

System and Method for Providing Non-audio Messages with a Portable Device

Field of the Invention

This invention relates to portable devices. More particularly, this invention relates to a system for outputting a message to a user from the portable device. Still more particularly, this invention relates to a system that provides a non-audio output of the message from the portable device.

Summary of the Prior Art

Portable devices, such as portable phones, smart phones, and Personal Digital Assistants (PDA) are commonly used by people to communicate while a person at a certain set location. However, it is often a problem that a user desires to receive certain information at time and location where the use of portable device will be conspicuous. For example, members of law enforcement agencies may want to receive notifications when a targeted person enters a public area without receiving a call which may alert others to the presence of the members of law enforcement in the crowd that received the notification. A second more common example is when a user is in a movie or attending a lecture in an auditorium and wants to receive a notification from another when an event has occurred without interrupting others. Thus, there is a need in the art for providing some type of notification that can be noticed by user without being conspicuous to others.

Recently, text messaging systems such as Short Message Service (SMS), Multimedia Message Service (MMS), and e-mail service have been incorporated into portable devices. These systems allow a user to receive a text message that is then displayed. Typically, the portable device plays a ring tone or other forms of notifications to alert a user when a message is received and the messages are displayed on an illuminated display when the user views the message. Thus, the notification of the user and the illumination of the display may not be as inconspicuous as the user desires and may be intrusive to others.

To solve these problems, others have also proposed using a vibration module or other devices to provide an output of the message in Morse code or in some letter encryption method. However, these systems are often unreliable as they require the user

to know the code being used and rely on the user's ability to identify the entirety of the played output to decrypt the codes. Further, if the message is long, the vibration of the phone may become conspicuous and/or annoying to others close to the user. Furthermore, these systems often require new components to be added to the portable device to allow
5 the system to operate.

Therefore, those skilled in the art are constantly striving for an improved method to inconspicuously provide information to a user.

10

Summary of the Invention

15

20

The above and other problems are solved and an advance in the art is made by a system for providing an output of a message from a portable device in accordance with this invention. A first advantage of a system in accordance with this invention is that a message may be output to a user in an inconspicuous manner. A second advantage of a system in accordance with this invention is that the user does not need to understand a complex code and does not need to receive the entire message to understand the contents of the message. A third advantage of a system in accordance with this invention is that no additional hardware components need to be added to a portable device to provide a message in accordance with this invention. A fourth advantage of a system in accordance with this invention is that the output may be modified based upon parameter data received to insure that the user receives the output of the message.

25

30

In accordance with an embodiment of this invention, a system for providing an output of a message to a user is configured in the following manner. The system receives a message that was transmitted to the portable device. Depending on the embodiment, the message may be an SMS, MMS, or e-mail message. The system then reads the data content from the message. The read content is then parsed into parsed components. In some embodiments, the parsed components may be phrases, words, and/or letters. The system then searches a library stored in a memory of the device for each of parsed components derived from the contents. When a parsed component is found in the library, play data associated with parsed component is read from the library and added to a play data set. The play data set is then stored by the system into a portion of memory readable

by an output device. The system then transmits a signal to an output device controller. The output device controller then causes the output device to use the play data set stored in the portion of memory to provide an output of the message.

5 In accordance with some embodiments of the invention, the system may alter the output of the message based upon parameter data in the following manner. The system receives parameter data and then modifies the output of the message in response to receiving the parameter data. In various embodiments, the parameter data may be an indication of motion from a motion sensor, Global Position System data, time information
10 from an internal clock, or any other data that may be generated or received by the portable device.

In accordance with some embodiments of the invention, the output may be modified by changing a parameter of said output device. In other embodiments, the output may be
15 modified by modifying the play data set. In still other embodiments, the output may be modified by changing the device that provides the output.

In accordance with some embodiments, the output device to provide the output may be selected from one of a group of output devices in the portable device. In accordance
20 with some embodiments, the group of output devices may include a vibration device and/or a display. In accordance with these embodiments, the portable device stores a library for each of the available output devices and the system selects the proper library to search in response to a determination of which output device is providing the output.

25 **Brief Description of the Drawings**

The above and other features and advantages of a system in accordance with this system are described in the below detailed description and are shown in the following drawings:

Figure 1 illustrating a network including a portable device including an embodiment
30 of a system in accordance with this invention;

Figure 2 illustrating a block diagram of components of a portable device in accordance with an embodiment of this invention;

Figure 3 illustrating a flow diagram for a process executed by a portable device for providing an output of a message in accordance with this invention;

Figure 4 illustrating a process executed by the portable device for an output based upon a received input in accordance with this invention;

5 Figure 5 illustrating a process executed by an output device in the portable device for providing an output from data input by user in accordance with this invention; and

Figure 6 illustrating a process executed by portable device for modifying the output of the message in response to receive parameter data in accordance with an embodiment of this invention.

