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(54) **MESSAGE DISTRIBUTION WARNING INDICATION**

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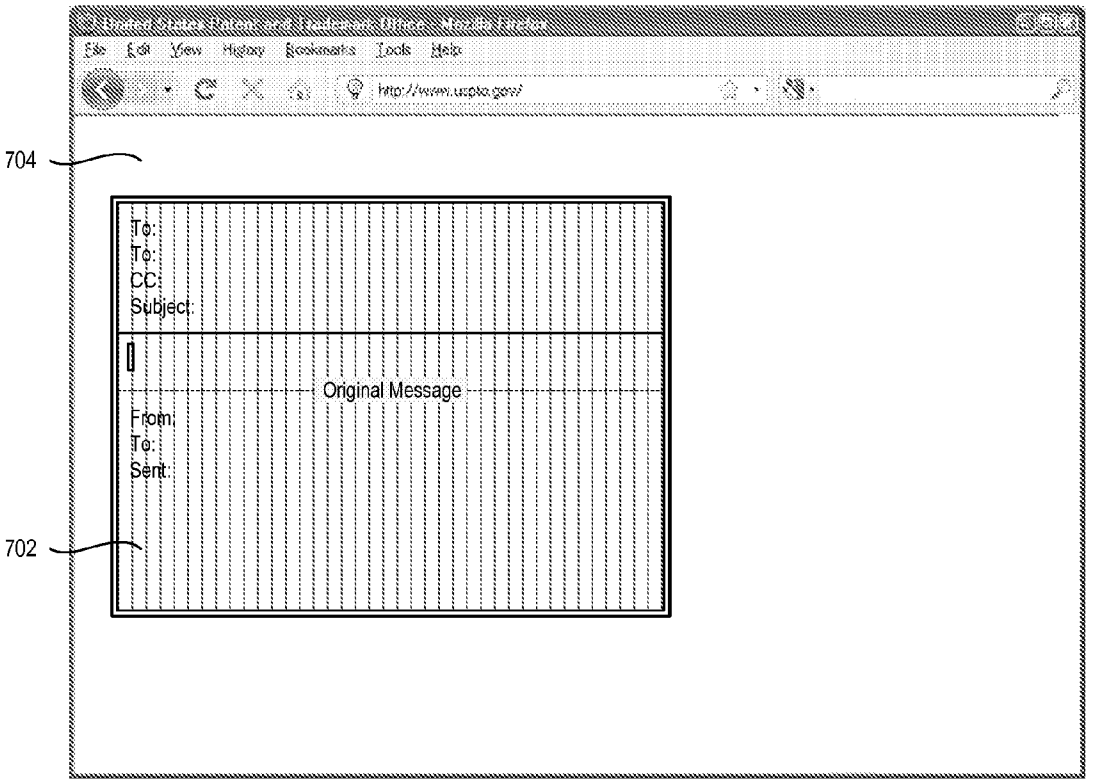
(57) **ABSTRACT**

An apparatus and method for receiving and sending messages from a communication device is disclosed. Message recipient information is compared to stored information for potential recipients to determine whether a characteristic of the expression of the message on a device display should be changed such that the user perceives an unavoidable visual indication relating to the result of the comparison.



100

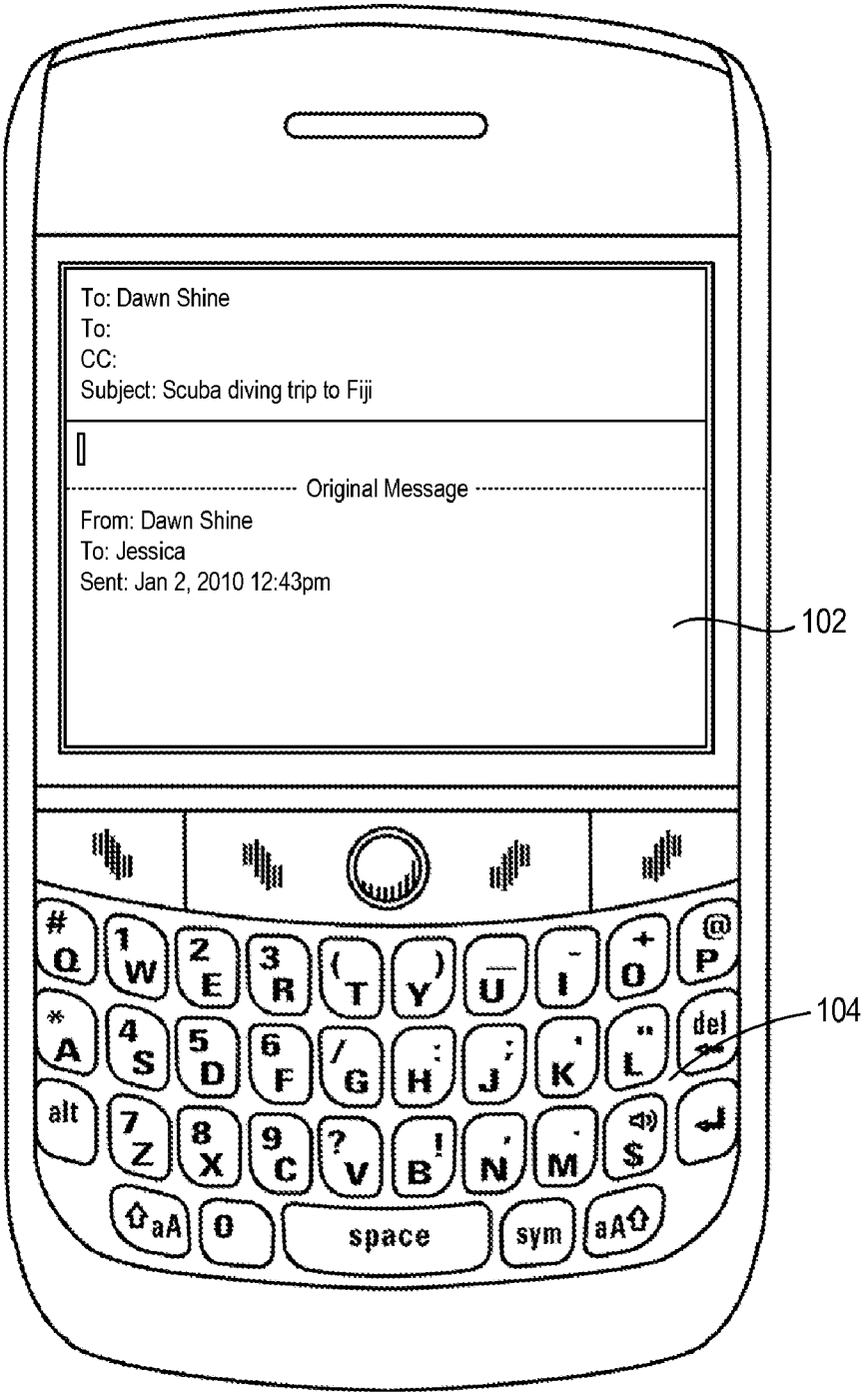

To: Dawn Shine
To:
CC:
Subject: Scuba diving trip to Fiji
Original Message
From: Dawn Shine
To: Jessica
Sent: Jan 2, 2010 12:43pm
102
104
alt
space
sym
del

FIG. 1

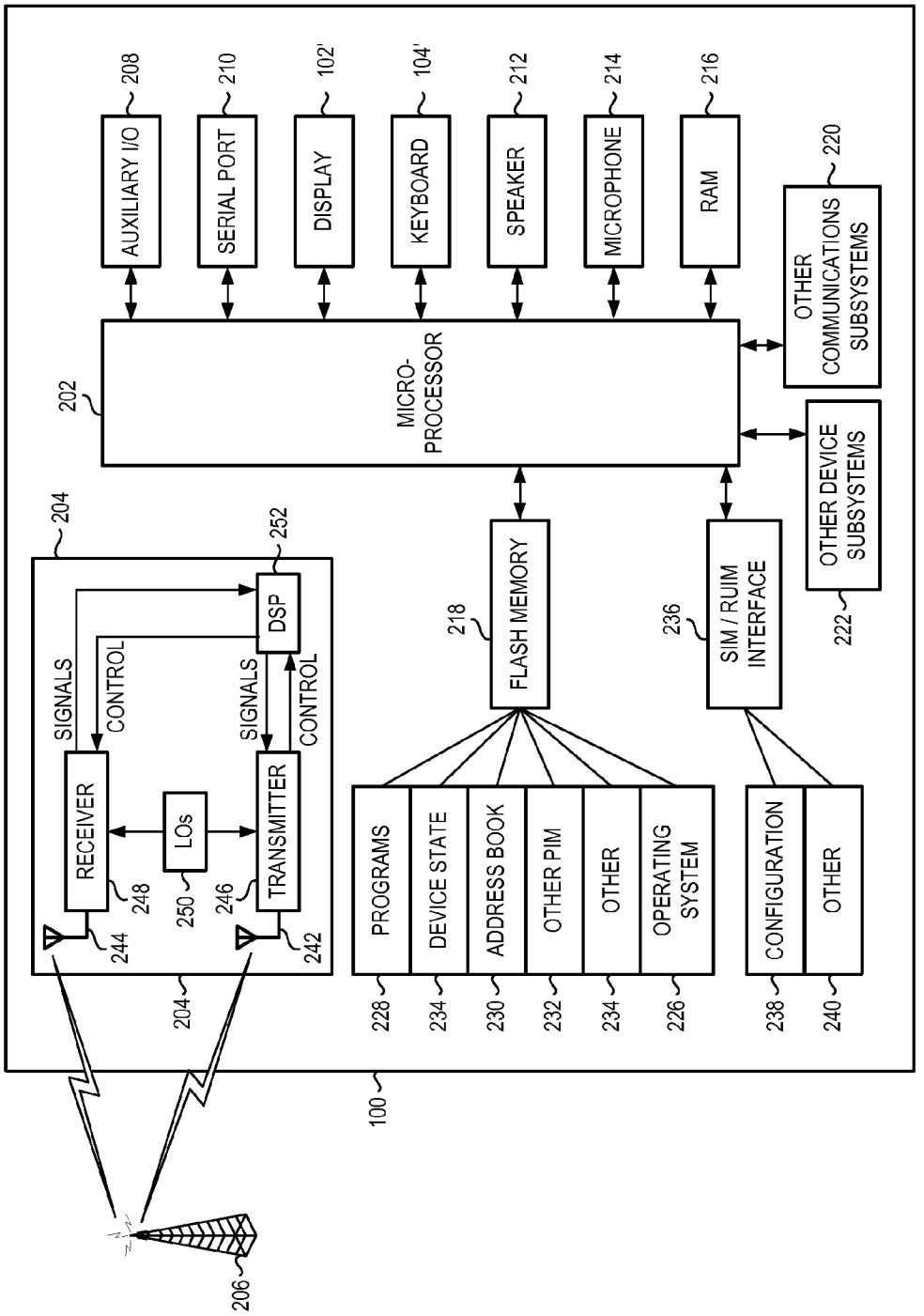

AUXILIARY I/O
208
SERIAL PORT
210
DISPLAY
102'
KEYBOARD
104'
SPEAKER
212
MICROPHONE
214
RAM
216
OTHER COMMUNICATIONS SUBSYSTEMS
220
202
MICRO-PROCESSOR
OTHER DEVICE SUBSYSTEMS
222
204
252
DSP
SIGNALS
CONTROL
SIGNALS
CONTROL
RECEIVER
LOs
TRANSMITTER
248
250
246
244
242
204
218
FLASH MEMORY
236
SIM / RUIM INTERFACE
PROGRAMS
DEVICE STATE
ADDRESS BOOK
OTHER PIM
OTHER
OPERATING SYSTEM
228
234
230
232
234
226
CONFIGURATION
OTHER
238
240
100
206

