

## Operator Aware Service and Method of Implementing the Same

### Field of the Invention

**[0001]** The present invention relates to a mobile communication device. In particular, the invention relates to an operator aware service for a mobile communication device.

### Background

**[0002]** With extensive launch of mobile communication devices at competitive prices offered by manufacturers and communication service providers, the mobile communication devices have become pervasive to most of the general public. Since the recent boom of multimedia content, many new generation mobile communication devices are now capable of performing more than just making phone calls.

**[0003]** FIG. 1 shows a screenshot **101** of a common mobile communication device driven by a Microsoft Window Mobile operating system. When the mobile communication device is within coverage of a service provider, an operator identification **102** "SGP-M1-3GSM" is shown at the top left corner of the screenshot **101** to indicate the current service provider. When there is no coverage, the operator identification will be hidden until a service provider is detected. Such operator identification generally does not interest the user of the mobile communication device.

**[0004]** FIG. 2 shows a screenshot **201** of the common mobile communication device of FIG. 1. When the mobile communication device is within coverage of a service provider, a carrier image **202** is shown at the top left corner of the screenshot **201** instead of the operator identification **102** of FIG. 1. This can be achieved by storing an image file in a prescribed format and size in a prescribed location of the mobile communication device. This feature is commonly known as Phone Canvas capability that is featured in Microsoft platform. As the carrier logo is pre-stored in the mobile communication device, it is shown on the screen regardless of the service provider. For example, when the mobile communication device is in roaming service

where a different service provider is detected, the same carrier image is displayed until a new image is provided in replacement of the earlier image.

**[0005]** In this case, it could be seen that the “name or brand” of the service providers is not emphasized. Also, it provides no flexibility in changing of text or presenting more representative and useful information.

### Summary

**[0006]** In accordance with one aspect, the present invention provides a system for providing and updating information on a carrier status field of a display panel of a communication device in real time, the system comprises an information controller for classifying the information in a plurality of levels for displaying on the display panel, wherein each level has its own priority; and a formatter for formatting the information based on each of the plurality of levels, wherein the information is presented in a manner based on the priority of the information.

**[0007]** In accordance with one embodiment, the information may be displayed as an image on the display panel. In accordance with another embodiments, the information controller may classify the information into a first level information and a second level information.

**[0008]** It is possible that the first level information may have a higher priority than that of the second level information, wherein the first level information is presented in a more emphasised manner than that of the second level information. It is also possible that the first level information is presented in a blinking manner on the display panel. In an alternative embodiment, the second level information is presented in 50% or less transparency on the display panel.

**[0009]** In yet another embodiment, the information controller may classify the plurality of levels based on a priority level provided by a content provider.

**[0010]** In yet another embodiment, the information controller may classify the plurality of levels based on a priority level provided a user of the communication device.

**[0011]** In yet another embodiment, the information controller may classify the plurality of levels based on a priority level provided by the service provider.

### Brief Description of the Drawings

**[0012]** This invention will be described by way of non-limiting embodiments of the present invention, with reference to the accompanying drawings, in which:

**[0013]** FIG. 1 illustrates a screenshot of a known mobile communication device;

**[0014]** FIG. 2 illustrates another screenshot of a known mobile communication device;

**[0015]** FIG. 3a illustrates a screenshot of a mobile communication device in a portrait orientation in accordance with one embodiment of the preset invention;

**[0016]** FIG. 3b illustrates a screenshot of a mobile communication device in a landscape orientation in accordance with one embodiment of the present invention;

**[0017]** FIG. 4 illustrates a diagram of a information controller in accordance with one embodiment of the present invention;

**[0018]** FIGs. 5A and 5B exemplify two screenshots of the mobile communication device in accordance with one embodiment of the present invention;

**[0019]** FIGs. 6A and 6B exemplify two screenshots of the mobile communication device in accordance with one embodiment of the present invention;

**[0020]** FIG. 7 exemplifies a screenshot of the mobile communication device in accordance with one embodiment of the present invention;