10

Detailed Description

This invention relates to portable devices. More particularly, this invention relates to a system for outputting a message to a user from the portable device. Still more particularly, this invention relates to a system that provides a non-audio output of the message from the portable device.

15

Figure 1 illustrates network 100 that communicates with portable device 140 in accordance with this invention. Network 100 includes server 105, administrator computer system 115, wireless router 120, Public Switched Telephonic Network (PSTN) 130, wireless base station 135, and portable device 140. Server 105 is a conventional server that performs the functions of storing data for and transferring data to portable device 140 in accordance with this embodiment of the invention. Server 105 is connected to Internet 110 and/or an equivalent network for communication with other digital processing systems.

20

Administrator computer system 115 is a conventional computer system that executes instructions to provide an administrator interface to allow an administrator to generate and transmit messages to portable device 140. Administrator computer system 115 is connected to Internet 110 and/or equivalent networks to communicate with other digital processing devices.

25

30

PSTN 130 is a conventional network of switches and other routing devices for handling calls and other forms of data transmission between portable devices. PSTN is

connected to Internet 110 via one or more gateways (Not Shown) to allow for devices connected to Internet 110 to communicate with devices connected to PSTN 130. PSTN also includes at least one wireless base station 135 that transmits and receives Radio Frequency (RF) and/or other types of signals 137 to communicate with portable device 140.

5 One skilled in the art will recognize that only those components of PSTN 130 and wireless base station 135 needed to understand the invention are discussed and a complete discussion of these components is omitted for brevity.

10 Wireless router 120 or another equivalent device is a device connected to the Internet 110 to allow portable devices to connect to Internet 110 via RF and/or equivalent signals 125. A complete understanding of the operation of wireless router 120 is not needed to provide a system in accordance with this invention. Therefore, a complete description of wireless router 120 is omitted for brevity.

15 Portable device 140 is a portable hand phone, Personal Digital Assistant (PDA), Laptop computer or other device that may be connected to and/or communicate with PSTN 130 and Internet 110 by transmitting and receiving signals for wireless base station 135 and/or wireless router 120. A complete description of portable device 140 is omitted for brevity and only those processes that are performed in accordance with this invention are
20 described.

Figure 2 illustrates a block diagram of the components of portable device 140 in accordance with the shown embodiment of this invention. One skilled in the art will recognize that Figure 2 is for illustrative purposes only and the exact configuration of the
25 components in the portable device may be different without departing from this invention. Processing system 200 includes Central Processing Unit (CPU) 205. CPU 205 is a processor, microprocessor, or any combination of processors and microprocessors that execute instructions to perform the processes in accordance with the present invention. CPU 205 connects to memory bus 210 and Input/Output (I/O) bus 215. Memory bus 210
30 connects CPU 205 to memories 220 and 225 to transmit data and instructions between the memories and CPU 205. I/O bus 215 connects CPU 205 to peripheral devices to transmit data between CPU 205 and the peripheral devices. One skilled in the art will recognize

that I/O bus 215 and memory bus 210 may be combined into one bus or subdivided into many other busses and the exact configuration is left to those skilled in the art.

A non-volatile memory 220, such as a Read Only Memory (ROM), is connected to memory bus 210. Non-volatile memory 220 stores instructions and data needed to operate various sub-systems of processing system 200 and to boot the system at start-up. One skilled in the art will recognize that any number of types of memory may be used to perform this function.

A volatile memory 225, such as Random Access Memory (RAM), is also connected to memory bus 210. Volatile memory 225 stores the instructions and data needed by CPU 205 to perform software instructions for processes such as the processes for providing a system in accordance with this invention. One skilled in the art will recognize that any number of types of memory may be used to provide volatile memory and the exact type used is left as a design choice to those skilled in the art.

Microphone 230, keypad 235, display 240, memory 245, transceiver 250, audio output 260, vibration module 270, motion sensor 280 and any number of other peripheral devices connect to I/O bus 215 to exchange data with CPU 205 for use in applications being executed by CPU 205. Microphone 230 is a device that receives audio input from a user. Keypad 235 is a specific type of I/O that receives alphanumeric user input and transmits the input to CPU 205. Display 240 receives display data from CPU 205 and display images on a screen for a user to see. Memory 245 is a device that transmits and receives data to and from CPU 205 for storing data to a media. Transceiver 250 is a device that connects to CPU 205 and transmits data to and receives data from a network via RF or other signals.