FIG. 2

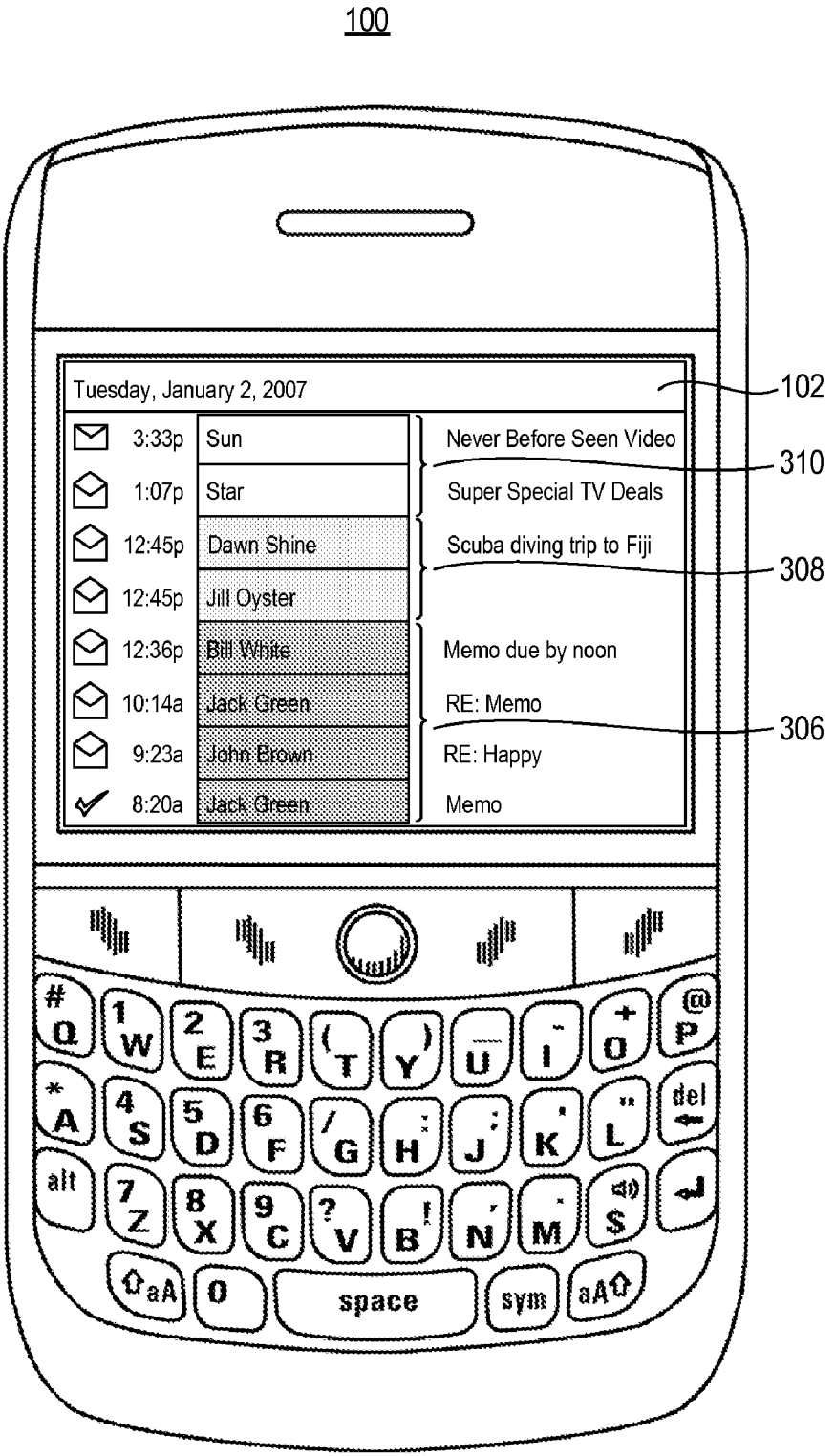

100
Tuesday, January 2, 2007
102
3:33p
Sun
Never Before Seen Video
1:07p
Star
Super Special TV Deals
310
12:45p
Dawn Shine
Scuba diving trip to Fiji
12:45p
Jill Oyster
308
12:36p
Bill White
Memo due by noon
10:14a
Jack Green
RE: Memo
9:23a
John Brown
RE: Happy
306
8:20a
Jack Green
Memo
space
sym
alt
del

FIG. 3

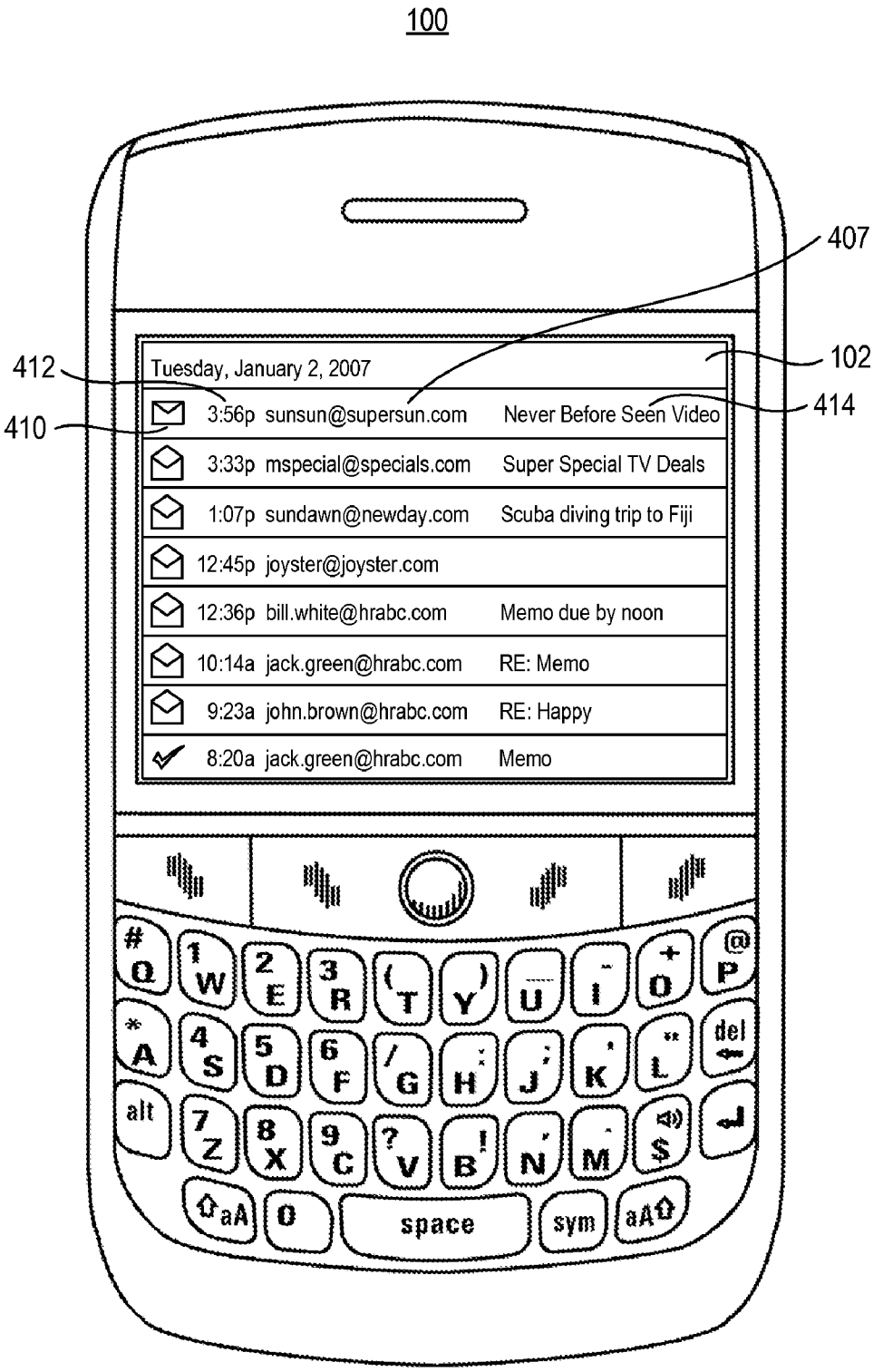

100
407
412
102
410
414
Tuesday, January 2, 2007
3:56p sunsun@supersun.com Never Before Seen Video
3:33p mspecial@specials.com Super Special TV Deals
1:07p sundawn@newday.com Scuba diving trip to Fiji
12:45p joyster@joyster.com
12:36p bill.white@hrabc.com Memo due by noon
10:14a jack.green@hrabc.com RE: Memo
9:23a john.brown@hrabc.com RE: Happy
8:20a jack.green@hrabc.com Memo
alt
space
sym
del

