

HANDHELD ELECTRONIC DEVICE AND ASSOCIATED METHOD PROVIDING TIME DATA IN A MESSAGING ENVIRONMENT

TECHNICAL FIELD

The invention relates generally to handheld electronic devices and, more particularly, to a handheld electronic device and a method for providing information representative of the times of certain communications in a messaging environment.

BACKGROUND ART

Numerous types of handheld electronic devices are known. Examples of such handheld electronic devices include, for instance, personal data assistants (PDAs), handheld computers, two-way pagers, cellular telephones, and the like. Such handheld electronic devices are generally intended to be portable, and thus are relatively small. Many handheld electronic devices also features wireless communication capability, although many such handheld electronic devices are stand-alone devices that are functional without communication with other devices. With advances in technology, handheld electronic devices are being configured to include greater numbers of features while having relatively smaller form factors.

Electronic devices, including handheld electronic devices, are capable of numerous types of communication. One type of communication is "messaging", and one type of messaging is "instant messaging" which enables a first device to send a message on a more or less instantaneous basis to a second device. With most all instant messaging, a given electronic device is provided with an interface that outputs the various communications that have occurred between the electronic device and another electronic device during a messaging "conversation". A sample output on an electronic device that is representative of the various communications that have occurred during a conversation may be as follows:

➤ Hi Honey, how was your day?
< Brutal! Larry embarrassed me in front of everybody.
➤ What a Jerk!
< Yeah, but I got him back later with a karate chop! ☺
➤ good for you.

In this example, incoming messages are indicated by a greater than ">" mathematical symbol, and outgoing messages are indicated by a less than "<" mathematical symbol. If the conversation continues quickly, i.e., substantially without interruption, the messages do not need a time stamp on them. In the environment of a handheld electronic device, it
5 would be desirable to avoid unnecessary time stamps and other unnecessary output since it occupies too much valuable space on the limited display of the handheld electronic device.

In some messaging circumstances, however, it may be desirable for information regarding certain timing aspects of conversation to be available to a user. Nevertheless, the limited space available on a display of a handheld electronic device has made a
10 solution difficult. It thus would be desirable to provide an improved handheld electronic device and an associated method that provide time data in a messaging environment.

DISCLOSURE OF THE INVENTION

An improved handheld electronic device and an associated method are provided in
15 which time data regarding certain aspects of a messaging conversation on a handheld electronic device are made available to a user. Such time data is provided, for instance, in situations where an interruption has occurred during a messaging conversation. Time data can also be provided to a user on demand in certain circumstances.

Accordingly, an aspect of the invention is to provide an improved handheld
20 electronic device and a method in which data regarding the times at which certain communications have occurred in a messaging environment are made available to a user.

Another aspect of the invention is to provide an improved handheld electronic device and a method that enable a user to be made aware of certain timing aspects of a conversation in a messaging environment.

25 Another aspect of the invention is to provide an improved handheld electronic device and a method in which data regarding the times at which certain communications have occurred are made available to a user while limiting the amount of display area that is occupied by such data.

Another aspect of the invention is to provide an improved handheld electronic
30 device and a method in which data can be provided regarding the elapsed time since a communication.

Accordingly, an aspect of the invention is to provide an improved method of providing an output on at least one of a first electronic device and a second electronic device, with the first electronic device being adapted to be in electronic communication with a second electronic device. The general nature of the method can be stated as including determining that a first messaging communication has occurred at a first time between the first device and the second device, outputting a first indication that is representative of at least a portion of the first communication, determining that a predetermined period of time has elapsed since the first time substantially without further communication between the first device and the second device and, responsive to determining that a predetermined period of time has elapsed, outputting a first time stamp representative of the first time.

Another aspect of the invention is to provide an improved method of providing an output on at least one of a first electronic device and a second electronic device, with the first electronic device being adapted to be in electronic communication with a second electronic device. The general nature of the method can be stated as including determining that a first messaging communication has occurred at a first time between the first device and the second device, outputting a first indication that is representative of at least a portion of the first communication, detecting a predetermined input and, responsive to detecting a predetermined input, outputting a first time stamp representative of the first time.