Audio output device 260 receives data from CPU 205 and outputs the data in audio form for a user to hear. Vibration module 270 includes the device that produces vibration that causes portable device 140 to "shake" to provide a tactile sensation to the user. Motion sensor 280 is an accelerometer and/or other related devices that detect the movements of portable device 140 by a user.

This invention relates to providing an output of a message from a portable device in an inconspicuous manner. Thus, the invention uses output devices in the mobile device to generate a unique signal that is associated with particular contents of a text message receive by a portable device.

5

Figure 3 illustrates a flowchart of a process performed in accordance with an embodiment of this invention to provide an output of a message. Process 300 begins in step 305 by receiving a message. In accordance with this embodiment of the invention, the message is a text message. The text message may be in any format supported by the mobile device. Some examples of message formats include, but are not limited to, SMS, MMS, and e-mail. A further example may be a text file and/or message sent via an established connection (e.g. Socket) over a GPRS/3G network. Although text messages are discussed, one skilled in the art will recognize that it is possible for this process to be applied to other types of messages without departing from this invention.

15

In response to receiving the message, the data, such as text data, is read from the message in step 310. The data is then parsed into parsed components in step 315. For example, in the current embodiment, the text data is parsed into parsed components that include characters, words, and phrases. In step 317, process 300 then determines the output device to output the message. The determination may be made from an indication in the message, reading user adjustable configuration data stored in the portable device, or through the selection of a default device.

20

Process 300 then determines the library to use to interpret the parsed components into output data. Libraries are databases, dedicated memories, look-up tables, or the like stored in a memory of the portable device that stores known components of data along with associated output data. Each library will store data for a particular output device. Thus, the output device that will be used to output the message will determine the corresponding library to be used.

30

The library is then searched for each parsed component in step 320. In accordance with this embodiment of the invention, a hierarchy of components are used to

search such that phrases are searched first, then words of unresolved phrases are searched and finally characters in unresolved words are searched. However, one skilled in the art will recognize that other methods for resolving the parsed components may be used without departing from this invention. When a parsed component is found, the output data associated with the found component is read from the library and added to a play data set. After all of the play data has been identified, the play data set is generated in step 325.

In step 330, process 300 determines whether any parameter data has been received. For purposes of this discussion, parameter data is any data received by process 300 that indicates that the output of the message should be changed in some manner. The changes may be required due to location, current activities of the user, or any other action that may require a change in the output for the output to remain inconspicuous. For example, Global Positioning System data or other location data may be received that indicates that a visual rather than a tactile mode of output should be used. In a second example, a motion sensor in portable device 140 detects motion. Thus, process 300 needs to adjust the amount of vibration for the output to allow a user to feel the tactile output of the vibration module while moving.

In step 335, the output is adjusted in response to receiving the parameter data. As discussed above, the output may be adjusted by changing the output device, modifying the play data set, or changing an operating parameter of the output device. Once the play data set is determined, the data is written to a memory in portable device 140 in step 340. The memory is a portion of a memory in the device that is readable by the output device and/or a controller of the device.

In step 345, process 300 ends by transmitting a play signal to a controller of the desired output device. One skilled in the art will recognize that the controller of the output device may be a software application executed by the processing system of portable device 140 or may be applications and or hardware in the output device itself, which controls the operation of the output device.

A process for the output from the play data set with the output device is shown in Figure 4. Process 400 begins in step 405 with the controller of the output device receiving the play signal. In step 410, the controller then directs the output device to read the play data set from the memory. The controller then directs the output device to produce an output based on the play data set in step 415 and process 400 ends.

In accordance with this invention, mobile device 140 may also produce outputs for signal input by a user in accordance with this invention. A process for providing an output based upon user input in accordance with an embodiment of this invention is shown in Figure 5. Process 500 begins in step 505, when an input by a user is received from an input device of portable device 140. Process 500 then read text from the input in step 510 and the input data is then parsed into parsed components in step 515. For example in the current embodiment, the input data may be parsed into parsed components that include characters, words, and phrases. In step 520, process 500 then determines the output device to output the message. The determination may be made from an indication in the message, reading user adjustable configuration data stored in the portable device, or through the selection of a default device.

Process 500 then determines the library to use to interpret the parsed components into output data. Libraries are databases, dedicated memories, look-up tables, or the like stored in a memory of the portable device that stores known components of data along with associated output data. Each library will store data for a particular output device. Thus, the output device that will be used to output the message will determine the corresponding library to be used.