FIG. 4

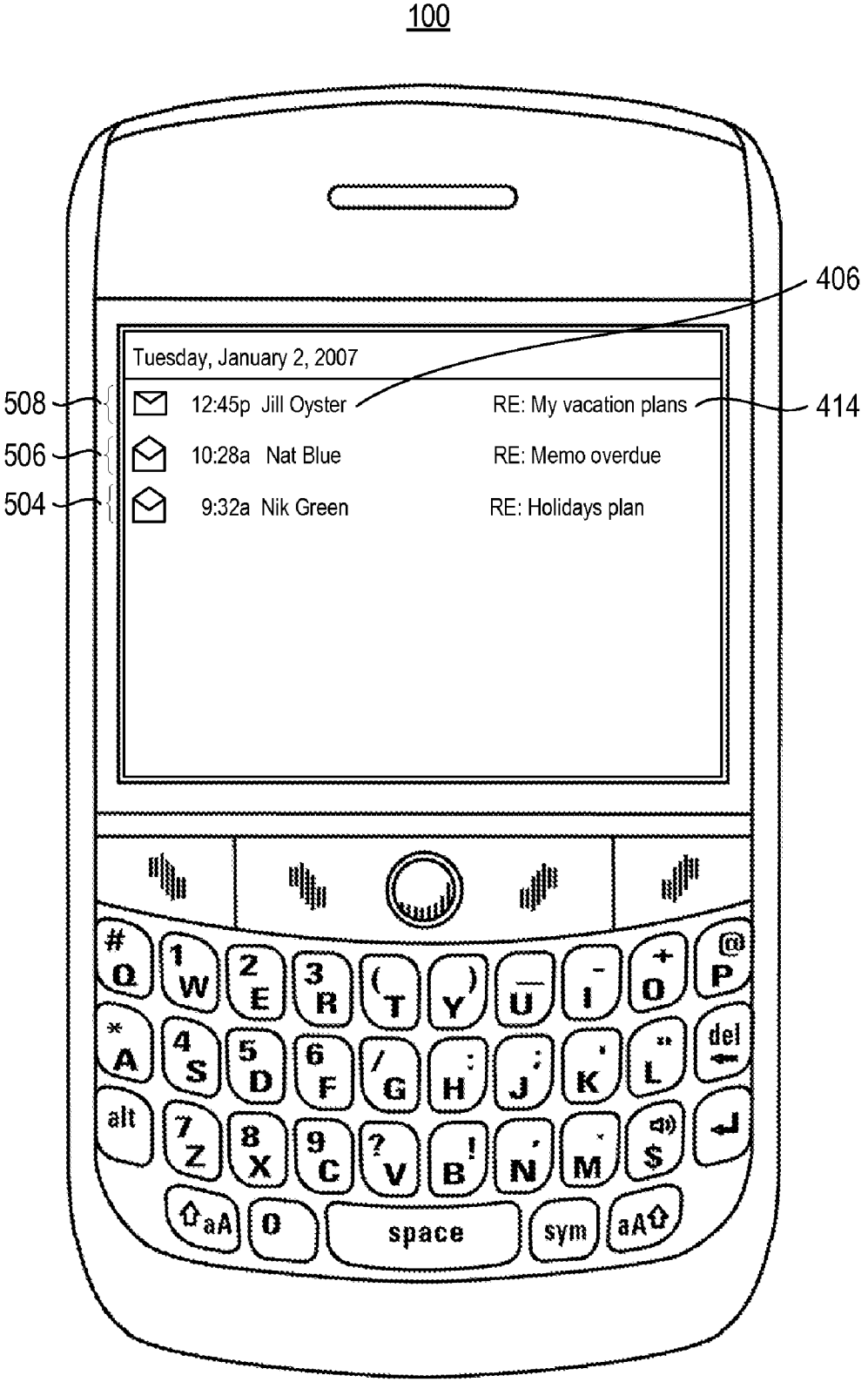

100
406
Tuesday, January 2, 2007
508
12:45p Jill Oyster
RE: My vacation plans
414
506
10:28a Nat Blue
RE: Memo overdue
504
9:32a Nik Green
RE: Holidays plan
space
sym
alt
del

FIG. 5

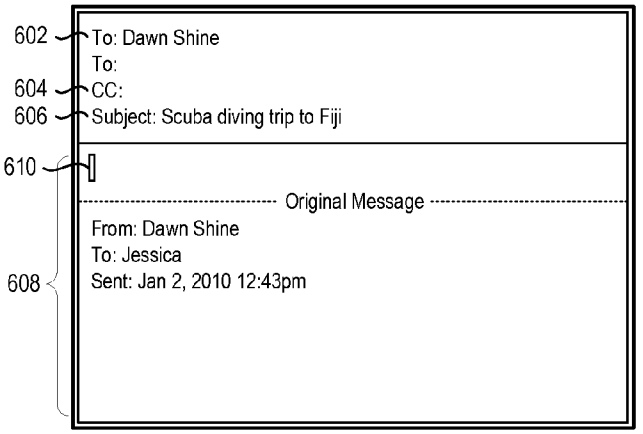

602
To: Dawn Shine
To:
604
CC:
606
Subject: Scuba diving trip to Fiji
610
Original Message
From: Dawn Shine
To: Jessica
608
Sent: Jan 2, 2010 12:43pm

FIG. 6

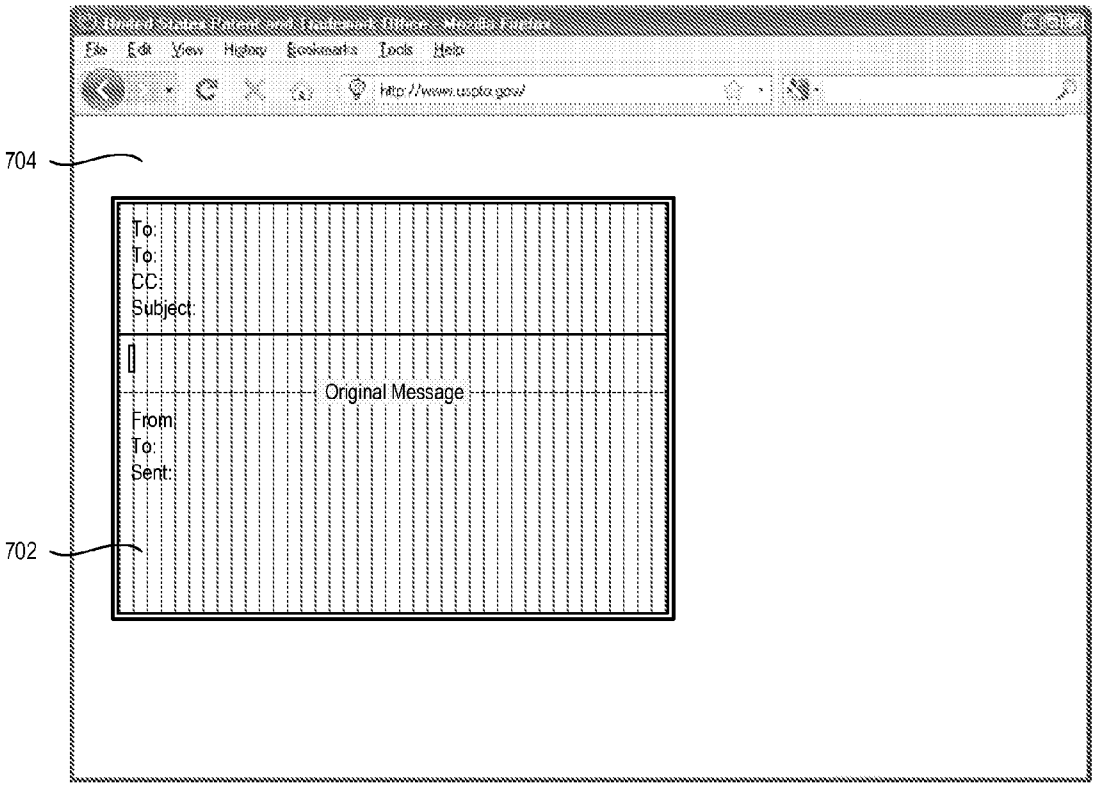

704
To:
To:
CC:
Subject:
Original Message
From:
To:
Sent:
702

FIG. 7

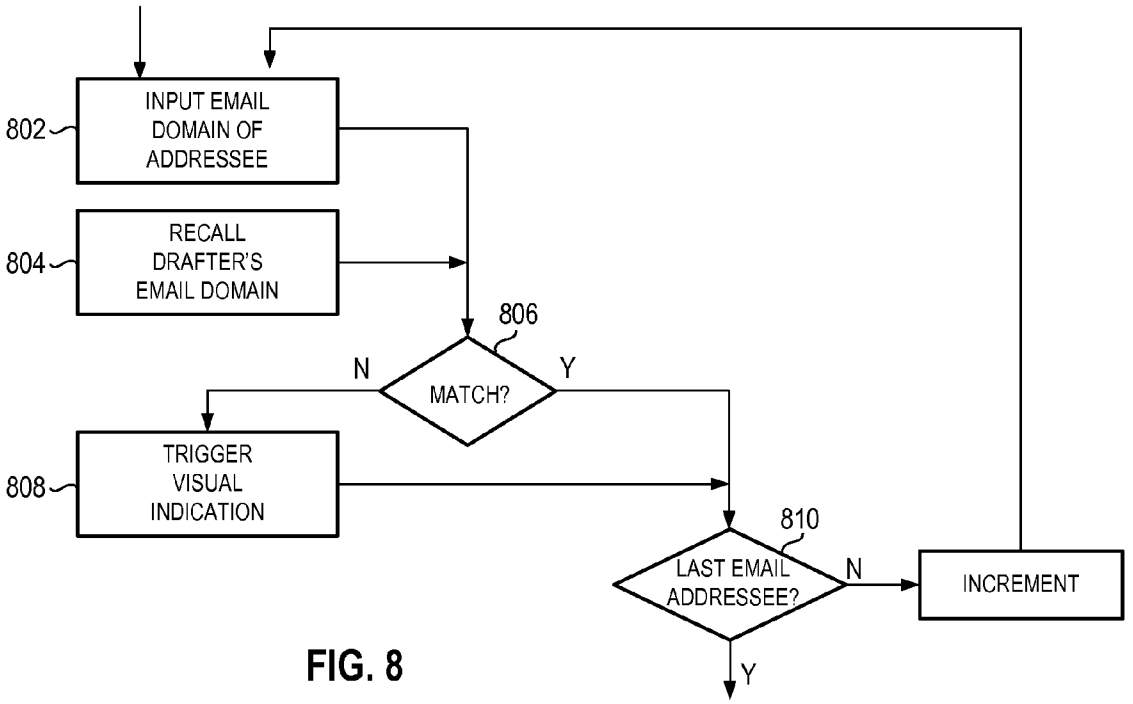

INPUT EMAIL DOMAIN OF ADDRESSEE
802
RECALL DRAFTER'S EMAIL DOMAIN
804
806
MATCH?
N
Y
TRIGGER VISUAL INDICATION
808
810
LAST EMAIL ADDRESSEE?
N
Y
INCREMENT

