A method and apparatus for receiving and transmitting email using a telephone device. In the case of receiving email, email messages are received and stored in a storage device (36). When it is desired to review or retrieve the received messages, a user accesses their storage device using a telephone device by placing a telephone call (30). Once a communication path is established, the received email messages are converted into audio using a speech synthesizer (32) and played to the user over the telephone line. Similarly, to transmit an email message via a telephone, the user speaks or vocalizes the desired message into the telephone device. This message is transmitted on audio to the user’s storage device (e.g., a personal computer) where the message is converted into text or data using a voice recognition unit (34). The text or data is subsequently transmitted on an email message having originated with the user. An alternative method of replying to a received message is to automatically initiate a reply message to the sender of the received message if at any time during the playback of the received message the user begins speaking.
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METHOD AND APPARATUS FOR TELEPHONE EMAIL

FIELD OF THE INVENTION

The present invention generally relates to the field of data communication. More specifically, the present invention relates to a method and apparatus for receiving and transmitting email using a telephone device.

BACKGROUND OF THE INVENTION

Email messages transmitted via computer are frequently used to communicate information. However, in order to transmit or receive such email messages, a user must typically have access to a computer or other device. This limitation severely restricts the ability to transmit or receive email when the user is not near a computer. One solution to this problem is the use of personal computers and other portable communication devices. Again, even the use of these devices poses other problems in terms of cost, logistics, and complexity.

Speech recognition and speech synthesis in conjunction with email can be accomplished using "Via Voice" available from IBM. However, such a system requires the user to be located at a personal computer in order to receive or transmit email by way of speech.

SUMMARY OF THE INVENTION

The present invention eliminates the foregoing and other problems by providing a method and apparatus for receiving and transmitting email using a telephone device. In the case of receiving email, email messages are received and stored in a storage device. When it is desired to review or retrieve the received messages, a user accesses...
their storage device using a telephone device by placing a telephone call. Once a communication path is established, the received email messages are converted into audio using a speech synthesizer and played to the user over the telephone line. Similarly, to transmit an email message via a telephone, the user speaks or vocalizes the desired message into the telephone device. This message is transmitted as audio to the user's storage device (e.g., a personal computer) where the message is converted into text or data using a voice recognition unit. The text or data is subsequently transmitted as an email message having originated with the user. Also, according to one aspect of the present invention, any sound input by the user during playback of a message is interpreted as a response or reply, and the system then automatically configures itself into reply mode, with the sound input by the user being the reply message. The voice recognition (voice to text) and speech synthesis (text to speech) may be performed using conventional software and systems for accomplishing these tasks.

**Description of the Drawings**

Other objects, features and advantages of the invention discussed in the above brief explanation will be more clearly understood when taken together with the following detailed description of an embodiment which will be understood as being illustrative only, and the accompanying drawings reflecting aspects of the embodiment, in which:

Figure 1 is a flowchart illustrating email message retrieval according to the present invention;
Figure 2 is a flowchart illustrating email message transmission according to the present invention; and

Figure 3 is a block diagram illustrating a telephone accessible email receiving/transmitting unit according to the present invention.

Detailed Description of the Preferred Embodiments

Message Retrieval

Referring now to Figure 1, therein is illustrated the process of email message retrieval using a telephone in accordance with the present invention. Beginning at step 10, the user initiates the process of message retrieval by accessing the location where the email messages are stored, e.g., a personal computer. This may be accomplished by the user calling into the personal computer and initiating message retrieval by navigating through menus or other user-interactive methods well known in the art.

Once the user has accessed the system, the user may optionally be presented with information concerning the received email messages, e.g., the number of messages received and the time each message was received. The user is also able to select one or more messages to listen to.

