An operating mode switch according to claim 11, wherein said messaging system is selected from the group consisting of SMS, Email, MMS, chat clients and social networks clients.

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