Another aspect of the invention is to provide an improved method of providing an output on at least one of a first electronic device and a second electronic device, with the first electronic device being adapted to be in electronic communication with a second electronic device. The general nature of the method can be stated as including determining that a first messaging communication has occurred at a first time between the first device and the second device, outputting a first indication that is representative of at least a portion of the first communication, determining that a first period of time has elapsed since the first time substantially without further communication between the first device and the second device and, responsive to determining that a first period of time has elapsed, outputting a first time stamp representative of the first period of time.

Another aspect of the invention is to provide an improved handheld electronic device of a type that is adapted to be in electronic communication with another electronic device. The general nature of the handheld electronic device can be stated as including a

processor apparatus, an input apparatus, and an output apparatus. The processor apparatus includes a processor and a memory and is adapted to receive input from the input apparatus and to provide output to the output apparatus. The processor apparatus also is adapted to determine that a first messaging communication has occurred at a first time
5 between the handheld electronic device and the other electronic device. The output apparatus is adapted to output a first indication that is representative of at least a portion of the first communication. The processor apparatus is adapted to determine that a predetermined period of time has elapsed since the first time substantially without further communication between the handheld electronic device and the other electronic device.
10 Responsive to a determination that a predetermined period of time has elapsed, the output apparatus is adapted to output a first time stamp representative of the first time.

BRIEF DESCRIPTION OF THE DRAWINGS

A full understanding of the invention can be gained from the following Description
15 of the Preferred Embodiments when read in conjunction with the accompanying drawings in which:

Fig. 1 is an exemplary top plan view of a handheld electronic device in accordance with the invention which can be used in conjunction with an improved method in accordance with the invention;

20 Fig. 2 is a schematic view of the handheld electronic device of Fig. 1;

Fig. 3 is a schematic view of the handheld electronic device of Fig. 1 and another device in a messaging environment;

Fig. 4 is an exemplary view of an output provided in accordance an aspect of the method of the invention;

25 Fig. 5 is another exemplary view of an output provided in accordance an aspect of the method of the invention;

Fig. 6a is another exemplary view of an output provided in accordance an aspect of the method of the invention;

30 Fig. 6b is another exemplary view of an output provided in accordance an aspect of the method of the invention;

Fig. 7 is another exemplary view of an output provided in accordance an aspect of the method of the invention;

Fig. 8a is another exemplary view of an output provided in accordance an aspect of the method of the invention;

Fig. 8b is another exemplary view of an output provided in accordance an aspect of the method of the invention;

5 Fig. 9 is another exemplary view of an output provided in accordance an aspect of the method of the invention; and

Fig. 10 is another exemplary view of an output provided in accordance an aspect of the method of the invention.

Similar numerals refer to similar parts to the specification.

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BEST MODE FOR CARRYING OUT THE INVENTION

An improved handheld electronic device 4 in accordance with the invention is indicated generally in Fig. 1 and is depicted schematically in Fig. 2. The exemplary handheld electronic device 4 includes a housing 8 upon which are disposed an input apparatus 12, an output apparatus 16 and a processor apparatus 20. The input apparatus 12 includes a keypad 24 that can be said to include a plurality of keys 28.

The output apparatus 16 includes a display 50. The output apparatus 16 can additionally include, for instance, additional indicators such as lights, and the like, and can additionally include an audible output such as a speaker as well as other output devices.

The processor apparatus 20 includes a processor 52 that can be, for instance, and without limitation, a microprocessor (μ P), and it is responsive to inputs from the input apparatus 12 and provides output signals to the output apparatus 16. The processor apparatus 20 further includes a memory 56 that includes a routine 60 stored therein. The exemplary routine 60 is a messaging routine that can provide a messaging capability on the device 4. It is understood that the memory 56 likely includes a number of other routines that are not expressly mentioned herein. As employed herein, the expression "a number of" and variations thereof shall refer broadly to any nonzero quantity including a quantity of one. The processor 52 interfaces with the memory 56, and the routine 60 is executable on the processor 52.