**[0021]** FIG. 8 shows a diagram of an SMS cum GPRS/EDGE image updates in accordance with one embodiment of the present invention;

**[0022]** FIG. 9 shows a diagram of an SMS, USSD cum GPRS/EDGE image updates in accordance with one embodiment of the present invention;

**[0023]** FIG. 10 shows a diagram of an SMS cum GPRS/EDGE with proxy server image updates in accordance with one embodiment of the present invention; and

**[0024]** FIG. 11 illustrates a flow chart of the SMS sum GPRS/EDGE with proxy server image updates of FIG. 10 in accordance with one embodiment of the present invention

## Detailed Description

**[0025]** In line with the above summary, the following description of a number of specific and alternative embodiments are provided to understand the inventive features of the present invention. It shall be apparent to one skilled in the art, however that this invention may be practiced without such specific details. Some of the details may not be described at length so as not to obscure the invention. For ease of reference, common reference numerals will be used throughout the figures when referring to the same or similar features common to the figures.

**[0026]** FIGs. 3a and 3b exemplify two screenshots of a mobile communication device featuring an operator aware service (OAS) in accordance with one embodiment of the present invention. The mobile communication device is driven by an operating system, such as Microsoft Window Mobile operating system. FIG. 3a is in a portrait orientation and FIG. 3b is in a landscape orientation. The mobile communication device is a touch screen type portable device where a user accesses and controls the mobile communication device via touching the screen. In the screenshots, the major portion of the screen is occupied by a soft-key pad **301** where the user enters numbers and characters. Above which, a display panel **302** for displaying information. When the mobile communication device is within signal coverage of a communication network provider (also known as "operator"), an operator image **303** is shown in the display panel **302**. The operator image **303** is provided and uploaded automatically by the operator to display the operator's logo. The operator can upload the operator image through various communication services such as GPRS, EDGE, STK, USSD etc. The operator image **303** is provided in a compatible format that is recognized by the operating system (such as Microsoft Window Mobile in FIGs. 3a and 3b).

**[0027]** In the above embodiment, the operator image **303** is provided in a Portable Network Graphics (PNG) file format and its file size is about 30Kb or less for optimized transmission. However, it is understood to the skilled person that any other file format such as bitmap (BMP) can be used; other file sizes would work as well.

**[0028]** With the OAS, the operator provides an effective channel for providing information on the display panel **302** of the mobile communication device in accordance with another embodiment of the present invention. For example, the OAS may allow advertising companies and retailers for introducing products and promotions to achieve branding and creating public awareness. When the mobile communication device is not within the coverage of any operator or when the mobile communication device is still searching for an operator, a default image can be displayed on the display panel **302**. The default image can be pre-stored in the mobile communication device or a SIM card of the mobile communication device.

**[0029]** In accordance with yet another embodiment, the OAS allows the operator to provide promotional information to the mobile communication device using its services, such as newly launch mobile phones, newly launch service plans, and other promotional packages.

**[0030]** In accordance with yet another embodiment, the OAS further allows emergency announcement to be displayed on the mobile communication device. The OAS is configured to provide eye-catching notices and announcements on the display panel **302** to draw to the user's attention.

**[0031]** In yet another embodiment, the OAS allows regular updates on information that is of interest to the user, such as news, stock exchange performance, sport updates, and etc. The updates can be in different forms, such as texts, charts, diagrams, and combinations thereof.

**[0032]** In yet another embodiment, the OAS allows enterprise users to identify their employees and group sections in a form of group identities with the use of different operator images.

**[0033]** The information displayed on the display panel **302** may not always be of interest to the user and sometime, the information may be agitating to the user if it is not managed in a considerate manner. On the other hand, some other users may find that it may need too many steps before the advertisements information could be

retrieved. Therefore, the OAS provides an information controller for controlling the information in accordance with one embodiment of the present invention. The information controller classifies the information in a plurality of levels based on different requirements, based upon the receiver groups and its content applications. The control of the information's level and the way the information is to be displayed can be achieved at the infrastructure end, either on the operator's network or an independent specialized service network.