When the user selects a message, the personal computer converts the text of the email message into speech using a speech synthesizer unit (step 12), such as "Via Voice" which is available from IBM. Alternatively, the conversion from text or data into speech may be carried out prior to the user accessing the system depending on the performance objectives of the system. If all received messages are converted into speech as soon as they are received, this may, of course, speed up the retrieval by the user. However, this will be at the expense of increased memory
needed to store the messages in audio format as opposed to their original text or data format. Conversely, if the messages are converted into audio only on an as-needed basis, this may possibly reduce the required memory since only those requested messages are converted into audio. However, this latter approach will require the messages to be converted in real time, possibly posing perceptible delays to the user.

Once the selected message is available in audio form it is played back to the user (step 14). The playback process may optionally include vocalizing to the user the sender of the message. This may be accomplished by using the speech synthesis unit to vocalize the sender information associated with the message which is being played back to the user. Alternatively, the sender information associated with the received message may be used to perform a look-up or other retrieval from a database of pre-stored audio information identifying particular senders.

Message Transmission

Referring now to Figure 2, therein is illustrated a process for transmitting email messages using a telephone device in accordance with the present invention. First, the user accesses their computer device and vocalizes or speaks the message it is desired to transmit (step 20). Next, at step 22, the audio message received from the user is converted into text or data using a voice recognition unit, such as, for example, "Via Voice" which is available from IBM. The text or data is then transmitted as an email message at step 24.

The user is able to specify the desired destination of the email message in a number of ways.
First, the destination may be identified on a "reply" to a received message. This may be achieved by presenting the user with the option to "reply" to a message once the user has listened to a received message, as indicated above. In this approach, the computer using the speech synthesis unit can announce to the user the sender of the received message. In this way, the user is informed of the message sender, while at the same time, the computer keeps track of the message sender data or other identifying information. An alternative method of replying to a received message is to automatically initiate a reply message to the sender of the received message if at any time during the playback of the received message the user begins speaking. The user’s speech during the playback of the received message is used to indicate that a reply message should be transmitted. The speech is then converted to text or data and transmitted as the reply message.

Second, the user may speak or vocalize the name of the intended message recipient for the message which is to be transmitted. Using the voice recognition unit, the computer can confirm to the user the intended message recipient by vocalizing the recipient's name or spelling the name of the recipient.

Third, the user may specify the intended message recipient by inputting numbers, letters, or other identifying information. Alternatively, the user may spell the name of the intended message recipient using the touch tone keypad on the telephone.

Voice Recognition/Speech Synthesis

Referring now to Figure 3, therein is illustrated a block diagram of a telephone accessible email message retrieval and transmission system according to the present
invention. The system includes a telephone interface 30 which allows access to the system from a remote location such on a telephone. Such telephone interfaces are common and well known in computer equipment, telephone answering machines and the like. Connected to the telephone interface 30 is a speech synthesis unit 32 which functions to convert data or text into audio to be output to the user. The data or text is received by the speech synthesis unit 32 from the computer 36 to which it is connected.

Also, connected to telephone interface 30 is a voice recognition unit 34 which functions to convert audio input by the user into data or text for use by the computer 36 to which the voice recognition unit is connected.

While the telephone interface 30, speech synthesis unit 32, and voice recognition unit 34 are shown on separate units, they may in fact be integrated into the computer 36 depending on whether the computer 36 is able to perform the required functions of the various units 30, 32 and 34.

While the invention has been particularly shown and described with reference to a preferred embodiment thereof, it will be understood by those skilled in the art that various changes in form and details may be made therein without departing from the spirit and scope of the invention.
WHAT IS CLAIMED IS:

1. A method for transmitting a digital data message using a telephone device, the method comprising the following steps:
   inputting an audio message using said telephone device into a computer;
   converting said audio message into a digital data message; and
   transmitting said digital data message to a destination.

2. The method of Claim 1, wherein the step of converting said audio message into said digital data message is performed using a voice recognition unit.

3. The method of Claim 1, further comprising the step of specifying a desired destination by selecting a reply to a received digital data message.