The library is then searched for each parsed component in step 525. In accordance with this embodiment of the invention, a hierarchy of components is used to search, such that phrases are searched first, then words of unresolved phrases are searched and finally characters in unresolved words are searched. However, one skilled in the art will recognize that other methods for resolving the parsed components may be used without departing from this invention. When a parsed component is identified, the output data associated with the found component is read from the library and added to a play data set.

After all of the play data has been found, the play data set is generated and stored in a memory or portion of memory readable by the output device in step 530. Process 500 then transmits a play signal to the device in step 535 and process 500 ends. The device then provides an output representing the input data in accordance to process 400 described above.

Figure 6 illustrates a flowchart of an embodiment of a process for receiving parameter data and modifying the output of a message in accordance with steps 330 and 335 of process 300 described above. Process 600 begins in step 605 by determining whether a signal indicating motion has been received from a motion sensor of portable device 140. If a motion signal has been received, process 600 modifies the parameter settings of vibration module 270 stored in a memory of portable device 140 to increase the intensity of vibrations caused by the module in step 610. If no motion is detected, process 600 skips to step 615. Alternatively, the data in the play data set may be modified to change the intensity. The exact manner used will depend on the configuration of portable device 140 and is left as a design choice for those skilled in the art.

In step 615, process 600 determines whether Global Positioning System (GPS) data has been received. If so, a new data play set is generated for a second output device and the play signal is sent to the second device in step 620. If no GPS data is received, process 600 skips to step 615. In step 625, process 600 determines whether a signal indicating a change in output devices is received. If so, a new data play set is generated for a second output device and the play signal is sent to the second device in step 630. Process 600 then ends. If no signal is received, process 600 skips to step 615.

The above describes embodiments for a system for providing an output of a message from a portable device in accordance with this invention. It is foreseeable that those skilled in the art can design alternative systems from the above description that infringe upon this invention as set forth in the following claims.

What is claimed is:

1. A product for providing contents of a message to a user from a portable device comprising:

instructions for directing a processing unit to:

- 5 receive a message,
 read contents of said message,
 parse said contents of said message into a plurality of parsed components,
 search a library stored in a memory of said portable device for each of said plurality
 of parsed components,
10 read play data from said library for each of said plurality of parsed
 components found in said library,
 add said play data to a play data set,
 store said play data set in a memory readable by an output device, and
 transmit a signal to an output device controller to use said play data set to
15 provide an output of said message using said output device, and
 a media readable by said processing device that stores said instructions.

2. The product of claim 1 wherein said message is a Short Message Service message.

- 20 3. The product of claim 1 wherein said message is a Multi-media Message Service
 message.

4. The product of claim 1 wherein said message is an e-mail message.

- 25 5. The product of claim 1 wherein said message is sent via a socket connection.

6. The product of claim 1 wherein said instructions further comprise:

instructions for directing said processing unit to:

- receive parameter data; and
30 modify said output of said message in response to receiving said parameter
 data.

7. The product of claim 6 wherein said instructions to receive said parameter data comprise:

instructions for directing said processing unit to:

receive an indication of motion from a motion sensor.

5

8. The product of claim 6 wherein said instructions to receive said parameter data comprise:

instructions for directing said processing unit to:

receive Global Position System data.

10

9. The product of claim 6 wherein said instructions to receive said parameter data comprise:

instructions for directing said processing unit to:

receive time information from an internal clock system.

15

10. The product of claim 6 wherein said instructions to modify said output of said message comprise:

instructions for directing said processing unit to:

change a parameter of said output device.

20

11. The product of claim 6 wherein said instructions to modify said output of said message comprise:

instructions for directing said processing system to:

modify said play data set.

25

12. The product of claim 1 wherein said portable device includes a plurality of output devices and said instructions further comprise:

instructions for directing said processing unit to:

select one of said plurality of output devices as said output device for providing said output of said message.

30

13. The product of claim 12 wherein said plurality of output devices include a vibration module.

14. The product of claim 12 wherein said plurality of output devices include a display.

5

15. The product of claim 12 wherein said portable device stores a plurality of libraries wherein each of said plurality of libraries is associated with one of said plurality of output devices and said instructions further comprise:

instructions for directing said processing unit to:

10 select one of said plurality of libraries as said library to search responsive to a selection of one said plurality of output devices.