**[0034]** In accordance with another embodiment, the information level control is provided at the user or device end. It is also possible that the level control is further provided at both the network and the device end to leverage on a most optimized control and usage.

**[0035]** The information controller classifies the information into three categories: a first level, a second level and a third level. In the first level, the information is classified as important information that requires user's immediate attention; the information in this level (herein referred to as "the first level information") is displayed in an eye-catching manner to draw the user's attention, such as blinking image and strong color image. In the second level, the information is classified as normal and neutral information that has a subjective and fair value of importance; the information in this level (herein referred to "the second level information") can afford to be delayed for viewing by the users. It is displayed in a manner that it will not strongly draw the user specific attention, but the user is able to view it as desired, such as a still image that stays on the display panel. In the third level, the information is classified as low importance message; the information in this level (herein referred to "the third level information") is displayed in a background of the display panel 302, such as a subliminal image, and watermarked images.

**[0036]** The level of the information is classified based on a content provider of the information, user selection option and service provider overrule. Each of these criteria has a priority, where content provider has the lowest priority, user selection option has higher and service provider overrule has the highest priority. The content provider, based on the content creation knowledge, categorizes the content information

accordingly, be it images or text messages. For example, the content may be categorized by an image type, by urgency type and/or payment type. As an examples, the image type may be further categorized into national, community, personal, and so on; the urgency type may be further categorized into immediate-attention-and-action-required, for-action-but-not-urgent, reminder, no-action-required-only-for-information, and so on; whilst the payment type may be further categorized into premium, normal, discounted, and so on.

**[0037]** With the user selection option, user may classify all the information sent from the OAS to be classified as one general level for a specific period regardless of the information level provided by the content provider. For example, when a user prefers not to be disturbed entirely, one can set all information under the third level information. The service provider will have the highest level of filter control that could overrule the other possible definitions done by the content Provider or the user selection option. For example, in an event of a major emergency, the service provider may broadcast announcement as the first level information to alert the user.

**[0038]** FIG. 4 illustrates a diagram of the information controller **401** in accordance with one embodiment of the present invention. The information controller **401** comprises a content default formatter **411**, a user select formatter **412**, a service provider formatter **413** and a device view formatter **414**. All contents to be displayed are embedded with a tentative level that is preferred by the content provider **402**. Then the content is sent to the OAS, the content default formatter **411** accepts the default or tentative information level of the image based on the image creator knowledge and mode of image creation. The user select formatter **412** checks if the tentative level is consistent with the user select option **403** and records the user select level. If not, the user select formatter **412** formats and converts the content into the level provided by the user. The service provider formatter **414** also checks if the user select level is consistent with the service provider level and records the service provider level. If not, the service provider formatter **414** formats and converts the content into the level controlled **404** by the service provider.

**[0039]** In accordance with one embodiment, the service provider level is influenced by, but not limited to, the various rules of the service providers, such as packages purchased by the content providers from the service provider, time slot of delivering the content, and content urgency.

**[0040]** Referring back to FIG. 4, the content is then processed by the device view formatter **414** for fitting into the display panel of the mobile communication device. The device view formatter **414** can either reside at the operator side or in the device itself. The device view formatter **414** formats the content into an appropriate size to fit the display panel and the manner in which the content is displayed based on the level of the content. The manner of displaying includes a top most display, a pop up message box display, a transparent background display, etc.

**[0041]** Still referring to FIG. 4, the User Authentication and Acknowledgement module **420** is provided to acquire user acknowledgement on the information that is delivered via the OAS. In one embodiment, the User Authentication and Acknowledgement module **420** resides at the service provider side. In another embodiment where information needs to be confirmed on delivery to the right user without failure, the User Authentication & Acknowledge module **420** allows a user to input and respond with an encrypted password or key which will be verified by the information controller **401** for authentication and/or acknowledgement. The information controller **401** alerts the content provider **402** when there is no relevant authentication and/or acknowledgement received from the user within a period of time. The module **420** may be used, but not limited, for military recalling, civil servant recall or other emergency rescue circumstances.