FIG. 8

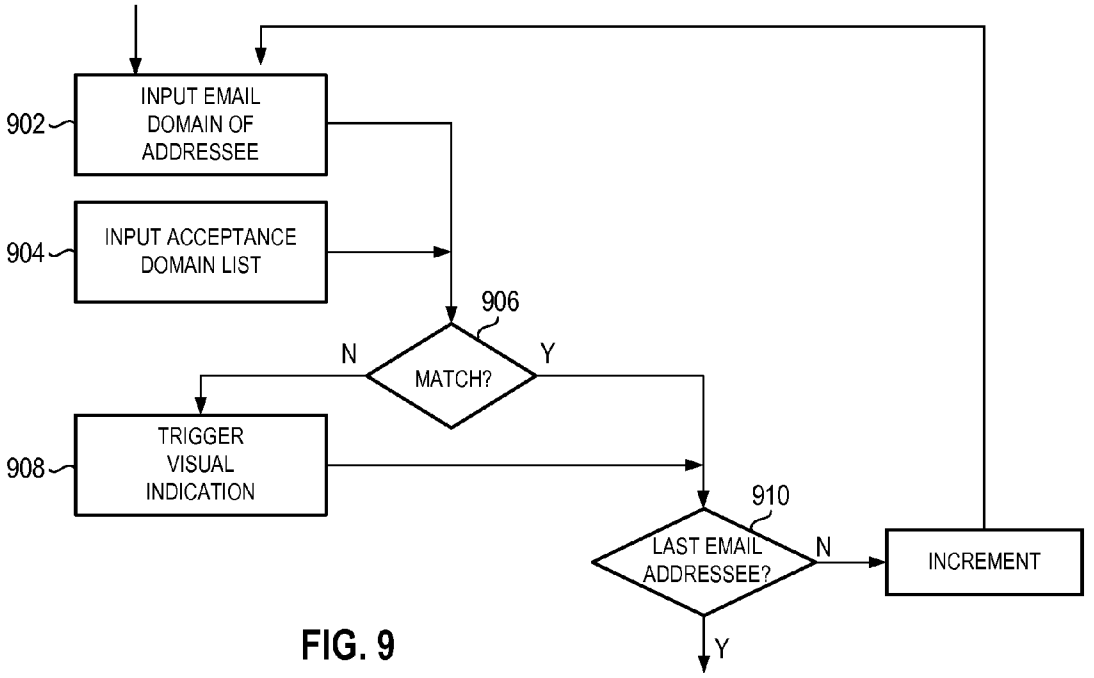

INPUT EMAIL DOMAIN OF ADDRESSEE
902
INPUT ACCEPTANCE DOMAIN LIST
904
906
MATCH?
N
Y
TRIGGER VISUAL INDICATION
908
910
LAST EMAIL ADDRESSEE?
N
Y
INCREMENT

FIG. 9

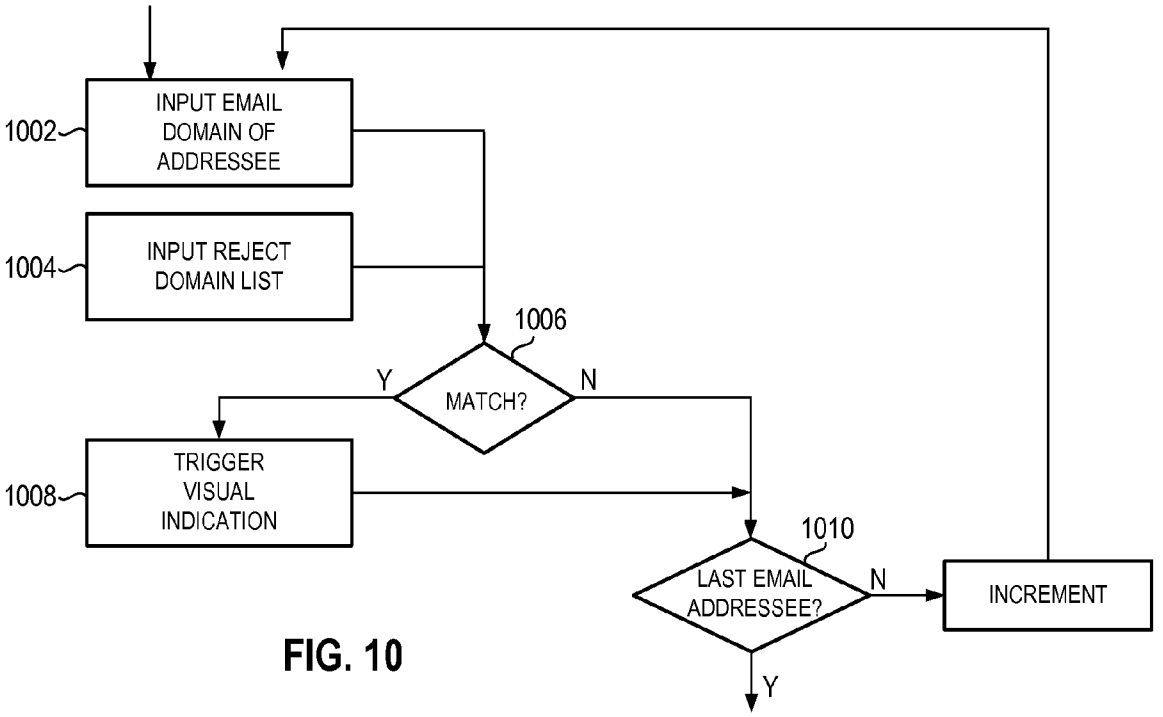

INPUT EMAIL DOMAIN OF ADDRESSEE
1002
INPUT REJECT DOMAIN LIST
1004
1006
MATCH?
Y
N
TRIGGER VISUAL INDICATION
1008
1010
LAST EMAIL ADDRESSEE?
N
INCREMENT
Y

FIG. 10

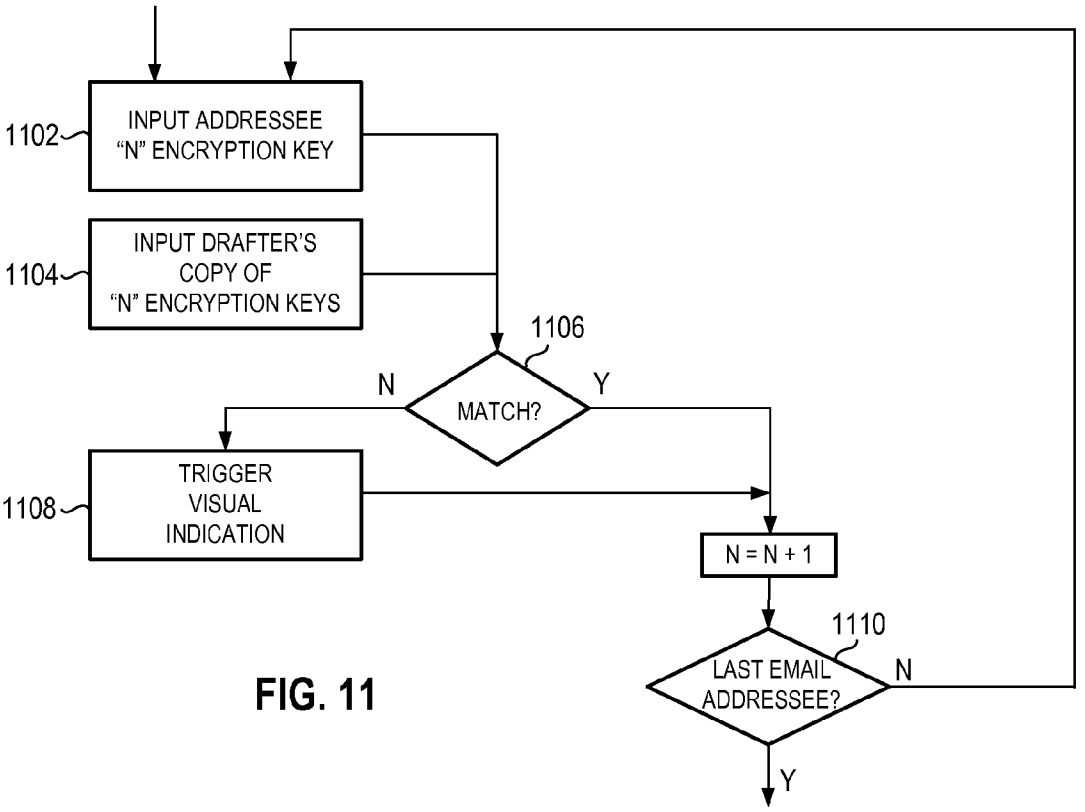

1102
INPUT ADDRESSEE "N" ENCRYPTION KEY
1104
INPUT DRAFTER'S COPY OF "N" ENCRYPTION KEYS
1106
MATCH?
N
Y
1108
TRIGGER VISUAL INDICATION
N = N + 1
1110
LAST EMAIL ADDRESSEE?
N
Y