20 The device 4 further includes a wireless communication system. As can be seen in Fig. 3, the device 4 with the routine 60 can interface with a messaging service 62 to wirelessly provide the messaging capability on the device 4. In the depicted exemplary

embodiment, the messaging service 62 provides an instant messaging capability on the device 4 and on the other electronic devices having routines that are subscribers to the messaging service 62. The messaging service 62 is schematically depicted as including a server, although the teachings herein are not limited to messaging services that employ a server. For instance, the messaging service could, for example, provide a point-to-point communication capability such as is provided with the Bluetooth protocol, or may provide some other type of communication capability, whether or not wireless.

Fig. 3 further depicts another device 104 as being a device having a routine that is another subscriber to the messaging service 62. Specifically, the device 104 is an electronic device having a routine 160 thereon which can communicate with the messaging service 62 to provide a messaging capability on the device 104. While the exemplary devices 4 and 104 are depicted as having a wireless connection with the messaging service 62, it is understood that either or both of the devices 4 and 104 may employ a non-wireless communication capability and still not depart from the concept of the invention. It is further understood that while only the two devices 4 and 104 are depicted in Fig. 3 as being subscribers to the messaging service 62, many more subscribers to the messaging service 62 may exist but are not expressly depicted in Fig. 3.

During the course of an electronic conversation, such as depicted in Fig. 4 between, for instance, the devices 4 and 104, a number of messages 68 are communicated between the devices 4 and 104. An incoming message 72 received on, for instance, the device 4, provides a visual indication of a communication that has been transmitted from, for instance, the device 104 to the device 4. As can be seen in Fig. 4, an incoming message 72 includes an incoming symbol 66 and an incoming text portion 70. In the exemplary output depicted herein, the incoming symbol 66 is a mathematical greater than ">" symbol. The text portion 70 is an exemplary linguistic output that could be of numerous types of forms, such as in different languages, and also can include, for instance, symbols and the like that need not necessarily be a part of any particular language.

An outgoing message 76 is depicted as including an outgoing symbol 74 and an outgoing text portion 78. In the exemplary output depicted herein, the outgoing symbol 74 is a mathematical less than "<" symbol. The text portion 78 is an exemplary linguistic output that could be of numerous types of forms.

As can be further seen from Fig. 4, the exemplary conversation depicted therein includes a plurality of incoming messages 72 and a plurality of outgoing messages 76 that are transmitted between the devices 4 and 104 at a conversational speed, i.e., at a speed in which back-to-back communications between the devices 4 and 104 occur without a meaningful delay therebetween. Due to the conversational speed of the back-to-back communications, the messages 68 do not include an indications of the times at which such messages 68 were transmitted, it being assumed as a general matter that in such circumstances the specific time at which a given message within such a conversation occurred may not be of significance to a user.

At a certain point in the exemplary conversation, though, an exemplary message 68 which, for example, may be an outgoing message 76, may also become a non-responded to message 80, meaning that subsequent to its transmission substantially no additional communication occurs between the device 4 and 104 within a predetermined duration of time. More specifically, as the conversation transpires, the back-to-back incoming messages 72 and outgoing messages 76 are displayed adjacent one another. However, after the expiration of a predetermined duration of time after the transmission of a message 68, for instance ten minutes, in which substantially no additional communication occurs between the device 4 and 104, the message 68 is determined in accordance with the invention to be a non-responded to message 80, and responsive to such determination a first time stamp 84 is output adjacent the non-responded to message 80. For instance, if the non-responded to message 80 was transmitted at 2:44 PM, and if substantially no additional communication between the device 4 and 104 occurs between 2:44 PM and 2:54 PM, at 2:54 PM the first time stamp 84 "2:44 pm" is output to provide to the users of the devices 4 and 104 an indication that the conversation was interrupted at 2:44 PM. Such selective outputting of the first time stamp 84 generally only in response to a message 68 of some significance, such as the terminal message of a conversation, saves space on the display 50. It is noted that the display of the first time stamp 84 typically will occur on both the device 4 and the device 104.

It is understood, however, that the time duration of ten minutes is completely exemplary and that the time duration could be set at any duration. It is also understood that the first time stamp 84 can be output in response to the occurrence of additional and/or other predetermined events. Moreover, it is noted that the predetermined time duration may be variable depending upon the characteristics of the conversation. For

instance, if messages are being exchanged on a more infrequent basis, such as every nine minutes, the predetermined duration of time after which the first time stamp 84 is output may be adjusted to be twenty minutes, for example.