**[0042]** FIGs. 5A and 5B exemplify two screenshots **501** of the mobile communication device in accordance with one embodiment of the present invention. The information shown on the display panel is classified as the first level information where immediate attention from the users is required. The first level information is provided as a foreground image and/or in an eye-catching manner to draw the user attention. The display may further be provided in a blinking manner to enhance the visibility to the users. Such first level information may include announcement on

natural disaster, emergency evacuation, terrorist attack, and etc. that highest priority will be given.

**[0043]** In accordance with another embodiment, an audio siren alert is provided along with the first level information until the users acknowledged receipt of the alert prompt.

**[0044]** FIGs. 6A and 6B exemplify two screenshots **601** of the mobile communication device in accordance with one embodiment of the present invention. The information shown on the display panel is classified as the second level information where no immediate attention from the user is required. The second level information covers a wide scope of information as it refers to information of relative importance but could be subjective to only certain groups of users. The second level information includes economy charts, petroleum statistics, stock and currency market performance, traffic information, live spot games' results, latest lottery results and other public recalls or news. The information is displayed with a reasonably visible message or flashing information with less than 50% transparency on the image.

**[0045]** FIG. 7 exemplifies a screenshot **701** of the mobile communication device in accordance with one embodiment of the present invention. The information shown on the display panel is classified as the third level information that has a least priority among the three levels. The third level information is displayed in the background of the display panel with more than 50% transparency. With this, the user will not be disturbed with their normal operation of the device and yet the content of the background information would have been captured in their minds, at least subconsciously. Such means of information delivery would be useful for advertisement, movie screenshots, and other branding or promotions.

**[0046]** The content of the OAS are updated regularly by the operator depending on the means of channel communications or data transfer between the operators and the devices. The means of channel communications include Short Messaging Service (SMS), General Packet Radio Service (GPRS) or Enhanced Data Rate for GSM Evolution (EDGE), and Unstructured Supplementary Services Data (USSD).

**[0047]** FIG. 8 is a diagram showing an SMS cum GPRS/EDGE image updates in accordance with one embodiment of the present invention. When a communication device **801** is in standby mode within the coverage of an operator **802**, the communication device **801** monitors for incoming SMS messages. When an SMS containing notification to update the operator image is received, the communication device **801** parses the received SMS to obtain a relevant Universal Resource Locator (URL) for image downloading and updating the operator image from an image server **803** via GPRS/EDGE. The image server **803** then communicates with the operator **802** to obtain the subscriber information and status and determine whether operator image is updated. If not updated, the operator **802** sends another SMS to the subscriber's device **801** for a clean boot.

**[0048]** FIG. 9 is a diagram showing an SMS/USSD cum GPRS/EDGE image updates in accordance with one embodiment of the present invention. When a communication device **901** is in standby mode within the coverage of an operator **902**, the communication device **901** monitors for incoming SMS messages. When an SMS containing notification to update the operator image is received, the communication device **901** parses the received SMS to obtain a relevant URL for image downloading and updating the operator image from an image server **903**. The communication device **901** then sends a USSD to the operator **902** to obtain the operator image's URL for image downloading and updating. If the image is not updated, the operator **902** re-sends an SMS to the subscriber for a clean boot. The communication device **901** then re-downloads the file from the image server **903**.

**[0049]** FIG. 10 is a diagram showing an SMS cum GPRS/EDGE with proxy server image updates in accordance with one embodiment of the present invention. When a communication device **1001** is in standby mode within the coverage of an operator **1002**, the communication device **1001** monitors for incoming SMS messages. When an SMS containing notification to update the operator image is received, the communication device **1001** parses the received SMS to obtain a relevant URL for image downloading and updating the operator image from an image server **1003**. If the operator image is not updated, the communication device **1001** sends a URL query to a

proxy server **1004** for a clean boot; in reply, the proxy server **1004** sends a response to the subscriber's device **1001**. The communication device **1001** then parses the response from the proxy server **1004** and re-downloads the file from the image server **1003**.