FIG. 11

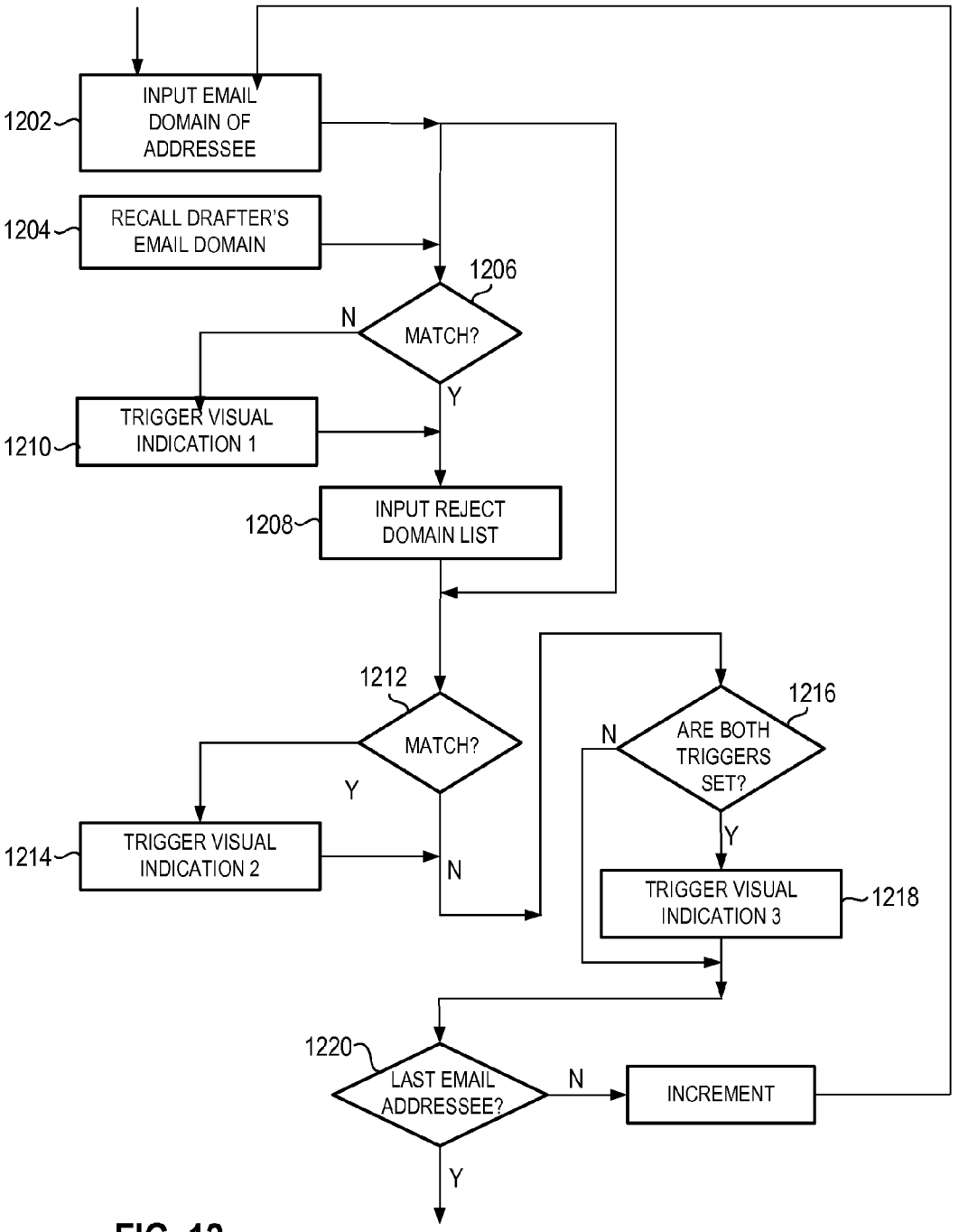

1202
INPUT EMAIL DOMAIN OF ADDRESSEE
1204
RECALL DRAFTER'S EMAIL DOMAIN
1206
MATCH?
N
Y
1210
TRIGGER VISUAL INDICATION 1
1208
INPUT REJECT DOMAIN LIST
1212
MATCH?
Y
1214
TRIGGER VISUAL INDICATION 2
N
1216
ARE BOTH TRIGGERS SET?
N
Y
TRIGGER VISUAL INDICATION 3
1218
1220
LAST EMAIL ADDRESSEE?
N
INCREMENT
Y

FIG. 12

MESSAGE DISTRIBUTION WARNING INDICATION

CROSS-REFERENCE TO RELATED APPLICATION

[0001] This Application is a Continuation-in-Part of U.S. patent application Ser. No. 11/859,614, "Color Differentiating a Portion of a Text Message Shown in a Listing on a Handheld Communication Device" filed on Sep. 21, 2007 on behalf of Mihal Lazaridis and assigned to the assignee of the present Application.

FIELD

[0002] This disclosure is directed to apparatus and method for a communication device that is capable of textual message transmission and reception, and more particularly is directed to such an apparatus and method for which a warning is presented to the user when a textual message is being distributed inappropriately.

BACKGROUND

[0003] Email has become a ubiquitous form of textual message exchange. It has become so commonplace that email users have come to regard its presence with the casualness of an intimate conversation. Despite the efforts of the business community in the education of its employees, people inadvertently leak proprietary information out of an organization by failing to verify that all of the designated recipients of that email (i.e., all of the names in the TO, CC and BCC address fields), are members of that organization (i.e., employees of the same company).

[0004] As one example, some email exchanges, which start out as communications marked as Attorney Client Privilege, may be continued among some of the recipients without including an attorney, thereby risking the claim of privilege for any material quoted within the email.

[0005] The problem of inappropriately distributing or redistributing email messages, at least as a result of human error, is unlikely to be thoroughly solved by education and policy mechanisms. Thus, a technology backstop is needed to reduce damage caused as a result of human error in creating or forwarding email messages.

BRIEF DESCRIPTION OF THE DRAWINGS

[0006] FIG. **1** illustrates a handheld wireless communication device;

[0007] FIG. **2** is a block diagram representing a wireless handheld communication device interacting in a communication network;

[0008] FIG. **3** illustrates the screen of a handheld device with an email listing shown on the display screen, where the email listing is differentiated using color based upon a common characteristic;

[0009] FIG. **4** illustrates another email listing shown on the display screen of a handheld device, where the each email is color differentiated based upon a common characteristic;

[0010] FIG. **5** illustrates yet another email listing shown on the display screen of a handheld wireless communication device, where the each email is color differentiated based upon a common characteristic;

[0011] FIG. **6** illustrates a display screen showing the addressing fields, subject field and message body of an email drafting screen;

[0012] FIG. **7** illustrates a display screen including a window for email messaging;

[0013] FIG. **8** is a flowchart of one embodiment of the disclosure;

[0014] FIG. **9** is a flowchart of another embodiment of the disclosure;

[0015] FIG. **10** is a flowchart of another embodiment of the disclosure;

[0016] FIG. **11** is a flowchart of another embodiment of the disclosure;

[0017] FIG. **12** is a flowchart of another embodiment of the disclosure.

DETAILED DESCRIPTION

[0018] The technology backstop for inappropriately distributing or redistributing a message, which is disclosed herein, is one that has particular relevance to handheld communication devices because of the small viewing screen and uncontrolled environment in which such a device is used. However, any system that handles messages, such as email messages, will substantially benefit from the claimed invention. Although the following disclosure is made with a handheld communication device as an example, the specification is not intended to be so limited.

[0019] Communication devices, handheld or otherwise, conventionally have display screens. A screen window, which may occupy the entire screen or a portion of the screen, is opened for the user when the user desires to create a message and activates a message creation program. In one embodiment such a program is an email program. The user, by way of a user interface, typically addresses the message to one or more recipients, provides a title to the message, and completes the body of the message with content. Or the user can forward a message created by another with a revised set of addressees and/or a new title. A microprocessor executes a stored program that compares the identification of the recipient addressees to identifications stored in memory and the program causes a signal to be unavoidably presented to the user via the display when there is a match between an identification of an addressee and the identifications stored in memory. Alternatively, the unavoidable signal is displayed when a match is not found between identifications. In another alternative embodiment, the comparison is made between keywords or other text found in the title or in the body content of the message. In another alternative embodiment, a comparison is made of cryptographic keys to determine whether a recipient addressee has the ability and right to decrypt a message. An absence of key match results in an unavoidable signal being presented to the user.

[0020] An unavoidable signal is presented on the communication device screen in such a manner that a user cannot reasonably avoid seeing the signal on the screen (or in a composition window on the screen). In one embodiment, a screen background color is changed, if a designated recipient is not in a group qualified to receive the message. In another embodiment, the background of a composition window, which does not occupy the entire communication device's screen, is changed. In another embodiment, a portion of a composition window, for example the outlining frame, is changed to a specified warning color-coded. The qualifications include employee status, valid encryption keys, subject line or message body keyword appropriateness, and similar parameters. Various other embodiments may combine features of these three exemplary embodiments.

[0021] An exemplary handheld communication device **100** is shown in FIG. **1**. The device includes a hand cradleable body configured to be held in one hand by an operator of the device during use. Such a device is capable of receiving and transmitting textual messages, among other things, and an email message reply is representatively shown on its screen **102**. Entry of a message by the user is accomplished via the keyboard **104**. Communication with other users is achieved through a wireless network, in this example, and a representative block diagram of the wireless device **100** is illustrated in FIG. **2**. The communication device **100** is also configured to send and receive voice communications such as mobile telephone calls. While a wireless embodiment is shown and described, it is expected that application of the claimed invention will be more widely found in other communication devices such as networked laptop and desktop computers and similar devices.

[0022] The device **100** in FIG. **2** includes a microprocessor **202** that controls the operation of the device **100**. A communication subsystem **204** performs all communication transmission and reception with a wireless network, which is simply represented by element **206**. The microprocessor **202** further connects with an auxiliary input/output (I/O) subsystem **208**, a serial port (preferably a Universal Serial Bus port) **210**, a display **102'**, a keyboard **104'**, a speaker **212**, a microphone **214**, random access memory (RAM) **216**, and flash memory **218** (or its equivalent). Other communication subsystems **220** and other device subsystems **222** are generally indicated as being functionally connected with the microprocessor **202** as well. An example of a communication subsystem **220** is that of a short range communication system such as BLUETOOTH® communication module or a Wi-Fi communication module (a communication module in compliance with IEEE 802.11b) and associated circuits and components. Additionally, the microprocessor **202** is able to perform operating system functions and preferably enables execution of software applications on the communication device **100**.

[0023] The auxiliary I/O subsystem **208** can take the form of a variety of different navigation tools (multi-directional or single-directional) such as a trackball navigation tool, or a thumbwheel, a navigation pad, a joystick, or the like. These navigation tools are preferably located on the front surface of the device **100**. Other auxiliary I/O subsystems can include external display devices and externally connected keyboards (not shown).