By way of further example, and as is depicted generally in Fig. 5, another message 5 68 may subsequently be communicated between the devices 4 and 104. Since the message 68 corresponds with a resumption of communication between the devices 4 and 104 after a period of interruption, the message 68 is determined to be a resumption message 88, and a second time stamp 92 is output adjacent the resumption message 88. A user thus can determine from the output on the display 50 the period of time during which the 10 conversation was suspended, i.e., the time between transmission of the non-responded to message 80 and transmission of the resumption message 88. Selective outputting of the second time stamp 92 saves space on the display 50. In this depicted example, the first time stamp 84 is disposed, for example, adjacent the non-responded to message 80, and the second time stamp 92 is disposed, for example, adjacent the resumption message 88. 15 It is also noted that the second time stamp 92 is disposed, for example, between the non-responded to message 80 and the resumption message 88.

As the conversation continues after transmission of the resumption message 88, one of the users of the devices 4 and 104 may determine that a time stamp would desirably be displayed in association with a message 68, such as if the user wished to emphasize to 20 himself or herself, or to the other user, the time at which the message 68 was transmitted. If such a time stamp is desired, the user may active a user interface 96, such as the exemplary user interface 96 of Fig. 6a, which can manually cause the output of an inserted time stamp 98 adjacent the message 68, as in Fig. 6b. As mentioned above, the inserted time stamp 98 can be made to appear on both the device 4 and the device 104, and it is 25 also noted that, if desired, the inserted time stamp 98 could be made to appear on only one or the other of the devices 4 and 104.

As can be seen in Fig. 7, the output could provide a non-responded to message 180 and a resumption message 188, with a first time stamp 184 being disposed adjacent the non-responded to message 180, and with a second time stamp 192 being disposed adjacent 30 the resumption message 188. However, in the exemplary output of Fig. 7 the first time stamp 184 and the second time stamp 192 are disposed adjacent one another and are both disposed between the non-responded to message 180 and the resumption message 188. Such an exemplary display of the first and second time stamps 184 and 192 illustrates the

gap in the conversation that occurred between transmission of the non-responded to message 180 and transmission of the resumption message 188. It is noted that the first time stamp 184 and the second time stamp 192 may have been generated in a fashion similar to the generation of the first time stamp 84 and the second time stamp 92.

5 As can be seen in Figs. 8a and 8b, the time stamps can be output in other places. For instance, a text portion of a non-responded to message 280 may have a beginning 282 and an ending 286. Similarly, a text portion of a resumption message 288 may have a beginning 290 and an ending 294. In accordance with another aspect of the invention, a first time stamp 284 can be output at either the beginning 282 or the ending 286 of the text
10 portion of the non-responded to message 280, and in the example of Fig. 8a the exemplary first time stamp 284 is output at the beginning 282. Also, a second time stamp 292 can be output at either the beginning 290 or the ending 294 of the text portion of the resumption message 288, and in the example of Fig. 8a the exemplary second time stamp 292 is output at the beginning 290. Other positioning of the first time stamp 284 and the second
15 time stamp 292 are possible within the concept of the invention.

For instance, and as another example, Fig. 8b depicts the exemplary first time stamp 284 as being output at the ending 286 while the exemplary second time stamp 292 is output at the beginning 290. Figs. 8a and 8b depict different exemplary ways in which the first and second time stamps 284 and 292 can be output to provide time data to a user.
20 In Fig. 8a the first and second time stamps 284 and 292 are disposed at a consistent location, i.e., at the beginnings 282 and 290 of the text portions of the non-responded to message 280 and the resumption message 288. Fig. 8b disposes the first and second time stamps 284 and 292 generally between the ending 286 of the non-responded to message 280 and the beginning 290 of the resumption message 288, which focuses the attention of
25 the user on the interval during which the conversation was interrupted. Other ways of outputting the first and second time stamps 284 and 292 will be apparent.