4. The method of Claim 1, further comprising the steps of specifying a desired destination by vocalizing information identifying an intended recipient and converting said vocalized information into destination data.

5. The method of Claim 1, further comprising the step of specifying a desired destination by inputting information using a keypad of said telephone device to identify an intended recipient.
6. A method for receiving and transmitting digital data messages using a telephone device, the method comprising the following steps:
   accessing a computer where a first digital data message is stored using said telephone device;
   retrieving said first digital data message from said computer;
   converting said first digital data message into an audio message;
   playing back said audio message over said telephone device;
   inputting a second audio message using said telephone device into said computer;
   converting said second audio message into a second digital data message; and
   transmitting said second digital data message to a destination.

7. The method of Claim 6, wherein the step of converting said first digital data message into said audio message is performed using a speech synthesizer.

8. The method of Claim 6, wherein the step of retrieving said first digital data message is performed using one or more selection menus.

9. The method of Claim 6, wherein the step of converting said first digital data message into said audio message is performed prior to the step of accessing said computer where said digital data message is stored.
10. The method of Claim 6, wherein the step of playing back said audio message over said telephone device is performed using a speech synthesis unit which vocalizes information identifying an intended recipient associated with said second audio message.

11. The method of Claim 6, further comprising the step of retrieving information from a database with respect to said first digital data message and playing back an audio identifier.

12. The method of Claim 6, wherein the step of converting said second audio message into said second digital data message is performed using a voice recognition unit.

13. The method of Claim 6, further comprising the step of specifying a desired destination by selecting a reply to a received digital data message.

14. The method of Claim 6, further comprising the steps of specifying a desired destination by vocalizing information identifying an intended recipient and converting said vocalized information into destination data.

15. The method of Claim 6, further comprising the step of specifying a desired destination by inputting information using a keypad of said telephone device to identify an intended recipient.
16. The method of claim 6, wherein said destination corresponds to a source of said first digital data message and said second digital data message is a reply to said first digital data message.

17. An apparatus for transmitting digital data messages, comprising:
   a computer;
   a telephone device for inputting an audio message into said computer; and
   a voice recognition unit for converting said audio message into a digital data message.

18. An apparatus for receiving and transmitting digital data messages, comprising:
   a computer;
   a telephone device for inputting an audio message into said computer;
   a voice recognition unit for converting an audio message into a digital data message; and
   a speech synthesizer for converting a second digital data message into a second audio message.
19. A method for receiving and transmitting digital data messages using a telephone device, the method comprising the following steps:

accessing a computer where a first digital data message is stored using said telephone device;

retrieving said first digital data message from said computer;

converting said first digital data message into an audio message;

playing back said audio message over said telephone device;

detecting input speech during or proximate the playback of said first message;

if said detecting step detects input speech, then performing the following steps:

automatically implementing a reply mode to transmit a reply message;

setting a destination of said reply message to a source of said first digital data message;

inputting the reply message using said telephone device;

converting said reply message into a second digital data message; and

transmitting said second digital data message to said destination.
FIG. 1

10
INITIATE MESSAGE REVIVAL

12
CONVERT MESSAGES INTO AUDIO

14
PLAY BACK MESSAGES AS AUDIO
FIG. 2

1. INPUT MESSAGES AS AUDIO
2. CONVERT AUDIO INTO TEXT
3. TRANSMIT TEXT MESSAGE
**INTERNATIONAL SEARCH REPORT**

**A. CLASSIFICATION OF SUBJECT MATTER**

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US CL : 379/88.13

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 379/88.01, 88.04, 88.07, 88.12, 88.13, 88.14, 88.16, 88.22, 88.23, 88.24, 88.28

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

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**Date of the actual completion of the international search**

14 JUNE 2000

**Date of mailing of the international search report**

03. JUL. 2000

**Name and mailing address of the ISA/US Commissioner of Patents and Trademarks**

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