[0024] The device **100** is equipped with components to enable operation of various computer programs, or sets of operating instructions for the microprocessor **202**, as shown in FIG. **2**. In an exemplary embodiment, the flash memory **218** is enabled to provide a storage location for a device operating system **226**, device programs **228**, and data. The operating system **226** is generally configured to manage other application programs **228** that are also stored in memory **218** and executable on the processor **202**. The operating system **226** honors requests for services made by application programs **228** through predefined application program interfaces. More specifically, the operating system **226** typically determines the order in which multiple applications **228** are executed by the processor **202** and the execution time allotted for each application, manages the sharing of memory **218** among multiple applications **228**, handles input and output to and from other device subsystems **222**, and so on. In addition, users can typically interact directly with the operating system **226** through a user interface, usually including the keyboard **104'** and display screen **102'**. While in an exemplary embodiment the operating system **226** is stored in flash memory **218**, the operating system **226** in other embodiments is stored in read-only memory (ROM) or similar storage element (not shown). As those skilled in the art will appreciate, the operating system **226**, device application programs **228** or parts thereof may be loaded in RAM **216** or other volatile memory.

[0025] In the embodiment illustrated in FIG. **2**, the flash memory **218** contains programs/applications **228** for execution in the device **100** including an address book **230**, a personal information manager (PIM) **232**, and the device state **234**. Furthermore, programs **228** and other information **234** including data can be segregated upon storage in the flash memory **228** of the device **100**.

[0026] When the device **100** is enabled for two-way communication with the wireless communication network **206**, it can send and receive signals from a mobile communication service. Examples of communication systems enabled for two-way communication include, but are not limited to, the General Packet Radio Service (GPRS) network, the Universal Mobile Telecommunication Service (UTMS) network, the Enhanced Data for Global Evolution (EDGE) network, and the Code Division Multiple Access (CDMA) network and those networks, generally described as packet-switched, narrowband, data-only technologies which are mainly used for short burst wireless data transfer. For the systems listed above, the communication device **100** must be properly enabled to transmit and receive signals from the communication network **206**. Other systems may not require such identifying information. GPRS, UMTS, and EDGE require the use of a Subscriber Identity Module (SIM) in order to allow communication with the communication network **206**. Likewise, most CDMA systems require the use of a Removable Identity Module (RUIM) in order to communicate with the CDMA network. The RUIM and SIM card can be used in multiple different communication devices **100**. The communication device **100** may be able to operate some features without a SIM/RUIM card, but it will not be able to communicate with the network **206**. A SIM/RUIM interface **236** located within the device **100** allows for removal or insertion of a SIM/RUIM card (not shown). The SIM/RUIM card features memory and holds key configurations **238**, and other information **240** such as identification and subscriber related information. With a properly enabled communication device **100**, two-way communication between the communication device **100** and communication network **206** and ultimately with other users is possible.

[0027] If the communication device **100** is enabled as described above or the communication network **206** does not require such enablement, the two-way communication enabled device **100** is able to both transmit and receive information from the communication network **206**. The transfer of communication can be from the device **100** or to the device **100**. In order to communicate to the communication network **206**, the device **100** in the presently described exemplary embodiment is equipped with an integral or internal transmitting antenna **242** for transmitting signals to the communication network **206**. Likewise the communication device **100** in the presently described exemplary embodiment is equipped with another internal antenna, receiving antenna **244** for receiving communication from the communication network **206**. These antennas (**242**, **244**) in another exemplary

embodiment are combined into a single antenna and, alternatively, be externally mounted (not shown).

[0028] When equipped for two-way communication, the communication device **100** features a communication subsystem **204**. As is well known in the art, this communication subsystem **204** is modified so that it can support the operational needs of the device **100**. The subsystem **204** includes a transmitter **246** and receiver **248** including the associated antennas as described above, local oscillators (LOs) **250**, and a processing module **252** which in the presently described exemplary embodiment is a digital signal processor (DSP).

[0029] It is contemplated that communication by the device **100** with the wireless network **206** can be any type of communication that both the wireless network **206** and device **100** are enabled to transmit, receive and process. In general, these can be classified as voice and data. Voice communication is communication in which signals for audible sounds are transmitted by the device **100** through the communication network **206**. Data is all other types of communication that the device **100** is capable of performing within the constraints of the wireless network **206**.

[0030] Example device applications that can depend on such data include email, contacts and calendars. For each such application synchronization with home-based versions on the applications can be critical for either or both of their long term and short term utility. As an example, emails are often time sensitive, so substantially real time synchronization is highly desirable. Contacts, on the other hand, can be usually updated less frequently without inconvenience. Therefore, the utility of the device **100** is significantly enhanced (if not enabled) when connectable within a communication system, and particularly when connectable on a wireless basis in a network **206** in which voice, text messaging, and other data transfer are accommodated.

[0031] When the device is capable of sending and receiving text messages such as email messages, an email software program is implemented on the handheld device. In some examples, the email software is a stand alone application. In other examples, the email software is integrated along with the operating system software. The email software program has an email application that is capable of displaying the email messages to the user. It is common that a listing of email messages be presented, along with a status of each message. It is a feature that the email software is capable of providing a color differentiation of the listed emails. This differentiation can also be realized through a grayscale differentiation as well. These color differentiations allow for common characteristics to be differentiated.

[0032] One common characteristic is the name of the sender or receiver of the email message. In another example, a common characteristic is a particular code associated with the sender or receiver of the email message. For example, emails from two different senders having the same host name would have the same color code. This can be helpful in determining emails from a particular organization or company that are sent via email. In one example, the email software is set up such that all emails that are from the sender's company or organization are identified by a particular color. Different groups or criteria can be used to generate different color differentiation and the device could be preset such that when a particular user's email address was entered, all emails received from a sender or sent to a recipient within the same organization would be color coded and all prohibited or otherwise restricted email messages would be differently colored.

[0033] The color coding of the emails is achieved through a variety of different ways. Some particular examples are provided herein, but these examples do not limit the scope of this disclosure and one skilled in the art would appreciate other color-coding possibilities. For example as shown in FIG. **3**, when a user has the email display application programmed such that names **302** of the senders or recipients are displayed, the names **302** of the sender or recipient are colored according to the different color scheme. Alternatively as shown in FIG. **4**, all information (such as indicator icon **410**, time **412**, email address **407**, and subject **414**) relating to a particular email in the listing are colored in the same fashion as the name **302** in FIG. **3**. In another example, only the portion which was related to particular code is colored according to the criteria as set forth above. In another embodiment, the name or other portion of the email listing that is color coded is color coded by having a the text portion of the email listing colored such as shown in FIG. **5**.

[0034] In another exemplary embodiment as shown in FIG. **4**, the identification code or email address **407** of the sender or recipient is shown. The listing shown in FIG. **4** corresponds to the same listing as shown in FIG. **3**, but the listing of FIG. **4** has the email address shown instead of the name of the sender or recipient. As illustrated in FIG. **5**, the name **406** and the subject **414** are colored the same. In this color scheme, the text of the name **406** and subject **414** are colored according to the desired color scheme as implemented in the email display application.

[0035] In order to determine which email or email listing should be color coded, the email software is programmed in one embodiment to examine the information contained within the email or the address associated with the sender or addressee. For example, the email software applies color differentiation based upon the host name of the email sender or recipient. In at least one example, the host name refers to the portion of the email address that follows the symbol @ and precedes the domain extension such as .com and .org. As shown in FIG. **4**, the portion that precedes the @ symbol of the email address **407** specifies the intended party. The portion after the @ symbol is either the company domain name or other domain name that the particular user is associated with. This domain name can be a public domain that allows users to sign up for free accounts or pay for account services through the company. For example, considering the email received at 9:23 am, the user name is "john.brown" and the company domain is "hrabc.com."

[0036] While most of the above apply to both incoming and outgoing messages, outgoing messages can further benefit through the use of color coding of email addresses or email recipient names. For instance, a user may wish to reply to a message, but may not fully appreciate all of the intended recipients' names. Thus, the addressees' names or email addresses can be color coded as described above. This allows the sender of the email message to determine whether the recipients are those to whom the message to should be sent. For example, a user may receive an email message where two parties are involved in negotiation between each other and would like to safely remove all outside parties from the email. Through the use of color differentiation, the user could easily remove those outside the intended list and know those other party will not receive the message. Having the recipients

and/or senders color differentiated allows the user of the handheld device to easily determine to the addressee or sender of the email message. Additionally, when the user is sending a confidential matter, which could have disastrous effect if sent to the wrong addressee, an additional visual cue is provided to the sender of the email.

[0037] FIG. **6** presents a display showing an exemplary embodiment of an email program where the user has initiated a response to a received email message. The email message response includes a "To:" field **602** which indicates the recipients of the email message, a "CC:" field **604** for carbon copying recipients, a "Subject:" field **606** which indicates the subject of the email, and the body **608** of the email. The body **608** of the email is where the user inputs text for transmission. If the email is a reply to a previous email, the body **608** can include at least a portion of the previous email message that was sent. A cursor **610** is often implemented as part of the email display program to indicate where the text will be input.

[0038] The addressee indicated in the "To:" field **602** can be colored so as to allow the user to differentiate among recipient addresses when sending a message. In the instance as shown in FIG. **6**, the email is addressed to "Dawn Shine." This email address is color differentiated from other addressees and can be distinguished by the user when sending a message to a particular recipient. It is possible for the user to determine whether the addressee matches one of the predefined categories as described above. In this case, Dawn Shine would be an approved contact and have the color-coding associated with an approved contact. Thus, in the scenario where a user may have a contact that is an approved contact with the same name as an unapproved contact, the user can determine which one of these two contacts the email is addressed to or received from. While the above examples provided in FIG. **6** is a reply to emails, other embodiments of the presently described disclosure can include original email messages. In the embodiment where an original email is sent, the same basic information is involved.

[0039] As mentioned above, a common characteristic, upon which color differentiation is based, is a host name included in an identification code of the respective email's sender. The host name can include the domain name from which the message is sent as well as the domain listed as the reply address. As described above, the host name can be the portion that appears after the @ symbol in the identification code, such as the email address. Other codes can likewise be used, such as sender's name. The received emails that have like host names can be same-color coded, such as the organization group **306** as shown in FIG. **3**. While in another example, received emails having different host names are colored differently.