**[0050]** FIG. 11 illustrates a flow chart of the SMS sum GPRS/EDGE with proxy server image updates shown in FIG. 10 in accordance with one embodiment of the present invention. In step **S111**, the communication device **1001** determines whether a clean boot of the image downloading and updating is necessary. If the decision in step **S111** is positive, the communication device send a request, in step **S112**, to the proxy server **1004** to query for the relevant URL for downloading and updating the operator image. In step **S113**, the communication device **1001** pauses for a reply from the proxy server, and in step **S114**, when the proxy server **1004** reply is successful, the communication device **1001** proceeds to download the operator image in step **S115**. If there is no reply from the proxy server **1004**, the communication device **1001** repeats the steps **S111-S114** until a successful reply is received from the proxy server **1004**.

**[0051]** The above embodiments illustrate various ways of updating the operator image on the communication device. It is provided by way of example, not limitations. It is understood to the skilled person that other communication protocols and architectures may be used for uploading and updating the operator image.

**[0052]** Further, the OAS has been described in the above embodiments based upon the communication device driven by the Microsoft Window Mobile operating system, by way of example, not limitations. It is understood to the skilled person that the OAS can be implemented at by system such as Symbian, Linux or other proprietary operating system. The OAS value-adds to both the operator and the device users with existing resources. The OAS offers a convenient channel to provide information and updates to the communication devices' users whilst minimizing disturbance to users by classifying the information to be displayed.

**[0053]** The present invention provides a system and method of allowing mobile network operators or service providers to perform branding features and to promote advertisement identities, as well as providing broadcast media channels for personalized group announcement over mobile communication devices. The OAS provides an information controller to classify the information to be displayed to achieve a balanced and effective means of mobile information display where users would not be annoyed by the over-supplied of irrelevant information, yet on the other hand, the service providers too have means to control the level of importance of the information to specific receiver groups. Thus, the OAS should still achieve the ability to capture users' attention on important announcements and other major global events as and when the service provider so determines.

**[0054]** While specific embodiments have been described and illustrated, it is understood that many changes, modifications, variations and combinations thereof could be made to the present invention without departing from the scope of the invention. For example, the e-calendar system may be provided as a dedicated software program for installing in a computer system locally, which then allows users to access the e-calendar offline and synchronized data as and when necessary. It is also possible that the e-calendar system provides a toolbar for embedding any recognized web-browser for easy subscribers' access.

**CLAIMS:**

1. A system for providing and updating information on a carrier status field of a display panel of a communication device in real time, the system comprising:  
an information controller for classifying the information in a plurality of levels for displaying on the display panel, wherein each level has its own priority; and  
a formatter for formatting the information based on each of the plurality of levels,  
wherein the information is presented in a manner based on the priority of the information.
2. The system according to claim 1, wherein the information is displayed as an image on the display panel.
3. The system according to claim 1, wherein the information controller classifies the information into a first level information and a second level information.
4. The system according to claim 3, wherein the first level information has a higher priority than that of the second level information,  
wherein the first level information is presented in a more emphasised manner than that of the second level information.
5. The system according to claim 4, wherein the first level information is presented in a blinking manner on the display panel.
6. The system according to claim 5, wherein the second level information is presented in 50% or less transparency on the display panel.
7. The system according to claim 1, wherein the information controller classifies the plurality of levels based on a priority level provided by a content provider.

8. The system according to claim 1, wherein the information controller classifies the plurality of levels based on a priority level provided a user of the communication device.
9. The system according to claim 1, wherein the information controller classifies the plurality of levels based on a priority level provided by the service provider.