Another way of providing time stamps in a fashion that saves space on the display
50 is depicted in Fig. 9. Specifically, the messages 368 are output without displayed time stamps, but upon moving a cursor 374 or other pointing device or other device in
30 proximity to a given message 368 a corresponding requested time stamp is output adjacent the message 368. In this way, the messages 368 can be provided without also displaying time stamps, but if a time stamp is desired as to any of the messages 368 a requested time stamp 378 can be readily output. In this regard, the requested time stamp 378 may be

output for only a predetermined duration of time, for instance a few seconds, and/or the requested time stamp 378 may be deleted from the display 50 upon a detection of another input, such as from the input apparatus 12 or otherwise. In this regard, all of the messages 368 can have time stamps associated therewith that are not displayed until requested.

5 It is also noted that the requested time stamp 378 need not be requested by the cursor 374, and rather could be requested with virtually any other type of input desired, such as with a stylus and a touch sensitive screen, by an actuation of a key, or by the use of alternate pointing or other devices. Other ways of managing the output of the requested time stamp 378 as to any of the messages 368 will be apparent.

10 It is noted that the appearances of the various time stamps herein is completely exemplary, and that the time stamps could be provided in any format without departing from the concept of the invention. In this regard, and in accordance with another aspect of the invention, a given time stamp may be a smart time stamp and provide additional information depending upon the prevailing circumstances. For instance, if the first time
15 stamp 84 of Fig. 4 was output as indicated above, and if the conversation was not resumed until the following day, the first time stamp 84 potentially could be configured to automatically change from being displayed as "2:44 pm" on the day of communication of the non-responded to message 80 to being displayed as, for instance, "2:44 pm Thursday" or, for instance, "2:44 PM September 17, 2004" or, for instance, "2:44 pm yesterday" on
20 the following day, although other configurations will be apparent and will be within the concept of the invention.

 Further in this regard, the time stamps can be configured to depict relative times, i.e., elapsed times, rather than absolute times. For instance, and as is depicted generally in Fig. 10, a time stamp 478 associated with a message 468 can be output to say, for
25 example, "less than one minute ago", meaning that the message 468 that has been activated by the cursor 474 has been transmitted less than one minute prior to the current time.

 Such a time stamp 478 could be configured to be an active time stamp, meaning that it would change as time progressed. For instance, the time stamp 478 could
30 progressively change from saying "less than one minute ago" to saying "one minute ago", "two minutes ago", "forty-five minutes ago", and the like as time progressed. Such a time stamp also could be configured, for instance, to revert back to displaying an absolute time after the expiration of a given time duration. For example, once the message 468 is one

hour old, for instance, the time stamp 478 might be configured to no longer output a relative time such as "fifty-nine minutes ago", and rather to output an absolute time such as "2:54 pm". Other variations can be provided without departing from the concept of the invention.

5 If it is desired to provide such time stamps that output relative times, it might also be desirable to output such time stamps in any of the fashions set forth above, and such time stamps potentially could be configured to be output without first detecting a delay or a break in the "conversation". For instance, the time stamp "less than a minute ago" could be displayed immediately upon receiving a message on the handheld electronic device 4, if
10 such a configuration is desired. In such a configuration, and order to save space on the display 50, the handheld electronic device 4 may be configured to provide such a relative time stamp only for the most recently transmitted message. That is, responsive to detecting the transmission of a message, the handheld electronic device may be configured to substantially immediately output a time stamp such as "less than a minute ago". After
15 one minute the time stamp may be altered to say "one minute ago", and the like. However, upon the transmission of an additional message, the time stamp for the prior message can be deleted and a new time stamp such as "less than a minute ago" can be provided with respect to the new message.

 Such relative time stamps provide to the user an expedited understanding of the
20 timing aspects of the message. That is, the user can understand an aspect of the time of transmission without having to refer to the current time. This advantageously saves effort by the user because it eliminates the mental step of determining the current time and subtracting therefrom an absolute time displayed by a time stamp to determine the elapsed time since transmission of the message.

25 The different fashions of selectively providing intelligent time data in the form of selectively output time stamps advantageously saves valuable space on the display 50. Moreover, such selective outputting of time stamps advantageously avoids unnecessary visual clutter on the display 50.