[0040] In yet another embodiment, the email software program identifies an email recipient uniquely color codes emails with the same host name in comparison to other display-listed received emails. While in another exemplary embodiment the email software program classifies email based upon host names—if the email is an approved email source then it is uniquely color coded in comparison to the received emails listed on the display. In still another exemplary embodiment, the email software program classifies received emails based upon an unapproved email source and the emails are uniquely color coded in comparison to other display-listed received emails. While the above embodiments have been described independent from each other, in at least one embodiment the received email is classified by the email software program using at least one of an approved email classification, an unapproved classification, and a same host name. In a particular embodiment, all of these classifications are implemented by the email software program.

[0041] Examples of these different color codes can be seen in FIGS. **3-5**. In FIGS. **3** and **4**, a listing of emails is shown on the display screen **102**. The two listings shown in FIGS. **3** and **4** differ in how the addressee's or sender's identification is shown. As shown in FIG. **3**, the identification of the addressee or sender involves displaying the name associated with that party. While in FIG. **4**, the identification of the addressee or sender is indicated through an email address associated with that party. The emails in both FIGS. **3** and **4** are color-coded based upon groups such that there is an organizational group **306** (which in one embodiment has the same host name associated therewith), an approved group **308**, and an unapproved group **310**. The emails are respectively colored, respectively, based upon the following criteria: same organization as the operator, an approved list contacts, and an unapproved list. In yet another example as shown in FIG. **5**, all the email messages are colored differently since each email **504**, **506**, **508** has a different host name associated therewith.

[0042] When a handheld device has an email software program as described above, the criteria for establishing the color-differentiation is required to be input into the email software program. In at least one embodiment, the criteria for color-differentiation is user-programmable, allowing the user to select which settings to be implemented along with its relevant color options. For example, the user could select whether to implement a color differentiation that allowed for certain messages from users within a particular host group to be color differentiated from other messages. The user could further select any one of the above described criteria for differentiating the addressee or sender of a given email message. In yet another embodiment, the criteria for color-differentiation is preset and non-changeable. Thus, the user would be required to use the preset criteria. While the user may not be able to program the desired criteria, at least one embodiment contemplates the use of administrator privileges that allow the administrator of the company to control the criteria for the handheld wireless communication devices.

[0043] When the user desires to send an email message from the communication device, an outbound email display application is implemented. This outbound email display application presents fields for the user to input data into such as a "To:" field, a "CC:" field, a "Subject:" field, and body field. In at least one embodiment, other addressing fields are implemented to further provide the user with different addressing options that are typically found within email programs. In one embodiment, the outbound email is color-coded prior to sending. The color-coding is based on a host name included in an identification code of the outbound email's recipient. When selecting the addressees of the email message, a portion of the email is color differentiated based upon one of the host name, an approved email addressee, and an unapproved email addressee. The host name is the part of the identification code as described above. Further examples of this have been provided above in relation to FIG. **6**.

[0044] The outbound email display application can also display a list of messages that have been sent from the device and at least a portion of the displayed email information is color-coded based upon a characteristic common to each sent email. This color-coding is based upon similar criteria to that of received email messages. In at least one embodiment, the

characteristic common to each displayed email is a host name which is included in an identification code of the respective sent email's recipient. In other embodiments, the display-listed sent emails having like host names are same-color coded. In yet another embodiment, the display-listed emails having different host names are different-color coded. Furthermore, the software program can present emails that are uniquely colored if the email recipient is an approved recipient. While in another embodiment, a unique color coding is applied to portion of an email message when the email recipient is uniquely color coded.

[0045] When the address list is long and a specific name, color coded as described above, appears in a part of the list that is not viewable on the screen or in the window presented on the screen when the email sender is creating an email message, the alert provided by a color coded name is likely to be missed. In many instances, it is desirable to have the electronic device cause the alert to be unavoidable for the sender. To this end, a visual indication is provided on the entirety of the message generating portion of the screen when a message composition window is opened for drafting, and a designated recipient meets certain criteria. With this system, the user cannot avoid observing the indication while viewing the draft of a potential outgoing message.

[0046] In general, a screen parameter or experience is changed if certain conditions worthy of a warning to the message drafter are met. A visual indication on the screen (or in the message composition window, where the window occupies only part of the screen) includes one or a combination of indications to unavoidably get the drafter's attention. An illustration of an exemplary message composition window **702** within a larger screen area **704** is shown in FIG. **7**. Here, the composition window background hue is changed for alerting purposes among several different colors: white, green, orange, red, gray, or other colors that are selected for visual clarity but will still allow typing over the colored background. As shown, the message composition window in FIG. **7** has been changed to the color red as an alert to the message drafter. It is desirable that color sets are selected to minimize the risk of misidentification by color blind users. Other types of changes to the entire message window will serve as an alert to the message drafter, for example but without limitation, the frame of a message composition window (if the window is so arranged) will be changed. Alternatively, or in combination, the background of either the entire screen or the message composition window will be grayscale patterned, for example with a watermark or lines. Such a watermark may read "Outside Recipient" or another phrase or word that alerts the drafter to a problem with the message or one of the addressees. Lines may be at any angle, and may be only parallel, or may include intersecting lines. Combinations of the above may be used, for example background colors, watermarks, and frames, to indicate among multiple severities of warnings, or multiple simultaneous warnings. However, the visual indications employed should permit typing of a message, for at least low level warnings, so such warnings should not be so obtrusive as to obscure the message text. Decorative message backgrounds, for example wallpaper in html email messages, may need to be over-ridden or removed.

[0047] Conditions that lead to the unavoidable alert presented on the screen of the communication device are typically those that would inadvertently leak proprietary information out of an organization by failing to verify that all of the designated recipients of that email (i.e., all of the names in the TO, CC and BCC address fields), are members of that organization (i.e., employees of the same company). Or, those messages that start out as communications marked "Company Confidential" or "Attorney Client Privileged" but are distributed to individuals that are not under an obligation of confidentiality or not sent to an attorney risk the loss of a claim of confidentiality or privilege for any material included within the message. The message that leaks information may be one that originates with the message drafter. Even more likely, an email message that is forwarded to a new set of addressees that do not meet the requirements of message information handling that the original message required inadvertently leaks information that was not intended for the new addressees. A handheld wireless communication device with its excellent mobility and immediacy offers an unwanted opportunity to inadvertently send messages to inappropriate recipients as a result of these advantages. An indication that is visible throughout the message window reduces the possibility of message distribution error.

[0048] Consider, now, the process shown in the flowchart of FIG. **8**. A message drafter is about to create (or forward) a message to be sent to a list of addressees. A series of computer instructions—recalled from memory and processed by a microprocessor, as described above—are employed to determine whether an alert is to be given to the drafter. In this embodiment, the concern is that addressees be members of the drafter's organization. The email domain of an addressee is input at **802** and the email domain of the drafter is recalled at **804**. The two domains are compared for a match at **806** and if the domains do not match, a visual indication is triggered at **808** so that the message window is changed to provide an unavoidable alert to the drafter. If the domains match or following the trigger of the visual indication, a determination of whether the last addressee has been evaluated is made at **810** and either the email domain of the next addressee is input or the program exits depending upon the determination of step **810**. Thus, addressees that are not members of the set "belong to the same organization as the drafter" (defined by the email domain) are potentially excluded since an alert is provided.

[0049] In an alternative embodiment, inclusion/exclusion is made on the basis of predetermined domains. Thus, a determination is based upon domains found in an email distribution list. For example if an addressee's email address is in one or more of "legal_department" and "approved_vendors" email domain lists an alert indication is not triggered. The addressee's email domain is input at **902** in FIG. **9**. The approved list is input at **904** and scanned for a match in the comparison at **906**. A no match condition triggers the visual indication at **908** and a match (as well as the next step following the visual indication trigger) leads to a determination of whether the last addressee has been evaluated is made at **910**. Either the email domain of the next addressee is input or the program exits depending upon the determination of step **910**.

[0050] The logical opposite of the embodiment of FIG. **9** is shown in the flowchart of FIG. **10**, where a list of unacceptable, reject domains (or more granularly, unacceptable individual's domains) is maintained in the address book. The email domain of an addressee is input at **1002** and the reject domain list is input at **1004**. The two domains are compared for a match at **1006** and when the domains match, a visual indication is triggered at **1008** so that the message window is changed to provide an unavoidable alert to the drafter that the

addressee has been deemed unacceptable to receive the email message. If the domains do not match or following the trigger of the visual indication, a determination of whether the last addressee has been evaluated is made at **1010** and either the email domain of the next addressee is input or the program exits depending upon the determination of step **1010**. Thus, addressees that are members of the set "belong to an unacceptable domain" are excluded and an alert is provided.

[0051] The determination for triggering an alert in an alternative embodiment is based on whether the drafter possesses or has access to a valid encryption key that is associated with a designated recipient. For example, the drafter may possess a digital certificate for some or all potential recipients, and the email program encrypts outgoing messages if keys are available for all designated recipients. As shown in the flowchart of FIG. **11**, the encryption key for addressee "N" is extracted from the certificate store and input at **1102**. The message drafter's copy of encryption keys is input at **1104** and compared for a match with addressee "N's" key at **1106**. An absence of a match leads to the trigger of a visual indication at **1108**. A match (and the next step following the trigger of a visual indication) leads to an increment to the next addressee and a determination of whether the last addressee has been examined, at **1110**. Either the email domain of the next addressee is input or the program exits depending upon the determination of step **1010**.

[0052] Three methods of encryption technique are useful in three alternate embodiments. The first method encrypts the text of the email message and, optionally, the attachments with a session key that is generated at the commencement of the encryption process. For each recipient of an email, a copy of the session key is encrypted with the recipient's public key. Each encrypted session key is placed in (or appended or prepended to) a message identified with the recipient. For decryption, the specific encrypted session key is identified using identification found in the file. For example, the file is identified as: addressee_id1 (plain text); <key1>(ciphertext); addressee_id2 (plain text); <key2>(ciphertext); etc. The identified session key is decrypted with the recipient's private key and the message body (and attachments, if encrypted) is subsequently decrypted using the decrypted session key.