16. A method for providing non-audio output of a message on a portable device comprising:

15 receiving a message in said portable device;

reading contents from said message;

parsing said contents of said message into a plurality of parsed components;

searching a library stored in a memory of said portable device for each of said plurality of parsed components;

20 reading play data from said library for each of said plurality of parsed components found in said library;

adding said play data read for each of said plurality of parsed components to a play data set;

storing said play data set in a memory readable by an output device; and

25 transmitting a signal to an output device controller to use said play data set to provide an output of said message using said output device.

17. The method of claim 16 wherein said message is a Short Message Service message.

30 18. The method of claim 16 wherein said message is a Multi-media Message Service message.

19. The method of claim 16 wherein said message is an e-mail message.

20. The method of claim 16 wherein said message is sent via a socket connection.

5 21. The method of claim 16 further comprising:

receiving of said signal by said device controller;

reading of said play data set from said memory by said output device;

providing of said output of said message by executing said play data set by said
output device.

10

22. The method of claim 16 further comprising:

receiving parameter data; and

modifying said output of said message in response to receiving said parameter data.

15 23. The method of claim 22 wherein said step of receiving said parameter data comprises:

receiving an indication of motion from a motion sensor.

24. The method of claim 22 wherein said step of receiving said parameter data comprises:

receiving Global Position System data.

20

25. The method of claim 22 wherein said step of receiving said parameter data comprises:

receiving time information from an internal clock system.

26. The method of claim 22 wherein said step of modifying said output of said message

25 comprises:

changing a parameter of said output device.

27. The method of claim 22 wherein said step of modifying said output of said message

comprises:

30 modifying said play data set.

28. The method of claim 16 further comprising:

selecting one of said plurality of output devices as said output device for providing said output of said message.

29. The method of claim 28 wherein said plurality of output devices include a vibration
5 module.

30. The method of claim 28 wherein said plurality of output devices include a display.

31. The method of claim 28 wherein said portable device stores a plurality of libraries
10 wherein each of said plurality of libraries is associated with one of said plurality of output devices and said method further comprises:

selecting one of said plurality of libraries as said library to search responsive to a selection of one said plurality of output devices.

15 32. A portable device that provides non-audio messages comprising:

circuitry configured to receive a message in said portable device;

circuitry configured to read contents from said message;

circuitry configured to parse said contents of said message into a plurality of parsed components;

20 circuitry configured to search a library stored in a memory of said portable device for each of said plurality of parsed components;

circuitry configured to read play data from said library for each of said plurality of parsed components found in said library;

25 circuitry configured to add said play data read for each of said plurality of parsed components to a play data set;

circuitry configured to store said play data set in a memory readable by an output device; and

circuitry configured to transmit a signal to an output device controller to use said play data set to provide an output of said message using said output device.

30 33. The portable device of claim 32 wherein said message is a Short Message Service message.

34. The portable device of claim 32 wherein said message is a Multi-media Message Service message.

5 35. The portable device of claim 32 wherein said message is an e-mail message.

36. The portable device of claim 32 wherein said message is sent via a socket connection.

37. The portable device of claim 32 further comprising:

10 circuitry configured to receive of said signal by said device controller;
 circuitry configured to read of said play data set from said memory by said output device;
 circuitry configured to provide of said output of said message by executing said play data set by said output device.

15

38. The portable device of claim 32 further comprising: circuitry configured to receive parameter data; and
 circuitry configured to modify said output of said message in response to receiving said parameter data.

20

39. The portable device of claim 38 wherein said circuitry configured to receive said parameter data comprises:
 circuitry configured to receive an indication of motion from a motion sensor.

25 40. The portable device of claim 38 wherein said circuitry configured to receive said parameter data comprises:
 circuitry configured to receive Global Position System data.

30 41. The portable device of claim 38 wherein said circuitry configured to receive said parameter data comprises:
 circuitry configured to receive time information from an internal clock system.

42. The portable device of claim 38 wherein said circuitry configured to modify said output of said message comprises:

circuitry configured to change a parameter of said output device.

5 43. The portable device of claim 38 wherein said circuitry configured to modify said output of said message comprises:

circuitry configured to modify said play data set.

44. The portable device of claim 32 further comprising:

10 circuitry configured to select one of said plurality of output devices as said output device for providing said output of said message.

45. The portable device of claim 44 wherein said plurality of output devices include a vibration module.

15

46. The portable device of claim 44 wherein said plurality of output devices include a display.

47. The portable device of claim 44 wherein said portable device stores a plurality of libraries wherein each of said plurality of libraries is associated with one of said plurality of output devices and said portable device further comprises:

20

circuitry configured to select one of said plurality of libraries as said library to search responsive to a selection of one said plurality of output devices.