 While specific embodiments of the invention have been described in detail, it will
30 be appreciated by those skilled in the art that various modifications and alternatives to those details could be developed in light of the overall teachings of the disclosure. Accordingly, the particular arrangements disclosed are meant to be illustrative only and

not limiting as to the scope of the invention which is to be given the full breadth of the claims appended and any and all equivalents thereof.

INDUSTRIAL APPLICABILITY

- 5 The present invention is directed at handheld electronic device and a method for providing information representative of the times of certain communications in a messaging environment.

CLAIMS:

1. A method of providing an output on at least one of a first electronic device and a second electronic device, the first electronic device being adapted to be in electronic communication with the second electronic device, the method comprising:

outputting an electronic conversation comprising a plurality of indications, each indication being representative of at least a portion of a corresponding messaging communication between the first device and the second device;

determining that a first messaging communication corresponding to a latest communication in the electronic conversation between the first device and the second device has occurred at a first time, the first messaging communication having a corresponding first indication representative of at least a portion of the first messaging communication and which is one of the plurality of indications

detecting a predetermined manual input to the first electronic device following said determining and outputting steps; and

responsive to said detecting a predetermined manual input to the first electronic device, outputting in the electronic conversation in association with the first indication, a first time stamp representative of the first time.

2. The method of claim 1, further comprising outputting the first indication on the second electronic device.

3. The method of claim 1 or claim 2, further comprising detecting as the predetermined manual input a movement of a cursor to a location one of adjacent to and overlapping the first indication.

4. The method of claim 3, further comprising outputting the first time stamp adjacent to the first indication.

5. The method of claim 3 or claim 4, further comprising detecting another input and, responsive to said detecting another input, removing the first time stamp.

6. The method of any one of claims 3 to 5, further comprising detecting an expiration of a predetermined duration of time and, responsive to said detecting an expiration of a predetermined duration of time, removing the first time stamp.

7. The method of any one of claims 1 to 6, further comprising outputting as the first time stamp a time of day representative of the first time, detecting a change in date and, responsive to said detecting a change in date, outputting as the first time stamp a time of day and a date representative of the first time.

8. The method of any one of claims 1 to 6, further comprising outputting as the first time stamp a relative time stamp representative of an elapsed time.

9. A computer readable medium comprising computer executable instructions for execution by a processor for performing the method according to any one of claims 1 to 8.

10. A handheld electronic device adapted to be in electronic communication with another electronic device, the handheld electronic device comprising:

a processor apparatus including a processor and a memory;

an input apparatus; and

an output apparatus;

the processor apparatus being adapted to receive input from the input apparatus and to provide output to the output apparatus;

the processor apparatus being adapted to output an electronic conversation comprising a plurality of indications, each indication being representative of at least a portion of a corresponding messaging communication between the handheld electronic device and the another electronic device;

the processor apparatus being adapted to determine that a first messaging communication corresponding to a latest communication in the electronic conversation between the handheld electronic device and the another electronic device has occurred at a first time, the first messaging communication having a corresponding first indication representative of at least a portion of the first messaging communication and which is one of the plurality of indications

the processor apparatus being adapted to detect a predetermined manual input to the handheld electronic device following said determining and outputting steps; and

responsive to said detecting a predetermined manual input to the handheld electronic device, the processor apparatus being adapted to output in the electronic conversation in association with the first indication, a first time stamp representative of the first time.

11. The device of claim 10, the processor apparatus being adapted to detect as the predetermined manual input a movement of a cursor to a location one of adjacent to and overlapping the first indication.

12. The device of claim 11, the processor apparatus being adapted to output the first time stamp adjacent to the first indication.

13. The device of claim 11 or claim 12, the processor apparatus being adapted to detect another input and, responsive to detecting said another input, remove the first time stamp.

14. The device of any one of claims 11 to 13, the processor apparatus being adapted to detect an expiration of a predetermined duration of time and, responsive to said detecting an expiration of a predetermined duration of time, remove the first time stamp.

15. The device of any one of claims 10 to 14, the processor apparatus being adapted to output as the first time stamp a time of day representative of the first time, detect a change in date and, responsive to said detecting a change in date, output as the first time stamp a time of day and a date representative of the first time.

16. The device of any one of claims 10 to 14, the processor apparatus being adapted to output as the first time stamp a relative time stamp representative of an elapsed time.