[0053] A second encryption technique embodiment includes the generation and encryption of the message body with a session key. A "successful decrypt" flag is appended to the session key, which flag is only recognizable if it is properly decrypted. In this embodiment, the session key is inserted in the message body and further used as the flag. For each addressee, a copy of the session key and its appended flag is encrypted with the addressee's public key. Each encrypted session key (and flag) is placed in the message, preferably in random order, without identification and the message is sent. Each addressee decrypts the first session key encountered and its flag with the addressee's private key. The flag is checked for validity and if it is valid, the message body is decrypted using the session key. If the flag is not valid, the decryption process is repeated using a private key until all keys are exhausted or a successful decryption is made.

[0054] A third encryption technique embodiment generates a session key for encryption. A "successful decrypt" flag is prepended to the message body and the message body and flag are encrypted with the session key. For each addressee, the session key copy is encrypted with the addressee's public key. Each encrypted message key is included in the message but without indication of which message key belongs to which addressee and preferably in a randomized order. The encrypted message is then sent. Each message recipient decrypts the first session key with the recipient's private key. The first block of the message body is then decrypted with the current session key and the flag is checked for validity. If the flag is determined to be valid, the remainder of the message is decrypted with the current session key. If the flag is not valid, a decryption of the next session key is attempted and decryption of the message body and flag is attempted with that next session key. The process continues until a valid flag is found or the number of session keys is exhausted.

[0055] Alert indications provide additional information to the drafter when the addressee characteristic is evaluated for reasons of exclusions from a desired set and reasons of inclusions in an undesired set. For example, the email domain of an addressee is input at **1202** in the flowchart of FIG. **12**. The drafter's email domain is recalled at **1204** and the two domains are compared for a match at **1206**. If a match is determined, a reject domain list is input from memory at **1208**. If a match is not found, one type of visual indication is triggered at **1210** before the reject domain list is input. The addressee's email domain is compared to the reject domain list at **1212** and a trigger of a second type of visual indication is triggered at **1214**. A match at **1212** (or following the second visual indication trigger) results in a determination, at **1216**, of whether both visual indicators are set. If both are set, a trigger of a third type of visual indication is set at **1218** and the determination of whether the last email addressee has been evaluated is made at **1220**, which is also entered from a determination that both the first and second triggers were set. When the last email domain has been evaluated, the program returns to the next operation of the communications device.

[0056] The evaluations described in the embodiments above have considered the email address of a selected addressee or plurality of addressees. Other parameters are evaluated in alternate embodiments. For example, key words in the Subject line or the body of the message trigger change which indications and criteria are used. Certain words or phrases, such as "Confidential" or "Attorney Client Privileged" trigger the use of certain criteria, such as whether an attorney is included in the TO line, or the list of available indications, such as certain reserved colors, or both are subject to be changed. These words may be standardized phrases that indicate sensitivity of information, or may be a customized list, such as code names of undisclosed projects. Further, there may be a differentiation based on the field in which a designated recipient field appears. For example, if an email address identified as one for an attorney appears in a CC field, rather than in the TO field, an indication will be triggered.

[0057] The subject line may be locked, and rendered unchangeable, if the email is a reply that quotes the content of the parent email. In this way, the user is prevented from disabling an indication, merely by changing the wording of the subject. This is important if an organization's policy prevents a message from being sent if the title indicates privileged material and there is an unauthorized address among the designated recipients. The message can then be sent by deleting the quote, thereby removing the privileged material, and then changing the distribution list.

[0058] While the above examples have been described in relation to email, one skilled in the art would appreciate the necessary modifications to allow lists and programs for SMS, MMS, PIN messages, instant messages, and similar messages to be displayed according to the above description provided in

relation to email messages. Thus instead of an email program, the program could be one directed towards one of the above types of messages or the program could be capable of displaying all of the above types of messages. Likewise, the message that is displayed could be one of the above messages.

[0059] Exemplary embodiments have been described hereinabove regarding both handheld wireless communication devices **100**, as well as the communication networks **206** within which they operate. Again, it should be appreciated that the foregoing disclosure teaches a resolution of the problem of inappropriately distributing or redistributing email messages by changing a characteristic of the expression of the message on a device display such that the user perceives an unavoidable visual indication.

What is claimed is:

1. A communication device configured to receive and send messages, comprising:

a user interface including an input device for accepting identification of a recipient for a message including content, and a display for expressing said message to a user;

a microprocessor and associated memory, coupled to said user interface;

wherein said memory maintains a list of identifications of potential recipients and said microprocessor executes a stored program to compare said identifications in said list of potential recipients to said identification of said recipient and to unavoidably signal to the user via said display that said comparison has determined that said recipient identification has been found in said list.

2. The communication device of claim **1** wherein said display is adapted to unavoidably signal to the user by changing the background color of said message expressed in said display.

3. The communication device of claim **1** wherein said display is adapted to unavoidably signal to the user by changing the color of the window frame of said message expressed in said display.

4. The communication device of claim **1** wherein said accepted identification of a recipient and said maintained a list of identifications of potential recipients further comprises an email address or email address domain of a recipient and a list of email addresses or email address domains of potential recipients, respectively.

5. The communication device of claim **1** wherein said accepted identification of a recipient and said maintained a list of identifications of potential recipients further comprises a session key representation of a recipient and a list of session key representations of potential recipients, respectively.

6. The communication device of claim **1** wherein said memory further comprises a maintained second list of second identifications of potential recipients to be compared to a second identification of said recipient and said display adapted to unavoidably signal to the user via said display that said comparison has determined that at least one of said recipient identification and said recipient second identification has been found in said list.

7. The communication device of claim **1** further comprising a receiver for receiving said message when said message is addressed to said user.

8. The communication device of claim **1** further comprising a transmitter for sending said message to said recipient

9. A method of receiving and sending messages from a communication device, comprising the steps of:

accepting identification of a recipient for a message including content from an input device;

expressing said message to a user via a display;

maintaining a list of identifications of potential recipients in a memory associated with a microprocessor;

comparing said identifications in said list of potential recipients to said identification of said recipient; and

changing a characteristic of the expression of said message on said display to unavoidably signal to the user via said display that said comparison has determined that said recipient identification has been found in said list.

10. The method of claim **9** wherein said changing a characteristic further comprises a changing of the background color of said message expressed in said display.

11. The method of claim **9** wherein said changing a characteristic further comprises a changing of the background grayscale pattern of said message expressed in said display.

12. The method of claim **9** wherein said changing a characteristic further comprises a changing of the color of the window frame of said message expressed in said display.

13. The method of claim **9** wherein said accepting identification of a recipient and said maintaining a list of identifications of potential recipients further comprises accepting email address or email address domain of a recipient and maintaining a list of email addresses or email address domains of potential recipients.

14. The method of claim **9** wherein said accepting identification of a recipient and said maintaining a list of identifications of potential recipients further comprises decrypting a session key representation of a recipient and maintaining a list of session key representations of potential recipients.

15. The method of claim **9** further comprising:

maintaining a second list of second identifications of potential recipients in a memory associated with a microprocessor;

comparing said second identifications in said list of potential recipients to a second identification of said recipient; and

changing a second characteristic of the expression of said message on said display to unavoidably signal to the user via said display that said comparison has determined that at least one of said recipient identification and said recipient second identification has been found in said list.

16. A computer readable medium having stored therein a set of instructions that when executed cause a computer to implement a process of receiving and sending messages, said instructions comprising the steps of:

accepting identification of a recipient for a message including content from an input device;

displaying said message and identification to a user;

maintaining a list of identifications of potential recipients;

comparing said identifications in said list of potential recipients to said identification of said recipient; and

unavoidably signaling to the user via said display that said comparison has determined that said recipient identification has been found in said list.

17. The computer readable medium of claim **16** wherein said unavoidably signaling to the user further comprises a changing of the background color of said message expressed in said display.

18. The computer readable medium of claim **16** wherein said unavoidably signaling to the user further comprises a

changing of the background grayscale pattern of said message expressed in said display.

19. The computer readable medium of claim **16** wherein said unavoidably signaling to the user further comprises a changing of the color of the window frame of said message expressed in said display.

20. The computer readable medium of claim **16** wherein said accepting identification of a recipient and said maintaining a list of identifications of potential recipients further comprises accepting email address or email address domain of a recipient and maintaining a list of email addresses or email address domains of potential recipients.

21. The computer readable medium of claim **16** wherein said accepting identification of a recipient and said maintaining a list of identifications of potential recipients further comprises decrypting a session key representation of a recipient and maintaining a list of session key representations of potential recipients.

22. The computer readable medium of claim **16** further comprising the steps of:

maintaining a second list of second identifications of potential recipients;

comparing said second identifications in said list of potential recipients to a second identification of said recipient; and

unavoidably signaling to the user via said display that said comparison has determined that at least one of said recipient identification and said recipient second identification has been found in said list.

23. A method of receiving and sending messages from a communication device, comprising the steps of:

accepting identification of a recipient for a message including content from an input device;

expressing said message to a user via a display;

maintaining a list of identifications of potential recipients in a memory associated with a microprocessor;

comparing said identifications in said list of potential recipients to said identification of said recipient; and

preventing the changing of a characteristic of the expression of said message on said display to unavoidably signal to the user via said display that said comparison has determined that said recipient identification has been found in said list.

24. The method of claim **23** wherein said accepting identification of a recipient and said maintaining a list of identifications of potential recipients further comprises accepting email address or email address domain of a recipient and maintaining a list of email addresses or email address domains of potential recipients.

25. The method of claim **23** wherein said accepting identification of a recipient and said maintaining a list of identifications of potential recipients further comprises decrypting a session key representation of a recipient and maintaining a list of session key representations of potential recipients.

26. A computer readable medium having stored therein a set of instructions that when executed cause a computer to implement a process of receiving and sending messages, said instructions comprising the steps of:

accepting identification of a recipient for a message including content from an input device;

displaying said message and identification to a user;

maintaining a list of identifications of potential recipients;

comparing said identifications in said list of potential recipients to said identification of said recipient; and

preventing an unavoidable signaling to the user via said display when said comparison has determined that said recipient identification has been found in said list.

27. The computer readable medium of claim **26** wherein said accepting identification of a recipient and said maintaining a list of identifications of potential recipients further comprises accepting email address or email address domain of a recipient and maintaining a list of email addresses or email address domains of potential recipients.

28. The computer readable medium of claim **26** wherein said accepting identification of a recipient and said maintaining a list of identifications of potential recipients further comprises decrypting a session key representation of a recipient and maintaining a list of session key representations of potential recipients.

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